# UNDERSTANDING THE ASSOCIATION BETWEEN INTERPROFESSIONAL COLLABORATIVE PRACTICE AND PATIENT HEALTH OUTCOMES IN URBAN SETTINGS: A MIXED METHODS STUDY

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**A dissertation submitted to the**

**Graduate School–Newark**

**Rutgers, The State University of New Jersey**

**in partial fulfillment of the requirements**

**for the degree of**

**Doctor of Philosophy**

**Graduate Program in Urban Systems**

**Written under the direction of**

**Sabrina Marie Chase**

**and approved by**

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**Newark, New Jersey**

**May, 2016**

## ABSTRACT OF THE DISSERTATION

**Understanding the Association Between Interprofessional Collaborative Practice and Patient Health Outcomes in Urban Settings: a Mixed Methods Study**

**by Yuri Tertilus Jadotte**

**Dissertation Director: Sabrina Marie Chase**

Collaboration among different healthcare professionals consists of effective teamwork and communication that involves patients and families, and is based on a clear understanding of each others' roles and responsibilities on the healthcare team, and a deep appreciation for the value that all professions bring to patient care. Yet it is still unclear how this collaboration works to influence patient health and wellness, especially for disadvantaged urban populations. This study sought to elucidate this phenomenon using both qualitative and quantitative methods. The qualitative component of the study employed the grounded theory approach to conduct 4 focus groups and 19 individual interviews with healthcare professionals who work with disadvantaged urban patients, to produce a conceptual model that explains the phenomenon of interest. In the quantitative component of the study, this model was converted into an online survey that was then administered to 150 healthcare professionals, so that it could be validated quantitatively with a larger number of people. Statistical regression methods were used to control for the influence of personal characteristics of the participants on their perception of the

model. The study identified 114 qualitative themes, which were condensed into 10 theoretical categories (interprofessionalism, building trust, coordination, facilitating sharing, patient care, enhancing reciprocity, common goals, effecting change, healthcare system disparities, and patient individual, group or population disparities) that were further reduced to two theoretical concepts (social capital and disparities). The survey and regression analysis revealed that the extent to which healthcare professionals are satisfied with their careers is the most important factor that influences their perceptions of this model. Other important factors include the type of healthcare profession, gross annual income, and whether a healthcare professional had worked in patient care for at least 6 months. In conclusion, this study showed that social capital is the theoretical foundation for collaboration among healthcare professionals, patients and families, and it helps explains why collaboration works or does not work in different settings. Additional research using more objective data sources is needed to determine whether collaboration can truly impact patient health and system outcomes.

**Acknowledgement**

I want to first thank the members of my dissertation committee for each contributing substantially to making my study possible. I especially wish to thanks Dr. Sabrina Chase for being there to guide me throughout the qualitative portion of the study and to help me troubleshoot along the way. This includes recommending a fantastic transcriptionist who made my life so much easier and saved me at least 2 months' worth of full time work (thanks Joni!), as well as providing advice on proper use of the triangulated approach of using both focus groups and individual interviews to achieve theoretical sampling and saturation. Dr. Cheryl Holly played an essential role in helping me identify the fundamental research question of this study and the gaps in the literature, by serving as my second reviewer for the systematic review that was conducted to solidify the literature review chapter for my dissertation proposal. Thanks to her, I am one step closer to publishing a condensed version of this systematic review in the Journal of Interprofessional Care, which is one of the premier journals in the field. This systematic review is also being published in full as a model paper and chapter in the 2nd edition of the book Comprehensive Systematic Review for Advanced Nursing Practice, edited by Drs. Cheryl Holly and Susan Salmond.

Dr. Powell has been instrumental particularly for the development of the qualitative portion/phase I of my study. It is from him that I gained a lifelong appreciation for qualitative research, and it is from him that I learned how to use qualitative research methodologies to frame important research questions requiring a depth of insight that is seldom achieved from quantitative methods. It is also in Dr. Powell's qualitative methods class that I developed and pilot tested the focus

group/individual interview guide, which allowed me to demonstrate that my project was not only feasible but also would yield insights heretofore unseen in the literature on interprofessional care. Finally, I would like to thank Dr. Marian Passannante for her incredible guidance regarding the quantitative data analytic portion of my study, which helped improve its methodological validity. In addition, as an educator involved in interprofessional education curriculum development at Rutgers Biomedical and Health Sciences (RBHS), Dr. Passannante's social capital became my link to all things interprofessional at the university; this includes providing a link to the Office of the Vice Chancellor for Interprofessional Programs, and to the members of the Master Educators' Guild.

I want to think Dr. Edna Cadmus and the board of the New Jersey Collaborating Center for Nursing (NJCCN), whose $2,500 George Hebert Legacy Dissertation Grant provided the financial support that I needed to conduct this study. I also wish to thank the many Rutgers administrative personnel who were eager to help me implement the data collection steps of this study. A special shout-out goes to Cheryl Thiemann from the Rutgers School of Nursing Office of the Associate Dean for Research who helped coordinate all of the administrative matters for my qualitative study/phase I (including reimbursements, identifying who should sign what, and purchasing and setting up the refreshments for the focus groups held in Newark and New Brunswick). I also especially send my best regards and thank you's to two members of the Office of Institutional Research and Assessment: William Dubbs, who worked tirelessly as my second coder for the qualitative data analysis, and John Runfeldt, whose experience with survey design played an immense role in helping to improve the validity of the cross sectional survey

instrument created and the data produced during phase II of this study. I wish to thank Sean Parnell, my former research assistant, for his contributions to the data management process for the systematic review that I conducted as part of developing my proposal for this dissertation study.

I could not fail to mention the fact that I am extremely grateful that the deans and faculty of the Rutgers School of Nursing not only welcomed me into their professional world, as a physician and therefore a de jure outsider in many ways, but also allowed me to participate in the affairs of the school to the fullest extent possible such that I never became or felt like a de facto outsider. They also created the opportunity for me to get a foot in the door of academia in general by welcoming me as a faculty colleague, which has furthered my career at the school, the university and beyond. Perhaps more than anything else, being a faculty member gave me a window of access into the worldviews of healthcare professionals at RBHS. Becoming faculty allowed me enter into and maybe even belong in the world of the participants of my study, which made it easier for them to open up to me and disclose information that otherwise might be somewhat uncomfortable to share with others who do not partake in that world.

I especially wish to thank Dr. Susan Salmond (and by association or affiliation Dr. Cheryl Holly as well) for making the decision to hire me first in 2011 as a research associate upon entry into the PhD in Urban Systems program, and then again in 2013 as an Assistant Professor and Assistant Director of Education for the Northeast Institute for Evidence Synthesis and Translation (NEST). These opportunities have given me the experience that I needed to know for sure that I belong in the world of academia, doing

research, writing, teaching, and providing service to local, national and global communities.

Last but not least and certainly most importantly, I wish to thank my friends and family for their patience and support all these years, waiting for me to be done pursuing additional degrees and advanced education. To my good friend David Valencia Valdecantos, I wish to say thank you for being there for me through the bulk of the years it took me to complete this PhD, and thank you for many years of friendship, with hopefully many more to come. Mom (Marie Judith Jadotte), Dad (Rhode Hamlet Jadotte Sr.), big brother (Rhode Hamlet Jadotte Jr.), and little sister (Rijha Jadotte), thank you for being there for me as well. I want you to know that I am not quite done yet as there is still the matter of completing Preventive Medicine residency, which requires the pursuit of a Masters degree in Public Health (MPH). As you know, I am a lifelong learner and increasingly, I find that I am becoming a lifelong teacher as well for those who are willing and able follow in my footsteps, and I find great delight in knowing that to be the case. Still, know that your support has meant the world to me and you can always count on me to be there for you.

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## Abbreviations

AIPPEN: Australian Interprofessional Practice and Education Network

CAIPE: Centre for the Advancement of Interprofessional Education

CIHC: Canadian Interprofessional Health Collaborative

IHI: Institute for Healthcare Improvement

IOM: Institute of Medicine

IPC: Interprofessional Competency

IPCP: Interprofessional Collaborative Practice

IPE: Interprofessional Education

IPEC: Interprofessional Education Collaborative Expert Panel

IPL: Interprofessional Learning

IPO: Interprofessional Organization

IPP: Interprofessional Practice

JBI: Joanna Briggs Institute

NCIPE: National Center for Interprofessional Practice and Education

RCT: Randomized Controlled Trials

## Introduction

Effective collaboration among healthcare professionals is key to attaining optimal patient health outcomes. However, attainment of optimal patient health outcomes is challenged by the increased complexity of healthcare system processes (Institute of Medicine, 2001) and the high degree of specialization that now exists within the healthcare professions (Irvine, Kerridge, McPhee, & Freeman, 2002), combined with the worsening burden of chronic diseases on patients and society as a whole (World Health Organization, 2012) and the increasing scarcity of resources for healthcare (Institute of Medicine, 2012a). These challenges demand that healthcare delivery be well coordinated, team-based, and patient-centered so as to achieve optimal patient health outcomes within resource constraints.

Interprofessional education (IPE) and interprofessional practice (IPP) are initiatives designed to improve the competency of healthcare professionals with regards to working in teams, communicating effectively with patients and their families, respecting and appreciating each other's unique and complementary roles in healthcare, and developing shared values that sustain collaboration to improve patient health outcomes and minimize healthcare costs (Interprofessional Education Collaborative Expert Panel, 2011). In essence, IPE and IPP are designed to help students and healthcare professionals achieve interprofessional collaborative practice (IPCP). These initiatives have been shown to be effective in improving many of the outcomes of IPCP, such as student and healthcare professional perceptions, attitudes, beliefs and knowledge about IPCP (Lapkin, Levett-Jones, & Gilligan, 2011), as well as healthcare outcomes, such as reduced length of stay and better patient care management infrastructures (Reeves,

Perrier, Goldman, Freeth, & Zwarenstein, 2013; Reeves et al., 2008; Merrick Zwarenstein, Goldman, & Reeves, 2009).

However, two major knowledge gaps remained in the field of interprofessional care. First, there was a lack of empirical evidence on the association between IPCP and patient health outcomes. This had been identified as a major gap in the literature both by key researchers in the field (B. F. Brandt, 2014) and via systematic review methodology (Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009). Respectively, these studies explicitly called for examining the relationship between IPCP, healthcare and patient health outcomes, and exploring how IPCP effects changes in healthcare and patient health outcomes. Second, this major gap in knowledge has been particularly poignant when IPCP is envisioned within the context of the urban setting (Vlahov & Galea, 2002), and the health and healthcare disparities (Kevin Fiscella & Epstein, 2008; Institute of Medicine, 2002; Krist, Johnson, Callahan, Woolf, & Marsland, 2005; Perloff, Kletke, & Fossett, 1995) that socioeconomically disadvantaged communities face (Vanderbilt et al., 2013; Xyrichis & Lowton, 2008).

I confirmed the presence of these knowledge gaps when I conducted an informal discussion with local urban healthcare professionals, and found that there was a substantial need to fully examine their perceptions of IPCP, in order to identify areas for improvement in patient care at the community and healthcare system levels (Jadotte, 2014). Studies have identified social capital as a possible theoretical framework by which IPE and IPP interventions act to enhance IPCP among healthcare professionals (Gloede, Hammer, Ommen, Ernstmann, & Pfaff, 2013; Godley & Russell-Mayhew, 2010), and thereby potentially improve patient health outcomes; however, this proposed mechanism

had not been demonstrated inductively and had not, to my knowledge, yet been grounded in any empirical qualitative study. Furthermore, while social capital may explain how IPE and IPP improve the cognitive and structural functionality of collaborative relationships among healthcare professionals, it did not explain how this improved collaboration works to change patient health outcomes. These important gaps had not yet been addressed in the published literature to our knowledge.

The conceptual map in Figure 1 below illustrates what is known about IPCP in the context of health and healthcare disparities embedded in the urban setting in the US, and situates the gaps that have been identified via a brief initial review of the literature. These two major knowledge gaps must be addressed if the healthcare community is to become truly collaborative throughout all levels of the educational continuum (Institute of Medicine, 2013a), and if it is to truly establish a lasting and meaningful commitment to and a real partnership with patients, families and communities – particularly those who are subject to substantial disparities in health and healthcare – in order to achieve better population health outcomes (Institute of Medicine, 2014).

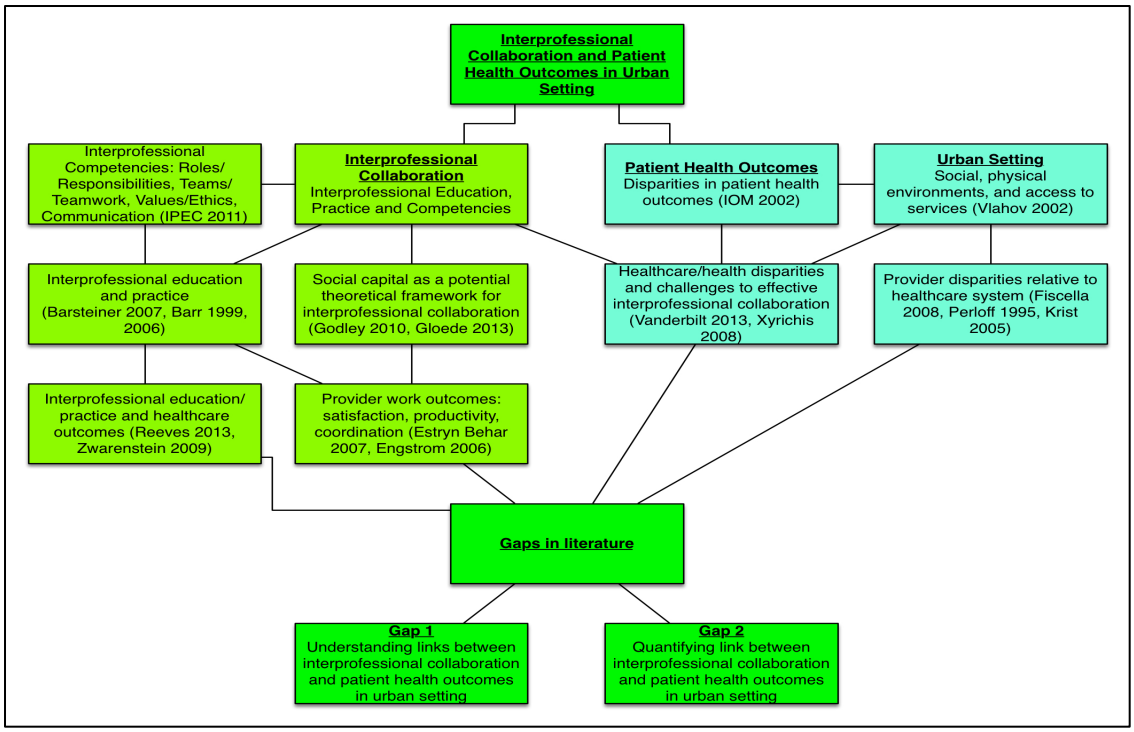


**Figure 1.** Literature map showing the identified gaps leading to the formulation of the research question for this dissertation study.

Furthermore, IPCP has substantial implications for healthcare education, policy, and practice in the US (Reeves et al., 2011). On one hand, students of the healthcare professions need to learn how to be interprofessionally competent to maximize patient-centered care, and health educators require empirical clarification on the link between IPCP and patient health outcomes in order to craft appropriate and effective educational policies (Hammick, Freeth, Koppel, Reeves, & Barr, 2007) and validate the utility of interprofessional education rather than uni-professional education in the curricula (Thistlethwaite, 2012). On the other hand, hospitals and other healthcare systems as well as individual clinicians need empirical evidence about whether the implementation of IPE and IPP will improve patient health outcomes and reduce costs (B. F. Brandt, 2014; Interprofessional Education Collaborative Expert Panel, 2011). This dissertation study

addressed the first knowledge gap identified here (i.e. understanding the association between IPCP and patient health outcomes in urban settings) using a mixed methods approach.

## Purpose Statement and Research Question

The purpose of this dissertation study was to examine the association between IPCP and patient health outcomes in urban settings (***research question***), using a mixed methods approach (***methodology***). This project began with a grounded theory study, whose purpose was to uncover potential mechanisms that explain the relationship between IPCP and patient health outcomes, from the perspectives of healthcare professionals working in urban settings in the US. More specifically, the study used an exploratory sequential design, starting with a grounded theory approach (***methodology***) to conduct semi-structured focus group and individual interviews (***methods***) with healthcare professionals (***participants***) working in the urban setting and caring for socioeconomically disadvantaged populations (***setting***), followed by the development and application of an online survey (***method***) that facilitated a cross-sectional quantitative assessment (***methodology***) of the association between IPCP and patient health outcomes from the healthcare professionals' perspective.

In this study, IPCP was defined as instances when "multiple health workers from different professional backgrounds work together with patients, families, carers and communities to deliver the highest quality of care" (World Health Organization, 2010). The urban setting was defined as the set of social, environmental and access to care issues that socioeconomically disadvantaged populations living in American cities face (Vlahov & Galea, 2002). Patient health outcomes were defined as aspects of patient health that

can be measured objectively using the current diagnostic tools of modern medicine. This includes quality of life outcomes, acute care health outcomes such as survival from myocardial infarction (or heart attacks) and cerebrovascular events (or strokes), as well as chronic care health outcomes such as the incidence or prevalence of diabetes mellitus or coronary heart disease, just to name a few. In this study, the term "patient health outcomes" was considered synonymous with the term "population health outcomes", which consists of the health outcomes listed above and, in particular, their distribution in the population and its various social groups (Kindig, 2007). The term population health implies a concern for the healthcare and health disparities that may explain differences among social groups (Kindig, 2007).

The central research question for this study was: "How do healthcare professionals who work in urban settings in the US perceive the relationship between IPCP and patient health outcomes within the context of healthcare and health disparities embedded in urban settings?" More specifically, this study sought to answer the following sub-questions: what does IPCP mean to healthcare professionals? What barriers or facilitators do healthcare professionals identify as being pertinent to their ability to work effectively with each other to improve patient health outcomes? According to healthcare professionals, what does IPCP mean to patients? Which patient outcomes are most affected by the way healthcare professionals work together among themselves? What roles do healthcare and health disparities play in the way healthcare professionals collaborate with one another? What processes explain the connection between IPCP and patient health outcomes?

## Conceptual Frameworks

In this study, I sought to examine the association between IPCP and patient health outcomes within the context of the healthcare and health disparities embedded in the urban setting in the US. To my knowledge, no single conceptual model had been developed to frame this particular research question in order to specifically address the problems that socioeconomically disadvantaged populations face in this area. As such, it was not possible to select one specific theoretical framework that was directly related to the research question in this study. Rather, one of the central goals of this dissertation study was to uncover/co-construct this framework from the perspective of healthcare professionals working in the urban setting in the US. Thereby, this study sought to provide an empirical base of evidence, guided by the rigorous inductive methods of qualitative research and supported by quantitative validation, for the eventual development of a plausible theoretical model for this phenomenon.

Nevertheless, three existing theoretical models proved to be useful in conceptualizing the problem, placing it in the context of modern healthcare systems, and relating it to existing approaches to improving the health and well-being of populations and reducing healthcare costs. In particular, I discuss Evans and Stoddart's (1990) health determinants model for achieving health equity, as it provided a way of envisioning how public health and medicine can work together to improve patient health outcomes and achieve health equity at all levels of the health determinants continuum.

Next, I elaborate on the IHI (2009) Triple Aims model for optimizing healthcare initiatives to achieve the goals of improving the patient experience of care, reducing per capita cost, and achieving the best population health outcomes possible. Note that the IHI

Triple Aims model was developed based on, and is nested within, the Evans and Stoddart health determinants model (Stiefel & Nolan, 2012), which made it particularly relevant for the purposes of this dissertation study. Note also that the IHI Triple Aims model guides the work of researchers at the NCIPE (National Center for Interprofessional Practice and Education, 2014), which is one of the leading think-thank organizations on IPE, IPP and IPCP in the US.

I also examine Vlahov and Galea's (2002) conceptual model for urban health. This model provided a solid operational foundation that clearly helped define the meaning of "urban health". Therefore, it helped frame the findings and results of this dissertation study on how IPCP relates to patient health outcomes in the urban setting. Note also that this model was developed specifically to examine this construct as it manifests in North American cities, which made it particularly relevant to this dissertation study.

Finally, it is critical to note that there exists a conceptual framework (see Figure 2 below) that relates explicitly to interprofessional interventions (Reeves et al., 2011; Reeves, Goldman, & Zwarenstein, 2009). This framework, however, is a logic model developed solely to provide some clarity for researchers in the field in defining their IPE and IPP interventions, not to help study the problem identified in this dissertation project or to place it in the context of the real world. As such, it was not truly useful as a conceptual model to guide this dissertation study and therefore was not used as such. However, it will be discussed further in the literature review section as it provided a good overview of formative pathways for IPE and IPP interventions. It was included here primarily for the sake of transparency. The task of this dissertation study in fact was to

expand the least developed parts of this model, which are the steps linking the intermediate, patient and system outcomes that are listed in the figure below.

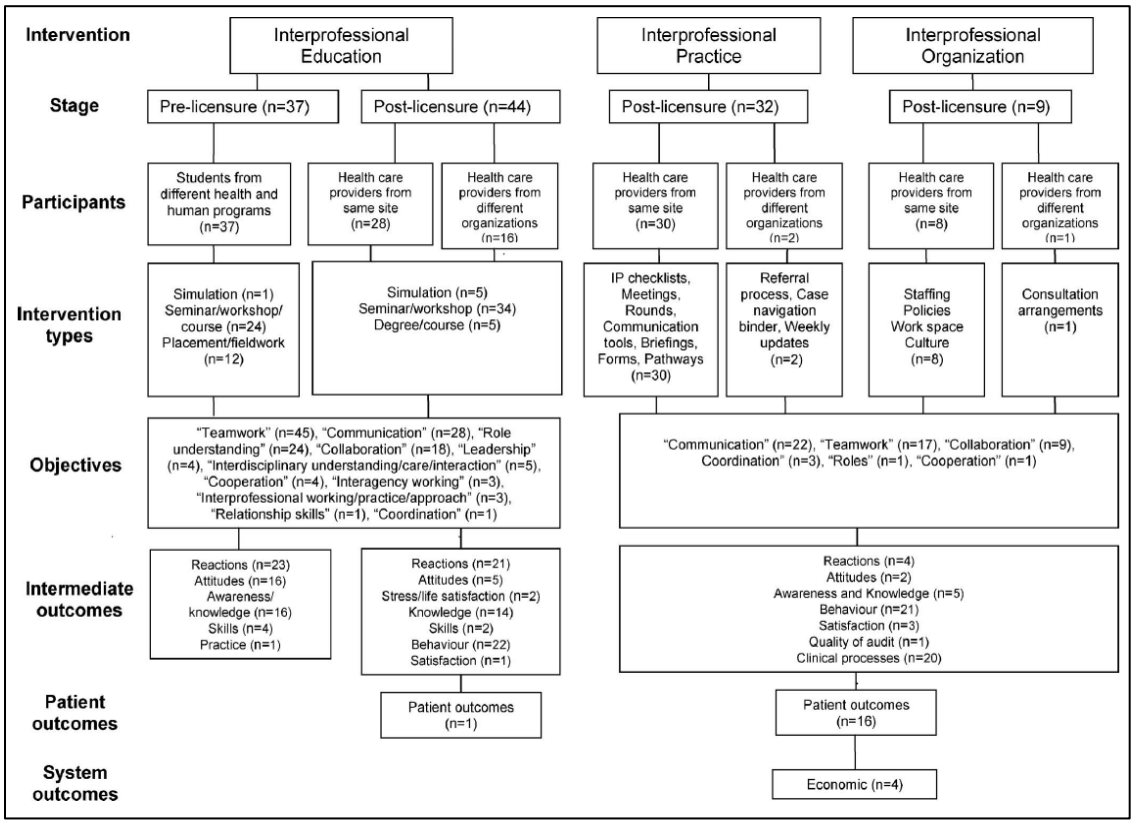


**Figure 2.** Reeves et al conceptual framework for interprofessional interventions. Source: Reeves, S., Goldman, J., Gilbert, J., Tepper, J., Silver, I., Suter, E., & Zwarenstein, M. (2011). A scoping review to improve conceptual clarity of interprofessional interventions. Journal of Interprofessional Care, 25(3), 167-174.

## Health Equity: Evans and Stoddart's Health Determinants Model

Health equity can be defined as the imperative to improve the health of disadvantaged communities based on the fact that it is morally just to do so and that it will benefit society as a whole (Grant Makers in Health, 2010; Kindig, 2007). Achieving this goal requires a commitment by policymakers and healthcare professionals within

public health and medicine to effective prevention and health promotion as well as to adequate provision of medical care, respectively. Note that in this instance public health and medicine are referring to the two basic categories of interventions in healthcare, not necessarily to the healthcare professions or healthcare professionals most commonly associated with these names (namely public health specialists and physicians): the terms as they are used by Evans and Stoddart encompass these activities as they are performed by all healthcare professionals.

Nevertheless, here is the fundamental tenet of the Evans and Stoddart (1990) health determinants model: it links these two sets of interventions (i.e. public health and medicine) to the health determinant variables that they are designed to influence. In particular, it connects prevention and health promotion initiatives to upstream factors (i.e. socioeconomic factors and the physical environment) and downstream or individual factors (i.e. genetic endowment, spirituality, resilience, physiologic and behavioral factors). Simultaneously, it links medical care to the intermediate outcomes (i.e. disease burden and injury) and health outcomes (i.e. health, function and mortality) over which medical interventions have the greatest and most direct influence (Stiefel & Nolan, 2012). Figure 3 below represents a visual model of this theoretical framework.

The model was useful for the purposes of this dissertation project for several reasons. First and foremost, it provided a framework by which the findings of the study could be integrated into the current frame of thinking for achieving the goal of health equity, which entails consideration being given to all the determinants of health as described above. Second, given that IPE and IPP interventions must take place even before health promotion and prevention activities as well as medical care, and given that

health equity fundamentally is the departure point of the model, the conclusion then is that IPE and IPP interventions can be applied to health promotion and prevention as well as medical care interventions to strengthen them. In essence then, IPCP (which is the construct that IPP and IPE interventions are designed to change) is a potential mediator between health equity and its two interventional arms that are most directly responsible for influencing the determinants of health, as elaborated by the model. Thus, this model provided a way to understand where IPCP fits within the causal pathways between health equity and population health outcomes. Finally, it is the theoretical model chosen by the IHI to frame their Triple Aim framework (Stiefel & Nolan, 2012; The Institute for Healthcare Improvement, 2009), a model that was also very pertinent to this dissertation study, which I discuss in the next section.

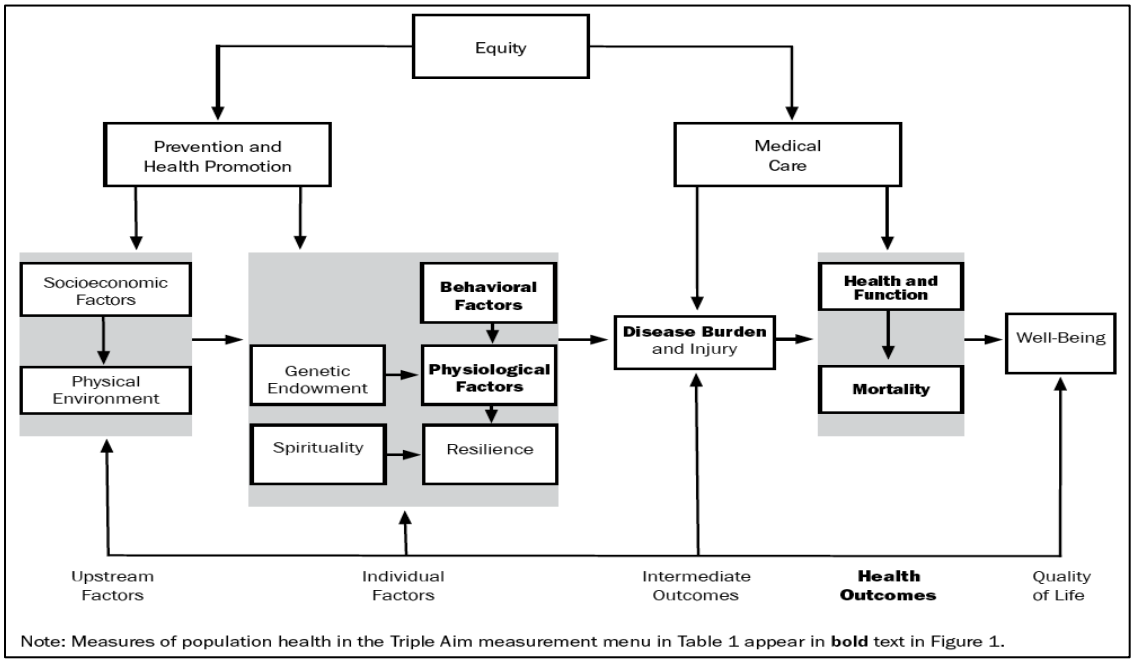


**Figure 3.** Evans and Stoddart health determinants model.

Source: Stiefel, M. & Nolan, K. (2012). A guide to measuring the Triple Aim: Population Health, Experience of Care, and Per Capita Cost. IHI Innovations Series White Paper. Cambridge, Massachusetts: Institute for Healthcare Improvement.

**Patient Experience of Care, Per Capita Healthcare Costs and Population Health Outcomes: The IHI Triple Aim Model**

In 2009, the IHI promulgated the Triple Aim conceptual framework (The Institute for Healthcare Improvement, 2009), with the explicit goal of helping to establish the optimization of the patient experience of care, per capita healthcare costs and population health outcomes as the three objectives that must be pursued simultaneously in any healthcare improvement endeavor (Stiefel & Nolan, 2012; The Institute for Healthcare Improvement, 2009). The premise for the development of this framework stemmed from two important and startling facts: the continual and unsustainable rise of healthcare costs in the US (Frenk et al., 2010; Institute of Medicine, 2012a), combined with the poorer population health outcomes achieved by the US relative to other developed nations that spend far less on healthcare (Institute of Medicine, 2013d; The Institute for Healthcare Improvement, 2009).

In proposing the Triple Aim, the IHI sought to create an impetus for the pursuit of "better models for providing healthcare" (The Institute for Healthcare Improvement, 2009). Fundamentally, IPE and IPP together form a model for improving healthcare that has recently been more fully embraced in the US, particularly since the publication of the Interprofessional Education Collaborative Expert Panel (IPEC) report (2011). This panel recommended placing emphasis on four key professional competencies (i.e. values and ethics, roles and responsibilities, teams and teamwork, and interprofessional

communication) as the key objectives that must be attained to enhance the collaborative relationships among healthcare professionals, in order to achieve IPCP and thereby strengthening their effectiveness in the delivery of healthcare (Interprofessional Education Collaborative Expert Panel, 2011). In this sense, the IHI Triple Aim framework can serve as a guide for benchmarking IPE and IPP endeavors. In other words, IPE and IPP, as healthcare delivery model interventions, should also seek to achieve the triple aim in measuring their success. This is also the approach taken by the NCIPE in benchmarking success regarding its own IPE and IPP endeavors (B. Brandt, Lutfiyya, King, & Chioreso, 2014).

Furthermore, the IHI Triple Aim model emphasizes the improvement of the experience of care as a first step in changing healthcare delivery. It argues that healthcare decision-makers should start with the individual patient experience of care and "scale up" (Stiefel & Nolan, 2012). This is a fundamental basic tenet of value-based healthcare: that improving the patient experience of care should occur simultaneously with enhancing the quality and reducing cost of care, as well as improving patient health outcomes (Berwick, Nolan, & Whittington, 2008). Although interprofessionalism is a paradigm shift in healthcare that is ultimately designed to enhance the effectiveness of public health and medicine in improving patient health outcomes, it actually begins by shaping the healthcare team into a collaborative unit that fully integrates the patient, the family and community in the entire process of pursuing health and wellness. As such, it is not a stretch of the imagination to state that IPE and IPP interventions might actually work to accomplish the distal goal of improving patient health outcomes in part by first achieving the more proximal goal of improving the patient experience of care.

The fundamental questions then are how best to achieve the formation of a sustainable interprofessional collaborative unit, and how to measure whether this enhanced form of collaboration actually improves patient health outcomes: the former has been a targeted aim of two recent IOM reports (Institute of Medicine, 2013a, 2014), while the latter remains a holy grail of research in the field of interprofessional care (B. F. Brandt, 2014). The IHI Triple Aim model was therefore particularly useful for the purposes of this dissertation study because it links the patient experience of care, which is a fundamental aspect of healthcare that IPE and IPP interventions likely modulate, with healthcare costs and population health outcomes, thereby providing a theoretical basis for making the claim that IPCP – the desired result of IPE and IPP interventions – may in fact influence patient health outcomes. Figure 4 below is a conceptual representation of this framework. The task of this dissertation project was to provide an early empirical basis to validate this claim, using both inductive and deductive methodologies.

In addition, the IHI Triple Aim model specifically identifies the design and coordination of healthcare as two processes that are fundamental to providing better healthcare and achieving better population health outcomes (The Institute for Healthcare Improvement, 2009). IPE and IPP are key interventions that have empirically been proven capable of changing some of the processes of healthcare, including care coordination (Lapkin et al., 2011; Reeves et al., 2013; Merrick Zwarenstein et al., 2009). Many questions remain, however. For example, what aspects of care coordination do IPE and IPP interventions actually influence? What other aspects of healthcare design and delivery do they influence? In the context of healthcare and health disparities embedded in certain settings, in particular the socioeconomic, sociopolitical, sociocultural, and

physical environments of the urban realm in the US, how does IPCP operate to effect changes in patient health outcomes? These are some of the questions that this dissertation project examined and evaluated, from the perspectives of urban healthcare professionals who work in this setting.

Furthermore, it is interesting to note that in a recent pilot study, I found that both the HCAHPS survey and the IPEC policy document were fundamentally inspired by the Institute of Medicine (IOM) report *Crossing the Quality Chasm* (Institute of Medicine, 2001; Jadotte, Chase, Qureshi, Holly, & Salmond, 2014). I also found that the HCAHPS survey may be a feasible tool with which to measure the four IPCs established by the IPEC expert panel (Jadotte et al., 2014). This pilot study was guided by the IHI Triple Aim framework (Jadotte et al., 2014), namely because this framework states that there is a conceptual link between the patient experience of care – of which the HCAHPS survey is the most widely validated and used measure in the US (National Center for Interprofessional Practice and Education, 2013) – and population health outcomes as well as healthcare costs. As such, the IHI Triple Aim model is a useful framework of analysis for linking the patient experience of care to IPCP. Finally, the NCIPE has committed to framing its research and evaluation agenda explicitly in terms of the IHI Triple Aim framework (B. Brandt et al., 2014), which further made this model particularly pertinent to this dissertation study.

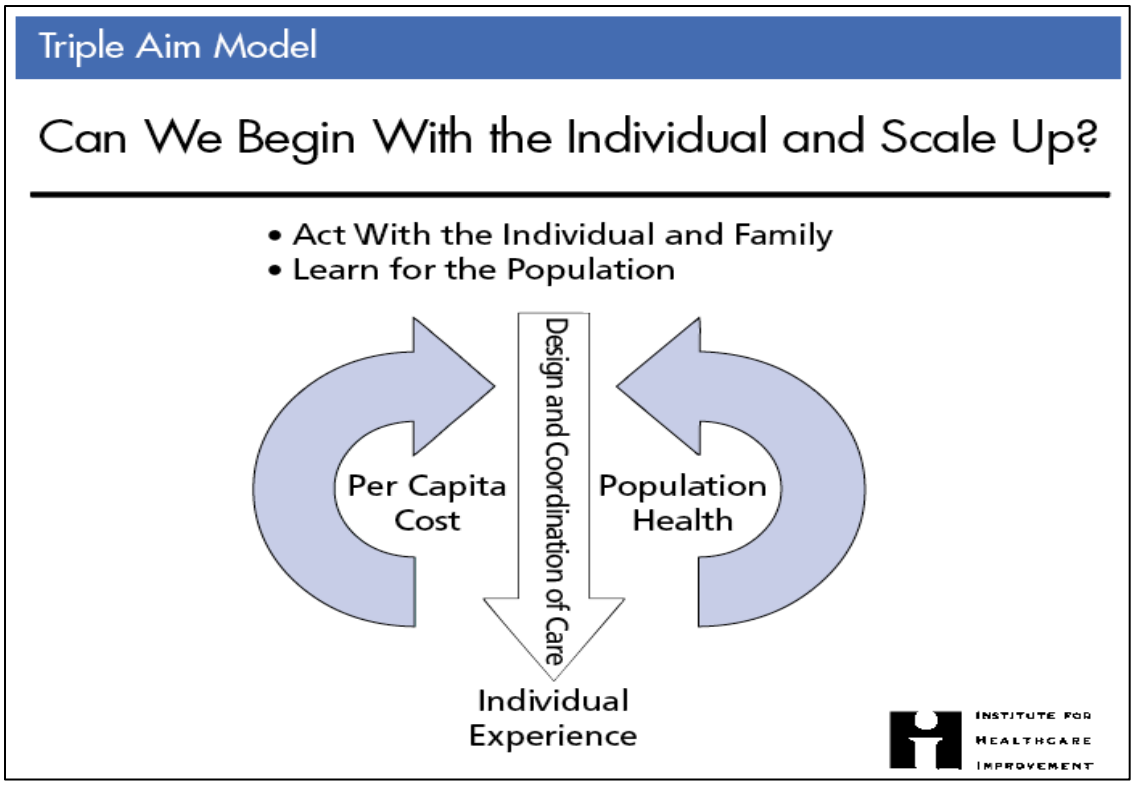


**Figure 4.** The IHI Triple Aim model.

Source: The Institute for Healthcare Improvement. (2009). The triple aim: optimizing health, care and cost. Healthcare Executive Jan/Feb 2009.

**The Social and Physical Environments and Access to Care: Vlahov and Galea's Urban Health Model**

The term "urban health" has long been ill-defined in the published literature. This is perhaps because that which is "urban" itself has been defined differently by different people in different places and at different times (Vlahov & Galea, 2002). Since the emergence of urban sociology as a discipline during the early 20th century, it is clear that there has been tremendous interest in studying the effects of cities on human health and social care. From theoretical ponderings on the effects of city living on mental health (Simmel, 1903), to attempts at providing systematic methodologies for examining cities

as “natural laboratories for studying human behaviors” (Park, Burgess, & McKenzie, 1925) and establishing the defining characteristics of cities (Wirth, 1938), there truly has been no shortage of research on the urban condition, both in the realm of urbanization – which consists of the processes of urban change – and urbanicity – which represents the conditions of urban living at any one point in time (Vlahov & Galea, 2002).

Vlahov and Galea’s (2002) urban health model was pertinent to this research study in that it explicitly attempts to create a framework that focuses solely on the urban condition as it pertains to health. It is important to note that their model was designed primarily for examining North American cities (Vlahov & Galea, 2002), which makes it even more useful for the purposes of this dissertation study. In constructing this framework, these authors reviewed the urban studies literature and identified two key dimensions in the study of urban health (i.e. urbanization and urbanicity) and three central themes that reflect the conditions of urban living as they pertain to health (i.e. the social and physical environments, as well as health and social services). By combining these dimensions and themes, this framework offers a wide lens with which to conceptualize the issues that exist in the urban setting. More importantly, it helps to make a distinction between the prevalent conditions (i.e. the problems as they exist at one point in time in cities, which fall under the realm of urbanicity) and the processes inherent in the urban setting that might be driving the prevalence of these conditions for better or for worse (i.e. the urban factors that influence these conditions, which fall under the realm of urbanization).

For example, by combining the lens of urbanicity and the theme of social environment, one comes up with the concept of poverty as being a fundamental problem

embedded particularly in the urban setting in the US, as well as the process of out-migration as one urban factor that helps to explain the prevalence of poverty in North American cities (Vlahov & Galea, 2002). For the theme of health and social services, the lens of urbanicity helps identify the fact that disadvantaged urban populations currently have limited access to healthcare services (as compared to suburban populations in the US) as a prevalent problem, and the lens of urbanization supports the idea that changing fiscal policies are an important explanatory factor to consider (Vlahov & Galea, 2002). Table 1 below summarizes these examples and provides illustrations of how this model can be used to frame problems from the disciplinary standpoint of urban health.

Thus, this particular model helped to provide a clear definition of what was meant by the term "urban setting" in the research question for this study. Namely, I sought to examine the perspectives of healthcare professionals working in American cities on the prevalent conditions that they identify as issues that shape their collaborative capacity to effect change in the health of urban residents (such as poverty, and limited access to care), as well as on the structural factors that continually influence collaborative practice and perpetuate these conditions over time (such as out-migration and changing fiscal policies). However, it is important to note that this framework was not discussed with the urban healthcare professionals, since one of the central goals of this project was to inductively derive their perceptions of the urban setting and how it may be influencing the relationship between IPCP and patient health outcomes. Note also that this model fits incredibly well with Evans and Stoddart's model, as both models identify the social environment and the physical environment as important themes in (Vlahov & Galea, 2002) or key determinants of (Evans & Stoddart, 1990) health. The difference is that one

model approaches these phenomena from the standpoint of health equity (Evans & Stoddart, 1990), while the other seeks to explore them from the disciplinary perspective of urban health (Vlahov & Galea, 2002).

**TABLE. An urban health framework***

| | Urbanicity | Urbanization |
|---|---|---|
| Social environment | *Poverty* | *Out-migration* |
| Physical environment | *Pollution* | *Industrialization* |
| Health and social services | *Limited access to care* | *Changing fiscal policies* |

*Examples italicized.

**Table 1.** Vlahov and Galea's urban health framework.

Source: Vlahov, D., Galea, S. (2002). Urbanization, urbanicity, and health. Journal of Urban Health, 79(1). S1-S12.

## Review of the Literature

### Interprofessional Education, Interprofessional Practice, Interprofessional Competencies and Interprofessional Collaborative Practice

Interprofessionalism embodies the philosophy that when two or more individuals from two or more health professions learn with, from and about one another and work together, there can be substantial improvements in the quality and efficiency of care, and its delivery becomes more cohesive and patient-centered (Herbert, 2005). In practice, it is sometimes referred to as interprofessional learning (IPL), or interprofessional collaboration (Australian Interprofessional Practice and Education Network, 2012). It is, however, not to be confused with interdisciplinary, multi-disciplinary, cross-disciplinary, or multi-professional learning, all of which stand for situations in which students and healthcare professionals learn side-by-side, without the added requirements to learn about

and from another, and without the concrete goal of achieving collaborative, efficient and patient-centered care (Hugh Barr, Hammick, Koppel, & Reeves, 1999). More recently, the term transdisciplinary professionalism has been introduced as an extension of the term interprofessionalism (Institute of Medicine, 2014), to explain what happens in settings where healthcare professionals adopt roles that may not be traditional to their fields (Australian Interprofessional Practice and Education Network, 2012). It is conceptually related to but contextually different from IPL.

IPL has two important but very distinct facets: IPE and IPP. ***IPE*** consists of all educational interventions or programs in which students or professionals from at least two different healthcare professions learn with, from and about each other to facilitate effective collaboration and improve the quality and efficiency of care as well as patient health outcomes (Centre for the Advancement of Interprofessional Education, 2002; World Health Organization, 2010). ***IPP***, on the other hand, consists of instances where healthcare professionals are collaborating actively with each other, including learning with, from and about each other in the practice setting, to accomplish the common goals of improving healthcare and patient health outcomes (Australian Interprofessional Practice and Education Network, 2012; World Health Organization, 2010).

A recent scoping review has helped to clearly distinguish the nature of IPE and IPP interventions as well as their targets and outcomes (Reeves et al., 2011). The researchers sought to comprehensively review the literature in order to bring conceptual clarity in defining IPE and IPP interventions, to inform discussions of these endeavors in the literature and to facilitate future research guided by a common understanding of the definition of these interventions. I have critically evaluated this scoping review and found

that it is of sufficient methodological quality to be considered a useful tool for achieving these authors' stated aims. A record of this critical appraisal is provided in table 2, which is located at the end of the literature review section of this research proposal.

In essence, based on this scoping review of the literature, one can say that ***IPE*** represents the sum of educational initiatives that are undertaken in order to improve IPCP (Reeves et al., 2011), which in turn is supposed to improve patient care and health outcomes as well as reduce healthcare costs (Interprofessional Education Collaborative Expert Panel, 2011). Examples of IPE initiatives include lectures and simulation-based activities where participants from two or more health professions are present and actively engaged in learning with and about each other for the purpose of improving healthcare and patient health outcomes (Reeves et al., 2011; Reeves et al., 2009). ***IPP***, however, consists of all endeavors that are interprofessional in nature but move beyond the educational realm, such as interprofessional meetings, briefings or rounds among licensed healthcare professionals working on the wards or other clinical settings (Reeves et al., 2011; Reeves et al., 2009). Figure 2 provides additional examples of IPE and IPP.

In some instances, IPP can best be conceptualized as interprofessional organization (IPO), particularly when collaborative learning initiatives occur at an organizational level and also involve other stakeholders, such as policymakers and administrators (Reeves et al., 2011). Changes in hospital policies and staffing, resulting from the active participation of different healthcare professionals working together, are examples of IPO (Reeves et al., 2011). In this study, IPP was assumed to encompass IPO, as both occur in the post-licensure realm.

Finally, interprofessional collaborative practice (IPCP) is the act of collaboration by continuously learning with, from and about each other, preferably with involvement of the patient, family and community, in the process of improving the quality of healthcare and optimizing patient health outcomes (Australian Interprofessional Practice and Education Network, 2012; World Health Organization, 2010). ***IPCP*** is the actualization in the real world of what is learned during IPE or IPP initiatives: it is the construct that these interventions are seeking to influence. Figure 2, which was mentioned briefly during the discussion of the conceptual frameworks for this dissertation study, provides a logic model of how these variables are related to each other.

Two key challenges have been identified in the basic theoretical relationship between the above variables, however, and much research has been dedicated to addressing them to date. First, what is the relationship between IPE/IPP interventions and IPCP? In other words, do IPE and IPP interventions truly influence IPCP, and how does this process happen? Second, while it is very clear what IPE and IPP consist of, and many such educational and practice-based activities have been created and implemented worldwide in this area and across all the health disciplines (Reeves et al., 2011; Reeves et al., 2009), it has been unclear what exactly IPCP itself looks like, or rather what it ought to look like. In other words, how do we measure IPCP in a way that is valid across the various healthcare professions and demonstrates that students and healthcare professionals have truly embodied the tenets of IPL? This is a particularly challenging task given that each healthcare profession's accrediting body has, for a very long time, maintained only uni-professional mandates of training (Thistlethwaite, 2012). Whether IPE and IPP interventions have an impact on IPCP and whether there exists valid

methods of capturing IPCP as a construct are critical components in understanding and measuring the association between the latter and patient health outcomes.

### Measuring the Association Between Interprofessional Education or Interprofessional Practice and Interprofessional Collaborative Practice

Addressing this first challenge requires having an understanding of what exactly does IPCP consist of, beyond its basic definition. The sheer number of tools that have been created to measure the construct of IPCP is staggering. A scoping review performed by the Canadian Interprofessional Health Collaborative (CIHC) reveals that there are at least 128 different tools that have been devised for the sole purpose of measuring IPCP outcomes (Canadian Interprofessional Health Collaborative, 2012). I performed a methodological quality assessment of this scoping review, and the findings of this appraisal are reported in table 2 at the end of the literature review section.

In this scoping review, the CIHC classified the tools that it identified into six IPCP outcome categories: ***attitudes***; ***knowledge, skills and abilities***; ***behaviors***; ***organizational practice***; ***patient satisfaction***; and ***provider satisfaction*** (Canadian Interprofessional Health Collaborative, 2012). The NCIPE recently reviewed this initial list of tools and refined it to select 26 of those tools, based on the fact that they are either available for use by other researchers or that they have been used in at least two empirical, peer reviewed and published studies, and the fact that it believes they truly measure IPCP outcomes and not tangentially related constructs, such as multi-disciplinary teamwork (National Center for Interprofessional Practice and Education, 2013). Figure 2 provides a logic model showing where these outcomes are located in a formative evaluation of IPE and IPP interventions: in general, they are considered to be

the intermediate outcomes of IPE and IPP interventions or programs. Note, however, that the CIHC scoping review could not locate any tools to measure attainment of the objectives of IPE/IPP as noted in Reeves et al's (2011) logic model in Figure 2.

In any case, it is reasonable to conclude that at this point in time, there are numerous tools available in the literature with which to measure the intermediate outcomes of IPE and IPP as they pertain to IPCP. Furthermore, there is also ample and reasonably convincing evidence in the literature to support the relationship between IPE/IPP interventions and the stated IPCP outcomes. This conclusion was reached in a systematic review of the effectiveness of IPE in university-based health professional programs, in which the authors examined the best available evidence on this particular topic (Lapkin et al., 2011). This systematic review was conducted under the auspices of the Joanna Briggs Institute (JBI), one of the leading international bodies specializing in the synthesis of the best available evidence and its translation into practice in order to improve clinical decision-making and population health outcomes globally (Joanna Briggs Institute, 2014; Pearson, Wiechula, Court, & Lockwood, 2005). I performed a quality assessment of this systematic review, using the JBI critical appraisal tool for systematic reviews and research syntheses and found that this study meets all but one of these methodological quality criteria, suggesting that it has high internal validity and is a usable synthesis of the evidence on this matter. The results of this appraisal are included in Table 2 at the end of the literature review section.

The findings of this review are very revealing, even though it focused only the effectiveness of university-based (pre-licensure) IPE programs. Based on nine high quality primary research studies identified, including three randomized controlled trials

(RCT), five non-randomized experimental studies, and one longitudinal cohort study, this review concluded that overall, students' attitudes and perceptions towards IPCP can be enhanced by IPE (Lapkin et al., 2011). It does caution, however, that the evidence is inconclusive with regards to the effectiveness of IPE programs to improve students' interprofessional communication and clinical skills (Lapkin et al., 2011). Note that, as illustrated in the logic model presented in Figure 2, the former is an objective of IPE or IPP interventions, while the latter falls under the IPCP intermediate outcome of knowledge, abilities and skills (Reeves et al., 2011).

It is therefore evident that while IPE interventions do seem to influence student attitudes and perceptions towards IPCP, which are two of the IPCP intermediate outcomes identified by the CIHC and NCIPE (i.e. attitudes and provider satisfaction), it remains unclear whether these endeavors teach students the skills they need to implement what they have learned from IPE in practice. Thus, how do we know whether students and healthcare professionals have truly attained the skills they are supposed to learn from IPE or IPP initiatives (such as better interprofessional communication or teamwork skills)? What, in fact, are the skills they are supposed to learn from IPE and IPP interventions? This is the second fundamental challenge identified previously in this review of the literature: how do we measure IPCP itself, and not simply the intermediate outcomes of IPE and IPP interventions? To fully understand the influence of IPE and IPP on IPCP, and ultimately the impact of IPCP on healthcare and patient health outcomes, there is a need to clearly and unambiguously define and measure how well students and healthcare professionals have attained the skills required to practice collaboratively.

**Defining Interprofessional Competencies for Interprofessional Collaborative Practice**

To address this challenge, think tanks, researchers, educators and policymakers in the field have examined the construct of IPCP thoroughly, and have reached three overarching conclusions. First, there is a clear disconnect between the proximal and distal measures within the known IPE and IPP intermediate outcomes, and second, there is a need to clearly define and operationalize the competencies necessary for collaborative practice (Hugh Barr, 1998). While the logic model illustrated in figure 2 does not distinguish between proximal and distal measures among the intermediate outcomes listed, the disconnect that exists between them is a challenge that is well recognized in practice (Thistlethwaite, 2012). Proximal measures examine the perceptions, knowledge, attitudes, and beliefs of students and healthcare professionals on IPCP. In other words, the proximal measures capture the extent to which their views of IPCP have changed. Thus, these proximal measures represent very subjective tools for evaluating the effectiveness of IPE or IPP activities, and are generally not used as measures of attainment of IPCP (Reeves et al., 2011). The distal measures, on the other hand, provide a way of identifying more objective behavioral changes in the learning environment and practice setting of students and healthcare professionals, respectively. These include behaviors, organizational practice patterns and other measures of IPCP. Unfortunately, these measures also do not facilitate an assessment of whether healthcare professionals' are truly ready for sustainable IPCP, as they are often self-reported (Reeves et al., 2011).

Third, as figure 2 illustrates, measuring the intermediate outcomes of IPE and IPP interventions (whether proximal or distal as mentioned above) is not akin to attainment of

the objectives of these endeavors. These objectives consist of the various facets of what it means for healthcare professionals to embody interprofessionalism, including demonstrating improved communication, well-coordinated teamwork, and shared roles and responsibilities, just to name a few (Reeves et al., 2011). The inability to measure attainment of IPCP by students and healthcare professionals makes it difficult to link changes in IPCP to changes in patient health and community outcomes (B. F. Brandt, 2014).

Nevertheless, based on the large amounts of research done in the field over the past 40 years, these intermediate outcomes of IPE and IPP interventions have been well defined in the literature, and as stated before, numerous tools have been created to measure them (Canadian Interprofessional Health Collaborative, 2012; National Center for Interprofessional Practice and Education, 2013). Also, research has already conclusively demonstrated that IPE and IPP endeavors are effective at changing the proximal aspects of IPCP (Lapkin et al., 2011) as previously discussed. They can also change some of the distal aspect of IPCP (Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009). The evidence demonstrating these facts will be examined more closely in the next section of this review of the literature.

The issue, then, remains how to measure whether changes in the proximal and distal aspects of IPCP (which are known to be amenable to IPE and IPP interventions) are truly associated with changes within students and healthcare professionals that will bring about sustainable IPCP (Thistlethwaite, 2012). In other words, when IPE or IPP interventions appear to change organizational practice patterns or healthcare professionals' behaviors towards IPCP, is it truly because the healthcare professionals

have attained a certain level of collaborative practice that will be carried forward beyond the duration of the IPE or IPP intervention? In addition, can we be certain that IPE and IPP endeavors truly lead to embracement of the tenets of interprofessionalism and embodiment of IPC, such that investing time and resources to train students and clinicians via these endeavors will allow for sustainable implementation of collaborative practice?

For a very long time, this had been a fundamental problem in the field of interprofessional care. Much research has been done in attempting to define which sets of objectives or competencies should be considered interprofessional (Canadian Interprofessional Health Collaborative, 2010; Interprofessional Education Collaborative Expert Panel, 2011). An extensive discussion of the literature on this specific problem is beyond the scope of this dissertation study. It suffices to say that after much debate on the subject in the literature, there is now a consensus in the US on what these objectives should look like. In essence, the concept of "competencies" has been adopted as the best method with which to objectively measure changes in the learning and practice environment for IPCP (Hugh Barr, 1998; Interprofessional Education Collaborative Expert Panel, 2011). This concept is not new in health professional education and in fact had already been adopted and implemented by educational institutions and accrediting bodies in the US (Frenk et al., 2010; Institute of Medicine, 2013a), namely in response to the limitations of knowledge, attitudes and beliefs-based methods of evaluating learner outcomes (Hugh Barr, 1998). The difference, however, is that prior to the promulgation of the IPEC consensus document, the concept of competencies as objective measures of

attainment of essential skills for healthcare practice had been embraced on a uni-professional basis only.

In healthcare, competencies have been generally categorized into three classes: common competencies, individual professional/complementary competencies, and collaborative competencies (Hugh Barr, 1998). ***Common competencies*** are those that some healthcare professionals may possess in common that can lead to professional scope of practice conflicts. Examples are the many common competencies shared by nurse practitioners and primary care physicians (Interprofessional Education Collaborative Expert Panel, 2011). ***Complementary competencies***, on the other hand, are those that are unique to each healthcare profession (Hugh Barr, 1998). For example, pediatricians and dentists mostly have complementary competencies, even though they may share some common competencies (Interprofessional Education Collaborative Expert Panel, 2011).

Last but not least, ***collaborative competencies*** are those that are required to facilitate effective cooperation and teamwork among all healthcare professionals with each other and with the patient, family and community (Hugh Barr, 1998). Common and complementary competencies have long been well defined in the healthcare professions (Hugh Barr, 1998). The challenge, then, became the identification of these collaborative (or interprofessional) competencies, which are those that are not just uni-professional (meaning those designed to be taught to students from each of the separate healthcare professions), but instead are interprofessional in nature (in the sense that the same competencies may be expected of students from all the healthcare professions). Establishing these IPCs would thereby facilitate valid and more objective evaluations of these students' capacity for IPCP.

To address this challenge, starting in 2009, the American Association of Colleges of Nursing, the American Association of Colleges of Osteopathic Medicine, American Association of Colleges of Pharmacy, American Dental Education Association, Association of American Medical Colleges and the Association of Schools of Public Health convened the Interprofessional Education Collaborative Expert Panel (IPEC), charging it with the task of identifying core competencies for IPCP. In 2011, this expert panel promulgated a common framework for the evaluation and implementation of IPE in the US (Interprofessional Education Collaborative Expert Panel, 2011). The panel provided a clear definition of IPC in the biomedical and health science professions. Using a consensus approach, four competency domains were identified: ***values and ethics for interprofessional practice***, ***roles/responsibilities***, ***interprofessional communication***, and ***teams and teamwork***. Each of these domains contains a set of more detailed general competency statements which provide additional guidance on what attainment of that particular competency actually looks like in practice (Interprofessional Education Collaborative Expert Panel, 2011). Thus, by consensus of the professional school accrediting bodies of the largest and most influential healthcare professions in the US, it is now very clear what exactly IPCP should look like within any student or healthcare professional learner.

Nevertheless, though these IPC domains and statements provide much needed guidance for the development of new educational and practice-based programs, and for the evaluation and improvement of existing IPE and IPP initiatives, there are currently no validated tools that measure IPCP based on these newly established and accepted collaborative competencies. The scoping review performed by the CIHC and updated by

the NCIPE have demonstrated this quite conclusively (Canadian Interprofessional Health Collaborative, 2012; National Center for Interprofessional Practice and Education, 2013). None of the existing tools to measure the IPCP outcomes are designed to measure competencies, much less the specific IPCs that have been developed and validated by consensus among the professional school accrediting bodies of the major healthcare professions in the US.

**Interprofessional Education and Interprofessional Practice vs. Healthcare and Patient Health Outcomes**

Interprofessionalism is the new collaborative paradigm to which healthcare professionals are supposed to adhere to help achieve optimal healthcare and patient health outcomes. In this hypothetical causal chain, which is supported by the aforementioned theoretical frameworks, ***healthcare outcomes*** are the intermediate results of health prevention, health promotion and medical care interventions and are related to the processes of care. For example, in the IHI Triple Aim framework, the design and coordination of care, as well as the patient experience of care can all be viewed as healthcare outcomes (The Institute for Healthcare Improvement, 2009). In the Evans and Stoddart (1990) model, some of the individual factors would meet this criterion. For example, behavioral changes in either patients or healthcare professionals are considered to be healthcare outcomes. In fact, the IPCP outcomes, which have been identified and well defined by the CIHC (2012) and further refined by the NCIPE (National Center for Interprofessional Practice and Education, 2013) can essentially be used to categorize all the healthcare outcomes that are known to relate to IPL. In particular, the IPCP outcomes of ***behaviors***, ***organizational practice***, ***patient satisfaction*** and ***provider satisfaction*** can

be thought of as the key healthcare outcomes that can be affected by IPE and IPP. ***Attitudes***, as well as ***knowledge, skills and abilities*** are generally considered to be educational outcomes more than healthcare outcomes, given that the literature has clearly demonstrated that they are the most direct outcomes of IPE and are very subjective (Lapkin et al., 2011).

Healthcare outcomes, however, are very different than ***health outcomes***. The latter consists of all the physical and physiological changes that take place in the patient's mind (if the pathology is psychological in nature) and body (if the pathology is of biological origins) in response to health promotion, prevention and medical care interventions. In the healthcare arena, these are sometimes referred to as clinical outcomes. In the Evans and Stoddart (1990) model, examples of these include the two distal outcomes of health/function and mortality (with regards to the realm of effect for medical care), as well as the intermediate outcomes of disease burden and injury (which can be influenced by both medical care as well as health promotion and prevention).

### Quantifying the Association between Interprofessional Education or Interprofessional Practice and Healthcare or Patient Health Outcomes

There is now ample evidence in the literature to support the idea that there is a quantitative relationship between IPE and numerous healthcare outcomes, but good evidence to support the quantitative relationship between IPE and patient health outcomes remains elusive to date. This conclusion is based on a comprehensive systematic review of the best available evidence that has been conducted to date on this particular research question by the Cochrane Collaboration (Reeves et al., 2008), with a recently published update of the evidence (Reeves et al., 2013). Similar to JBI, the

Cochrane Collaboration is a pre-eminent international organization that is a leader in the field of evidence synthesis for decision-making in healthcare (Higgins & Green, 2011; The Cochrane Collaboration, 2011). I evaluated the internal validity of this systematic review using the JBI tool for critical appraisal of research syntheses. I found that it met most of the methodological criteria listed in this tool.

This systematic review sought to evaluate the effectiveness of IPE interventions, compared to uni-professional educational interventions or no educational interventions at all (as a placebo), in changing patient health outcomes and healthcare outcomes (Reeves et al., 2013; Reeves et al., 2008). They performed a comprehensive search of the literature for RCTs as well as non-randomized experimental studies, screened the studies found from this search for their relevance to the research question, and performed appraisal of the methodological quality of studies that matched the research question. Consistent with current guidelines for systematic reviews (Higgins & Green, 2011; Joanna Briggs Institute, 2014), they sought to synthesize the evidence from these studies using the statistical method of meta-analysis. However, they did not identify enough sufficiently similar studies to be able to perform this preferred method for the synthesis of quantitative data from primary research studies.

Nevertheless, they identified and included fifteen experimental studies in their review and reported their findings narratively. Based on these, they conclude that IPE can impact healthcare outcomes. In particular, they found that IPE interventions can lead to: improved patient care management infrastructures; better collaborative team behaviors; reduction of clinical error rate and improved team culture in emergency departments; higher patient satisfaction with the care received; improved diabetic care outcomes; and

better mental health practitioner competencies related to patient care delivery (Reeves et al., 2013; Reeves et al., 2008). They also found four studies with mixed results and four studies that reported no impact of IPE interventions on healthcare or patient health outcomes. Thus, two major conclusions can be reasonably made. First, the literature shows that IPE endeavors can help improve many healthcare outcomes though not all. Second, and more importantly, no primary experimental research studies or systematic reviews of such studies have demonstrated that IPE leads to any changes in patient health outcomes, much less any improvements in these outcomes.

There is also good evidence in the literature to support the idea that there is a quantitative relationship between IPP interventions and some healthcare outcomes. However, similar to the aforementioned Cochrane systematic review, a recent systematic review of the highest quality primary experimental research studies suggests that the evidence to support a quantitative relationship between IPP interventions and patient health outcomes is mostly absent at worst or, if present, inconclusive at best (Merrick Zwarenstein et al., 2009). I also evaluated this systematic review using the JBI critical appraisal tool for research syntheses and found it to have high internal validity, and the results of this evaluation are reported in table 2.

This systematic review sought to evaluate the effectiveness of IPP interventions, compared to alternative interventions or no interventions at all, in changing healthcare and patient health outcomes (Merrick Zwarenstein et al., 2009). The inclusion criteria for identifying studies, the approach for searching the literature, screening the studies and performing critical appraisal of the methodological quality of studies that matched the research question were similar to the aforementioned Cochrane review. These reviewers

also sought to synthesize the evidence from these studies using the statistical method of meta-analysis, but they faced the same challenge of not having a sufficient number of similar studies to do this type of analysis.

Narratively, they report a similar pattern of results. One study using daily interdisciplinary rounds showed a positive impact of this IPP intervention on the length of stay and total costs, while another using a similar intervention found no impact on length of stay. A study in which monthly multidisciplinary team meetings were implemented demonstrated improvements in psychotropic drug prescription practices. Other studies found mixed results in terms of the impact of IPP interventions on improvements to care such as better audit activity and shorter length of treatment (Merrick Zwarenstein et al., 2009). Thus, similar to IPE interventions, one can conclude that IPP interventions can influence changes in healthcare outcomes, including some of the known IPCP outcomes, but they have not been conclusively shown to make a difference in influencing patient health outcomes. Furthermore, neither of these systematic reviews demonstrated an association between attainment of the objectives of IPE and IPP interventions and changes in patient health outcomes, making it difficult to claim that these interventions are truly effective as a result of improved IPCP. Table 2 summarizes the results of the critical appraisal for the three systematic reviews and three scoping reviews identified and discussed in this review of the literature.

### Explaining the Association Between Interprofessional Education or Interprofessional Practice and Healthcare or Patient Health Outcomes

In addition, the exact mechanisms linking IPE and IPP interventions with healthcare and patient health outcomes have long been unclear (Barnsteiner, Disch, Hall,

Mayer, & Moore, 2007; H. Barr, Freeth, Hammick, Koppel, & Reeves, 2006; Hugh Barr et al., 1999), and these systematic reviews have explicitly called for the conduct of research studies that seek to explain how IPE and IPP interventions lead to changes in healthcare and patient health outcomes (Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009). However, despite the paucity of experimental primary research studies or systematic reviews of such studies on this very specific research question, the latter of which represented one of the main objectives of this dissertation study, there is some discussion in the literature of plausible pathways for how IPE and IPP endeavors may lead to changes in healthcare and patient health outcomes.

Two of the intermediate outcomes of IPE and IPP interventions are important to examine in this regard. The IPCP outcomes of patient and professional satisfaction with healthcare have been given some credence in the literature as potential links in the pathways to achieve the ultimate goal of improving patient health outcomes (Herbert, 2005). This is based partly on existing research, not necessarily specific to the field of IPL, that has shown that healthcare professional satisfaction is an important measure of the quality of the work environment and a critical determinant of sound healthcare delivery, and much research has been dedicated to this idea. For example, a systematic review of studies examining physician satisfaction with healthcare practice in the United States has found that while stable overall, physician satisfaction is influenced by job-related indicators, such as collegial support and demands of the work environment; the study reported that these factors have a greater effect on primary care physicians, with evidence of a slight decline in satisfaction in recent years (Scheurer, McKean, Miller, & Wetterneck, 2009). A cross-sectional study on nurses had similar findings, showing that

work factors such as supervisor support and work-group cohesion impacted professional satisfaction (Kovner, Brewer, Wu, Cheng, & Suzuki, 2006).

Note that existing research has already demonstrated that these factors are amenable to change from multi-disciplinary workplace interventions. In fact, some studies not only corroborate the relationship between work-related factors and healthcare professional satisfaction, but also demonstrate how these initiatives are useful in mitigating those factors (Engström, Ljunggren, Lindqvist, & Carlsson, 2006; Estryn-Béhar et al., 2007; Kowalski et al., 2010). As we have discussed before, there is also evidence that IPE and IPP can have a significant impact on healthcare professional satisfaction, making the latter a potential mediator in the causal chain between IPE/IPP endeavors and patient health outcomes.

However, the mechanism by which IPE and IPP actually lead to healthcare professional satisfaction itself remained elusive. Social capital has been slowly emerging as a strong candidate to explain this relationship, and some significant strides have been made in this realm, albeit indirectly (Soubhi, 2010). For example, Flap and Volker (2001) have shown that social capital has implications for both the structure and content of social networks at work, which then moderate the general social climate at work and cooperation with managers and colleagues. Other studies have found that social capital in the workplace enhances the coordination of care among hospital staff (Gloede et al., 2013), supports hospital-wide knowledge sharing and significantly influences patient safety outcomes (Chang, Huang, Chiang, Hsu, & Chang, 2012), minimizes clinician emotional exhaustion (Driller, Ommen, Kowalski, Ernstmann, & Pfaff, 2011), is a strong predictor of job satisfaction and quality of life at work (Felix, 2003), and promotes

patient-oriented customer service behaviors that enhance patient and provider satisfaction (Hsu, Chang, Huang, & Chiang, 2011). Furthermore, studies have found that interprofessional collaboration, particularly among healthcare professionals working as researchers, operates along the lines of social network ties and can be beneficially examined from a social network perspective (Godley, Barron, & Sharma, 2011; Godley & Russell-Mayhew, 2010). Social capital may thus be able to serve as one of the missing bridges between IPE and IPP as upstream interventions and attainment of the objectives of these interventions (including the IPCs), as well as IPCP outcomes such as healthcare professional satisfaction, and potentially, patient health outcomes, the most prized downstream variable.

In 2011, the IPEC expert consensus report identified the four IPC of values and ethics for professional practice, roles/responsibilities, interprofessional communication, and teams/teamwork as being the essential domains of the construct of IPCP in the US (Interprofessional Education Collaborative Expert Panel, 2011). While these competencies together serve as an important guide for the implementation and evaluation of IPE and IPP activities for students and healthcare professionals, this expert panel warned that more research is still needed in relating those competencies to patient health outcomes (Interprofessional Education Collaborative Expert Panel, 2011). The main reason for this cautionary stance is that the latter are significantly downstream phenomena, and linking them objectively to IPCP has been one of the greatest challenges of research in this field (Hugh Barr et al., 1999).

Nevertheless, even though some of the links between IPE/IPP, social capital and IPCP outcomes such as patient or healthcare professional satisfaction have been explored

to date, many aspects of their operative mechanisms remain unsolved. First, there is little literature on the role of social capital as a potential resource that healthcare professionals can tap to mitigate the social determinants of health, particularly in socioeconomically challenging settings, and there is little, if any, evidence on how the health and healthcare disparities embedded in these settings might influence or constrain the capacity of healthcare professionals for collaborative practice.

Second, while there is some theoretical work on how IPE/IPP relates to IPCP outcomes (Reeves et al., 2011), there is still little empirical work on the mechanisms through which IPE/IPP interventions impact healthcare and patient health outcomes. Third, while there is now a consensus in the US that IPE/IPP activities must be anchored to the four IPCs as key objectives in order to optimize IPCP outcomes (B. Brandt et al., 2014; B. F. Brandt, 2014), there is little empirical evidence regarding the potential impact of attainment of the IPCs on healthcare and patient health outcomes. The proposed dissertation study seeks to examine these specific gaps in the evidence, by using grounded theory and cross sectional survey methodology to qualitatively explore and quantitatively capture the relationship between IPCP and patient health outcomes, from the perspectives of healthcare professionals working in urban settings within the US, where healthcare and health disparities are known to be particularly prevalent among socioeconomically disadvantaged populations.

**Table 2.** Results of critical appraisal of existing systematic reviews and scoping reviews.

| **Study Short Title and Citation** | **Questions (Yes-Y, No-N, Unclear-U, Not Applicable-NA)** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** | **11** |
| **Systematic Reviews** | | | | | | | | | | | |
| IPE Interventions and IPCP (Lapkin et al., 2011) | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| IPE Interventions and Healthcare Outcomes (Reeves et al., 2013) | Y | Y | Y | Y | Y | Y | Y | Y | N | Y | Y |
| IPP Interventions and Healthcare Outcomes (Merrick Zwarenstein et al., 2009) | Y | Y | Y | Y | U | U | N | Y | N | Y | Y |
| **Scoping Reviews** | | | | | | | | | | | |
| IPCP Tools (Canadian Interprofessional Health Collaborative, 2012) | Y | Y | Y | Y | N | N | Y | Y | N | Y | U |
| IPE and IPP Interventions or Programs and Healthcare or Health Outcomes (B. Brandt et al., 2014) | Y | Y | Y | N | N | N | Y | Y | N | Y | Y |
| Conceptual Clarity for IPE and IPP Interventions (Reeves et al., 2011) | Y | Y | Y | N | N | N | U | N A | N | Y | Y |

**Interprofessional Collaborative Practice and Patient Health Outcomes in Urban Settings: a Comprehensive Systematic Review**

Systematic reviews of experimental and quasi-experimental studies have overwhelmingly demonstrated that IPE initiatives can lead to improvements in the IPCP educational outcomes of knowledge, attitudes, and beliefs (Lapkin et al., 2011) and in the IPCP healthcare outcomes of behaviors, organizational practice, provider and patient satisfaction (Reeves et al., 2013; Reeves et al., 2008). A systematic review has also demonstrated that IPP interventions can lead to changes in healthcare outcomes such as length of stay (Merrick Zwarenstein et al., 2009). However, new data have been produced since the publication of these seminal JBI and Cochrane systematic reviews on this topic. In fact, a scoping review performed by the NCIPE identified approximately 500 new research studies, both qualitative and quantitative, that are broadly related to this topic since the year 2008 (B. Brandt et al., 2014).

Importantly, given that the IHI Triple Aim framework, which was promulgated in 2008, is the primary conceptual framework for this dissertation study, it is imperative to

ensure that the studies reviewed here, for the purpose of informing this dissertation research study, adhered to or were conducted within the same time period as the dissemination of this important framework. Recall that the IHI Triple Aims framework proposes that there should be a link between any healthcare delivery model or intervention (such as IPE and IPP) and the patient experience of care, population health outcomes and per capita costs. Prior to the emergence of this conceptual model, the impetus for linking these three variables, as key benchmarks of quality, performance and efficiency, was simply absent in US healthcare policy and research (B. Brandt et al., 2014; The Institute for Healthcare Improvement, 2009). The NCIPE has explicitly embraced the IHI approach in framing its research agenda (B. Brandt et al., 2014). For these reasons, I adopted a similar approach here for the conduct of this systematic review, such that only studies from 2008 to the present were sought and, if relevant, included.

Although the scoping review from the NCIPE informed this systematic review, in terms of the use of the IHI Triple Aim model to guide the search strategy, I believe that a scoping review is insufficient to obtain the high quality evidence needed to guide practice and future research on this important topic. A scoping review is similar to a systematic review, in the sense that both have well defined research questions, inclusion criteria for selecting studies, as well as comprehensive search strategies. However, the difference is that a scoping review seeks neither to select only the best available evidence by appraisal of the methodological quality of studies, nor to synthesize the data from those studies into a meta-analysis or meta-synthesis in order to increase the generalizability or transferability of the results or findings for best practice and future research recommendations (Arksey & O'Malley, 2005; Davis, Drey, & Gould, 2009). These are

tasks explicit to systematic reviews, and these are the goal I sought to accomplish here, using the JBI approach (Joanna Briggs Institute, 2014), in order to provide the highest quality appraisal and synthesis of the evidence for this fundamental research question.

Based on a search of the JBI Library of Systematic Reviews and Implementation Reports, the Cochrane Library, as well as Google Scholar, I have concluded that no quantitative systematic reviews have examined the link between IPCP and patient health outcomes in the context of health and healthcare disparities embedded in the urban setting of the US, using all types of quantitative studies available since 2008. One Cochrane systematic review did examine some of this evidence, but it limited the search to experimental studies only (Reeves et al., 2013), thereby neglecting the wealth of information that has emerged in the field based on observational studies. Furthermore, although qualitative primary research studies have examined some aspects of the fundamental research question in this project (Solberg, Hansen, & Bjørk, 2014), and literature reviews related to this topic have been conducted (Xyrichis & Lowton, 2008), no qualitative systematic review has ever been conducted on this topic to date. Thus, to clearly link this dissertation project to the gaps in the literature, a comprehensive (i.e. quantitative and qualitative) systematic review was performed as part of the proposal development for this study.

In the following sections, I provide a transparent record of how this systematic review was conducted. The methodological approach of JBI was chosen for this study (Joanna Briggs Institute, 2014), as the primary researcher has direct access to all JBI support tools for systematic reviews. However, in some cases, the IOM approach was taken as it allowed the primary researcher the flexibility of working alone, without the

need for a secondary reviewer during the study screening, critical appraisal and data extraction phases (Institute of Medicine, 2011), which saved considerable time for the conduct of this comprehensive systematic review.

### Objective and Research Question

The objective of this comprehensive systematic review was to synthesize the best available evidence on the relationship between IPCP and patient health outcomes, with a particular focus on the context of the health and healthcare disparities embedded in urban settings in the US. Specifically, this systematic review asked the following questions:

1. What is the association between IPCP and patient health outcomes in urban settings? (***quantitative question***)
2. How does IPCP affect patient health outcomes in urban settings? (***qualitative question***)

### Inclusion Criteria

*Types of Studies*

**Quantitative Studies.** This review considered quantitative studies to address the first research question, including randomized controlled trials and other experimental designs, as well as observational studies. Specifically, regardless of research design, studies must have included the following criteria to be considered for inclusion: have at least two time point measurements of the outcome of interest (pre and post), and contain a comparator group (as either a cohort or control group). This is the same strategy taken in the scoping review that informed this systematic review (B. Brandt et al., 2014). It is also the same general strategy that was chosen in the Cochrane systematic reviews on this

topic (Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009), except they excluded observational evidence.

**Qualitative Studies.** This review also considered qualitative studies to address the second research question, regardless of their research designs, as this is the approach of JBI (Joanna Briggs Institute, 2014). We included all qualitative methodologies, such as grounded theory, phenomenology, ethnography, action research and other community-based participatory research methods. However, to be considered for inclusion, all qualitative studies must specifically have addressed the central phenomenon of interest, which is the relationship between IPCP and patient health outcomes from the perspective of any stakeholder in healthcare, regardless of the study's chosen healthcare setting, or whether the participants in this study had received any IPE or IPP interventions prior to participating in the study. This is consistent with the NCIPE scoping review that informed this systematic review study (B. Brandt et al., 2014).

*Types of Participants*

I included studies that had any healthcare stakeholder as participants. This could include patients, healthcare professionals, healthcare policy administrators or any other type of individual who normally has a direct involvement in the provision of healthcare. However, the study sample must have been interprofessional in nature (B. Brandt et al., 2014). This means that the participants must have originated from at least two of the healthcare professions, and they must have been either observed for or have discussed IPCP as an integral component of their participation in the study, or have been engaged in an IPE or IPP activity before or during the study.

*Types of Interventions/Phenomenon of Interest*

**Quantitative Studies.** I included quantitative studies that used any IPE or IPP intervention, regardless of their chosen definition for the construct of interprofessionalism, so long as it is one of the definitions recognized in the literature (Centre for the Advancement of Interprofessional Education, 2002; Interprofessional Education Collaborative Expert Panel, 2011; World Health Organization, 2010). Studies that defined this construct as transdisciplinary professionalism were excluded, because even though this concept is related to interprofessionalism, it is a somewhat different phenomenon (Institute of Medicine, 2014). Also studies that defined this construct as multiprofessional, multidisciplinary, or uni-professional practice or collaboration were excluded, as these are different constructs than the one under study. This is also consistent with the scoping review that guided this systematic review (B. Brandt et al., 2014).

**Qualitative Studies.** I included qualitative studies that explored the key phenomenon identified in the research question; specifically, studies must have explored the experiences, perceptions, views, attitudes or beliefs of participants regarding how IPCP affects patient health outcomes. The NCIPE scoping review that guided this systematic review sought all qualitative research studies that examined the phenomenon of IPCP (B. Brandt et al., 2014). Although it did not explicitly state that it sought to identify perceptions, views, attitudes or beliefs, their inclusion criteria for qualitative studies were broad enough that all relevant qualitative studies should have been identified.

*Types of Outcomes/Context*

**Quantitative Studies.** While the NCIPE scoping review identified quantitative studies that contained any of the three IHI outcomes (i.e. cost, quality of care and patient health outcomes), we sought only quantitative studies that explicitly contained at least the patient health outcomes, including acute care health outcomes such as mortality from myocardial infarction, stroke, and pneumonia, as well as chronic care health outcomes, such as the incidence of specific diseases or the degree of control of the symptoms of such diseases, just to name a few. Studies that only reported on the intermediate outcomes of IPCP, such as attitudes, beliefs, knowledge, skills and abilities of healthcare professionals or students, processes of care, organization practice patterns, healthcare professionals' behaviors, or the experience of care (i.e. patient satisfaction with care, or healthcare professional satisfaction), were excluded, as these are not considered to be patient health outcomes, and the latter are the focal outcomes of this dissertation project. Studies that have examined educational and healthcare outcomes of IPE and IPP interventions have already been the subject of other published systematic reviews (Lapkin et al., 2011; Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009) and will be excluded.

**Qualitative Studies.** I included qualitative studies that examined the phenomenon of interest in the acute or continuing care settings. This dissertation project was focused on empirically examining this phenomenon particularly as it applies in the urban environment, where daily life unfolds for the majority of socioeconomically disadvantaged populations in the US. Therefore, the search for qualitative evidence on this phenomenon was aimed at finding studies done specifically in this context, and the search strategy reflected that emphasis on this particular context. Also, given that the IHI

Triple Aim framework guided this dissertation study, it was important to focus on the evidence that had emerged on this phenomenon from the time of the promulgation of this critical framework. This facilitated an assessment of this phenomenon in a way that was relevant to contemporary healthcare policy trends in the US.

**Search Strategy**

Normally, JBI recommends that a systematic review follow a three-step search strategy. First, a search of MEDLINE and CINAHL should be done using an initial list of key words, which are typically generated from a concept map based on the research question, in order to identify additional key words and index terms that may have been missed during the generation of the initial list of key terms. Second, this broader list of key terms should be used to search all the major databases of interest for all relevant years. Finally, the reference list of studies considered for inclusion should be searched for additional potentially relevant studies, and hand-searching of all articles published in specialty-specific journals should be done.

However, I took a slightly different approach for two reasons: first, to avoid duplicating the work of prior systematic review scholars (Reeves et al., 2013; Merrick Zwarenstein et al., 2009), whose research questions were nearly identical to my own, and second, to obtain evidence pertinent to the IHI Triple Aim framework, which formed the conceptual foundation for this dissertation study. Furthermore, the NCIPE scoping review on the research question of this dissertation limited its search period to between the years 2008 and 2013, for the purpose of identifying IPE/IPP studies published after the promulgation of the IHI's Triple Aim framework. While this timeframe is appropriate for our purposes, unfortunately this scoping review limited its search to MEDLINE only, did

not pursue grey literature, did not hand-search the major specialty-specific journals, and did not seek to obtain evidence relevant to the context of healthcare and health disparities embedded in the urban setting. Thus, for the purposes of this systematic review, it was necessary to conduct a search for studies in all these neglected sources.

Although the NCIPE scoping review identified quantitative and qualitative studies from MEDLINE on the relationship between IPE, IPP and health outcomes within the years 2008-2013 (B. Brandt et al., 2014), a search up to the year 2014 was warranted. Thus, I used the list of keywords below to search MEDLINE and CINAHL for the years 2008 to 2014 to identify all the relevant evidence. Other than this limitation by year, the remainder of the search strategy, as described below, was consistent with the standard JBI approach.

The initial key words used were: (Interprofessional or interprofessional education or interprofessional practice or collaborative practice) and (disparities or health disparities or healthcare disparities or urban or disadvantaged or socioeconomic or social status or poor or minority or black or latino) and (health outcomes or disease or illness or patient health or death or mortality or heart or infarction or stroke or chronic or infection or hospital). Using the expanded key terms, I searched MEDLINE and two other major databases (CINAHL and Web of Science) for quantitative and qualitative studies, limiting to the years 2008-2014. Subsequently, I searched the ProQuest Dissertations and Theses Database for unpublished studies.

I then examined the list of studies identified by this expanded search, removed duplicate articles, and selected only those studies that met the inclusion criteria for further review. Finally, I planned to hand-search all articles published in the following specialty-

specific journals for the years 2008 to 2014: *Journal of Interprofessional Care* and *Journal of Research in Interprofessional Practice and Education*. However, upon searching the major databases, I realized that articles from these journals are archived in these databases. Thus, hand-searching was no longer warranted and was therefore not conducted. The results of this comprehensive search strategy are presented in this systematic review as a PRISMA flow chart (Moher, Liberati, Tetzlaff, & Altman, 2009) in the results section. Details on the exact search strategy used for each of the databases are presented in Appendix B.

**Study Selection**

I reviewed and screened all identified articles to determine if they met the inclusion criteria, first by title and abstract, and then by full review of the text of the articles.

**Assessment of Methodological Quality**

I assessed all studies that passed the screening phase for methodological validity, which is a task that was not done in the NCIPE scoping review (B. Brandt et al., 2014), using the Joanna Briggs critical appraisal checklists for quantitative and qualitative studies (see Appendix A). Studies were included if they met at least half of the methodological questions in the critical appraisal tool that corresponds to their research design.

**Data Extraction**

I extracted data from the included studies using the JBI data extraction tools for experimental/observational studies and for qualitative studies (see Appendix A).

Extracted data includes detailed information on the population (sample size, types and proportions of healthcare professionals, practice setting, type of healthcare delivery model), intervention/comparator (type of IPE or IPP activity, duration, and frequency) or phenomenon of interest, and outcomes (method of measurement, follow-up period, effect size data). Quantitative data on the outcomes (rates/proportions and risks/ratios for categorical outcomes, and means and standard deviations for continuous outcomes) were collected for meta-analysis. Findings/themes and illustrations of those findings/themes were extracted from the text of the included qualitative studies for meta-synthesis.

**Data Synthesis**

Extracted categorical data were expressed as relative risks (RR) or odds ratios (OR), and continuous data were expressed as mean differences (MD) or standardized mean differences (SMD). Both were reported with 95% confidence intervals, with the aim of synthesis into a meta-analysis based on a random effects model, using the heterogeneity Chi square and $I^2$ value to estimate the statistical significance and quantify the degree of between study variance, respectively. I aimed to pool qualitative findings into a meta-synthesis using the meta-aggregation approach, as recommended by JBI (Joanna Briggs Institute, 2014). Data synthesis in this approach is a three-step process involving: extraction of all findings from all included papers with an accompanying illustration and establishing a level of credibility for each finding, development of categories for findings that are sufficiently similar, with at least two findings per category, and development of one or more synthesized findings of at least two categories.

**Results**

*Description of Studies*

Appendix B lists the search strategy used for each of the chosen databases. The search yielded an initial number of 1180 articles. No articles were identified via hand-searching of papers that met the inclusion criteria. From this final pool of 1180 papers, 96 duplicates were removed, and the remaining 1084 studies were screening by title and abstract. A total of 1006 papers were screened out via this method, leaving 78 papers to be examined via full review of the text of the studies. Consistent with the IOM approach, reasons are provided in Appendix B justifying the criteria by which studies that initially met the inclusion criteria by title and abstract screening were then excluded by full review of the texts of the articles.

While the JBI approach does not require that such studies be listed in the systematic review report, I believe it is beneficial to increase the transparency of the screening process, thereby facilitating evaluation of the validity of my screening of the studies by title and abstract, and clear identification of studies in the literature that are closely related to the research question in this dissertation study. Eleven studies met all inclusion criteria and were subjected to methodological appraisal. One study was excluded on the basis of poor methodological quality. Therefore, 10 studies (9 qualitative and 1 quantitative) were included in this review. Figure 5 below is a flow diagram depicting the results of this search strategy.

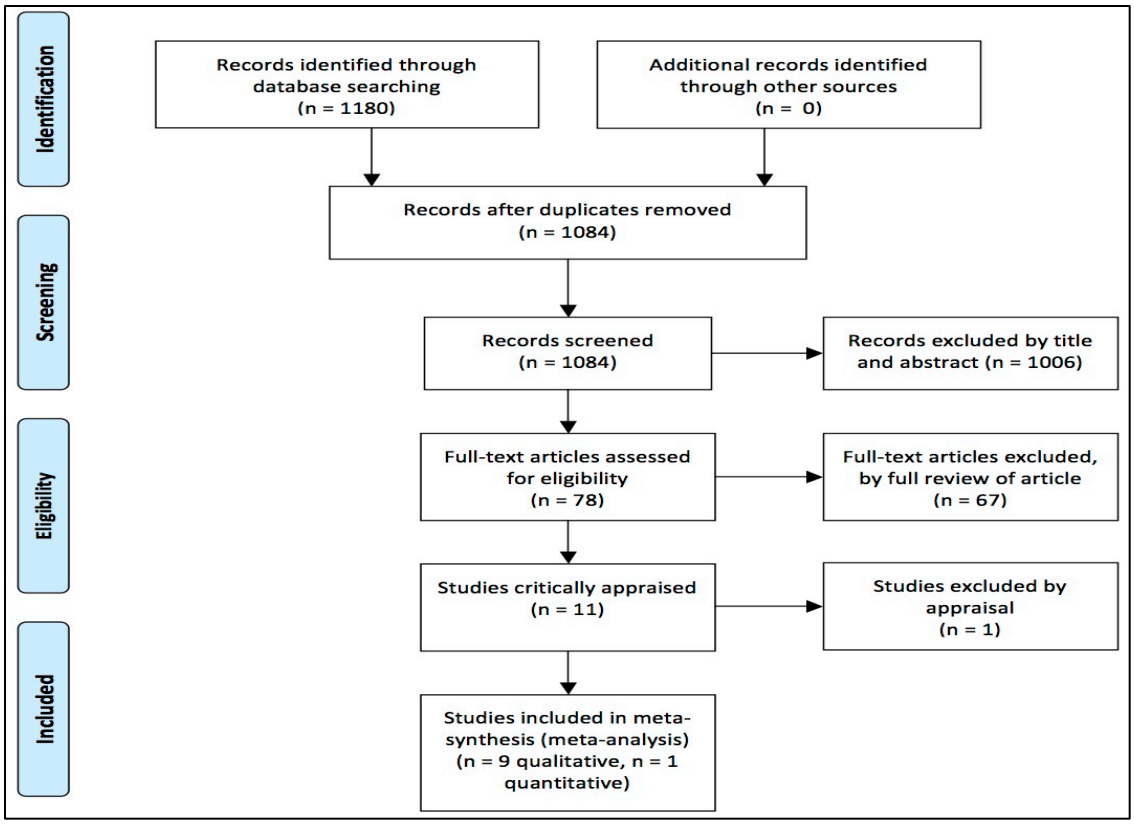


**Figure 5.** PRISMA flow diagram showing the results of the comprehensive search strategy.

*Methodological Quality*

**Quantitative studies.** Only one quantitative paper (a prospective cohort study) met all the inclusion criteria (Bunkenborg, Samuelson, Poulsen, Ladelund, & Akeson, 2014), and it also met at least half of the methodological quality criteria established a priori for inclusion in this systematic review. Although this study is included in the review, it did not meet a number of methodological criteria however. It was unclear whether the sample was representative of the target population (question 1): although demographics were provided for the sample, no clear reference to the target population of in-hospital patients was included in the study. Regarding the similarity of patients in the

illness (question 2), the authors do not provide enough information to determine whether patients in the two cohorts were similar enough at baseline. Finally, the authors did not discuss the risk of attrition bias at all (question 7), even though they had full access to all hospital records during the study period and could, in theory, identify all patients lost to follow-up. Table 3 lists the results of the critical appraisal of this study.

**Qualitative studies.** Of the 10 qualitative studies identified, nine met at least half of the methodological criteria (Adams, Orchard, Houghton, & Ogrin, 2014; Bajnok, Puddester, Macdonald, Archibald, & Kuhl, 2012; Bradley Eilertsen et al., 2009; Chong, Aslani, & Chen, 2013; Eloranta, Welch, Arve, & Routasalo, 2010; Fredheim, Danbolt, Haavet, Kjonsberg, & Lien, 2011; Goldman, Meuser, Rogers, Lawrie, & Reeves, 2010; Hjalmarson, Ahgren, & Kjölsrud, 2013; Maneze et al., 2014), which was the threshold established a priori in this review for a decision on inclusion. Most studies used an unspecified qualitative descriptive methodology, except one study that used a grounded theory methodology to conduct a research-based qualitative evaluation of a new program (Bajnok et al., 2012). None of the studies met 3 of the methodological rigor criteria for qualitative research, which are addressed in questions 1, 6 and 7 of the JBI appraisal tool for qualitative research. Respectively, these criteria address whether the authors' philosophical perspective is congruent with the study's methodology, whether there is a statement locating the authors culturally or theoretically, and whether the researchers' influence on the study is addressed. Unfortunately these are components of qualitative research studies that are often left out of their published version, as the authors' attempt to cut down the wording of their manuscripts to meet journal editorial requirements. Table 4 lists the results of the critical appraisal for the qualitative studies included in this

review. One study was excluded by appraisal (M. Zwarenstein, Rice, Gotlib-Conn, Kenaszchuk, & Reeves, 2013) and is listed in appendix B, with the methodological reasons for exclusion provided.

**Table 3.** Results of the critical appraisal of included quantitative studies.

**Comparable Cohort Study Design**

| **Quantitative Internal Validity Criteria** | **Representativeness of sample** | **Similarity between groups in terms of disease or condition** | **Minimization of bias regarding selection of cases and controls** | **Confounders identified and dealt with** | **Objective criteria for outcome assessment** | **Sufficient time for follow-up period** | **Lost to follow-ups identified and included in analysis** | **Outcomes measured reliably** | **Appropriate statistical analysis used** |
|---|---|---|---|---|---|---|---|---|---|
| **Studies** | **Q1** | **Q2** | **Q3** | **Q4** | **Q5** | **Q6** | **Q7** | **Q8** | **Q9** |
| Bunkenborg 2014 | U | U | N/A | Y | Y | Y | U | Y | Y |
| % | 0 | 0 | N/A | 100 | 100 | 100 | 0 | 100 | 100 |

**Table 4.** Results of the critical appraisal of included qualitative studies.

| **Qualitative Rigor Criteria** | **Congruity of philosophical perspective and study methodology** | **Congruity of study methodology and research question/objectives** | **Congruity of study methodology and data collection methods** | **Congruity of study methodology and representation/analysis of data** | **Congruity of study methodology and interpretation of results** | **Statement locating the researcher culturally or theoretically** | **Influence of researcher on the research, and vice versa, addressed** | **Participants and their voices adequately represented** | **Research is ethical/there is evidence of ethical approval** | **Study conclusions flow from the analysis or interpretation of data** |
|---|---|---|---|---|---|---|---|---|---|---|
| **Studies** | **Q1** | **Q2** | **Q3** | **Q4** | **Q5** | **Q6** | **Q7** | **Q8** | **Q9** | **Q10** |
| Maneze 2014 | U | Y | Y | Y | Y | N | N | Y | Y | Y |
| Bradley 2009 | U | Y | Y | Y | Y | N | N | Y | Y | Y |
| Chong 2013 | U | Y | Y | Y | Y | N | N | Y | Y | Y |
| Goldman 2010 | U | Y | Y | Y | Y | N | N | Y | Y | Y |
| Fredheim 2011 | U | Y | Y | Y | Y | N | N | Y | Y | Y |
| Hjalmarson 2013 | U | Y | Y | Y | Y | N | N | Y | Y | Y |
| Adams 2014 | U | Y | Y | Y | Y | N | N | Y | Y | Y |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Eloranta 2010 | U | Y | Y | Y | U | N | N | Y | Y | Y |
| Bajnok 2012 | U | Y | Y | Y | Y | N | N | Y | Y | Y |
| Total % Yes | 0 | 100 | 100 | 100 | 89 | 0 | 0 | 100 | 100 | 100 |

*Characteristics of Included Studies*

**Quantitative Studies.** Table 5 provides a summary of the characteristics of the included quantitative study.

**Table 5.** Characteristics of included quantitative studies.

| Study | Method & Setting | Participants | Intervention A | Inter-vention B |
|---|---|---|---|---|
| Bunken-borg 2014 | Pros-pective cohort study in hospital in Denmark | All patients who were 18 years or older, who were not on the do-not-resuscitate list according to medical records, with at least a 24-hour stay during the study period | Interprofessional clinical multi-component intervention comprising a bedside track-and-trigger system, consisting of a new monitoring practice, an observational chart, and an algorithm for bedside action | Usual care |

**Qualitative Studies.** None of the included studies took place in the US: 3 studies were done Canada, 2 studies were from Australia, 2 studies took place in Norway, 1 study was from Finland, and 1 study originated from Sweden. Participants included a range of healthcare professionals as well as patients and their family members or carers. They were conducted in a variety of clinical settings, including primary care, acute care hospital, community health centers and other settings. Table 6 provides details on the characteristics of the included qualitative studies.

**Table 6.** Characteristics of included qualitative studies.

| Study | Methods | Participants & Settings | Phenomenon Under Study | Authors' Overall Conclusions |
|---|---|---|---|---|
| Adams 2014 | Individual interviews with partici-pants at three time points, using qualitative descriptive methodo-logy | 11 practitioners at urban center in Canada | How do community practitioners experience the establishment of an interprofessional team? What are the processes through which individual community-based practitioners become members of an interprofessional team with a shared vision, shared purpose and clearly defined roles? | Despite the barriers and challenges accompanying patient centered interprofessional practice, positive clinical outcomes, and the benefits experienced by patients and practitioners, make it well worth the effort. During the project reported here, the results were effective, inexpensive treatment for a group of patients with diabetes related foot ulcers and the joy they shared in being integral team members. More institutional supports need to be put in place to facilitate and support interprofessional practice in a variety of healthcare settings, involving a wide variety of practitioners and patients |
| Bajnok 2012 | Focus group interviews, using qualitative descriptive | 5 teams of physicians, nurses, dietitians, audiologists and other | To explore whether interprofessional team development for | Success meant different things to each team reflecting the continuum of team development from building a safe, trusted group to becoming leaders of team development |

| | | | | |
|---|---|---|---|---|
| | methodo-logy | healthcare professionals and others partici-pating in the Teams of Inter-professional Staff (TIPS) program in Canada | practicing healthcare professional s, makes a difference in team functioning, team member satisfac-tion, ability to work effectively both indivi-dually and as a team, and improved patient well-being | for other interprofessional teams. Effective teamwork is crucial to nurses who often take on the role of coordinator of care on a day-to-day basis, or are in managerial roles in interprofessional clinics or clinical program teams |
| Bradle y 2009 | Focus group and individual interviews, using qualitative descriptive methodo-logy | 23 health and health-related professionals working in the department of pediatrics at a university hospital in Norway | To explore non-health and health professio-nals' views of interprofessi onal collabora-tion in general | Collaboration was considered significant for professionals themselves and the families they work with. Participants support the importance of arranging collaborative meetings at an early stage of the child's illness and the family's crisis. Many professionals, working in the child's home community, were alone with the responsibility for follow-up care, but only a few of these professionals received supervision. More frequent contact with the pediatric clinic was desired, as well as a more active role for the general practitioner. They perceived the model as being a valuable support system for long-term planning of follow-up care, allowing parents to collaborate with the care team. It is essential to emphasize the |

| | | | | |
|---|---|---|---|---|
| | | | | importance of having well-established routines, as well as the use of a coordinator. This can be important for enhancing communication between professionals and for obtaining a well-functioning collaboration |
| Chong 2013 | Individual semi-structured interviews, using qualitative exploratory methodology | 31 Healthcare providers from a range of mental health professions working in the hospital or primary care settings in Australia | To describe the perceptions of a range of healthcare providers on the notion of shared decision making and interprofessional collaboration as part of a patient-centered practice in mental health | Although healthcare providers acknowledged the importance of interprofessional collaboration, only a minority discussed it within the context of shared decision-making. Healthcare providers appeared to have differing perceptions on the level of consumer involvement in shared decision-making. Interprofessional roles to facilitate shared decision-making in mental health needs to be acknowledged, understood and strengthened, before an interprofessional approach to shared decision-making can be effectively implemented |
| Elorantaa 2010 | Focus group, using qualitative descriptive methodology | 25 Health care staff (13 HHWs, 11 HCNs and one GP), working in home care units in Finland; mean age of 43 years; mean of 11 years of elder care experience | To examine home care unit care providers' perspectives of the collaborative approach to HC delivery for older clients | It is necessary to develop methods for sharing information, particularly to ensure that staff members have access to common patient information records that allow all team members to enter comments and observations about clients. Care based on the client's situation would minimize competition between staff groups because these groups would share and contribute their expertise to achieving the common goal of serving clients' best interests |

| | | | | |
|---|---|---|---|---|
| Fred-heim 2011 | Focus groups, using qualitative descriptive methodo-logy | 6 groups of GPs and mental health workers (for a total of 28 persons) selected to represent the population and infrastruc-ture of 2 regions in Norway | To investigate strengths and weaknesses in today's collabora-tion, and to suggest improve-ments in the interaction between GPs and specialized mental health service | Coordination is experienced as important by GPs and other mental health professionals involved. GPs are the gatekeepers of specialized care, and lack of collaboration seems to create problems for all healthcare professionals as well as the patient. Mutual knowledge and mutual accessibility of all healthcare professionals is important to effective collaboration. |
| Gold-man 2010 | Multiple case-study approach involving semi-structured interviews of 32 healthcare providers | 14 family health teams (FHT) in urban and rural Canada, including 12 family doctors, 6 nurses, 5 pharmacists, and 9 others including social workers, and dieticians | To examine FHT members' experiences of interpro-fessional collaboratio n and its perceived benefits | Issues such as roles and scopes of practice, leadership and space are important to effective team-based primary care. This study provides a framework for understanding different types of interprofessional interventions used to support interprofessional collaboration |

| | | | | |
|---|---|---|---|---|
| Hjal-marson 2013 | Observa-tional field notes within a case study | 23 key stakeholders from different professions (5 nurses, 11 physiotherap ists and 7 occupational therapists) working in central Sweden | To explore the develop-ment of interpro-fessional collabora-tion aiming to improve secondary prevention of osteopo-rosis by studying this topic expansively from the perspec-tives of different stakehol-ders | A balance between bottom-up and top-down structures triggered improvements in the development of interprofessional collaboration since horizontal structures gave the professional freedom to act and encouraged a changed leadership. The process illustrates the forces that are the engines of those elements as interprofessional motivational forces are created through constructive feedback from: interprofessional interactions with shared patient-centered approach, confirming leadership and the developed ability to recognize the benefits of joint actions |
| Mane-ze 2014 | Individual interview, using qualitative descriptive method-logy | 13 family members and patients with type-2 diabetes admitted to the emergency department of a district hospital serving a socio-economical-ly disadvantage d population in Australia | To explore the diabetic patients' experience of multidisci-plinary care, in particular their perceptions, perceived barriers and facilitators | Patients did not perceive their diabetes care as integrated. Their care appeared to be disorganized and fragmented. The patients were confused and overwhelmed by the processes involved. Personal biophysical and psychosocial issues, such as poor English language skills. Transportation, socioeconomic issues and competing priorities of co-morbidities, are important barriers for patients, compounding their difficulties in participating in their health care. The poorly coordinated and “un-integrated” services made these barriers even more challenging |

**Synthesis of Studies**

*Narrative Synthesis of Quantitative Studies*

A meta-analysis of quantitative studies could not be conducted, as only one quantitative study met all the inclusion criteria and was of sufficient methodological quality to be included in this review. Therefore, the results of this study are presented narratively here. The study by Bunkenborg et al (2014) is a large prospective cohort study conducted between 2009 and 2011. The total sample size consisted of 4104 patients admitted for at least 24 hours (n = 1870 in cohort group exposed to usual care, and n = 2234 in cohort group exposed to an interprofessional track-and-trigger program). The usual care group was followed during the year 2009, while the interprofessional care group was followed during the years 2010 and 2011. 56 to 59% of the patients were women, and 79% of them were admitted to the hospital for surgical treatment. The mean age of participants ranged from 57 to 58 years across both cohorts, with standard deviations ranging from 19 to 20. For the outcome of interest, which was the rate of unexpected mortality, the cohort of participants exposed to the interprofessional program had an adjusted risk ratio of 0.404 (95% CI 0.161-1.012) at the first follow-up time point (2010) and 0.271 (95% CI 0.097-0.762) at the second follow-up time point (2011) compared to the usual care cohort. This suggests a statistically significant reduction of 72.9% in the risk of unexpected mortality in the interprofessional program cohort compared to the usual care cohort adjusted for the confounders identified in this study.

The forest plot presented in figure 6 below is shown only as a tool for calculating and displaying the unadjusted risk ratio for the outcome of interest in this study, as the authors did not provide this effect size. The unadjusted risk ratio for this outcome is 0.32 (95% CI 0.11-0.90). This suggests a statistically significant reduction of 68% in the risk

of unexpected mortality in the interprofessional program cohort compared to the usual care cohort, without adjustment for any confounders.

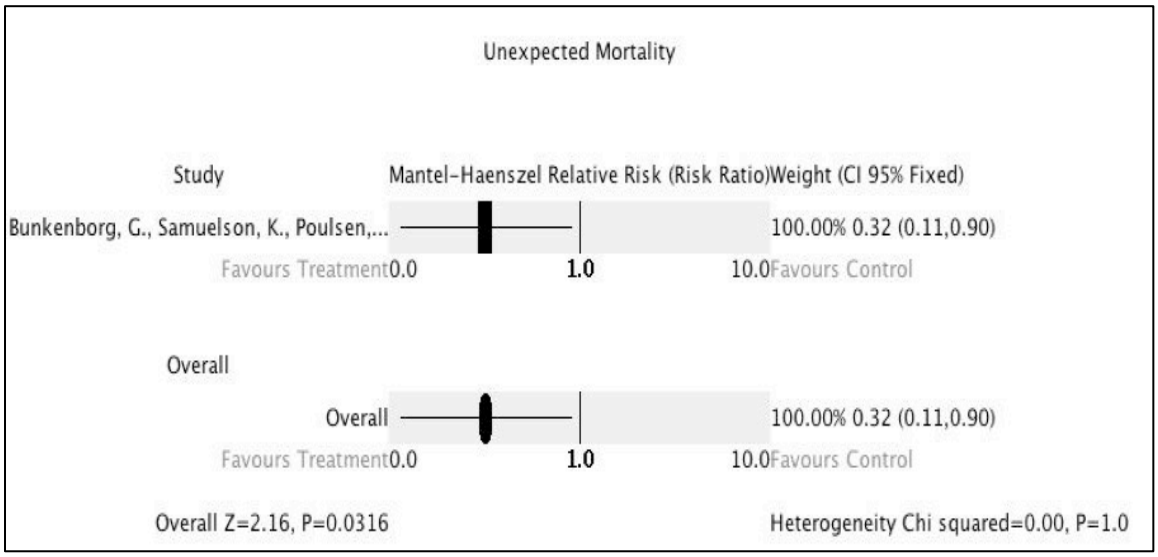


**Figure 6.** Graphical display of the unadjusted risk ratio for the outcome of unexpected mortality in the Bunkenborg et al (2014) cohort study.

*Meta-Synthesis of Qualitative Studies*

Using the 9 qualitative studies included in this review, a meta-synthesis of the qualitative evidence on the phenomenon of interest was conducted. Findings were considered to be the exact themes stated in the studies by authors in the results section of the study reports retrieved from the search. Findings were combined into categories based on similarities in conceptual meanings embedded in the findings. A single reviewer (YTJ) created the descriptions for the categories in this review. A single reviewer (YTJ) created the final synthesized finding for this review, by combining the categories into a single cohesive group of declamatory statements that can be used to provide a response to the central research question and thereby help guide practice. The author findings or themes extracted from each individual study are presented as tables in appendix B, as

well as a diagram illustrating the relationship between these findings and the review categories.

Meta-synthesis of studies included in the review generated a single synthesized finding. This overall finding was derived from 64 original study findings that were subsequently aggregated into 13 categories. Below, I present the categories that were generated from these findings and their descriptions, as well as the overall synthesized finding and its description. In the synthesized review finding, the categories are in bold font for emphasis.

**Category 1: Role clarity.** Role clarity is a fundamental component and result of effective interprofessional collaborative practice. Role clarity consists of the presence of a clear consensus and understanding among healthcare professionals of their individual and collective responsibilities as well as the skill sets of all healthcare professionals on the team. It is fostered via experience communicating with healthcare professionals from different professions. Role clarity not only enhances effectiveness of patient care via better communication among healthcare professionals as well as with the patients (such that they always know who to contact for what problem), but it also increases the efficiency of healthcare systems and can lead to a greater sense of professional meaningfulness and satisfaction. This may require a re-thinking of traditional professional roles and scopes of practice, as well as greater flexibility on the part of all healthcare professionals.

**Category 2: Communication.** Communication is an essential component and a result of interprofessional collaborative practice. Communication must occur on multiple levels, including among healthcare professionals as well as with the patients and families

for the purpose of clarifying the roles of each team member, and it must involve feedback mechanisms to be sustainable. Interprofessional communication has several important outcomes. It leads to greater role clarity among healthcare professionals, including greater awareness of the resources that each health professional and parts of the healthcare system can bring to the table; it helps to minimize professional conflicts, and improves the workplace environment, thereby resulting in greater effectiveness in team-based care. It also directly generates greater patient satisfaction with the care received. The absence of effective interprofessional communication results in a lack of continuity (or an increase in fragmentation) and of coordination of care.

**Category 3: Shared Decision-Making.** Shared decision-making consists of collaborative work to achieve a consensus regarding patient care. It reduces time barriers and minimizes confusion by providing opportunities for patients and healthcare professionals to ask questions and discuss their concerns prior to the implementation of care. It often requires some healthcare professionals to relinquish some control over some aspects of their work, but it also entails other healthcare professionals taking on greater responsibility and accountability for care decisions. Achieving shared decision-making in interprofessional collaborative practice works concurrently with team-based problem solving and requires the presence of a clear team leader in order to be sustainable.

**Category 4: Leadership-dependent collaboration.** Collaborative practice cannot take place without a team leader who takes responsibility for ensuring team-based problem solving, shared decision-making, and effective coordination of care.

**Category 5: Team-Based Problem-Solving.** Team-based problem-solving consists of the active participation of different healthcare professionals in addressing

patient issues. Team-based problem-solving results in better patient care by fostering collaborative relationship among healthcare professionals as well as with patients and families. A clear team leader who is committed to using the results of team-based problem-solving in shared decision-making is a fundamental requirement for the success of this approach.

**Category 6: Commitment.** Interprofessional collaborative practice is unsustainable without various forms of commitment from all stakeholders in patient care. Commitment consists of clear, irrevocable affirmation of the value of other healthcare professionals, trust in and appreciation for what each of them brings to the team, and agreement by all team members to practice patient-centered care. It also entails the dedication of adequate resources within health systems to provide effective patient care. A commitment to interprofessional collaborative practice facilitates greater efforts towards resolution of professional conflicts, and greater willingness to transfer what is learned in one team to other teams and healthcare settings, thereby increasing the sustainability of interprofessional collaborative practice.

**Category 7: Overcoming Personal Biases.** Before interprofessional collaborative practice can fully take root, healthcare professionals must learn to overcome their personal biases. The latter consists of all the perceptions, attitudes, beliefs and other individual characteristics that individuals must overcome in order work collaboratively. This requires learning to communicate interprofessionally (such as by avoiding discipline specific jargon) and to address conflicting perspectives constructively. Over time, this can lead to substantial personal growth of interprofessional team members.

**Category 8: Patient Care.** Patient care consists of all the activities that are undertaken by healthcare professionals as well as patients and their families in order to address the health issue at hand. Effective patient care can include a number of components, including activities to minimize the stress of seeking care and increase patient satisfaction with care. It may or may not be patient-centered, depending on the approach taken by the team.

**Category 9: Information Sharing.** Information sharing is an integral output of interprofessional collaborative practice. It is most effective when it is well supported by structures such as appropriate information technology. Effective information sharing leads to better patient care with greater continuity by ensuring the transmission of consistent information among healthcare professionals and with the patients and families.

**Category 10: Collaboration-Dependent Continuity of Care.** Collaboration-dependent continuity of care is one of the most fundamental mechanisms by which interprofessional collaborative practice affects patient health outcomes. Continuity of care consists of the prevention of care fragmentation through various means, including via a system-designated care coordinator, via the patient or a family member acting as a coordinator, or by chance. Interprofessional collaborative practice works via the first two mechanisms to achieve efficient patient care, by ensuring adequate participation of all stakeholders in the processes of care. For example, hospital discharge planning is an important process for providing continuous care that can benefit from interprofessional collaborative practice because it is thought to be highly coordination-dependent. Other such processes include the management of multiple chronic conditions, and the successful provision of follow-up and routine care.

**Category 11: Efficiency of Care.** The efficiency of care is increasingly an important consideration for all healthcare systems worldwide. Efficiency implies a mutual consideration for effectiveness of interventions as well as their economic cost and resource use requirements. Achieving the most efficient patient care possible is a multifaceted and challenging process. With regards to interprofessional collaborative practice, this may involve improved communication with families to minimize stress, information sharing to reduce incidence of adverse health outcomes, and maximizing the use of healthcare professionals' time through identification of the least costly provider required to competently perform a particular patient care function.

**Category 12: Mutual accessibility.** Mutual accessibility is an important requirement for effective interprofessional collaboration. This consists of the availability of healthcare professionals, both in time and space, to work together in an interprofessional capacity to achieve effective/efficient patient centered care.

**Category 13: Barriers to Patient Care.** There are many barriers to patient care, which may help to explain the difficulty of interprofessional collaborative practice to achieve its stated aims. These barriers include those related to the social, cultural and economic environments or resources of the patient, as well as those that may be embedded within multidisciplinary care itself, such as being cared for by multiple healthcare professionals simultaneously.

**Review Synthesis: Committing to Collaborate for Better Patient Care.** Inter-professional collaborative practice consists of an active **commitment** by all healthcare professionals to **communicating** effectively, working in **teams**, and **clearly understanding each others' roles**, for the common purpose of **effectively and**

**efficiently** achieving optimal **patient care**. Attaining interprofessional collaborative practice first and foremost requires that healthcare professionals **overcome personal biases** about themselves and each other, thereby facilitating effective **collaboration-dependent coordination of continuous patient care**. The latter entails the implementation of **team-based problem solving** approaches, where **information is shared** systematically, and a **team leader** is dedicated to ensuring that solutions generated by the team are carried forward within the context of **shared decision-making** among healthcare professionals, the patients and their families. Achievement of optimal patient care via interprofessional collaborative practice requires that the lack of **mutual accessibility of healthcare professionals**, both in time and space, as well as the many social, economic and cultural **barriers that their patients face**, all be addressed simultaneously.

**Discussion**

While the search strategy used in this review was comprehensive and followed existing guidelines for the conduct of systematic reviews, the fact that only studies limited to the years 2008 to 2014 were sought is a limitation of this review, since the construct of IPCP has been around since at least the 1970s. This is a particularly important limitation for the search for qualitative studies, which do not require the kinds of expenditures to obtain good evidence that evidence from quantitative comparative effectiveness studies would require. However, given that the conceptual framework of the IHI was the fundamental guide for this study, this may truly instead be a delimitation, which represents a demarcation of the relevant evidence, in this case based on a specific and well justified time period of interest, and not a limitation in the traditional sense of

the word. Limitations generally imply fundamental issues that restrain the external or internal validity of the evidence. The time period chosen for the search in this review does not invalidate the generalizability of this review, and it does not negate the rigor by which this systematic review was conducted. Therefore, it is mentioned here only to make the point that there may be more evidence available (particularly qualitative evidence, given that this review is the first to tackle this type of evidence using systematic review methodology to our knowledge), on the relationship between interprofessional collaborative practice and patient health outcomes with a focus on urban settings.

A more significant limitation of this review is that the original intent of this review was to focus on this evidence as it pertains to the urban context in the US. This review was undertaken explicitly to examine the current state of knowledge on this topic, which would then inform the conduct of the dissertation study. However, none of the studies that met the criteria to be included in the review were conducted in the US, which signified that there was no evidence for the US context on the research question of interest. While this was good news for the dissertation study, as it implied that there was a tremendous need to conduct this important study, it also spoke very poorly of the state of the evidence in the US. There was simply no good evidence on this topic for the US, from either a quantitative or qualitative standpoint, despite multiple systematic review teams (Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009) and other major thinkers in the field (B. Brandt et al., 2014; B. F. Brandt, 2014) having called repeatedly for this evidence to be generated.

Another important point to consider about this review is the very limited number of quantitative studies identified that met the inclusion criteria of this review. While many quantitative studies were identified from the initial search, most were excluded on the basis of one of the five criteria established for this review: either they did not study an interprofessional population (ex. they included non-professionals such as unlicensed health aids, or they created a uni-professional sample); or they did not truly examine interprofessional collaborative practice as defined by the many reputable think-thank organizations that have tacked this construct (ex. they used multi-professional/disciplinary interventions); or they did not study health outcomes but rather healthcare outcomes (ex. patient and provider satisfaction with care, attitudes, beliefs, knowledge, process outcomes such as behaviors and organizational practice patterns); or in the case of the quantitative studies, they were not using any comparative effectiveness methodology (ex. they were descriptive in nature instead of analytical, they did not include a comparator group, or they were cross sectional rather than longitudinal). These stringent criteria, which are required to identify the best available evidence on the research question, resulted in only one observational study (Bunkenborg et al., 2014) being identified from the search pool of more than 1,000 papers. All of the quantitative studies identified in prior Cochrane systematic reviews (Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009) on the research question of this review were excluded on this basis. Recall that these prior reviews excluded observational studies.

Finally, it is critical to note that only one of the included qualitative studies (Maneze et al., 2014) even came close to meeting the criterion for the context of interest. Recall that the goal was to identify studies specifically conducted in or about the urban

context where socioeconomically disadvantaged populations reside. Only the Maneze et al (2014) study was done specifically in this context, yet even it does not fully meet the criterion if we add the fact that studies done in the US context are of the greatest interest for the research question in this dissertation study. However, since the review criteria did not explicitly specify that we would limit to the US context, it became possible to include this study. Most of the other qualitative studies were not done in this specific context, but I still included them because I believe that in the absence of evidence specific to the urban context, it is important to obtain and examine the evidence on different contexts. This has allowed me to identify where the gaps are in the evidence on the relationship between IPCP and patient health outcomes in any setting.

**Conclusion**

The commitment to collaborate is the most important lynchpin in the relationship between interprofessional collaborative practice and patient health outcomes. This commitment is required from healthcare professionals, patient, families, as well as policymakers and health systems, and until this commitment is present, IPCP cannot be expected to change patient health outcomes. Components of this commitment include: attainment of IPCP and related components (i.e. teamwork, communication, role clarity), sharing information, overcoming personal biases, ensuring continuing of care, solving problems in teams and making shared decisions, and addressing the issues of mutual accessibility of healthcare professionals and the numerous socioeconomic and cultural barriers to care that patients face (JBI Level 1 evidence for questions of meaningfulness/appropriateness) (Joanna Briggs Institute, 2014).

There is currently some evidence to support the fact that IPCP (generated from IPP/IPO interventions) is effective at changing patient health outcomes, particularly the outcome of unexpected mortality after at least 24 hours of being admitted to the hospital (JBI Level 3c evidence for questions of effectiveness) (Joanna Briggs Institute, 2014).

## Implications for Practice

### *Qualitative Evidence*

Based on currently available evidence, the recommendations for understanding and improving the relationship between IPCP and patient healthcare outcomes receive a Grade of A ("Strong") in the JBI Grade approach for making recommendations for practice (Joanna Briggs Institute, 2014). Healthcare professionals, policy makers, and other stakeholders in healthcare should examine the declamatory statements in the synthesized finding and strongly consider applying its recommendations in their own context as appropriate and meaningful for their given patient populations. There is currently insufficient evidence of meaningfulness/appropriateness on the relationship between IPCP and patient health outcomes.

### *Quantitative Evidence*

Based on the currently available evidence, the recommendation that IPCP can improve patient health outcomes receives a Grade of B ("Weak") in the JBI Grade approach for making recommendations for practice (Joanna Briggs Institute, 2014). The quality of the evidence is too low to support a recommendation to implement IPCP as a tool for improving patient health outcomes in any setting.

## Implications for Research

### *Qualitative Evidence*

While there is strong qualitative evidence of meaningfulness/appropriateness for the relationship between IPCP and healthcare outcomes, there is still a need to conduct qualitative studies on the relationship between IPCP and patient health outcomes. Such studies should explicitly set out to identify: specific healthcare and health-relevant variables that that can be influenced by IPCP, how IPCP relates to those variables, how IPCP and those variables interact to influence patient health outcomes, and what other non-healthcare/non-health variables are important to consider as confounders in the association between IPCP and patient health outcomes. Future studies should also consider using mixed methods as an approach to overcome the limitations of traditional quantitative or qualitative approaches and their inability, to date, to fully capture this phenomenon.

*Quantitative Evidence*

There is currently low quality evidence on the association between IPCP and patient health outcomes. Obtaining better quantitative evidence on the effectiveness of IPCP in changing patient health outcomes will require the conduct of large scale, multi-site RCTs, experimental or cohort studies with long follow-up periods, using all the safeguards required to minimize systematic bias to improve internal validity, and using a representative sample of the target population to improve external validity, as well as potentially incorporating complex multi-level models for analysis of the resultant data at both the healthcare professional and patient levels.

## Methodology

### Specific Aim and Objectives

The specific aim of this project was to assess the association between IPCP and

patient health outcomes and, thereby, to improve IPE and IPP for healthcare professionals working in urban settings and caring for socioeconomically disadvantaged populations.

### Study Objectives

The specific objectives for this study were as follows: 1) to assess the association between IPCP and patient health outcomes from the perspectives of healthcare professionals working in urban settings; 2) to develop a research-grounded conceptual framework identifying contextual variables that should be accounted for as potential confounders in future studies on the impact of IPCP on patient health outcomes.

## Philosophical Assumptions

I approached this research project first and foremost by examining the goal that I wished to accomplish, which was to answer the research question that addressed the aforementioned gaps in the literature. I was not concerned with using one particular methodology over another, as I believe what matters most is whether the chosen approach helps answer the research question in a manner that is practical and generates knowledge that is meaningful to those who will use it. Thus, I used a pragmatic worldview for this research project.

My ontological assumption is that there may be both internal and external realities, but that at its core, reality is defined by what is useful, practical and what works to help solve the problem at hand. Epistemologically, I believe that knowledge can be defined and measured by both objective and subjective means. With regards to axiology, I believe that values should be acknowledged when conducting research because both researchers and participants contribute to the development of knowledge. Thus, the research design or methodology that I chose to use was a mixed methods approach,

specifically an exploratory sequential mixed methods design, whereby qualitative methods were used first to inductively explore and describe a phenomenon, and then quantitative methods were implemented to deductively validate the constructed phenomenon (Creswell, 2013, 2014).

## Phase I Study Design

### Methodology: Grounded Theory

To address the specific objectives, this study was guided by a grounded theory study design from a constructivist perspective (Charmaz, 2006). Focus group and individual interviews were conducted with healthcare professionals working in urban settings. A grounded theory methodology was chosen here because the goal of this dissertation project was to take a fresh look at the relationship between IPCP and patient health outcomes within the context of health or healthcare disparities, from the perspective of healthcare professionals working in urban settings, by allowing a plausible theory to emerge empirically from the research data (Charmaz, 2006). This helped to explain how IPCP works to influence patient health outcomes, within the context of health and healthcare disparities embedded in urban settings in the US. Based on the textual data obtained from the interviews, I then derived a research-grounded conceptual framework that captured the association between IPCP and patient health outcomes, within the context of health and healthcare disparities. This phase of the study helped to establish the face validity of the themes to be incorporated as survey items in the quantitative phase.

**Sampling and Data Collection: Purposive/Theoretical Sampling, Focus Groups and Individual Interviews**

The specific criteria for inclusion in the sample were: holding a valid license or certification to practice or work with patients as a healthcare professional in any established health profession, and actively working or having experience working in the urban setting with populations facing health and healthcare disparities (such as racial or ethnic minorities, as well as poor and underserved populations). The focus group and individual interview participants consisted of a purposive sample of healthcare professionals, namely those affiliated with Rutgers Biomedical and Health Sciences (RBHS), as the principal investigator had ready access to this population and it is fundamentally based in two of New Jersey's largest urban centers (Newark and New Brunswick).

The target population consisted of all healthcare professionals working within the urban setting in the US. Healthcare professional was defined as any individual who underwent a professionally accredited, degree- or certificate-granting educational program at an institution of higher learning, who graduated from such a program and had been involved in caring for patients, whether in prevention and health promotion or medical care, using skill sets learned from this program, for at least 6 consecutive months before the onset of participation in this study.

Furthermore, healthcare professionals not in practice for at least 6 consecutive months prior to the start of the study and healthcare professions students were excluded from this study for two reasons. First, they were considered less representative of the target population of healthcare professionals within the US, since the study was interested

in individuals actively practicing their crafts. Second, at the time the study was conducted they were also the least directly responsible for implementing health prevention, health promotion and medical care interventions and therefore did not represent the target population of healthcare professionals. Participants who had prior exposure to IPE or IPP activities of any kind were particularly desirable for the focus groups and individual interviews, but I did not exclude those who had not had this experience. I took this approach because this project sought to capture the association between IPCP and patient health outcomes based on the views of as representative a sample of the target population as possible, and this included healthcare professionals who had not had any direct exposure to IPE or IPP activities prior to the study.

I aimed to conduct 5-7 focus groups and 15-20 in-depth individual interviews with eligible participants. However, due to logistical challenges that will be discussed later in this report, only 4 focus groups and 19 individual interviews were conducted in this study. See Appendix C for the participant interview protocol, which was piloted prior to the conduct of the study and was found to yield good data relevant to the research question (Jadotte, 2014). While individual interviewing is the usual method for producing data in the grounded theory approach (Charmaz, 2006), focus group interviewing was also chosen as an additional method of data collection for this project because it was particularly appropriate to study the topic of IPCP. This was especially true given that the latter is inherently co-constructed among participants, and this is the type of information that focus groups, as a data collection procedure, are meant to capture. It was important to conduct individual interviews as well because they allowed certain themes related to power differentials and dynamics to emerge, which would not have been possible in

focus group interviews. These longstanding power differentials and dynamics are well known and have long existed within the healthcare professions (Hall, 2005).

Participants consisted of healthcare professionals who have experience working with urban populations facing health and healthcare disparities. In this way, the interviews were designed to generate data that are pertinent to the main research question, which is the relationship between IPCP and patient health outcomes within the context of healthcare and health disparities. These qualitative findings provided an in-depth look at the research question, helping to make sense out of the quantitative results of the overall dissertation study, and to illustrate the essence of the problem under study in a manner that quantitative data alone could not. The qualitative data from these interviews then facilitated the inductive creation of a conceptual model that is grounded in the data, and that provides a framework for explaining the association between IPCP and patient health outcomes, within the context of the health and healthcare disparities embedded in urban settings in the US.

Data from the first focus group was excluded from the analysis because those focus group participants took part in the pilot phase of the study, where IRB approval was not yet obtained. Table 7 below provides a breakdown of the composition of these interviews, based on the type of healthcare profession. What follows is an in-depth discussion of some of the challenges that were encountered with regards to sampling and data collection in this phase of the study, and how I dealt with each of those challenges to help enhance or maintain the internal and external validity of the study.

**Table 7.** Types of healthcare professional institutions from which participants originated and number of participants, listed in chronological order.

| **Interview Type & Number** | **Healthcare Professional Institution** | **Sample Size** |
|---|---|---|
| Focus group#1 (pilot data) | Mixed | 8 (excluded) |
| Participant#1 | Medicine | 1 |
| Participant#2 | Nursing | 1 |
| Participant#3 | Medicine | 1 |
| Participant#4 | Allied Health (Mental Health) | 1 |
| Participant#5 | Nursing | 1 |
| Participant#6 | Medicine | 1 |
| Participant#7 | Allied Health (Physical Therapy) | 1 |
| Participant#8 | Allied Health (Mental Health) | 1 |
| Participant#9 | Allied Health (Nutrition) | 1 |
| Participant#10 | Nursing | 1 |
| Participant#11 | Allied Health (Mental Health) | 1 |
| Participant#12 | Allied Health (Social Work) | 1 |
| Participant#13 | Allied Health (Radiation Therapy) | 1 |
| Participant#14 | Nursing | 1 |
| Participant#15 | Medicine | 1 |
| Focus group#2 | Mixed | 4 |
| Focus group#3 | Mixed | 6 |
| Participant#16 | Allied Health (Nutrition) | 1 |
| Participant#17 | Medicine | 1 |
| Participant#18 | Dentistry | 1 |
| Focus group#4 | Mixed | 5 |
| Participant#19 | Medicine | 1 |
| **Total Number of Participants by Type of Professional Institution** | **Allied Health** | **8** |
| | **Medicine** | **6** |
| | **Nursing** | **4** |
| | **Dentistry** | **1** |
| | **Mixed** | **4** |
| **Total Number of Transcripts** | **N/A** | **23** |
| **Total Number of Participants** | **N/A** | **42** |
| **Final Number of Included Transcripts** | **N/A** | **22** |
| **Final Number of Included Participants** | **N/A** | **34** |

**Addressing Challenges in Sampling and Data Collection.** The standard sampling approach of grounded theory depends on the constant comparative analytic method, whereby open coding is performed on some of the initial textual data, followed by focused and theoretical coding, working hand in hand with the analytic steps to ensure theoretical sampling is achieved. This means that sampling should continue to occur until no new codes appear in the emergent theoretical model. At the same time, the challenge of having your work evaluated within the objectivist paradigm by institutional review boards requires taking an explicit and well-defined approach for sampling your population. For example, continuing to sample *ad lib* (until theoretical sampling is achieved) is generally not acceptable to institutional review boards.

To address this challenge, I used a two-fold strategy in this dissertation study. First, I used both focus groups and individual interview to triangulate the data using these different data collection methods, such that I could obtain rich data both from an individual perspective as well as a shared or group perspective. This strategy had the added benefits that it expanded the total sample size substantially (since each focus group can contain 4-8 persons) and it fit the study of the construct of IPCP very well. As this study was about examining the perspectives of healthcare professionals on a phenomenon relating to their professional experiences, the use of focus groups allowed the shared aspects of IPCP to emerge, which were as important to explore as the individual perceptions of healthcare professionals. Second, I proposed a broad range of sample sizes for both focus groups and individual interviews in the study protocol, such that there would be room to gather more participants to further pursue new themes that continue to emerge, should theoretical sampling not be reached quickly.

Thanks to this strategy, theoretical sampling was successful well before reaching the pre-approved sample size, as no new themes emerged about two-thirds of the way through the data collection process. One focus group was conducted as part of a pilot study to obtain a good overall view of IPCP and develop the initial codebook. However, the textual data from this focus group could not be used as part of this dissertation study as it was conducted as an in-class assignment, in which participants gave informal consent to participate. Based on the IRB rules, such data was not admissible for a research study as there was no documentation of the participants having given their formal informed consent.

Subsequently, 18 individual interviews and 3 additional focus groups were conducted with healthcare professionals from different professions across all healthcare professional schools within the target institution, spanning the gamut of the traditional healthcare professions. One of the planned focus groups was cancelled due to unforeseen events (i.e. visit of the President of the United States at Rutgers University-Newark in November 2015). Finally, one additional individual interview was conducted with a participant who had expert knowledge of and experience with all aspects of the research study, including interprofessional learning as well as healthcare practice serving urban disadvantaged populations. This final interview was particularly helpful in terms of reaching theoretical saturation of the categories that emerged from the analysis. This brought the total number of transcripts produced in this study to 22.

Table 7 shows the breakdown of the institutions of origin for all individual and focus group interview participants. It is worth noting that regardless of the institution of origin, all focus groups had an interprofessional make-up. That is, at least 2 different

healthcare professions were represented in each of them. This strategy was carefully followed to ensure that the data that emerged from the focus groups would provide a shared or aggregated perspective on the topic of the research question. It is the author's belief that the underlying construct of interest (i.e. interprofessional collaborative practice), given its emphasis on having shared values and belief as an essential component of collaboration among different healthcare professionals (Interprofessional Education Collaborative Expert Panel, 2011), can best be captured by using both individual and group data production techniques.

Open coding took place during analysis of the earliest individual interviews. At about interview #7, as the study approached satisfactory theoretical sampling, a more focused coding approach was used to identify existing codes in new transcripts and more focally pursue new ones. This occurred simultaneously with the pursuit of theoretical saturation, which required asking additional questions beyond those strictly listed in the interview questionnaire (see Appendix C). For example, in question 1, participants were asked to explain what interprofessional collaboration means to them. While the participants certainly gave their views of what IPCP is and is not, and what it means to them, there was a need to ask them more specific questions about how each of the established components of the IPCP construct, as defined by current professional and educational standards, may influence patient health outcomes. These components are currently very well defined in the literature: specifically, it is known that IPCP in the US should consist of the 4 key domains of teams/teamwork, roles and responsibilities, interprofessional communication, and values and ethics for interprofessional practice (Interprofessional Education Collaborative Expert Panel, 2011). Thus, to fully explore

participants' views on how IPCP may influence patient health outcomes, it became necessary to pose questions specific to each of the domains of IPCP, which asked participants to link each domain to downstream factors that in their view connect IPCP to patient health outcomes. This particular data collection strategy began once no new themes emerged from asking the original question alone, and ended once no new themes emerged from asking the 4 additional questions targeting the relationship between each IPCP domain and patient health outcomes.

The earlier participants were not asked directly what role these specific domains of IPCP might play in patient health outcomes because the researcher did not want to present preconceived notions to the participants and instead sought to allow these ideas to initially emerge on their own. Once they did in fact emerge, it became acceptable to ask more specific questions regarding each individual competency domain and its potential relationship to patient health outcomes. Three important corollaries emerged from taking this approach. First, the study was able to confirm that participants' views of IPCP were indeed consistent with what the healthcare professional organizations in the US have agreed by consensus represents this construct. This congruence was important because it suggested that the study participants' perspectives indeed served as a good starting point for envisioning how IPCP, as a real world construct, may influence patient health outcomes. Second, while the themes that emerged from this study regarding the nature of IPCP were similar to those proposed by the IPEC (2011) expert panel, they emphasized a number of aspects that had heretofore not emerged in the published literature. These will be discussed in the findings section of this report. Finally, and surprisingly, the participants spontaneously chose to discuss the relationship between these different IPCP

domains, which then paved the way for identifying and relating IPCP to a broader theory that may explain how IPCP works. This too will be discussed in the findings section.

A similar approach was undertaken with regards to other themes that emerged related to healthcare system disparities and patient/population disparities, which again are part and parcel of the urban context for socioeconomically disadvantaged populations in the US. For questions 7 and 8 of the original interview guide, participants were asked to think about and discuss how health and healthcare disparities may play a role in the way IPCP works in this setting. The textual data from earlier participants provided ample themes to further explore, and no new themes related to these questions emerged after participant #9. Thus, to ensure appropriate use of the theoretical sampling approach, newer participants were asked more specific questions regarding how the healthcare and health disparities that their patient populations face relate to each component of IPCP, as well as the various additional processes that link IPCP and patient health outcomes. Additional participants were sought as long as a particular theme proposed by earlier participants appeared underdeveloped. This strategy was continued until no new themes emerged.

Furthermore, to solidify the theoretical sampling approach, once a reasonably well-developed model had emerged, which happened by the end of the first 15 individual interviews, 3 additional focus groups and 3 more individual interviews were conducted to further evaluate the model, using both the original questions presented in the interview guide as well as more specific questions seeking to explore additional plausible links between the different themes that had emerged. Subsequently, a final individual interview was conducted with a healthcare professional who has expert knowledge of IPE, IPP, and

IPCP and extensive experience caring for urban socioeconomically disadvantaged populations. This was done not to replace any ideas proposed by the prior participants but rather to further explore all themes and links between themes. The reason for this approach was that these links between themes themselves formed the most important *categories* in this project for the purpose of creating the validation survey for Phase II. Certainly all themes were given appropriate consideration based on their importance in the data from the participants' perspective, and all themes were reported and presented in the qualitative results of this overall mixed methods study. However, these mechanistic themes were critical as they formed the backbone of the survey for Phase II.

**Qualitative Data Analysis: Constant Comparative Analysis**

Consistent with the grounded theory methodological approach, the constant comparative method was used in this study: data was analyzed as soon as it was collected, and the results of this analysis helped focus the collection of further data for analysis (Charmaz, 2006). A theoretical sampling approach was used to ensure that all concepts were adequately captured in the final theoretical framework that emerged from the study. Data was collected until theoretical saturation was reached: this means that I stopped collecting data when no new themes/concepts or variations of them emerged from the participant individual and focus group interviews. Open, focused and theoretical coding were used to code, categorize and relate the data into a plausible theoretical framework that could explain the relationship between IPCP and patient health outcomes within the context of health and healthcare disparities.

I used the software program Dedoose to code and categorize the qualitative data and develop the conceptual framework. The results of this coding informed the

development of the survey items to quantitatively capture the participants' views of the association between IPCP and patient health outcomes. I used the graphical software program OmniGraffle to create visual diagrams of each section of the model, as well as an overall depiction of the entire model. Although the focus group and individual interview participants were instrumental in producing the textual data that helped to generate the model, priority in shaping the final conceptual model was based on the themes and categories that emerged from the constant comparative analysis of the data and that were most grounded in the data gathered from the interviews themselves, based on the systematic and rigorous procedures accepted within the methodology of grounded theory (Charmaz, 2006).

**Coding Approach.** Consistent with the constant comparative analytic method of grounded theory, coding began soon after the production of the first transcript, which was a focus group of 8 healthcare professionals. This early data provided an initial set of codes, some of which eventually would be raised to theoretical categories and subcategories to construct the theoretical model proposed in this study. Coding was done using an incident-by-incident approach, rather than a line-by-line approach. This is because the principal investigator concluded that given that a constructivist approach to doing grounded theory was used, the codes identified and eventually converted into themes and categories should meaningfully capture aspects of the phenomenon under study (Charmaz, 2006). Rather than assume that each line should contain a single code (as is done in the line-by-line coding approach), the researcher felt that in this study it was more useful to identify discrete packets of text as codes, as long as they represented a single idea. This approach to coding was explicitly stated in the protocol and was

implemented in the conduct of the study, and is being reported here accordingly to ensure transparency of the data analysis.

The limitation of the incident-by-incident coding approach is that in some cases, it was found that multiple ideas that became themes were found to partly overlap, putting into question the very notion that they are discrete. Still, ideas can be discrete without being independent of each other: in order words, multiple incidents linked closely to each other grammatically may suggest that there is a link between them. The author believed that identifying overlapping ideas as discrete might thus have been a significant strength of the coding approach used in this study, because overlapping suggests that codes were related to each other in some way. Ultimately, these themes allowed the principal investigator to achieve the purpose of this study, which was to examine how IPCP relates to patient health outcomes in the urban setting, by making explicit conceptual linkages between themes. Furthermore, the fact that participants were asked to think about specific mechanisms or processes that could link IPCP to patient health outcomes facilitated the direct formation of linkages from the participants' own words, rather than only those made indirectly by the researcher during the process of theoretical coding.

There are several additional points to discuss with regards to the coding strategy used in this study. First, this study sought to explore the links between IPCP and patient health outcomes in the urban setting from the perspectives of healthcare professionals who work in this setting. A two-fold coding strategy was used to capture this phenomenon. First, using question 5 ("in your opinion, which patient clinical care or health outcomes are most affected by the way healthcare professionals work together) and question 6 ("describe some mechanisms by which you think interprofessional

practice could influence a patient's clinical care or health outcomes") from the initial interview instrument, healthcare professionals were specifically asked to identify mechanisms or processes that they believe link IPCP to patient health outcomes. The resulting themes were considered the explicit or mechanistic links that healthcare professionals were consciously aware of and chose to present as their views of how IPCP works to improve patient health outcomes. As such, these were identified as codes from the data, since they represented discrete incidents from a coding perspective.

Second, all other questions asked of the participants led to the production of text and the identification of distinct codes associated with that text: these codes form the remainder of the themes identified in this study. These codes became the categories and subcategories to be linked by the mechanistic codes. For example, the concepts of teamwork and decision-making emerged separately as distinct codes produced from the general questions asked of the participants, and the two mechanistic questions led to the explicit linkage of teamwork to decision-making, which itself was identified as a separate code.

These linkages are represented in a visual diagram, used to track the evolution of the theoretical model over the course of theoretical sampling and saturation. A new version of the visual diagram was produced chronologically at the conclusion of each new data point: each new transcript facilitated the confirmation of an existing theme, the identification of a new aspect of an existing theme, or the addition of a new theme to the model. Linkages explicitly and consciously proposed by healthcare professional were colored in red for distinction. Those that emerged from the researchers analytic treatment of the data, whether based on the proximity of themes to each other, whether they be

from unconscious but spontaneous linkages made by the healthcare professionals, or based on raising themes into categories during the analysis, were initially presented in blue. When these implicit linkages were confirmed explicitly by later participants, they were converted to the color red in subsequent visual diagrams. This approach was used as a way to visually track the achievement of theoretical saturation for all emergent mechanistic themes.

Figures 7 and 8 represent a sample of the 22 visual models produced using this graphic visualization method. The final conceptual model is presented in the qualitative findings chapter. All mechanistic links identified by the conclusion of Phase I, in turn, formed the basis of the outcome variables used in Phase II, to ensure that only themes generated from and confirmed by the participants were used in the quantitative validation of the model. This approach was also explicitly detailed in the protocol and has been followed to maintain the validity of the proposed analytic plan and transparency in reporting.

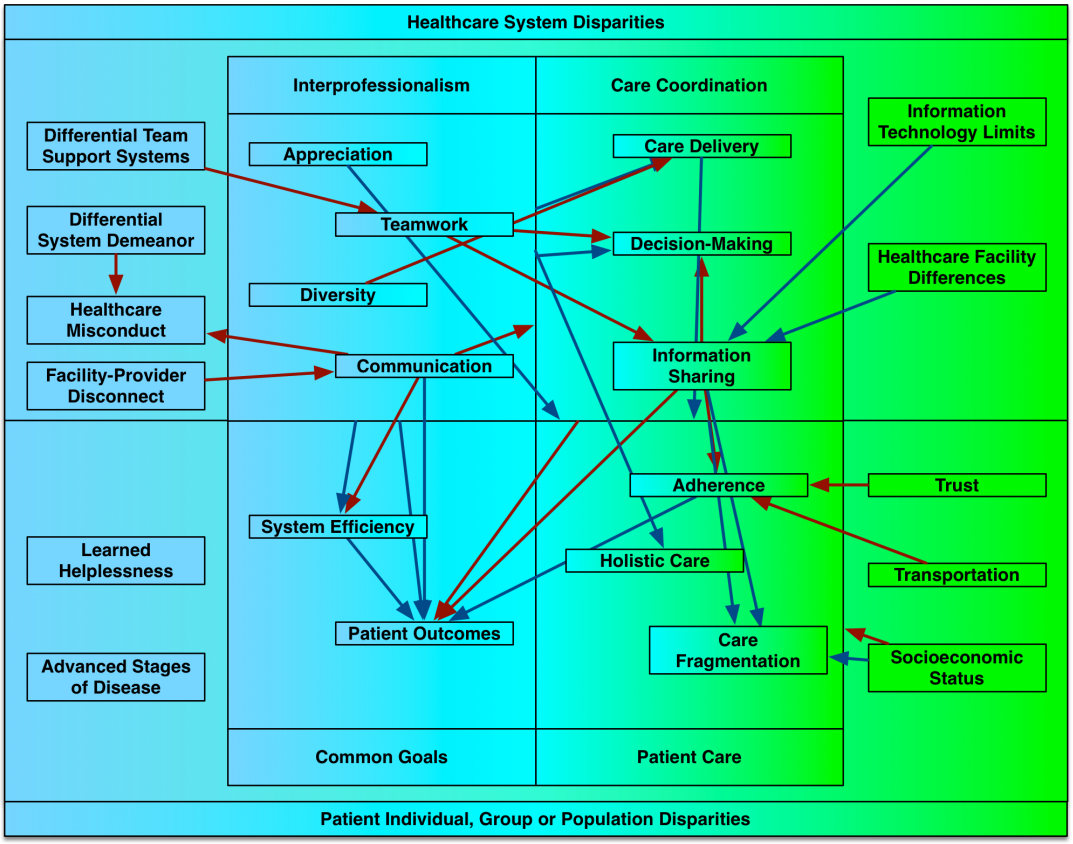


**Figure 7.** Visual depiction of the theoretical model at the conclusion of individual interview#2.

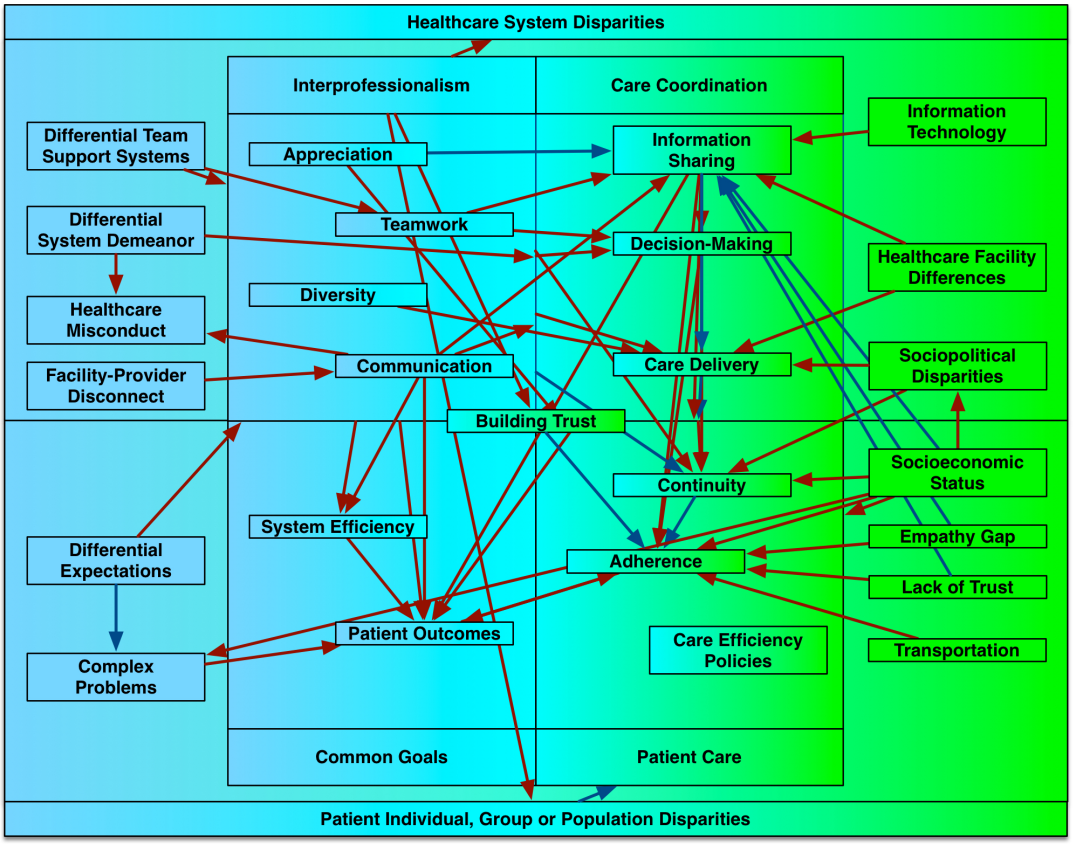


**Figure 8.** Visual depiction of the theoretical model at the conclusion of individual interview#12.

In addition, the issue of how theoretical saturation was achieved using the grounded theory approach is worthy of discussion. This is because achieving this goal often requires that the initial *a priori* interview questions be either modified or phrased differently, and this is especially true when it appears that the questions are not generating any new ideas from the participants. For example, at about 1/3 of the way through the data collection period for the qualitative phase, the two mechanistic interview items (i.e. questions 5 and 6), when asked verbatim, no longer appeared to yield new insights regarding how IPCP may influence patient health outcomes. Realizing this, I

began to ask these questions in slightly different ways. For example, instead of asking how IPCP as an overall construct may influence patient health outcomes, I began asking participants to comment on how they believe each of the 4 domains of IPCP (i.e. teamwork, communication, roles/responsibilities, and values/ethics) works to influence patient health outcomes. From this new version of the same question, a number of new themes emerged, the most poignant of which being the idea that these domains of IPCP are inseparable and work together to achieve the ultimate aim of changing patient health outcomes. In other cases, even when the *a priori* interview questions were not modified, it became important to probe participants with additional questions or to rephrase the same question in a way that allowed the participants to feel more comfortable disclosing their thoughts and feelings, based on their initial response to the question.

Finally, it is important to discuss here one of the fundamental elements of grounded theory, which is the process of constant comparative analysis and how it led to the generation of the theoretical model. First, theoretical saturation was reached for all manifest themes about halfway through the data collection period: by then, most of the discrete and overt mechanistic themes had emerged. Themes such as “teamwork enhances decision-making” or “communication leads to better care coordination” were very much crystal clear. However, a few participants began discussing the idea of “trust” as being essential to the functioning of IPCP. When probed further, participants spoke of issues related to the traditional hierarchies in healthcare and how those can be barriers to IPCP, and how “being part of the team” or “working together over time” are important elements in provide team-based patient care. Many of these ideas had been initially lumped under the theme of “teamwork”, as they seemed to relate to that the most. But by

comparing this type of textual data that was emerging from the later transcripts to earlier data, the researcher began to identify a pattern. This necessitated a second coding of the data with these additional new themes in mind. Ultimately, this led to the development of the core conceptual variable of social capital, and its 3 known correlates of trust, sharing and reciprocity, as the mechanism that underlies the 3 more overt variables of interprofessional collaboration, care coordination, and patient care. The latter 3 variables had emerged very early on regarding how IPCP relates to patient health outcomes.

**Reliability of Coding Strategy.** First it is important to point out that the issue being addressed here is the reliability of the coding strategy, not of the study as a whole. The latter is a separate issue altogether related to the trustworthiness of the study, which depends on its credibility, transferability, dependability and confirmability (Golafshani, 2003). Here I am referring to inter-rater reliability, which in essence means the ability of two coders to come to similar conclusions while using the codebook developed in this study. Determining the reliability of the coding strategy is a puzzling issue in grounded theory research. On the one hand, the pressure to achieve a high level of inter-rater reliability is present in all qualitative research coding strategies, and this is true regardless of the chosen qualitative methodology. This results from the dominance of the objectivist paradigm, which continues to dominate the research landscape. In fact, grounded theory itself emerged out of the need to give more rigor, in particular more reliability, to the process of doing qualitative research (Charmaz, 2006). On the other hand, this dissertation study was explicitly based on the constructivist approach to doing grounded theory, which posits that it is not possible for a study to be truly objective, that all research is a form of construction of knowledge, and therefore does not concern itself

with the issue of methodological validity, including reliability, as proposed by more positivistic researchers. This is a particularly challenging point for grounded theory, because the constant comparative analytic method usually demands changing the questions that are asked and the way they are asked over time as more data is collected, to achieve theoretical saturation. This conundrum makes it ever more difficult to perform reliability testing, particularly on data that is collected at later points in the research study.

Thus, how do we know whether a reliable coding strategy has been used, based on the standard indices of inter-rater reliability, such as Cohen's kappa index or percent agreement? The solution proposed in this study is three-fold. First, the questions contained in the interview guide developed for this study were all asked verbatim to the initial few sets of participants. Specifically, these questions were asked unchanged in any way to the first 6 sets of participants (which, chronologically, consisted of 1 focus group of 8 participants, followed by 5 individual interview participants). This was possible because at that early stage, the pressure to achieve theoretical sampling and saturation were not as great, which made it possible to ask the same questions in the same order and in the exact same way, regardless of the data being produced. This is the approach taken for the entire data collection period in quantitative survey research, as well as in most other qualitative methodologies except grounded theory. In the latter, themes are allowed to emerge over time and need to be explored more closely as the study proceeds, and that requires a continual refocusing of the kinds of questions posed and the ways of asking them. However, by producing the data in this way for the initial participants, the data produced could be said to originate from the same set of questions asked in the same

way, making it possible to calculate an index of reliability that could serve as a proxy for the reliability of the coding strategy for the entire study.

Second, the literature on inter-rater reliability suggest that for most indices of reliability used in qualitative coding, a second coding of about 10-20% of a random subset of the total study data is sufficient to perform the calculation of the index (Hruschka et al., 2004; Lombard, Snyder-Duch, & Bracken, 2004). Thus, in this study, since 23 interview transcripts were produced, the researcher chose 4 out of the 6 transcripts produced at the beginning of the study to be used as the sample for inter-rater reliability calculations, which represents 17% of the total data produced. The researcher coded these 4 transcripts independently and in parallel to a second coder who was hired explicitly for the purpose of coding these 4 transcripts but who was not familiar with the subject matter of the dissertation study. Coding by two researchers was limited only to these initial transcripts because they represent the only portion of the total interview data that was produced using the same exact set of interview questions presented in the interviewer's guide, and the questions that led to their production were read verbatim to the interview participants. This ensured that the transcripts subjected to inter-rater reliability testing all originated from the usage of the same instrument in the same way, which is a critical prerequisite for calculating valid indices of inter-rater reliability of a coding strategy (Hruschka et al., 2004; Lombard et al., 2004).

It is important to emphasize that this dual strategy of using the same exact questions read in the same way to the participants, and double-coding only this small subset of the transcripts, is a *delimitation* of the study's approach to reliability testing in the sense that only a narrow subset of the sample will have undergone a formal reliability

assessment. However, it is not a *limitation* because what was under study in this instance was the reliability of the approach for creating codes, which included whether the codes made sense to more than just the principal investigator, and whether the definitions given to the codes and the rules for coding were clear and comprehensive enough to allow other researchers to apply the same codes to relevant excerpts. The *validity* of the codes created was not under question, as this represented a different aspect of rigor in qualitative methodologies (Golafshani, 2003; Joanna Briggs Institute, 2014).

Lastly, a directed content analysis approach was used for coding, using a preliminary codebook developed by the researcher during the pilot focus group conducted to assess the feasibility of this phase of the dissertation study. All the qualitative data from this dissertation study were produced from the same interview instrument and the exact questions that were developed during the pilot study. As such, the use of the codebook developed from this pilot study for directed content analysis was congruent with the remainder of the study. Directed content analysis involves the *a priori* development of a codebook, based on pilot data or theoretical knowledge of the literature (Hsieh & Shannon, 2005), which is then applied to the data produced in a study. Whether the text was elicited or extant does not matter: these terms imply, respectively, that the researcher either had a role to play in the production of the data, or did not have a role to play in their production but instead obtained them from an existing source (Charmaz, 2006, p. 36). This approach is often used to help validate a theory or conceptual framework that is already emerging. In this approach, the researchers attempt to identify all codes present in the *a priori* codebook, and then any text that does not fit the codebook is assigned a new code (Charmaz, 2006, p. 36).

This approach was used here for three reasons. First, it allowed the researcher to remain consistent with the early theoretical model that had been developed in the pilot study, as it was not possible for the principal investigator to completely detach himself from this preliminary data. Pretending to do so would not be consistent with the need to bracket oneself within one's prior research. Second, grounded theory asks that early codes be developed at the outset of data collection, and these codes are to form the initial backbones of the emergent theory, which will be modified as theoretical sampling and saturation are eventually achieved in the remainder of the study (Charmaz, 2006). Thus the directed content analysis approach is very much in line with constructivist grounded theory principles. Third, the second coder hired by the principal investigator did not have a background in either healthcare or the field of interprofessional care, unlike the principal investigator. Thus, it was felt that directed content analysis would be a more valid approach to facilitate the second coding of the data for inter-rater reliability. In keeping with the directed content analysis approach, the second coder was instructed on the methods to use for coding, including a concerted effort to apply existing codes to the data presented as much as possible, use of an incident-by-incident coding approach for the segmentation of the data to be analyzed, and the generation of new codes for excerpts of text that could not be captured by existing codes.

**Challenges to and Solutions for Reliability Testing of Coding Strategy.** Having established these rules for the coding approach, the performance of reliability testing in this study presented a fundamental challenge: the process of coding in most qualitative studies, on which the utility and validity of the reliability testing process is based, is very different than coding in grounded theory studies. To achieve adequate

levels of inter-rater reliability, the process of coding typically entails several steps: segmentation of text, codebook creation, coding, assessment of reliability, codebook modification, and final coding (Hruschka et al., 2004). In the first step, the segmentation of text, researchers using any qualitative methodologies must answer the following question: what proportion of the text will be considered a segment to be coded? For grounded theory, this can be thought of as selecting the type of coding approach, which can be word-by-word, line-by-line, or incident-by-incident coding (Charmaz, 2006). The challenge in constructivist grounded theory is that although there can be agreement as to what approach to take, *a priori* selection of specific segments of texts that are agreed upon as excerpts to be coded is not done in practice. Instead the researcher should allow the text to speak for itself, such that themes emerge from the text itself (Charmaz, 2006). If the data is segmented prior to coding, might this not prevent the emergence of these themes? Beyond the decision to use incident-by-incident coding, who decides what exact segments of text should be coded? In this study, consistent with the constructivist approach where the themes are allowed to emerge from the data, each coder was given free reign to decide which segments of text count as incidents to be coded. This introduced a level of variability in the segmentation of the text, which later made it more challenging to calculate reliability indices, particularly a Cohen's kappa index.

Compounding this challenge is the fact that the approved protocol for this dissertation study did not explicitly state which reliability index would be used. In content analysis studies, the most widely used indices are either percent agreement or Cohen's kappa (Lombard et al., 2004), with the latter being preferred as it controls for chance agreement between coders. The challenge with calculating a Cohen's kappa index

is that it relies exclusively on the *a priori* segmentation of textual data for its calculation, which is inconsistent with the constructivist grounded theory methodology of this dissertation study. Without this *a priori* segmentation of the textual data, Cohen's kappa index is not meaningful (Hruschka et al., 2004).

Therefore, in this study, the percent agreement was chosen as the preferred reliability index. Calculation of this index was based on the extent to which both coders applied the same code to approximately the same incident in the data: that is, if the segments of text selected by both coders at least overlapped and were assigned the same code or codes, they were considered to be in agreement. Also, as long as two segments of text were assigned at least the same root code, they were considered to be in agreement as well. For example, if one coder assigned the root code "low socioeconomic status" to a segment of text, while the other assigned the child code "denied access to care" to the same or a similar and overlapping segment of text, these were registered as being in agreement for the purpose of reliability index calculations. This is an acceptable approach since both coders were using the same codebook, from which all root and child codes could clearly be discerned.

This process was performed for all 69 initial codes produced, and the total percent agreement was computed for each code across the 4 chosen transcripts, as well as for the entire codebook across all 4 chosen transcripts. The former was done to identify which codes may have been unclear in their definitions (especially those where there was less than 75% inter-rater agreement), while the latter facilitated an overall assessment of the reliability of the entire codebook, which is the percent agreement index of inter-rater reliability for the whole study. The two coders then met to clarify the definitions of all

codes that had a total percent agreement score of less than 75%, and in some cases, the definitions were re-written such that it became clear to both coders what the code actually meant.

Note that the percent agreement index facilitates the exploration of inter-rater reliability not only for the entire codebook, which the Cohen kappa index does as well, but also for each code within the codebook, which the Cohen kappa index does not allow. This then facilitates the refinement of the codebook in specific areas rather than needing to revise the whole codebook. This is another fundamental reason that led to the selection of the percent agreement over the Cohen kappa index in this study. This complementarity may be why many qualitative methodological researchers often recommend using at least two indices when exploring inter-rater reliability (Lombard et al., 2004).

Both sets of percent agreement indices are reported in Appendix D, Table D1. The overall percent agreement between coders was 84.7%. Most qualitative researchers consider inter-rater reliability scores greater than 80% to be sufficient to meet methodological quality control standards (Hruschka et al., 2004). This suggested sufficient inter-rater reliability in the codebook and the coding strategy for the principal investigator to proceed with coding the remainder of the textual data set alone.

It is interesting to note that most of the codes with the highest reliability scores were either *in vivo* codes (such as patient navigator, patient satisfaction, and length of stay) or very specific and unambiguous codes (such as coordination of information sharing enhances decision-making, coordination of information sharing increases patient satisfaction, and coordination of information sharing reduces anxiety). Whether high

reliability scores were achieved for these codes because of word recognition across coders or because the use of *in vivo* codes allows the abstraction of codes to be more grounded in the text remains unclear, but the achievement of higher reliability scores is nevertheless a clear result for these codes.

Finally, there were certain codes that did not initially meet sufficiently high reliability levels (i.e. those scoring below 75%) and therefore merited some clarification in meaning, which was done via discussion between the two coders. The following codes and their descriptions were revised based on this: appreciation for different specialties, bringing efficiency to healthcare systems, diversity in professional skills, healthcare system disparities, and patient care.

## Phase II Study Design

### Methodology: Cross Sectional Survey

The external validity of the qualitatively derived conceptual framework was explored quantitatively by testing it via a cross-sectional survey of a larger sample of healthcare professionals working in urban settings. In this way, the emergent theoretical framework developed in this dissertation study, via grounded theory methodology, was subjected to quantitative validation via cross sectional survey methodology. This is considered to be a valid use of mixed methods design (Creswell, 2014, p. 227; Morgan, 1998).

### Sampling and Data Collection: Convenience Sampling and Online Survey

To maximize the generalizability of the results from this study, the strategy chosen was to ensure that only healthcare systems located within the urban setting are

allowed to participate in this study. I included healthcare professionals who worked at sites affiliated with RBHS in Newark and New Brunswick. These healthcare systems were targeted because they are the sites of Rutgers University's healthcare professional schools and affiliated healthcare systems, and therefore as anticipated, I had greater access to them for sampling purposes via RBHS's faculty and staff email database. Sampling was initially expected to be performed randomly, in the sense that all eligible RBHS participants would be equally likely to be invited to participate. However, the more important goal was to achieve as representative sample as possible, such that the findings from this study could be generalizable to the broader population of healthcare professionals who work in urban settings in the US.

Thus, I aimed to perform random sampling until at least the proportions of healthcare professionals listed in table 8 would be achieved in the sample. Unfortunately, this type of sampling strategy was not feasible in this study due to logistical reasons, and a convenience sample was used instead. All eligible participants at RBHS were sent a link to the online survey via the email address that Rutgers University has assigned to them for all official, work-related communications. Using this strategy, online data collection continued until at least 150 participants had completed the survey in its entirety. To achieve this sample size, and to account for the problem of non-response, I initially aimed to survey at least 750 eligible participants, based on the assumption of a 20% response rate within a random sampling framework. However, since a convenience sample was used instead, the survey was sent to all potentially eligible participants at RBHS, which led to over 5,000 individuals receiving the survey.

**Table 8.** Total number and proportions of healthcare professionals in the US, and targeted sample size (Bureau of Labor Statistics, 2009; Henry J. Kaiser Family Foundation, 2012; US Census Bureau, 2012).

| Type of Health Professional | Total Number | US Proportion | Targeted Sample Size |
|---|---|---|---|
| Physicians | 838,000 | 17% | 25 |
| Registered Nurses | 2,505,000 | 50% | 75 |
| Pharmacists | 243,000 | 6% | 9 |
| Dentists | 195,000 | 5% | 7 |
| Public Health Workers | 124,000 | 2% | 3 |
| Allied Health Workers | Unclear* | 20%* | 31 |

*The number of allied health workers is a best guess estimate, as this number is unclear based on the literature. The proportions of all other healthcare professionals was reduced by 20% to allow room for allied health professionals together to make up 20% of the sample.

From the baseline textual data and the constructed theoretical model, questions were derived to create a survey designed to capture the views of a larger set of healthcare professionals' on the proposed theoretical model. The survey questions targeted the explanatory portions of the model: these were the fundamental mechanistic links that were identified by the healthcare professionals during the interview and that suggested some pathways by which IPCP acts to influence patient health outcomes. Healthcare professionals were asked to rate their level of agreement, based on a 5-point ordinal scale, with statements derived from these mechanistic links. For example, healthcare professionals interviewed in the pilot focus group identified that teamwork has a direct influence on decision-making in patient care. The following statement was created from this identified link and placed in the survey: "Teamwork among all healthcare professionals is essential in making decisions for patient care".

The survey included 39 items constructed in this manner, as well as questions on the demographic characteristics of the respondents and their practice settings. The latter initially included: the type of healthcare profession, number of years working in the healthcare professions, level of overall satisfaction with their career in the healthcare professions, gross annual income, access to electronic medical record systems in daily work tasks, and type of healthcare system (i.e. community-based hospital vs. academic medical center vs. public or private outpatient practice setting vs. other). I believed that these variables represented major predictors and potential confounders that were important to consider in examining the association between IPCP and patient health outcomes, based on general knowledge of the literature.

The survey was distributed to the targeted sample of healthcare professionals. They were recruited via organizational email list serves from RBHS. Demographic data on the participants and their practice settings were collected in this survey. I aimed for and successfully obtained a final sample of 150 participants. This sample size was calculated using the G3*Power analytical software, based on a Type I error or alpha level of 0.05, a Type II error or beta level of 0.80, and an effect size ($f^2$) of 0.1 (small), assuming that the 7 initial predictors indicated were to be examined. This calculation assumes that a probabilistic (random) sampling approach was to be used, ensuring that all eligible participants were equally likely to be selected. This is a major limitation of the study, as this type of sampling approach could not be achieved.

**Addressing Challenges to Sampling and Data Collection.** Once the qualitative model had been established, the quantitative phase of the dissertation study could be pursued. As planned, it consisted of a cross sectional survey of the perspectives of healthcare

professionals, on the relationship between interprofessional collaborative practice and patient health outcomes, within the context of the urban setting in the US, as elaborated by the conceptual model. Given that this was the methodology chosen, a number of steps needed to be completed to produce data with good internal and external validity. At the same time, a number of challenges were encountered and it is imperative that the methods used to address or overcome them be discussed as well to maintain transparency. With respect to internal validity of a cross sectional survey, the following important aspects must be addressed: initial survey design (i.e. how the survey was created), survey validation, and implementation of data collection (Fowler, 2009). With regards to external validity, the key issue is the sampling strategy used (Fowler, 2009). Both of these methodological steps will be discussed in the sections that follow.

**Initial survey design.** No prior surveys existed either on the relationship between IPCP and patient health outcomes, or how this relationship unfolds within the urban setting. As such, all items in this study needed to be derived *de novo*. Following the proposed plan of research approved for this study, an exploratory sequential mixed methods approach was implemented. Qualitative themes were generated about the proposed relationships between the constructs, using a constructivist grounded theory approach. A theoretical model was then created, based on these themes and grounded in the voices of the healthcare professionals who participated in the study, which is depicted visually in the qualitative findings section. Having developed this model qualitatively, the challenge then was how to derive quantitative survey questions based on this conceptual model.

The first step in constructing the survey was to extract the most manifest themes that could serve as pathways to understanding the relationship under study. Recall that the goal of the study was to understand the association between IPCP and patient health outcomes in urban settings from the perspective of healthcare professionals: thus the goal of the cross sectional survey was to quantify their views on this phenomenon. To understand this relationship, the most useful themes were those that provided links to other themes. Many such themes emerged quickly from the very beginning of the study and persisted throughout the qualitative data collection period. Appendix E contains the initial survey questions that were created as a result of the pilot focus group interview. Theoretical sampling and theoretical saturation in the qualitative phase led to the development of additional questions, which provided a more complete view of the theoretical model. Each of the mechanistic themes identified in the qualitative phase were represented by a question in the cross-sectional survey (see Appendix E).

What one can immediately notice about these questions is that while they link many of the core variables that have been identified as being important to the phenomenon of interest, and while they provide important insights into the basic steps of the pathways of action IPCP, they somewhat leave something to be desired. For example, while the theme "teamwork enhances decision-making" clearly linked two important constructs (i.e. teamwork and decision-making), I was left asking questions like "why does teamwork enhance decision-making" or "so what if it does"? This sense of conceptual uncertainty also emerged during the qualitative phase of the study. This led to a deeper investigation for more latent themes, which revealed social capital and its correlates of trust, sharing and reciprocity as the underlying variables of interest for the

manifest variables of interprofessionalism, care coordination, and patient care, respectively.

From that point on, it became clear that to fully understand the phenomenon of interest, the quantitative investigation ideally should explore all aspects of both the overt variables of IPCP and the hidden variables of social capital. This led to the creation of a question matrix, as shown in Appendix F. In addition, since one of the fundamental goals of this study was to understand how disparities embedded in urban settings influence the phenomenon of interest, it became important to develop quantitative survey items related to these disparities. Using the two classifications of disparities that were identified in the qualitative phase of this study (i.e. healthcare system disparities and patient/population disparities), an additional question matrix was created, as shown in Appendix F. Thus, the initial survey developed for this study at the start of the quantitative phase consisted of the 9 demographics questions, the 39 questions developed from the manifest qualitative themes, plus 44 potential questions developed from the question matrices described above regarding the product of manifest and latent themes, for a grand total of 92 potential survey items needed to fully explore this phenomenon.

**Discussion on survey validation via psychometric validity and reliability testing.** It is important to point out that this was not a survey that was attempting to measure or quantify a particular social construct by creating a scale or index. Instead, it was a survey designed to capture the perceptions of participants regarding multiple aspects of several constructs simultaneously (i.e. interprofessional collaboration, health outcomes, and disparities), without attempting to sum them up. This distinction is critical because in the former case, complete psychometric validation would need to be

performed prior to the use of the survey for data collection purposes. This is done ensure that a survey instrument has high internal or construct validity, which means that it is able to measure the construct it purports to measure (Fowler, 2009). This would require the establishment of content validity as well as criterion-related validity (Kimberlin & Winterstein, 2008). One would also need to determine the reliability of the survey instrument, which includes the internal consistency, test-retest reliability or stability, and inter-rater reliability (Kimberlin & Winterstein, 2008).

Measurement of the internal consistency is only essential if one wishes to determine whether a set of survey items that purport to measure a particular construct are correlated with each other (Kimberlin & Winterstein, 2008), which again was not the case in this study as it was a survey of the relationship between the aforementioned constructs. In addition, inter-rater reliability is only measured when a survey is being administered by different observers to the same participants within the same timeframe (Kimberlin & Winterstein, 2008). Given that the survey in this study was offered online and was completely self-administered, there were no "observers" in the traditional sense of the term, which removed the human element that often creates error among different raters (Kimberlin & Winterstein, 2008). Thus, measurement of inter-rater reliability was not required in this study. Therefore, only two psychometric assessments were potentially applicable in this study: face validity, and test-retest reliability.

Face validity, which has to do with whether or not an instrument or survey appears to measure what it claims to measure (Kimberlin & Winterstein, 2008), was accomplished in this study via the qualitative phase. All survey items related to the conceptual model originated directly from the views of healthcare professionals working

in urban settings. They are in the best position to describe the phenomenon of interest and thereby to provide data on the constructs under study. Calculation the test-retest reliability would require distribution of the survey to a small subset of the research participants at two time points spread 2 weeks apart. This is a typical timeframe for measurement of test-retest reliability (Marx, Menezes, Horovitz, Jones, & Warren, 2003). Unfortunately, due to major logistical challenges, this step could not be completed in this study. This is an important limitation, and the analysis of the data and the interpretation of the survey results will need to be critiqued in this light.

**Implementation of data collection.** There were a number of challenges to face regarding the data collection for this study. First, the number of survey items required to fully explore the phenomenon under study seemed quite daunting. It became clear that the survey needed to be condensed for the sake of practicality. Surveys with very large numbers of question items are likely to face low response rates (Heberlein & Baumgartner, 1978), and this is especially true of online surveys (S. D. Crawford, Couper, & Lamias, 2001). This would pose a substantial challenge to the successful completion of this study. To resolve this challenge, the principal investigator decided to include only the 9 demographic questions and the 39 questions developed from the manifest qualitative themes. The justification for this choice was that these themes provided a sufficient initial examination to help meet the fundamental goal of understanding the phenomenon under study. Further exploration of this phenomenon and of its more latent themes will be possible via additional research studies, where the other 44 potential survey items developed in this dissertation study can be used to develop a new survey instrument.

The second challenge in data collection for this study was in regards to the sampling strategy. The initial desired sampling approach chosen for this study was a stratified random sampling method. This was the proposed approach because the goal was to achieve as representative a sample as possible: a random sample would ensure that all eligible participants had an equal chance of being selected, and stratification was designed to achieve real world proportions of the different types of healthcare professionals, as illustrated in Table 8. Unfortunately, the principal investigator was unable to obtain access to a complete list of eligible participants at the study site, which made the processes of random sampling and stratification impossible to achieve.

Thus, the choice was made to reach out to participants in the most feasible way possible, which was via a mass email communication to all potentially eligible participants. As such, the study achieved neither a random nor stratified sample, but rather a convenience sample. Nevertheless, to explore whether the sample was still similar to the target population at least with regards to the critical variable of type of healthcare professional, the frequencies of this variable for the sample are compared to the data in Table 8. The examination of the representativeness of this study's sample is discussed in the results section.

**Quantitative Data Analysis: Descriptive, Bivariate and Regression Analysis**

Once the survey data had been collected from the targeted sample of healthcare professionals, the next step was quantitative data analysis. First, descriptive statistics were used to report the mean value or frequencies for each survey item. The mean score on the ordinal scale, as well as the standard deviation (SD), was calculated and reported for each continuous survey variable. Second, bivariate statistics were used to address the

first component of the overall research question, which sought to examine the association between IPCP and patient health outcomes from the perspective of healthcare professionals. Here, given that the dependent variable (i.e. the perceptions of this relationship, as captured in each survey item related to the model) was categorical, and the independent variables (i.e. demographic variables for the healthcare professionals, such as their gross annual income, type of health profession and type of healthcare delivery model, as well as other potential covariates identified based on the inductively-derived conceptual model and captured via the online survey) were either continuous or categorical, I used bivariate statistics to analyze the link between each of the dependent variables and each of the independent variables data, without considering any of the other covariates identified, in order to first examine the strength of the relationship between each covariate and each dependent variable alone. Last but not least, multivariable linear regression was conducted to examine the relationship between each survey item related to the IPCP conceptual model and all key demographic covariates identified above simultaneously. The significance threshold was initially set at alpha = 0.05 for all statistical tests to control for Type I error, and power determination was set at 0.80 for all statistical analyses to control for Type II error.

**Data Analysis.** Consistent with the *a priori* approved study protocol, the *links* between the themes identified in phase I, from the healthcare professionals' views related to the topic of interest, formed the *variables* captured in the survey instrument used in phase II. Figure 9 below is a representation of the final theoretical model produced from phase I, with the addition of numbers to locate the 39 cross sectional survey items used in phase II. This figure thus provides a conceptual link between phases I and II. While these

variables are illustrated in their original form in the survey instrument (see Appendix E), Table 9 below provides a condensed title for each variable and thereby presents them in a more organized manner to facilitate statistical analysis and interpretation. As this phase of the study used a cross sectional analytical design, recall that the goal was to determine whether the conceptual links made in phase I were statistically associated with the demographic variables which, it was thought, could better explain the variance in the data.

To accomplish this goal, the following sequential steps had to be performed: cleaning of the data, description of each variable to explore the nature of the data, making statistical associations between pairs of variables, and performing multivariable regression analyses to identify whether the conceptual links are associated with the multitude of demographic confounding variables stated *a priori* in the study protocol and embedded in the survey instrument. Each of these steps is described in the following paragraphs, with a brief discussion of how each step was performed, any challenges that were encountered along the way, and how these challenges were addressed to optimize the validity of the results.

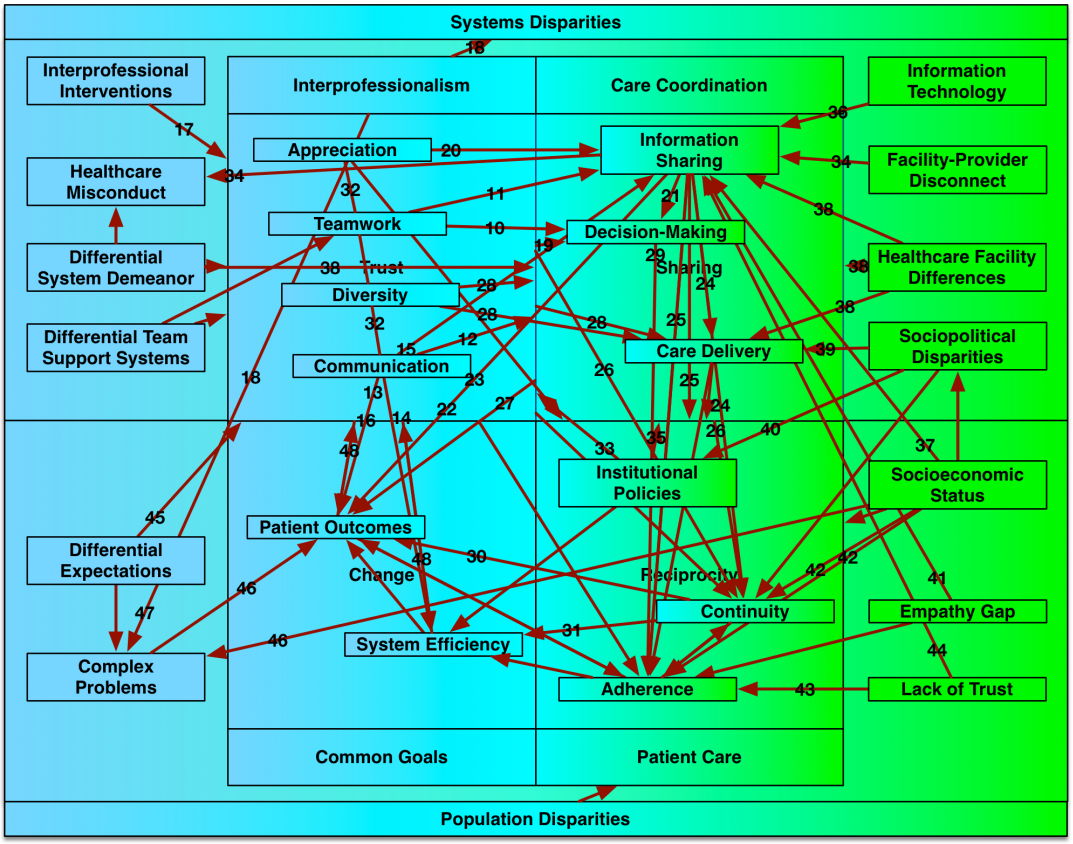


**Figure 9.** Theoretical model with corresponding survey item question numbers.

**Table 9.** Variable names, numbers and full descriptions in the survey instrument.

| Variable Name | # | Full Description of Variable in Survey Instrument |
|---|---|---|
| **Predictor Variables: Demographics** | | |
| Profession | 1 | Which of the following best describes your healthcare profession? |
| Six_months | 2 | Have you been actively involved in patient care for at least 6 months since completing your health professional schooling? |
| Years_served | 3 | How many years have you worked as a healthcare professional serving urban, socioeconomically disadvantaged populations? (please enter years using only numbers; you may use decimals if needed) |
| IPE_attend | 4 | Have you ever attended or participated in an interprofessional education, practice, session, lecture or other related activity? |
| Prof_satisfaction | 5 | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is your level of overall satisfaction with your career as a healthcare professional? |

| | | |
|---|---|---|
| EHR | 6 | Do you use an electronic health record system in your daily work tasks? |
| Deliver_model | 7 | Which one of the following healthcare delivery models best applies to your primary practice setting? |
| System_practice | 8 | What type of healthcare system practice do you predominantly work in? Please select only one. |
| Income | 9 | What is your approximate gross annual income? |
| **Outcome Variables: Perceptions of IPCP and Health Outcomes** | | |
| Team_decision | 10 | Teamwork among all healthcare professionals is essential in making decisions for patient care. |
| Team_info_share | 11 | Teamwork among all healthcare professionals is essential for sharing information with patients and families. |
| Comm_coord | 12 | Effective communication among all healthcare professionals is essential for care coordination. |
| Comm_efficient | 13 | Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. |
| Comm_LOS | 14 | Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. |
| Comm_info_share | 15 | Effective communication among all healthcare professionals improves how well information is shared with patients and their families. |
| Comm_pt_satisf | 16 | Effective communication among all healthcare professionals improves patient satisfaction. |
| IPCP_trust | 17 | Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. |
| IPCP_complex_care | 18 | Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. |
| IPCP_decision | 19 | Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families. |
| Apprec_info_share | 20 | When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. |
| Info_share_decision | 21 | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. |
| Info_share_satisf | 22 | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. |
| Info_share_anxiety | 23 | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and |

| | | |
|---|---|---|
| | | their families) reduces patient anxiety. |
| Info_share_cont | 24 | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. |
| Info_share_adhere | 25 | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. |
| Coord_cont | 26 | The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. |
| Coord_complicate | 27 | Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. |
| Apprec_deliver | 28 | When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. |
| Decision_adhere | 29 | When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. |
| Cont_efficient | 30 | When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. |
| Adhere_efficient | 31 | When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. |
| IPCP_interrelate | 32 | The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. |
| Instit_IPCP | 33 | Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. |
| Info_share_cheat | 34 | Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). |
| Instit_deliver | 35 | Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. |
| EHR_info_share | 36 | The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. |
| SES_info_share | 37 | Disadvantaged patient populations face a lot of |

| | | |
|---|---|---|
| | | socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. |
| Facil_bar_care | 38 | Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patients. |
| Laws_care_deliver | 39 | Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practice and dentistry). |
| Laws_care_fragm | 40 | Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to the other). |
| Emp_info_share | 41 | The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. |
| SES_adhere | 42 | Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. |
| Trust_adhere | 43 | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. |
| Trust_info_share | 44 | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. |
| Expect_IPCP | 45 | Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. |
| Complex_outcomes | 46 | Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. |
| IPCP_disparity | 47 | I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. |
| Outcomes_IPCP | 48 | I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. |

**Data cleaning.** Upon completion of data collection, the study reached an initial sample size of 399 respondents. This initial data set underwent a number of steps prior to analysis. First, data cleaning was performed. The first step in data cleaning involved the deletion of surveys of incomplete respondents (ex. participants who did not complete large proportions of the survey [20% or more] or who did not agree to the terms of informed consent) and ineligible participants (ex. participants who identified themselves as students, and participants who identified themselves as belonging to groups not considered part of the healthcare professions [ex. information technology specialist, statistician]). This led to the deletion of 154 and 55 respondent surveys, respectively, or 209 respondent surveys in total, leaving 190 potentially complete respondents in the sample.

The next step involved dealing with missing data. The percent missing data cutoff chosen here (20%) is arbitrary. The initial approach in this study was to impute the mean value (for continuous variables) or mode value (for categorical variables) for the sample in cells with missing data. While this is generally not an ideal approach to dealing with missing data (Pigott, 2001), the fact that a simple random sampling approach could not be used in this study is an even bigger limitation to the interpretation of the statistical tests performed in this study. This is because the validity of all the approaches for dealing with missing data (including complete case analysis, available case analysis/pairwise deletion, single-value imputation such as imputing the mean or mode value for the sample for each missing case, as well as model-based methods) is inherently tied to both having applied a simple random sampling strategy and also knowing whether the data is missing at random or not (Pigott, 2001).

Unfortunately, neither of these conditions were met in this dissertation study. Cognizant of this fact, the researcher cautions that all statistical test results should be interpreted in light of this major limitation. At the conclusion of these steps, the sample size for this study stood at 190 participants, which is well above the initial number needed (150) to achieve adequate power for the statistical model chosen. Further analysis using the Statistical Package for the Social Sciences (SPSS), revealed that of the 190 respondents for whom a reasonable amount of data was available as described above, there were 150 who had complete response data for every variable. Since this was the minimum number needed to reach adequate power for the study, it was felt that the use of a complete case analysis approach would be reasonable, as this approach requires the fewest number of assumptions to be made, even though it substantially decreased the sample size (Pigott, 2001). Therefore, the final sample size chosen for this study was 150. Figure 10 below presents this information visually in a flow chart.

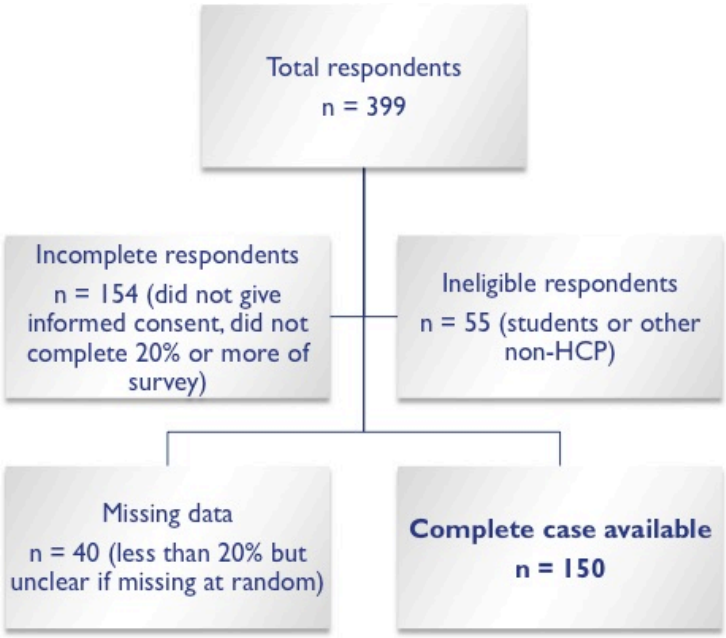


**Figure 10.** Phase II sample size flow chart.

**Statistical significance testing.** Descriptive statistics were used to calculate and report the mean score on the ordinal scale, as well as the standard deviation (SD), for the 39 survey items that represent the outcomes of interest. Data was collected on the demographic variables identified *a priori* in the protocol: type of healthcare profession, level of satisfaction with professional careers, use of an electronic health record system, type of healthcare system practice, and gross annual income. The variable "number of years working in the healthcare professions" was discarded in favor of the variable "number of years spent working with disadvantaged populations", as it was felt from the qualitative inquiry that this new variable may better predict some of the responses on the outcomes, especially since many of the outcomes specifically pertain to these populations. Data was also collected on 3 additional variables that were identified as being potentially important confounders according to the theoretical model developed in phase I: previous exposure to IPE, IPP or IPO, type of healthcare delivery model, and having worked in patient care for at least 6 months. Descriptive statistics were also used to report the means scores and SD or the frequencies for each of these additional variables.

Second, bivariate statistics were applied to examine the association between each outcome variable and each demographic variable. This then led to the performance of 351 bivariate statistical tests (9 x 39). The type of statistical tests to be performed depended on whether the diagnostic tests (see Appendix G) identified the continuous variables as being normally distributed or not, and the level of measurement of each pair of variables. Assuming the outcome variables to be continuous, the expected types of bivariate statistical tests to be performed for each variable pair (i.e. t-test, ANOVA, or Pearson's

correlation for normally distributed variables, or Mann-Whitney U, Kruskal-Wallis or Spearman's correlation for non-normally distributed variables) are reported in Table 10 below. This information is reported as a table with the demographic variables (#1-9) in the columns and the outcome variables (#10-48) in the rows.

However, upon performing diagnostic tests of normality for all variables, including visual inspection using histograms and calculation of skewness and kurtosis, it was found that none of the outcome variables are normally distributed but instead are substantially left skewed. These diagnostic test results are reported in Appendix G. Therefore, the bivariate statistical tests that depend on having normally distributed outcome variables could not be performed, including t-tests, ANOVA and Pearson's correlation. The alternative then was to use the equivalent non-parametric tests, which do not depend on this fundamental assumption. Table 10 below summarizes the initial tests that were planned, as well as the tests that were actually performed for which pairs of variables in the final analysis. Given the sheer number of bivariate tests to perform (351), *post hoc* analyses were not conducted to determine the magnitude or directionality of the relationship between pairs of variables. Note that *post hoc* analyses were not necessary regarding the relationship between the outcomes and demographic variables 3 and 5, as the Spearman's rho correlation coefficient does provide an indication of both the magnitude and directionality of the relationship. The p values for all these tests are reported in the results chapter.

**Table 10.** Types of bivariate statistical tests planned and actually performed. Please refer to table 9 above for the full name and description of the variables.

| **Var #** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
|---|---|---|---|---|---|---|---|---|---|
| **10-48 (Planned)** | ANOVA | t-test | Correlation | t-test | Correlation | t-test | ANOVA | ANOVA | ANOVA |
| **10-48 (Actual)** | Kruskal Wallis | Mann Whitney | Spearman's rho | Mann Whitney | Spearman's rho | Mann Whitney | Kruskal Wallis | Kruskal Wallis | Kruskal Wallis |

Similar to the bivariate statistical tests, even though the outcomes data are ordinal, for the purposes of the multivariable regression analyses, the outcomes were treated as continuous variables. The literature has shown that ordinal data with at least 5 categories can be treated as continuous in linear regression modeling – especially for studies with large enough sample sizes – and that the estimates, confidence intervals, and statistical power obtained from this test are equivalent to those calculated using logistic regression modeling (Rhemtulla, Brosseau-Liard, & Savalei, 2012). Furthermore, ordinal logistic regression analyses were also conducted for all outcomes, and the interpretation of the final statistical results overall did not change as compared to the linear regression models. Therefore, the multivariable linear regression models examining the relationship between each IPCP outcome and the 9 key predictors identified were reported. Normally, regression models need not be performed for outcomes that fail to achieve statistical significance with any of the predictors at the bivariate level. However, they are still reported here for the sake of transparency. This led to the performance of 39 regression

analyses. Thus the total number of inferential statistical tests that were run in this study was 390.

The significance threshold was set at alpha = 0.05 for all statistical tests to control for Type I error, and beta was set at 0.80 as planned for all statistical analyses to control for Type II error. The power analysis was recalculated, given that 3 additional predictors were added to the model after the conduct of phase I. The results are presented in Appendix H. The new minimum sample size required to reach adequate power increased to 166, which is above the total number of participants with complete responses (150) for this survey. This suggested that the statistical analyses in this study were underpowered. It is also important to note that since a true random probabilistic sampling approach was not feasible, the power analysis is not fully reliable. Nevertheless, it is presented here to demonstrate that the principal investigator indeed took this important step into consideration.

Furthermore, while the alpha level was set at 0.05 for all statistical tests, and the results were presented for all tests as such, there was case to be made that the Bonferroni correction should be used to correct the alpha level so that a type I error can be avoided. The Bonferroni correction is recommended when multiple statistical tests are performed as part of the same overall hypothesis and when the following conditions are met: a single test of the overall null hypothesis that all tests are not significant is needed; it is critical to avoid a type I error; and a large number of tests are carried out without preplanned hypotheses for the purpose of detecting statistical significance (Armstrong, 2014). This is a commonly used correction of the alpha level for surveys in which each item is subjected to separate statistical significance testing rather than the performance of

a single statistical significance test for the entire survey. All of these conditions applied in this dissertation study to a certain degree: respectively, it was important to be able to determine whether the overall theoretical model was statistically significant or not; it was critical to avoid type I errors, as these could potentially have influenced the generalizability of the theoretical model or of its 39 component parts; and there was no *a priori* basis to rely on to determine which predictors ought to be included in each statistical regression model. Therefore, in addition to presenting the results at the alpha of 0.05 level, the final interpretation of the statistical analysis relied on the alpha threshold determined by the Bonferroni correction for this study, which is equal to 0.05/39, or alpha value of 0.0013 for each outcome.

The data was analyzed using SPSS IBM version 23, as opposed to the Stata or R software programs as initially planned. This choice was made for two reasons. The first reason was methodological and was by far the most important: it is the fact that the survey in this study was not complex and therefore did not necessitate advanced analyses requiring the use of statistical coding or special programming to address the analytical needs of the study. The second reason was logistical: it is the fact that the data collection software provided by Rutgers University (Qualtrics) can produce ready-made data sets that are fully compatible with SPSS and not other statistical software packages, which facilitated the analysis of the data in a more rapid and practical way.

**Protection of Human Subjects: Expedited Review**

This study involved the collection of data on healthcare professionals with regards to their perceptions of IPCP and how it influences patient health outcomes within the context of health and healthcare disparities embedded in the urban setting. This involved

disclosure of their personal views of other healthcare professionals, of patients, and of their work environment, including a discussion of their level of satisfaction with the healthcare environment and services that are provided to their patients. Much of this information was collected via focus group and individual interviews, which were audiotaped, so as to facilitate more rigorous transcription and analysis of the qualitative data. This then posed a potential risk to these participants, particularly if their opinions were disclosed. To protect participants, the audiotaped digital files from all focus groups and individual interviews were first kept in a locked cabinet in the principal investigator's office, which can also be locked. Second, these digital files were transcribed as soon as possible, and then destroyed. The transcripts were then carefully examined to remove all potentially identifiable information, such as names or specific place of work. Demographic information was collected for individual interviews; however, this only included information that cannot be easily linked to the original participant (such as type of health professional, type of healthcare delivery model operating at the place of work, and gross annual income). Informed consent was obtained from all participants prior to undergoing interviews.

In the second part of this study, a larger sample of health professionals were sent an online survey to complete, in order quantitatively pilot test and validate the proposed theoretical model developed in this study. While it is true that all of the data was collected anonymously using this online survey, there was nonetheless a potential risk to participants, which is the fact that their responses on the questionnaire could have been seen in a negative light by their current employer, who is responsible for creating a safe and pleasant work environment on their behalf. To protect participants from potential

harm, the following strategy was used. First, although they were invited to take the survey via their work email address – since much of the recruitment strategy is contingent on that approach – they were re-directed to another, non-work related but secured website, where they completed the survey. This was made possible by Rutgers University, which provides free access for all students, faculty and staff, to the survey software tool Qualtrics, and it is this tool that was used to create and collect data from the proposed online survey. Prior to participating in this survey, the participants were given a statement of informed consent, with a phone number and an email address at which to contact the principal investigator to answer any questions they might have. The principal investigator followed-up with all participants who had concerns about the study via phone or email to ensure that they were comfortable with completing this survey prior to allowing them access to the survey website. They were fully informed of their rights under this agreement, such as the right to not participate and to cancel their participation at any time, and the right to the privacy of their information.

These strategies prevented the employers from gaining access to the responses of participants. The subjects were also asked not to complete the survey in the presence of either the principal investigator, other members of the research team, or healthcare administrators, supervisors or other representatives of their employer. Finally, the subjects were not able to print their response from the screen, and once they had submitted them, they were not able to change or view their responses in any way. This minimized the possibility that an administrator could access a participant's response by requesting it from the participant himself or herself. All of these steps helped to protect the subject's data against breaches of privacy, and thereby maintaining confidentiality;

they also decreased the likelihood of a response bias by allowing the subjects to complete their responses in an environment outside of work and away from any potentially coercive influences. To further protect the subject's confidentiality, employers were not made aware of which of their staff members were invited to participate in the study, or which of them agreed to participate in the study.

Furthermore, the reality was that employers may have been aware of when the focus group and individual interviews took place, given that these occurred within the healthcare environment so as not to disrupt the participants' on-going work. These interviews involved minimal risk to the participants and were not thought capable of causing any physical, psychological or emotional harm. However, the principal investigator was available throughout the study to debrief the participants, thereby providing an outlet for expression of any thoughts or emotions the participants wished to share outside of the interview setting. The participants were also asked not to disclose that they are participating in this study to co-workers both within and outside of their work environment.

Although this study did not involve the participation of vulnerable populations, and although there were minimal actual risks from the interviews themselves for the participants, there was still some degree of risk given the possibility of adverse work consequences depending on their responses to the interviews and online questionnaire. Thus, this study underwent an expedited IRB review to ensure adequate protection of the participants. Although a yearly continuing review should not have been necessary since the study data collection period was expected to only last 6 months, this level of IRB review also provided the flexibility that the researcher needed to have the study re-

evaluated should there be a need for a longer data collection period due to practical reasons, which was indeed the case.

Given that the subjects were healthcare professionals who generally have higher salaries than the average working American, they were compensated for the time that they put into this study using methods that are more symbolically significant than monetarily substantial. Focus group participants were provided lunch immediately prior to and during the focus group interview, so as to create a collegial atmosphere among them. Also, participants who completed the survey in its entirety were entered in a one-time raffle to win one of several $100 gift cards, which were drawn at the end of the data collection period.

**Resources, Facilities, and Funding for this Project**

The Rutgers School of Nursing provided all the resources needed for the conduct of this project, including adequate meeting space, computers with appropriate analytic software, and access to appropriately qualified support staff. While some focus groups and individual interviews were conducted at the Rutgers School of Nursing, the principal investigator traveled as needed to the workplace of the participants to accommodate their scheduling needs. Appendix I provides a timetable and a list of deliverables for this project.

The Rutgers School of Nursing allocated $1,000 to this project. These funds were awarded to the principal investigator of this project as part of the New Jersey Health Foundation Excellence in Research Award, in recognition of his work as a highly productive faculty member whose research endeavors were best aligned with the school's mission during the year 2013-2014. Additional funding for this project came from the

New Jersey Collaborating Center for Nursing (NJCCN), which selected this project for its 1st annual George Hebert Legacy Dissertation Award. The NJCCN award, in the amount of $2,500, provided sufficient funds to successfully perform all necessary steps of this dissertation project.

## Phase I Report: Findings

In this study, 114 unique codes were identified in the data during the incident-by-incident open and focused coding, which is the result of data reduction for the 1809 excerpts that directly represent the participants' voices. Theoretical coding led to the further reduction of these 114 codes into 10 unique categories and 2 overarching theoretical concepts that captured all categories and codes. These theoretical concepts also increased the explanatory power of the model, as they are familiar constructs in the general literature. Appendix J lists these codes, categories and their definitions. Theoretical coding led to the organization of the identified themes into a model that provides one plausible answer to the research question. Table 11 and figures 11 and 12 illustrate these relationships for the overall model. Figure 13 is a word cloud, which is a visual representation of all 114 qualitative codes, with codes that appeared in greater frequency being represented in larger letters. Finally, figures 14-18 present the code tree for each of the 5 pairs of theoretical categories.

**Table 11.** List of theoretical concepts, categories and the codes they contain. Sub-codes are omitted here for brevity, but are available in the codebook, located in Appendix J. The color scheme used here helps to relate the content of this table to the visual depiction of the model in Figure 12.

| Theoretical Concepts | Categories | Codes |
|---|---|---|
| Social capital | Building trust | Overcoming entrenched attitudes, looking beyond traditional hierarchies |
| | Interprofessionalism | Appreciation for different specialties, diversity in professional skills, communication, teamwork, interrelatedness of interprofessional competencies, interprofessional interventions, tackling disparities, mechanisms of interprofessional impact on care outcomes |
| | Facilitating sharing | Being part of the team, improving the work environment |
| | Coordination | Information sharing, care delivery, decision-making |
| | Enhancing reciprocity | Working together over time, holding each other accountable |
| | Patient care | Adherence, continuity of care, institutional policies |
| | Effecting change | Impacting objective outcomes, influencing subjective outcomes |
| | Common goals | Bringing efficiency to healthcare systems, improving patient outcomes |
| Disparities | Healthcare system disparities | Differential system demeanor toward stakeholders, facility-provider disconnect, healthcare misconduct, information technology/electronic health record limitations, differential support systems for teams, healthcare facility differences, sociopolitical disparities can lead to poor care delivery or care fragmentation |
| | Patient, individual, group or population disparities | Empathy gap, lack of trust, differential expectations, complex problems, low socioeconomic status |

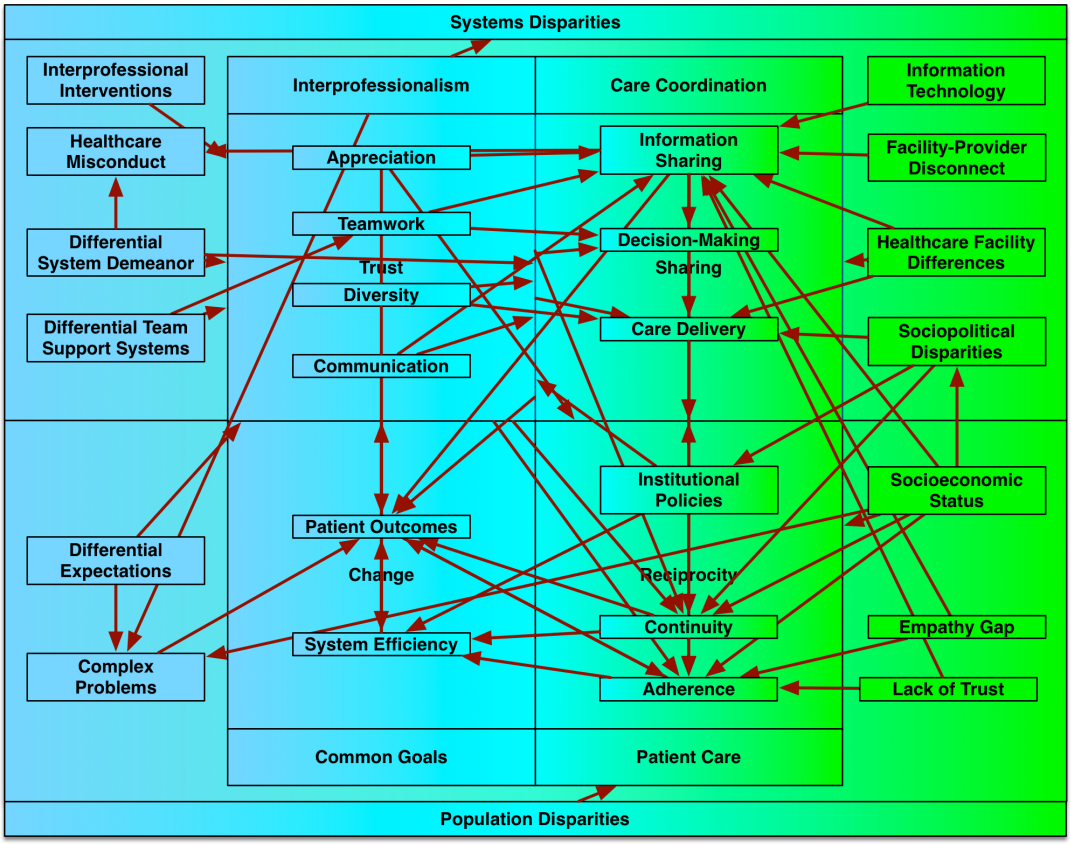


**Figure 11.** Theoretical framework relating IPCP and patient health outcomes in the context of disparities, from the perspective of healthcare professionals working in the urban setting. The red arrows indicate the conceptual links that emerged from the textual data in the study, which formed the basis of the online survey in Phase II.

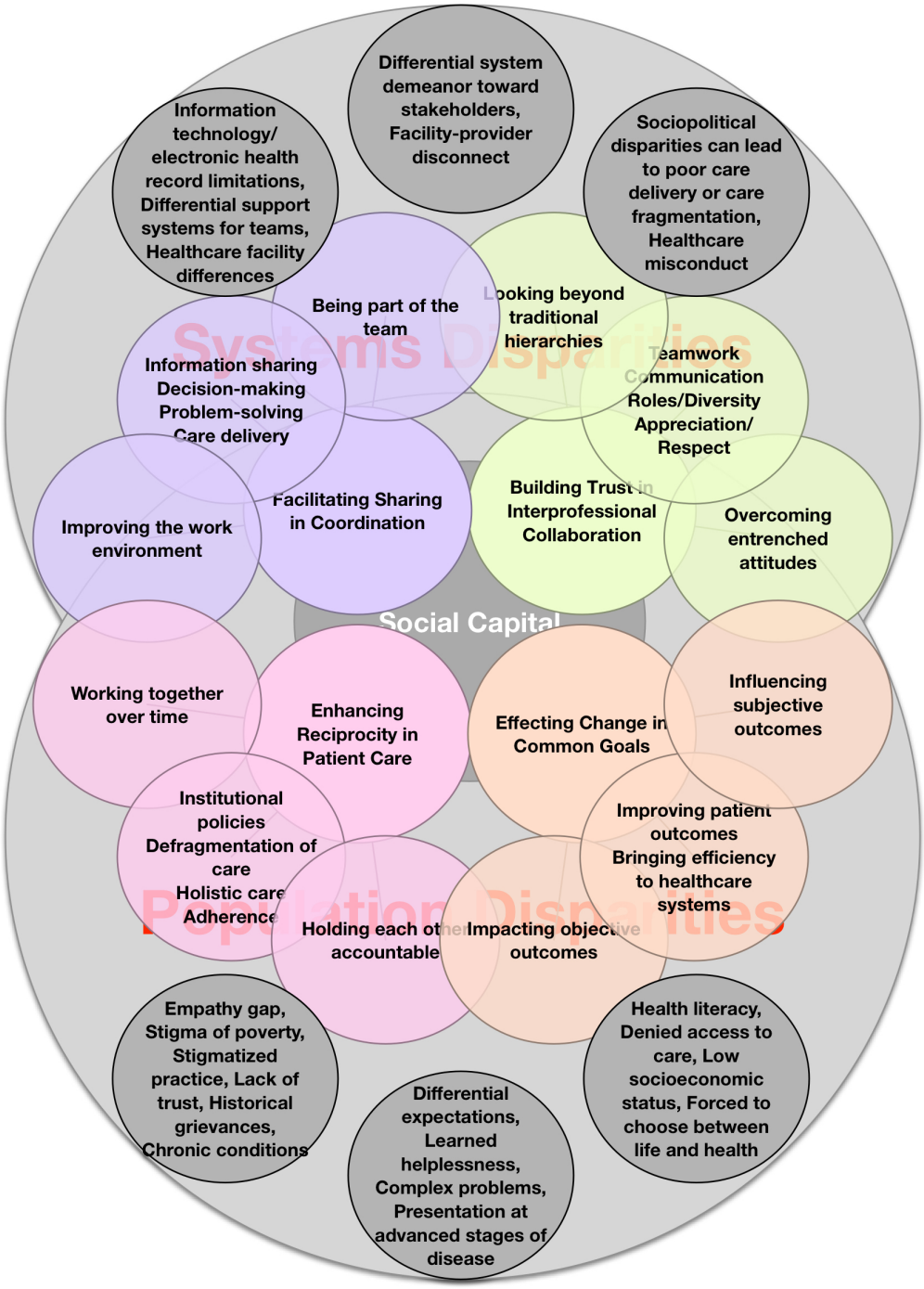


**Figure 12.** Different version of the theoretical framework relating IPCP and patient health outcomes in the context of disparities, from the perspective of healthcare professionals working in the urban setting. This figure emphasizes the feedback loops that are thought to occur in the phenomenon under study.


**Figure 13.** Dedoose word cloud for the most prevalent qualitative codes. Themes that have a larger font occurred in greater frequency in the data.

Key excerpts are presented here to support the themes identified. In the text below, categories are listed in bold, while codes and sub-codes are italicized. Theoretical concepts, and their relationship to current knowledge in the literature, are presented in the discussion section of this report. Prior to discussing each of the categories and presenting the participant excerpts that support them, it is critical to point out that a dialectical relationship was identified between the 10 identified categories, which led to the development of the 2 theoretical concepts. The first 8 categories and the last 2 categories listed in table 11 formed pairs of ideas that are distinct yet inseparable: one cannot be understood without the other, both in the data as well as in the real world of the phenomenon under study. For example, in the data, the codes and categories of healthcare system disparities and patient individual, group or population disparities often occurred together, even though participants were asked to discuss them separately. In the real world, it is well known that disparities often exist simultaneously at the level of systems as well as the level of individuals, groups and populations. It is for this reason that the participant quotes used as supporting evidence are presented for pairs of categories. Specifically, findings are presented together for the following 5 pairs of categories: building trust and interprofessionalism; facilitating sharing and coordination; enhancing reciprocity and patient care; effecting change and common goals; and healthcare system disparities and patient individual, group or population disparities. Also, for the sake of brevity, not all 114 codes are represented in excerpts in this section of the report. Rather, only the major codes as well as the theoretical categories are presented here. All remaining codes (among those referred to as sub-codes in the codebook) are represented with clear excerpts in Appendix J to ensure the participants' voices are fully captured.

**Building Trust and Interprofessionalism**

One of the most commonly discussed ideas in this study is represented by the theme of *building trust*. Many participants felt that building trust is a fundamental part of IPCP. One participant puts it very well by saying that "I think it's changing. I think it's changing because a lot of other professions are coming to the fields. Now suddenly a lot of nurse practitioners are around, physician assistants, they're also taking care of patients, the primary care providers. I think now it's changing, but it will take a lot of time until it will be real professional collaboration. We don't have trust in each other. This is the major barrier". What this participant is saying is that while she sees that interprofessional collaboration is starting to happen in her practice setting, the main problem that continues to impede progress in this area is the lack of trust among healthcare professionals and other stakeholders of the healthcare teams.

Related to the idea of building trust, participant also felt that IPCP helps people *overcome entrenched attitudes* and learn to *look beyond traditional hierarchies and perspectives*. These ideas are captured by the following quotes, respectively: "And I just feel like there's a lot of kind of entrenched attitudes about how things are done that are really difficult to overcome. And I don't know, it might take like a whole generation before some of these folks have been doing this for so long are finally kind of out of the system. If they're really not willing to change, you know, that might just be for the best. So hopefully the people we're training now are developing more of the skills", and "I think what the bigger challenge is what I call the social dynamic of teams. If you look at the history of health care in this country, it was a very doctor centric, doctor driven model. The doctor was God, walked on water, and everybody bowed down and did what

he or she said. And most often it was a he, and everyone worked to serve the doctor. We are now evolving to a place where everyone should be working to serve the patient". In each of these quotes, participants are expression very powerful yet different ideas related to how to build trust in healthcare teams. The first one deals with overcoming the entrenched attitudes, biases, stereotypes, and other forms of prejudices held by different members of the healthcare team, especially those who have been part of the status quo for a long time. The essence of this theme's message is the following point: that people will never be able to trust other team members if so many of them hold on dearly to ideas that are antithetical to collaboration itself. The second quote deals with a very specific type of challenge to trust among teams that has long been known in healthcare: it is the inherent power structure that continues to pervade the functioning of the healthcare system, whereby the patient is not at the center of care as he or she should be. Instead, healthcare continues to be centered on a healthcare professional, usually a physician, and that undeniable fact itself poses a threat to the very idea of building trust among all members of healthcare teams. When people learn to look beyond this traditional hierarchy, and this includes both those at the top and bottom of the hierarchy, then they can begin to appropriately learn to trust each other to always do what is right for the patient, the person that matters most above all.

The category of *interprofessionalism* was well represented in this study, although participants often acknowledged that there is still in their view a lack of clarity as to what exactly interprofessionalism really is. One participant stated: "the question for me as we're having this discussion is what exactly is collaboration. Is collaboration more so everybody working together in harmony? Is collaboration everybody doing their part

when their number is called? Or is collaboration something different altogether? And I think that's what's not been quite defined in health care right now, exactly what cooperation is". This participant is referring to the fact that even though there are clear definitions of interprofessional collaboration in the literature, and even though everyone in healthcare talks about collaboration all the time, few are those who truly understand what it really entails and what it really looks like in practice.

Nevertheless, many participants felt that *interprofessional interventions* are needed to truly to foster IPCP in the sense that it is unlikely to happen on its own, whether they take the form of IPE, IPP or IPO. This idea is best represented in the following quote: "So obviously I'm involved in this leap of faith that we're doing that says if we train people to work together, then they will know how to work together better when they get out and that will make them more skilled as part of teams". The idea then is that without providing trainings and other forms of interventions – all of which can be classified as IPE, IPP or IPO – IPCP may not be possible. In addition, some participants felt that *IPCP should be used as a tool to tackle disparities* in health and healthcare. This view is clear when participants said things like "I mean I can see how interprofessional collaboration should be able to help address disparities", and "I think it should actually, working in these neighborhoods or areas with these populations, make all health care providers more eager actually to collaborate with each other". Thus, participants felt that IPCP, by its very nature as a construct whereby many people are supposed to come together and work together across professions for the betterment of patient care and improvement of patient health outcomes, is ideally positioned to help address the perennial challenges posed by disparities in health and healthcare.

Participants identified *diversity in professional skills* as being an important component of interprofessionalism. One participant stated, “yeah I think it’s pretty clear, you know, that it’s using various talents of the professions around you”. *Appreciation for different specialties* was also identified as a matter-of-fact component of interprofessionalism and is illustrated by the following quote: “God, it's like you get more done when you acknowledge what each profession brings to the table”. The points that these participants are making are that, respectively, the knowledge and skills of all healthcare professionals must be used at their optimal level and scope of practice depending on the patient’s needs, and the importance of all healthcare professions must be a core value of all healthcare stakeholders. *Teamwork* and *communication* were also seen as critical components of interprofessionalism. Regarding teamwork, one participant said “I consider it team work, you know if you’re taking care of let’s say patients, be it a nurse or a doctor, one person can’t do it so you need to kinda collaborate as a team”. There was a common idea that communication is an integral element of healthcare team-based work, and one participant put it this way: “sometimes those answers may not be answers that we agree on, and how do we develop communication strategies that will allow us to do that. And I think at the same time, it really is also coming to some common understandings around how we can communicate”. The message here is that working together as a team is the way forward in patient care, and that learning how to communication effectively in that context is critical. Participants thus clearly voiced that they understand that these four core ideals represent what IPCP is supposed to look like in an ideal world, and that they must be upheld for collaborative practice to work. But as previously seen, they also admit it is a difficult challenge to make IPCP a reality.

With regards to how IPCP works to influence downstream factors and ultimately patient health and system outcomes, two critical themes emerged. The first is the idea that while each of the 4 components of IPCP (i.e. teamwork, communication, diversity in knowledge and skills, and appreciation for the different professions) discussed above has its own roles to play, in general they are *interrelated and act together to achieve their effect*. The following participant quote makes this point very clear: "I actually reject the premise of the question to be honest with you because I think that part of the reason that these competencies were developed in the way they are is that communication without valuing teamwork and without understanding the need for respect between different professionals doesn't work. That's the problem. Health professions education 101 is all about communication. Clearly, the problem has been that it's all about communication without layering on these other very important competencies that inform what that communication should look like. So I actually don't think about it that way at all. I don't think about communication standing alone ever". What this participant is saying is that each of the 4 components of IPCP have historically been taught separately to healthcare professional students and practitioners (ex. communication has been taught alone, without teaching about appreciation for the different professions), and that IPCP is doomed to fail if its 4 components are viewed and implemented separately. For example, without learning to value the importance of nurses and allied health practitioners, medical students would continue to replicate the hierarchical patterns of communication that have for long been so characteristic of the healthcare system. It is only when all 4 of these elements are taught together and are working together that collaborative practice can truly be attained.

Finally, participants explicitly identified 19 specific *mechanisms* via which IPCP works to influence patient health outcomes. For the sake of brevity, quotes regarding these 19 mechanisms are not all presented here. However, all of these are in incorporated in the proposed theoretical framework seen in figure 12 above, and a few that are very richly illustrated and described below. Appendix J lists these 19 mechanisms; in figure 11 above, some of the red arrows represent these explicitly identified mechanisms of action for IPCP. Also, Appendix J contains least one excerpt for each of the explicit mechanistic themes.

The mechanisms presented here were clearly outlined by the participants and have been pulled directly from their words. The role of *coordination of information sharing in decision-making* is captured as follows: "I think another mechanism is through effective decision-making, cuz you get all the necessary information and then you make decisions of course with family and the patient but the whole decision-making process, whether it be healthcare providers making decision about the care of the patient, it becomes way more effective, because you have all of the information that you need". Thus, by coordinating how information is shared among the healthcare team members, including patients and families, it becomes easier to make decisions regarding patient care. *Communication can lead to better coordination* and can *lead to lower anxiety level*, as one participant literally stated "like if they communicated well, and had everything setup, patient anxiety would be less". That the *coordination of information sharing increases patient adherence/compliance*, and that *coordination of information sharing increases patient satisfaction* are both captured by this participant who stated "anxiety reduction…umm, there's a clear mechanism to help flow through to improve satisfaction

and compliance, and I would think that that [coordination of information] would be a key mechanism". The statement that "they [patients] now know they have a team of persons who are working together instead of these separate silos…they're getting coordinated information" is clearly indicative of the belief that *teamwork leads to better coordination of information sharing*.

All of these quotes are pointing to various aspects of the phenomenon of care coordination, and through them, the participants are linking various important constructs to each other. For example, one can discern from these quotes that participants believe that the way information is shared with patients and families can impact adherence to, anxiety from and satisfaction with healthcare services offered. These are important points to keep in mind because IPCP is thought to be linked to how well information is shared. This provides a pathway of action by which IPCP may influence health and system outcomes.

The impact of *care coordination on medical complications* was poignantly illustrated by one participant. She recounted the following story about a medical complication incident: "so I think it [coordination] makes a huge difference in changing the outcomes. And I think I was talking about complications before when X brought up the outpatient stuff. I wanted to say that because of all of this world of specialization, what happens is the patient is going from one specialist to the second specialist, the third specialist, and some older people…and even younger people, end up complicating their own problems by overmedicating themselves. So for example, I had somebody on a beta-blocker at 25 mg, and then they go to somebody else, they didn't really check what they were on already and they say 'oh your blood pressure is a little high, I'm gonna give you

a beta-blocker'. So they give them more beta-blocker. The patient doesn't know the difference, that they should stop that. Now they put them on 50 mg, and now they're taking 75 mg and then they end up in the hospital with beta-blocker toxicity". Beta-blockers are a type of medication designed to help increase how strongly the heart beats and help slow down how fast it beats. What this patient is pointing out is that when taken in excess amounts, perhaps due to a miscommunication between different healthcare professionals resulting in over prescribing, patients can overdose on this medication, resulting in adverse health outcomes.

Another theme is that *teamwork is thought to directly enhance decision-making*. One participant connected the two by stating that "they [the patients] need to see or they need the interprofessional collaboration to help them with decision-making". She is, *in absentia*, stating that the status quo has inhibited the optimization of outcomes, and that patients feel like healthcare professionals are not working as a team, making it difficult for them to feel confident in and abide by the medical advice they receive. Figure 14 below presents the thematic code tree for the dialectically related categories of building trust and interprofessional collaboration.

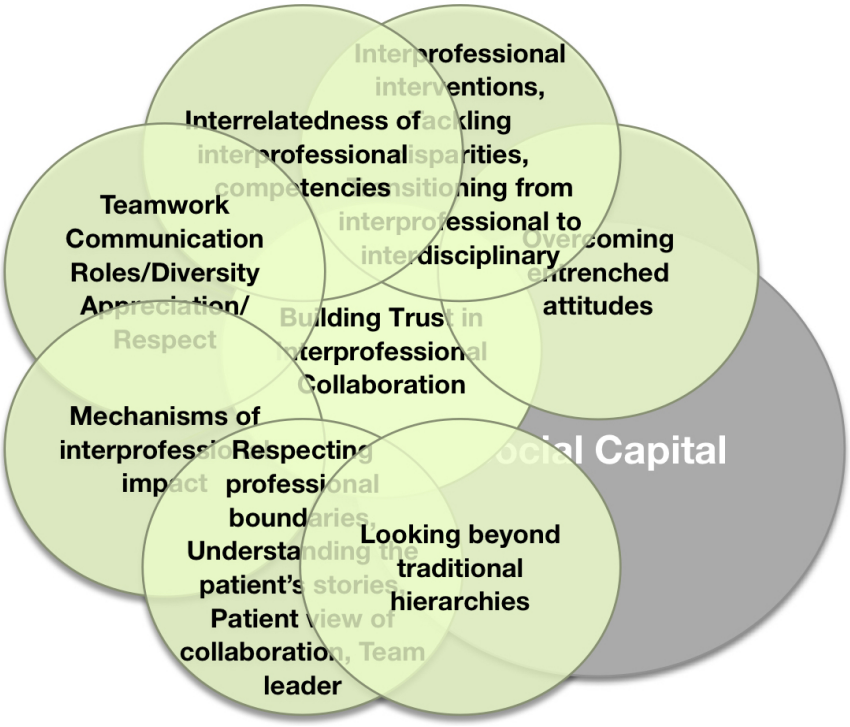


**Figure 14.** Visual code tree for the theoretical categories of building trust and interprofessional collaboration.

**Facilitating Sharing and Care Coordination**

The most direct output of IPCP, according to participants, is to *facilitate sharing* in the act of care coordination. While discussing how IPCP works to influence patient health outcomes, one participant said "Yes. That's why I help them ask the right questions. That's why we help them here. That's why we do that. That's why we have coordination of care letters. That's why we're permitted to call the medical doctor. That's why we teach them or refer them how to go and get dental care. That's why when the doctors work with them here, they'll refer them to a sleep disorder clinic or a nutritionist or audiologist or whatever they may need. The psychiatrists here do that. And then as a therapist, I help and work with them to ask the right questions because you can't get the right services if you don't ask the right questions". The idea is that healthcare

professionals who have attained IPCP are more willing to go the extra mile as described here for their patients: as this participant explains, they spend the time helping the patient understand what questions to ask when he or she encounters other healthcare professionals, helping to coordinate the care that the patient is receiving, and ensuring that patients get the appropriate referrals for their various problems.

But for this facilitation to happen, the textual data suggest that all healthcare stakeholders, including the patient, must *be part of the team*. In reference to a healthcare institution where IPCP is the norm and is making good care coordination possible, one participant stated "They're very good at it up there. They really know how to do it. They're very much into everybody is a part of the team". Being part of the team means that the voices of patients and of all healthcare team members are heard, not just those of healthcare professionals who historically have greater power within the healthcare system.

The ultimate result of having everyone be part of the team is an *improvement in the work environment*, which is critical to sustaining care coordination. Speaking of working in a collaborative work environment, one participant declared "And plus I think it just makes life easier. If there's something that I'm doing that I don't need the nurse or the medical assistant to do, then it frees their time to do something else that would be important because there's always something more to do. It's never ending", suggesting that she has come to appreciate importance of working in such an environment. The key message here is that participants felt that being part of the team makes it possible to better coordinate care because it improves the work environment, making it possible for healthcare professionals and patients to work together well.

*Coordination* was seen as the central factor linking the 19 identified *mechanisms of interprofessional impact on patient care outcomes*. Participants viewed *coordination* as care delivery in a highly contextual, specialty-dependent manner that facilitates information sharing for the purpose of effective decision-making. All 3 key aspects of care coordination that are important with regards to IPCP, i.e. *information sharing*, *decision-making*, and *care delivery*, are well represented in this quote and form a sequential pathway through which IPCP acts to influence patient care: "I had recent experiences with my kids, having same day procedures stuff, one last year the other earlier this year. And I see there's a difference though in pediatric care. I'm not sure if they're more concerned because they're caring for little kids or…it seems like they were more coordinated. We knew what to expect [*information sharing*]. We went from step A to step B to C [*care delivery*]. And the nurses were more forthcoming with explaining to us what to expect, the doctors and so on [*decision-making*]. I did think that it was way more coordinated than care for other populations". These themes are well represented elsewhere in the textual data. Regarding *information sharing*, one participant stated. "So if you imagine a care pathway – what do doctors and the team do? First, we gather lots of information which is usually assessments, screening". Here, the participant is suggesting that *information sharing* is the first step in the coordination of care.

Participants also identified 3 key aspects of information sharing that are critical to good care coordination: *information sharing needs*, *information sharing processes*, and *information sharing systems*. The first component, *information sharing needs*, deals with what patients need to truly be engaged in the process of getting better: "And then also for the patient, have the opportunity to ask questions, even when they go home, maybe

having a family member come with them to teach them about having to meet with the dietitian and learn about what diet they should be eating because most people don't know. I think that's like step one". Understanding what patients need to know so that they can be truly informed is the crux of this theme.

The second one consists of the steps healthcare professionals must take to make the sharing of information possible, such as writing clear notes in the patient's chart, and setting up team meeting to discuss and resolve patient care challenges. This is evident in the following participant's words: "More collaborative meetings and think groups like that, I think, are good to have in the health care setting". Finally, participants identified the need for different systems that can facilitate the *processes of information sharing*, such as good *information technology* and a *patient navigator*: "Not only that but for it to be meaningful for the patient, they have to have a way to communicate back. And they can do it through this central person who can act when necessary as an advocate for the patient to the team. So I think that's an important contribution". IPCP can influence all 3 elements of information sharing, and all are important to accomplishing good care coordination.

*Decision-making* is the next step in the pathway, and consists of the act of making choices regarding what to do for patient health and healthcare issues, and participants recognized that at the core of this process should be the patient: "[...] for them to make decision about their own care. So how do you know I manage my medications while I have to do all these dietary restrictions or what do I do about my discharge even when I have to wait for a bed to be delivered to my house or for the oxygen tank to be delivered. They need to see or they need the interprofessional collaboration to help them with

decision-making". Therefore, the conclusion is that IPCP can play a role in how decisions are made in healthcare, because it requires taking into account the patient's needs, as well as setting up the necessary systems and processes to make effective decisions possible.

*Problem-solving* is an inherent component of decision-making, especially in terms of using evidence-based approaches in all steps of patient care. This idea emerged very clearly in this study, and is captured in the following quote: "The second thing is that eventually when you get a group of people together to work on a separate situation and a problem, after so much brainstorming, better solutions are then made aware of and then you can start seeing which of those better solutions of course are going to be a part of it". This participant is pointing out the idea that bringing people (i.e. healthcare professionals, patients and families) together to solve a problem facilitates making better decisions about this problem. Thus, by making sure everyone is part of the team and improving the work environment, IPCP helps to facilitate the sharing of information, decision-making power and care delivery implementation, all of which are the key ingredients required for the effective coordination of care. Figure 15 below presents the thematic code tree for the dialectically related categories of facilitating sharing and care coordination.

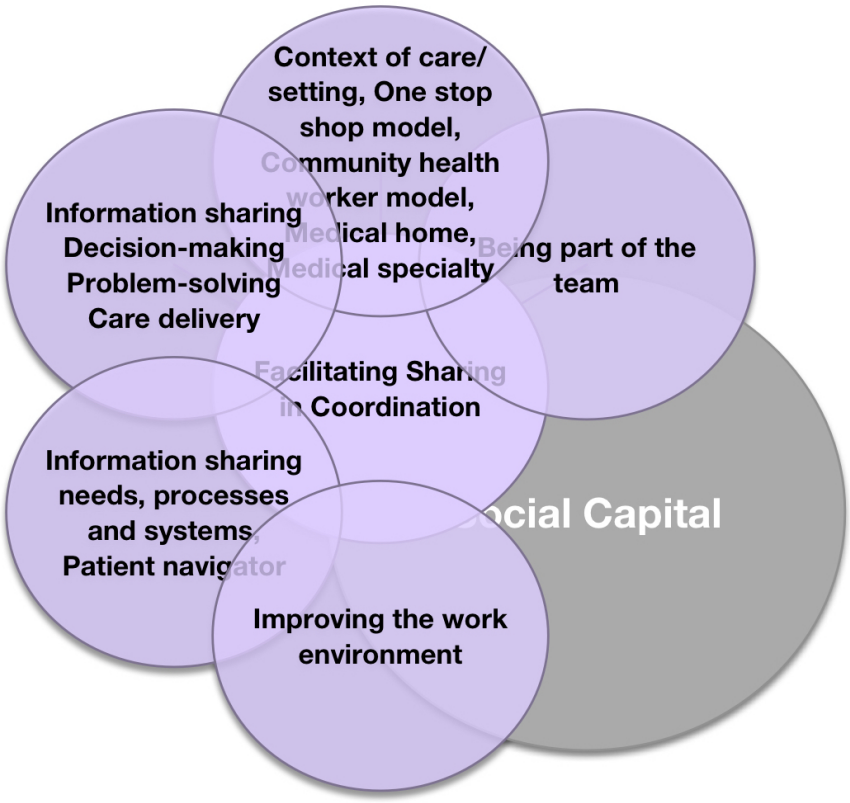


**Figure 15.** Visual code tree for the theoretical categories of facilitating sharing and care coordination.

**Enhancing Reciprocity and Patient Care**

When participants belong to teams collaborating in an improved work environment, it becomes possible to *enhance reciprocity* in patient care. The idea that emerged from this study is that when care is well coordinated, in all the ways described above, both patients and healthcare professionals become more committed to doing everything they can to ensure optimal outcomes. “They have confidence in us, they have faith in us, and they follow through because we follow-up. Have you been to the eye doctor? Did you go to the dentist? Remember we talked about that? Did you get your flu shot?” is a concise statement of what participants felt can happen when there is reciprocity within healthcare teams. They believe that when all members of the

healthcare team reciprocate in their respective tasks in healthcare, then it become possible to achieve optimal patient care.

They also identified two key elements required to make this enhanced reciprocity possible: the need to *work together over time*, and to *hold each other accountable*. For the former, one participant put it best when she said: “It means that obviously it's not just one profession taking care of patients. There are a lot of professions taking care of patients, and it means that instead of all acting like we are independent and our work doesn't affect each other and affect the patients, that we actually are cognizant of the fact that it does, and that we kind of make the conscious effort to work together”. This quotes captures an important element of how collaborative practice actually works: it is a process that requires people to get to know each other over time, so that they can learn to be comfortable with each other and thereby will be more likely to reciprocate. This means that, in particular, patients must become part of stable healthcare teams, whereby the same healthcare professionals are tending to their needs and understand the nuances of their lives, perceptions, attitudes and behaviors.

In addition to working together over time, the need to hold each other accountable was expressed well in the following quote: “Well you want the nurse who's discharging that patient to be looking at this documentation, to feel that sense of responsibility to kind of say, okay, let me just make sure. We have your checklist. You're coming back at this time. Whoops, I don't see anything that would indicate why you need an antidepressant. Let me just go double check on that”. The idea here is that regardless of the traditional structures, roles, responsibilities and skills of healthcare professionals, good patient care means that all members of the healthcare team can serve as advocates

for the patient. That means if the nurse feels the doctor made a mistake in a prescription, he or she should feel accountable enough for the patient's care, health and wellbeing to step in and point out this potential error, even though traditionally it is not within his or her purview to question the doctor's decisions.

These two steps (i.e. holding each other accountable and working together over time) are absolutely essential to delivery of good patient care because they actualize what it means to provide good patient care. However, to understand what it means to achieve good patient care using IPCP, it became important to clearly define which aspects of patient care may be affected by IPCP and its output of coordination. *Patient care* consists of all the activities that healthcare professionals, patients and other stakeholders in healthcare do to ensure good patient health and system outcomes. One participant explained this very well: "In terms of from the moment the patient comes in the room to making them in a comfortable setting, giving them an appointment time that works around their schedule and also of course when we're open, when the facility is open, all the way down to when they meet with the nurse, the doctor, just making them comfortable, making them educated, making sure they know what's going on, what's to come, what's the risk".

In terms of the specific elements of patient care that can be affected by IPCP and improvements in care coordination, three principal themes emerged: *continuity* (which consists of both the *defragmentation of care* and the provision of *holistic care*), *adherence* and *institutional policies*. The importance of continuity of care, particularly the defragmentation of care, is emphasized here: "Well, now that I look back on it, as much as I like her primary care physician, I would probably go to maybe if they exist a

gerontologists, or maybe seek out a team, maybe a practice where there's a nurse practitioner or a PA who leads a team and coordinates a team say for someone who has dementia or someone who has diabetes, just someone who is familiar with the team concept. Because it really didn't matter who, whether it be the endocrinologist or the neurologist, but they just needed to speak to a team of other professionals to make a plan of care. They couldn't just make these silo plans of care". The issue of siloing of care has perennially plagued the healthcare system and continues to do so, and what this participant is pointing out is that patients do not like receiving care in a fragmented manner. Indirectly, she is also stating that healthcare professionals who understand and believe in collaborative practice cannot accept the status quo of fragmented care and must demand more of each other and of the healthcare system. *Defragmentation of care* is the concept of removing silos in care, where different healthcare professionals are not collaborating, and inpatient and outpatient healthcare institutions are not working together.

*Holistic care*, on the other hand, consists of addressing the health needs of the patient that do not depend on healthcare, such as social and spiritual needs. The following quote captures this well: "Like, that was totally holistic care. I mean sometimes they'll have like a social worker or somebody there to talk to them, but everybody was there. The chaplain was there. Everyone had a specialty and everyone was there, and I really felt like, you know, he got the best that everyone had to give, and that every part of his person, you know, was taken care of". Holistic care, therefore, can be thought of as what happens when individuals who are not traditionally considered part of the healthcare team (such as community leaders, faith healers and pastors, alternative medicine practitioners

and other atypical participants in the health and well-being process) are also reciprocating and providing the social, emotional and spiritual support patients need to get better and live well.

Finally, the importance of *institutional policies* with regards to provision of good patient care was a common theme among the majority of participants. Institutional policies consist of all the rules established by institutions (ex. hospitals, clinics, insurance companies) that govern the delivery of care. Participants felt that these policies themselves can be a major impediment to accomplishing changes in patient health outcomes via IPCP. This is well illustrated in the following quote, where the participant is discussing the role of institutional policies in the discharge planning process: “But sometimes we're handcuffed because the hospital kicks a patient out, and even though we [healthcare professionals] want them to stay, you don't really often get a choice. That's a tough one”. The conflict here is between hospital policies dictating relatively arbitrary rules and timelines for when patients are to be discharged, and healthcare professionals who are in the best position to understand what patients need to get better. This is a classic example of the failure of institutions to reciprocate to facilitate good patient care. Some participants even felt that IPCP itself can be either limited or facilitated by institutional policies, such as the reimbursement policies that pay based on the volume of patients seen by doctors, rather than the quality of care and health outcomes obtained by teams of healthcare professionals working together. Figure 16 below presents the thematic code tree for the dialectically related categories of enhancing reciprocity and patient care.

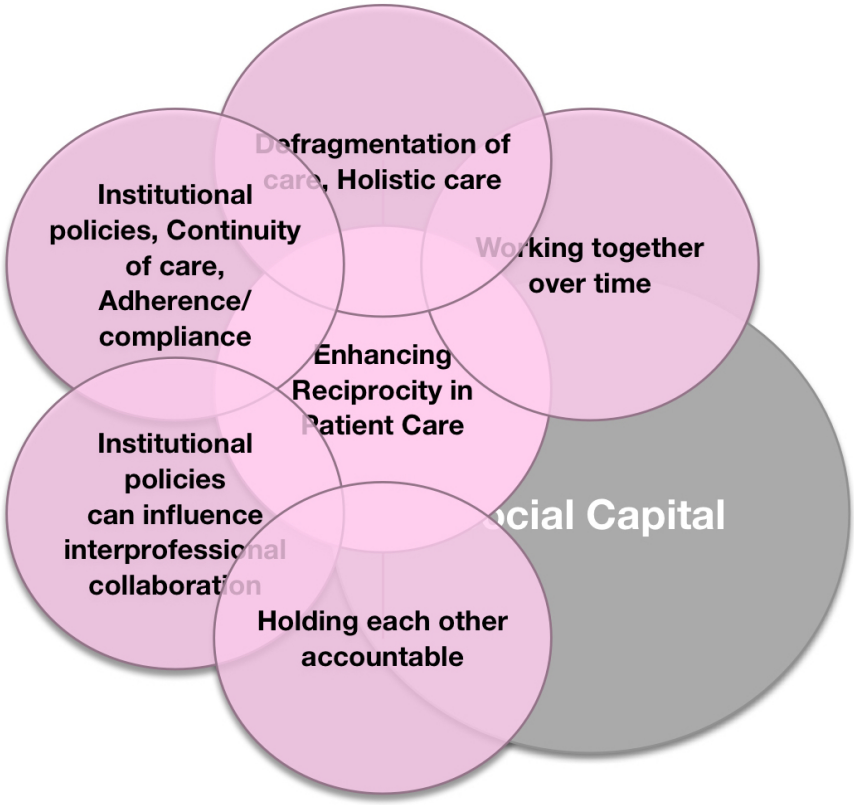


**Figure 16.** Visual code tree for the theoretical categories of enhancing reciprocity and patient care.

**Effecting Change and Common Goals**

Participants made it clear that interprofessionalism must be grounded in *common goals* that all providers can share. These goals ranged from *bringing efficiency to the healthcare system* to *improving patient outcomes*. The first common goal is well captured by the participant who said "I think overall the system is much more efficient from you know [interprofessional collaboration]…and also it removes a lot of frustration. From the patients' end, they perceive it as an effective system that works". Making the healthcare system more efficient means that for the same amount of resources used per capita to care for a patient, better health outcomes were achieved and the patient had a better experience of care. A number of themes emerged relating to the need to improve

efficiency, including: *length of stay*, *discharge* planning, *saving time*, *readmission* and overall healthcare *cost reduction*. The following concise statement represents the second common goal well: "patient outcomes are better if people work together". The patient outcomes that were explicitly discussed by participants include: the rate of *errors and disease complications*, *patient anxiety*, *patient satisfaction*, as well as *quality of life, health and wellbeing*.

Participants agreed that improving these and other patient outcomes was to be the mantra of interprofessional collaboration. They also emphasized that *effecting change* in either patient health or system outcomes will be the fundamental element that helps sustain interprofessional collaboration. This participant captures that idea extremely well: "And it is a process because you're going from a certain way of delivering health care to a different way, so it's always a little painful to change. But I have to say, everyone wants those changes because they want the outcomes. So they're willing to make those changes". Thus, the fact that all healthcare professionals believe that it is important to work to improve patient health and system outcomes is a strong motivating force to work together in the first place.

In addition, they also distinguished between *objective outcomes* and *subjective outcomes*. The objective outcomes emerged as the clearest and most important factors of interest for healthcare professionals: "Initially, it was a little bit from the physician's point of view how you will decide what I'm going to do. But now, they came to the – probably because the outcomes are better – they're more accepting the team recommendation. And I feel it's getting better, it's getting much better". Ultimately, participants felt that improving the *objective outcomes* (ex. those related to patients' health outcomes and the

healthcare system's function) would lead to improvements in the *subjective outcomes* (such as healthcare professionals' satisfaction with their work). The following quote illustrates that idea very well: "So I think aside from the time, I haven't noticed anything wrong because I think it makes life easier. It truly does. The change, yeah, makes it hard. But when you actually do it and you do it correctly, the members of the team at least feel like they're making a difference, and I think that's just rewarding in itself". This participant has concluded that achieving improvement in the objective outcomes facilitates improvement in the subjective outcomes, which in turn will provide an impetus for continuing to do support, promote and partake in interprofessional collaboration. In this way, the elements of the conceptual model feed back into themselves: IPCP improves care coordination, which leads to better patient care, and that improves objective and subjective outcomes, thereby making the further attainment of IPCP even more important to all healthcare stakeholders. Figure 17 below presents the thematic code tree for the dialectically related categories of effecting change and common goals.

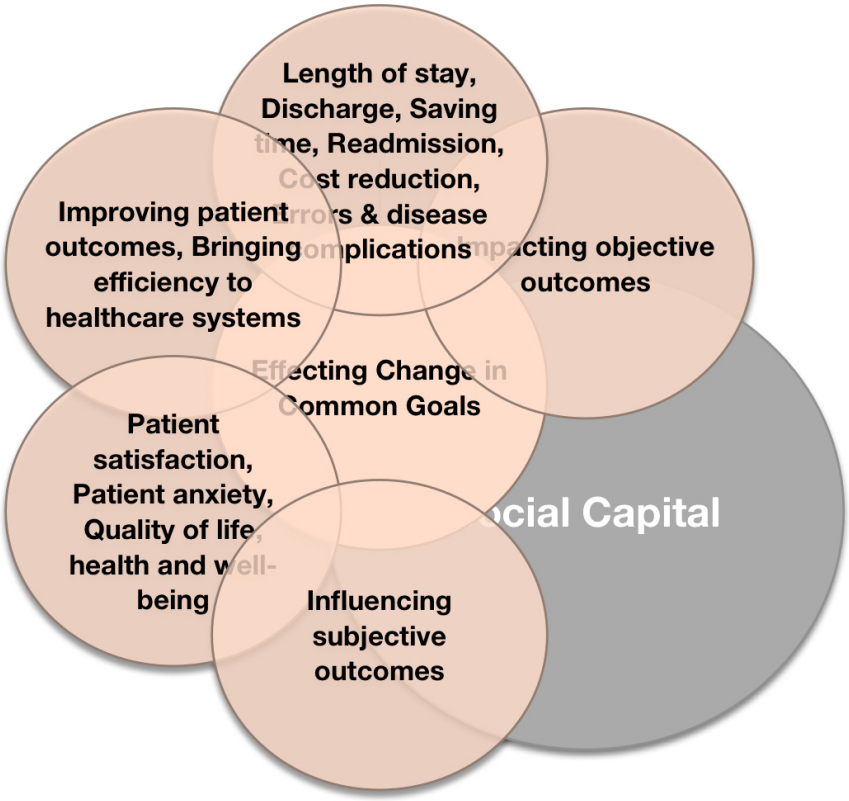


**Figure 17.** Visual code tree for the theoretical categories of effecting change and common goals.

**Population and Systems Disparities in Health and Healthcare**

The analysis revealed that participants' views on disparities in health and healthcare can be categorized as those affecting the *healthcare system* and those affecting *individuals, groups or populations of patients*. The following quote illustrates one major concept that the participants identified, which is that the *healthcare system treats its stakeholders (that is, patients and health professionals) differently*: "…I think it's more about if you know the system where you're going into it really makes a huge difference. That's why I would say that if I have used their services in the past they were good, and if they were not good I had the ability to speak to somebody who was responsible for those services. So I think it was a little bit different for me. So I don't think I can put in any of

that in there". Healthcare professionals are treated different when they become patients, which is a stark contrast to how the healthcare system behaves towards patients, and this participant is pointing this out as a potential problem for the ability of team members to work together. The inherent power differential that exists in this context is a potent impediment to collaborative relationships.

Another participant emphasized that the healthcare system even treats healthcare professionals differently from each other, depending on the context of their practice. She emphasized that there are *differential support systems even regarding the facilitation of teamwork*: "I am probably looking at it a different way though. Because what I am thinking in my mind is that the provider…and I've worked in a lot of underserved areas, and what I realize is that they don't have the same support system, they don't have the same amount of people to collaborate with". This participant is describing how in some settings, such as in urban disadvantaged neighborhoods, even healthcare professionals who are motivated to collaborate to improve health and system outcomes may not find the teams they need to successfully accomplish these important goals.

With regards to *patient individual, group or population disparities*, there is a strong emphasis on the role of socioeconomic status on patient adherence to care via *denial of access to care*, *learned helplessness*, *presentation at advanced stages of disease,* being *forced to choose between life and health*, and *induction of provider frustration*. The following quote captures the first three of these ideas simultaneously: "And I'll tell you a story, someone I know, he had prostate cancer, and they did the…at the time they did a PSA it was positive. He went to a clinic because he didn't have money…he was sent to a private person and they wanted $3500 or whatever he couldn't

afford it, so he ended up going to a clinic and he got like a 6-month I don't remember but it was a long waiting time for the appointment, and he just said you know…when it was time, they cancelled because the person was either sick or couldn't…so he just said 'I'm not going to be bothered'. So he never bothered to go. By the time he came to the clinic I was at he was…he was really like really advanced stage of cancer". Thus, this patient was ultimately denied access to the early care he needed to catch the prostate cancer at an early stage, which might have made it possible for him to be cured. Instead, after repeated attempts to get care and being unable to pay for this necessary care, he gave up and stopped trying to seek care. This story poignantly captures the struggles of disadvantaged patients trying to get help and get well in a healthcare system and society whose predominant interest seems to be capitalistic.

Participants felt that as a result of the numerous challenges to care that disadvantaged patient face, they often *do not even have the expectation* that healthcare professionals should be collaborating as a matter of course to help them. This idea is captured well in the following quote: "No, I don't think a lot – I'm angry as a health care professional – I don't think a lot of patients are angry because they don't even know that that kind of collaboration should be occurring, and I think they should be angry. I think they should have an expectation that it's not 100% on them. It's hard to consider your own health outcomes and think about how they could have been improved by interprofessional collaboration when you don't have an expectation of interprofessional collaboration. If you never thought that it was possible for the pharmacist to call the doctor and say that this prescription isn't covered, then why should you be angry when you never got your prescription and now you're in a bad state? Right? If you didn't know that it should have

happened, how can you be angry that it didn't happen"? This healthcare professional in essence is saying that many patients are unaware that collaborative practice should be happening and should be the norm, and because of this they are unaware that they can and should demand that the healthcare professionals who serve them adopt this healthcare approach.

Many healthcare professionals felt that there is an *empathy gap*, both within the healthcare system as well as in the broader society, with regards to how people feel about disadvantaged patients. This gap then leads to differential treatment of patients based on their disadvantaged background, whether socioeconomic, racial or otherwise. For example, one participant discussed how this can affect healthcare professionals' attitudes during patient care: "And another big one is our clear disregard for families [at University Hospital in Newark], more so I think in urban populations than Barnabas or rich white hospitals. I think they're more sensitive to family needs there than they are here. Families are seen as a problem, not as the patient family. You know, they're oh, no, the wife is coming, she's going to ask me questions, that kind of stuff." The disparity between how urban disadvantaged patients and their families are treated, as compared to wealthier patients living in other neighborhoods, could not be made more clear.

The role of socioeconomics in *forcing patients to choose between life and health* was captured in a short exchange between several participants: "They can't afford to go see all these people…And sometimes they don't have the time. They have demands with family at home, they don't have the time to go to these various places, they have to pick and choose…And the finances as well. They tell you they have to buy food or go pay for this [medication]…food is more important". Another fundamental idea that emerged is

that many urban disadvantaged patients tend to have *complex problems* that may or may not be health-related but do interfere with the optimization of their health outcomes: "Because I think poverty, what happens a lot of times, I think some of the people that they might be getting treatment as the patient, it's not just asthma or COPD or a heart or whatever that's going wrong. There are so many other things that are at the table when they come". As this participant describes, the challenge for healthcare professionals and the healthcare system is how to successfully help address the full complexity of these types of problems, so that the ultimate goal of improving health outcomes becomes feasible.

Participants also identified several disparities in patient care. They believe that *care tends to be more fragmented* in certain patient populations, and this is made clear here: "I agree with X and I was actually gonna talk about the umm low income, underserved, a lot of them are urban inner city populations, tend to not be insured so they go to the emergency room for a lot of their care and this is probably one of the least coordinated specialties in health care. There's no follow-up. It's not like when you go to your primary care doctors and they call you to follow-up to see how you're doing on your meds or anything like that. So it becomes even more fragmented". The conclusion here is that, because of the socioeconomic challenges that urban disadvantaged populations face, they are unable to participate in the healthcare system in a way that would allow them to maintain continuity in their care. This fragmentation of care is thought to induce substantial *frustration for healthcare professionals*. One participants made this evident when she stated: "follow-up is key, because in a lot of underserved populations, phone numbers are constantly changed, addresses are…so even following up to give them

updates or to tell them what the next step should be becomes very frustrating for the providers". Thus the challenges of the urban setting do not solely impact the patient: they also frame the perceptions of healthcare professionals who work in that setting.

The presence of *collaborative resource limitations requires role adaptations* for healthcare professionals caring for these patient populations. A colloquial exchange between participants captured this stark phenomenon: "yeah, you become the nurse who teaches about diet too because you don't have a dietitian, or you may actually take a part in the social worker's role or the case management. So you do end up extending your role…P1: And also your time with the patient…P3:…even the doctors extend their role. They start doing the things they probably shouldn't be doing or…are not used to doing (chuckles). P1: So you're the nutritionist, the educator, the social worker, and more". As a result, nurses may find themselves doing the traditional tasks of social workers, and physicians may have to perform tasks that are traditionally considered to be within the purview of nursing. The humor that these participants clearly derived from describing this phenomenon is a tell tale sign that not only they are familiar with this struggle themselves, but also that they do understand that the traditional hierarchies of healthcare make it particularly difficult for team members who face this challenge to meet it successfully. Nevertheless, the more important message from this quote may be that IPCP can serve as a tool for facilitating these role adaptations, and it can help ensure that the healthcare team is receptive to the needs of the patient as well as the available resources of the care setting.

Another major source of disparity is that disadvantaged patients tend to harbor a greater *lack of trust* in healthcare professionals or the healthcare system than those who

do not face these challenges. Participants believe that this limits the effectiveness of interprofessionalism in its goal of improving patient outcomes: “Now you’re talking about even underserved populations where they…there is…there are a lot of examples around mistrust because “we don’t have healthcare services”, “we don’t have doctors around us”, “we have to wait 3 months to get an appointment” and things like that. So that just contributes to the disparities and prevents people from getting into practices that may have interprofessional collaboration and may actually provide good outcomes”. It is well known that there are a number of historical injustices that have been committee against urban disadvantaged patients, particularly Black and Latino populations, which have damaged their trust in the healthcare system and by association in the healthcare professionals who work with them.

Healthcare professionals even felt that this *lack of trust can often influence patients’ willingness to share information and to adhere* with prescribed care plans. Speaking from the perspective of a patient facing severe socioeconomic challenges and mistrusting healthcare professionals, one participant stated “And I brought this up a couple of times. If I had the option to know if I had cancer or didn't have cancer, which would I choose? I would chose not to know, and that's my fear. Even though in the back of my head, I know that that's the wrong decision, I'd still go with it. If I got a super pain in an area, am I going to go to a doctor”? This participant is making the point that when patients have lost trust in the healthcare system, they have a tendency to not be as forthcoming with information that may be relevant to their care. This poses yet another serious challenge to patient care. Figure 18 below presents the thematic code tree for the

dialectically related categories of population and systems disparities in health and healthcare.

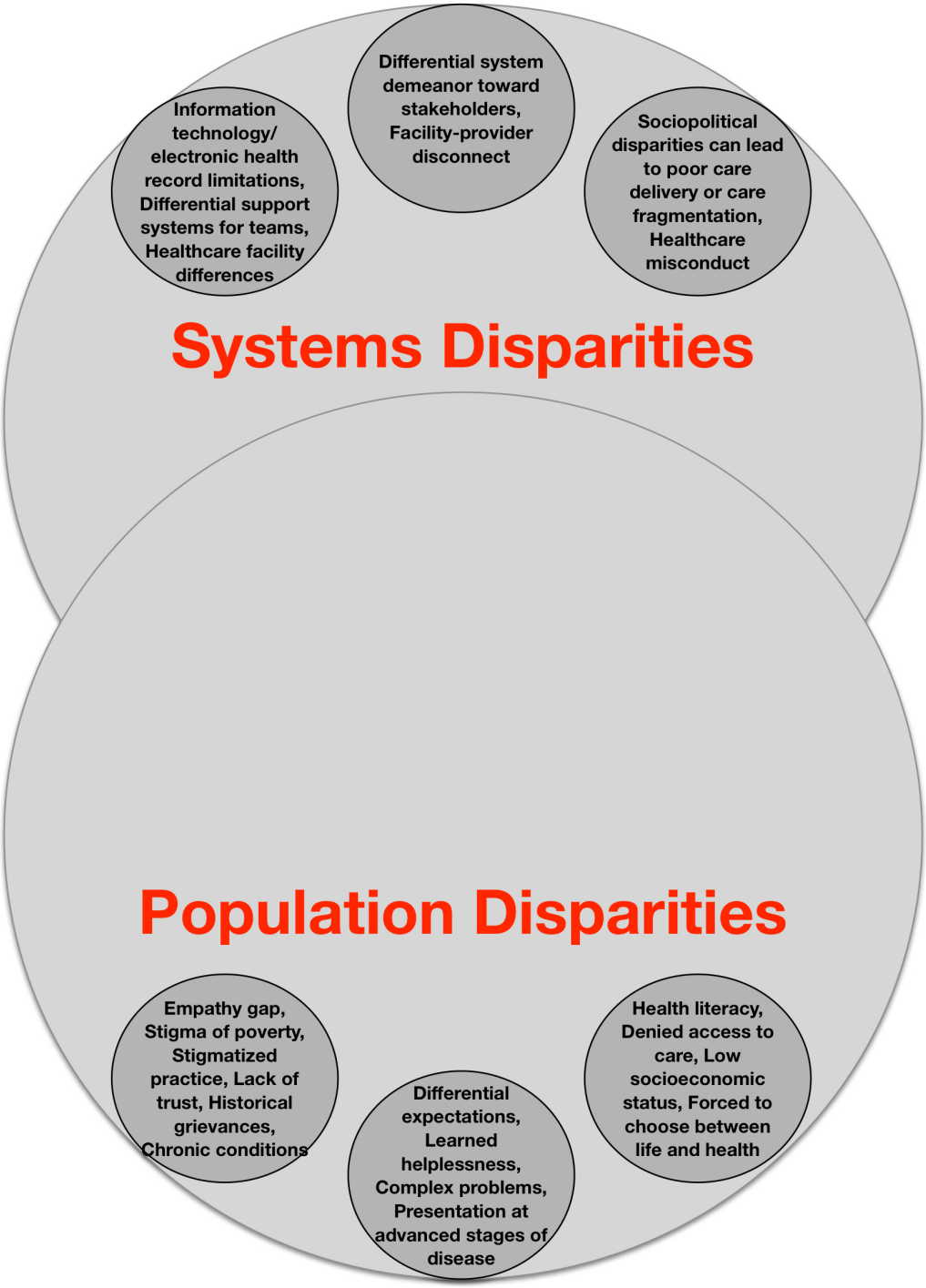


**Figure 18.** Visual code tree for the theoretical categories of population and systems disparities in health and healthcare.

**The Conceptual Model: Reloaded After Grounded Theory**

Below is a re-envisioning of the theoretical model regarding the relationship between IPCP and patient health outcomes in urban settings, compared to what the prior systematic review and meta-synthesis had revealed about the model as it existed heretofore in the interprofessional care literature (Jadotte, 2015). Themes that are new relative to the existing literature are underlined for emphasis.

**Interprofessional collaborative practice** (which consists of effective **communication**, **teamwork**, **appreciation for different specialties** and **diversity** in professional knowledge and skills) occurs when all healthcare stakeholders learn to **trust** each other. This requires **overcoming entrenched attitudes** and **looking beyond traditional hierarchies** in healthcare. Achievement of IPCP leads to improvements in the **coordination** of care, including better **sharing of information**, **decision-making** and **care delivery** modeling. These are made easier because when IPCP is established, **everyone is part of the team** (including the patient and family) and the **work environment is improved**. This then helps to optimize **patient care**, including improved **continuity of care**, greater **adherence to care**, and implementation of more supportive **institutional policies**. All of these are possible because there is **enhanced reciprocity** among all healthcare stakeholders, which depends on **everyone working together over time** and **holding each other accountable** for patient care. Only when patient care is optimized in this way does it become possible to **effect change** in both **objective outcomes** (such as **patient health outcomes** and **system efficiency**) and **subjective outcomes** (such as greater satisfaction among healthcare professionals and patients), all of which are goals shared by all healthcare stakeholders. A number of **system disparities**

(i.e. **differential system demeanor toward stakeholders, facility-provider disconnect, healthcare misconduct, information technology/electronic health record limitations, differential support systems for teams, healthcare facility differences, sociopolitical disparities that can lead to poor care delivery or care fragmentation**) and **population disparities** (i.e. **empathy gap, lack of trust, differential expectations, complex problems, low socioeconomic status**) impede the achievement of better health outcomes via interprofessional collaborative practice for urban disadvantaged populations.

## Phase II Report: Results

This phase of the dissertation study consisted of a cross sectional survey of the perceptions of healthcare professionals on the relationship between IPCP and patient health outcomes in the urban setting, with a focus on disadvantaged populations, as elaborated by the qualitatively-derived conceptual model. Descriptive statistics are presented first to examine the demographic characteristics of the respondents as well as the nature of the outcome variables, followed by statistical testing of the association between each outcome and the demographic variables. The results conclude with an assessment of the final theoretical model using multivariable linear regression to control for the influence of all covariates.

### Descriptive Statistics

#### Demographics Variables

The frequencies for the 7 categorical variables, and the means with SD for the 2 ordinal variables treated as continuous are presented in tables G2 and G3, appendix G. As can be seen in these tables, the great majority of participants (83.3%) have been involved

in patient care for at least 6 months since completing their educational training and most (84%) have participated in an IPE, IPP or IPO activity at some point in the past. This suggests that the sample primarily included participants who are familiar with patient care and with the phenomenon of IPCP. Also most of the participants in this sample (76%) did use an electronic health record system in their daily work tasks. Regarding the type of healthcare setting, almost half (47.3%) of the respondents stated that they work in an academic medical center, which was expected as this was the primary clinical care setting for the chosen site (Rutgers Biomedical and Health Sciences-Newark and New Brunswick). While a substantial proportion (23.3%) of participants identified their healthcare setting as other, the distribution of participants among the remaining types of healthcare settings was fairly even: 12.7% work in a public outpatient practice, 9.3% work in a community-based hospital, and 7.3% are located in a private outpatient practice setting.

Close to half (42%) of the respondents could not identify the type of care delivery model in place at their primary work setting and therefore selected the category of "other". This suggests that there was either wide variation in the care delivery models in place at the site of the study, or that the question needed to list more categories of delivery models to choose from. Regardless, 25.3% of the participants identified the traditional physician-led fee-for-service model as being in place at their work site. A large proportion (17.3%) identified the ACO model, while smaller proportions stated that they delivery care in the patient centered medical home (PCMH) model (9.3%) or the nurse managed health clinic (NMHC) model (6%).

A large proportion of participants (44%) had gross annual incomes in the range of $50,000 to $99,999. The next two largest income groups consist of those making less than $50,000 (22.7%) and those making between $100,000 and $149,999 (16%) per year. The participants who were earning between $150,000 and $199,999, between $200,000 and $249,999, and greater than $250,000 were small (6%, 4.7%, and 6.7%, respectively). In addition, there was substantial variation in the length of time that participants had worked with urban disadvantaged population: the mean number was 11.2 years, with a SD of 11.2 years. There was less variation in the level of professional satisfaction: the mean score was 7.9 with a SD of 1.6.

Finally, the proportions of participants in the sample categorized by the type of healthcare profession are presented in Table 12 below. Note that while the exact real world proportions of each type of profession were not achieved as originally planned in the proposal, and while this difference is statistically significant, all the different types of professions were represented in the sample. Note also that one of the cells in the table violated one of the key assumptions of the chi square test (i.e. the need to have at least 5 cases within each cell), which was an important limitation of this significance test result. Nevertheless, it is worth noting that most professions were actually overrepresented in this sample, except the professions of pharmacy and, in particular, nursing. Exact reasons for a low response rate in these groups remain unclear, but some plausible ones are discussed in the limitations section.

**Table 12.** Actual vs. expected proportions of the types of healthcare professions.

| Type of Health Professional | Actual Number in Sample | Expected Number in Sample |
|---|---|---|
| Physicians | 45 | 25 |
| Registered Nurses | 31 | 75 |
| Pharmacists | 2 | 9 |
| Dentists | 10 | 7 |
| Public Health Workers | 16 | 3 |
| Allied Health Workers | 46 | 31 |
| **TOTAL** | **150** | **150** |

**Outcome Variables**

The mean score for most variables was above 4, the median for most variables was either 4 or 5, and the mode for all variables was 5. This demonstrated that the data was substantially left skewed, which can also be seen in the histograms for the outcomes located Appendix G, Figure G3. In practical terms, this pattern suggested that respondents overall tended to either agree or strongly agree with the statements posed regarding the phenomenon of interest. Table 13 below is a ranking of these variables, based on the mean score, presented in the order they are found in the survey instrument, while table 14 is a ranking of these variables based the mean scores listed from highest to lowest. When variables had the same mean score, they were ranked higher if they had a lower standard deviation.

**Table 13.** Ranking of the outcome variables based on the mean scores.

| Outcome | Mean (SD) | Ranking |
|---|---|---|
| Teamwork among all healthcare professionals is essential in making decisions for patient care. | 4.58 (0.735) | 6 |
| Teamwork among all healthcare professionals is essential for sharing information with patients and families. | 4.52 (0.775) | 16 |

| | | |
|---|---|---|
| Effective communication among all healthcare professionals is essential for care coordination. | 4.73 (0.675) | 1 |
| Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. | 4.72 (0.667) | 2 |
| Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. | 4.28 (0.898) | 30 |
| Effective communication among all healthcare professionals improves how well information is shared with patients and their families. | 4.54 (0.774) | 10 |
| Effective communication among all healthcare professionals improves patient satisfaction. | 4.48 (0.800) | 21 |
| Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. | 4.52 (0.766) | 15 |
| Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. | 4.67 (0.730) | 3 |
| Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families. | 4.53 (0.739) | 13 |
| When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. | 4.56 (0.773) | 9 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. | 4.49 (0.739) | 18 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. | 4.44 (0.755) | 24 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. | 4.23 (0.853) | 31 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. | 4.57 (0.689) | 7 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. | 4.17 (0.896) | 35 |
| The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. | 4.53 (0.721) | 12 |
| Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. | 4.58 (0.707) | 5 |
| When all healthcare professionals clearly understand and | 4.49 | 19 |

| | | |
|---|---|---|
| appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. | (0.740) | |
| When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. | 4.35 (0.786) | 27 |
| When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | 4.48 (0.712) | 20 |
| When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | 4.40 (0.786) | 25 |
| The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. | 4.50 (0.730) | 17 |
| Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. | 4.23 (0.883) | 32 |
| Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). | 4.15 (0.922) | 36 |
| Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. | 4.19 (0.872) | 34 |
| The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. | 4.33 (0.839) | 28 |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. | 4.47 (0.808) | 22 |
| Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patients. | 4.64 (0.638) | 4 |
| Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practice and dentistry). | 4.53 (0.720) | 11 |
| Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to the | 4.53 (0.739) | 13 |

| | | |
|---|---|---|
| other). | | |
| The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. | 4.21 (0.971) | 33 |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. | 4.57 (0.755) | 8 |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. | 3.91 (0.999) | 38 |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. | 3.99 (1.036) | 37 |
| Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. | 3.67 (1.109) | 39 |
| Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. | 4.31 (0.891) | 29 |
| I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. | 4.45 (0.729) | 23 |
| I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. | 4.38 (0.748) | 26 |

**Table 14.** Ranking of the outcome variables based on the mean scores, from the highest to the lowest value.

| **Outcome** | **Mean (SD)** | **Ranking** |
|---|---|---|
| Effective communication among all healthcare professionals is essential for care coordination. | 4.73 (0.675) | 1 |
| Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. | 4.72 (0.667) | 2 |
| Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. | 4.67 (0.730) | 3 |

| | | |
|---|---|---|
| Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patients. | 4.64 (0.638) | 4 |
| Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. | 4.58 (0.707) | 5 |
| Teamwork among all healthcare professionals is essential in making decisions for patient care. | 4.58 (0.735) | 6 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. | 4.57 (0.689) | 7 |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. | 4.57 (0.755) | 8 |
| When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. | 4.56 (0.773) | 9 |
| Effective communication among all healthcare professionals improves how well information is shared with patients and their families. | 4.54 (0.774) | 10 |
| Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practice and dentistry). | 4.53 (0.720) | 11 |
| The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. | 4.53 (0.721) | 12 |
| Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families. | 4.53 (0.739) | 13 |
| Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to the other). | 4.53 (0.739) | 13 |
| Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. | 4.52 (0.766) | 15 |
| Teamwork among all healthcare professionals is essential for sharing information with patients and families. | 4.52 (0.775) | 16 |
| The interprofessional competencies (i.e. teams/teamwork, | 4.50 | 17 |

| | | |
|---|---|---|
| roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. | (0.730) | |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. | 4.49 (0.739) | 18 |
| When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. | 4.49 (0.740) | 19 |
| When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | 4.48 (0.712) | 20 |
| Effective communication among all healthcare professionals improves patient satisfaction. | 4.48 (0.800) | 21 |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. | 4.47 (0.808) | 22 |
| I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. | 4.45 (0.729) | 23 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. | 4.44 (0.755) | 24 |
| When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | 4.40 (0.786) | 25 |
| I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. | 4.38 (0.748) | 26 |
| When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. | 4.35 (0.786) | 27 |
| The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. | 4.33 (0.839) | 28 |
| Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. | 4.31 (0.891) | 29 |
| Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. | 4.28 (0.898) | 30 |

| | | |
|---|---|---|
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. | 4.23 (0.853) | 31 |
| Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. | 4.23 (0.883) | 32 |
| The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. | 4.21 (0.971) | 33 |
| Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. | 4.19 (0.872) | 34 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. | 4.17 (0.896) | 35 |
| Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). | 4.15 (0.922) | 36 |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. | 3.99 (1.036) | 37 |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. | 3.91 (0.999) | 38 |
| Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. | 3.67 (1.109) | 39 |

**Bivariate Statistics**

A number of interesting relationships were identified in this study. For the sake of brevity, only those showing statistical significance will be discussed. Non-statistically significant results are not discussed here but are presented in Appendix K, Tables K1-K3. For the sake of organizational clarity, all bivariate statistical test results are classified

based on each outcome and its association to the given predictors. Table 15 below contains a discussion of each of these relationships. Note that the reporting of an effect size was possible only for the relationship between the outcomes and 2 predictors (i.e. the number of years served in urban settings and level of professional satisfaction). This is because the statistical test used in these two cases is Spearman's rho, which provides a correlation coefficient as an effect size. All other statistical tests (i.e. Kruskal Wallis and Mann Whitney) do not provide effect sizes. The statistical significance results for each of these bivariate statistical tests are summarized in Table 16 below.

**Table 15.** Discussion of the statistically significant relationships between each of the 39 outcomes and the 9 demographic predictors, using bivariate statistics.

| **Outcome** | **List of predictors showing a statistically significant association, with effect sizes when relevant** |
|---|---|
| Teamwork among all healthcare professionals is essential in making decisions for patient care. | • Positive association with the level of professional satisfaction (coefficient 0.165)<br>• Association with the type of healthcare profession |
| Teamwork among all healthcare professionals is essential for sharing information with patients and families. | • Positive association with the level of professional satisfaction (coefficient 0.163)<br>• Association with the type of healthcare profession<br>• Association with the gross annual income |
| Effective communication among all healthcare professionals is essential for care coordination. | • Association with the type of healthcare profession |
| Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. | • Positive association with the number of years having worked with urban disadvantaged population |

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| | (coefficient 0.190)<br>• Association with prior participation in IPCP activity |
| Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. | • Association with work in patient care for at least 6 month<br>• Association with the use of an electronic health record |
| Effective communication among all healthcare professionals improves how well information is shared with patients and their families. | • Association with the type of healthcare delivery model |
| Effective communication among all healthcare professionals improves patient satisfaction. | None |
| Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. | None |
| Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. | None |
| Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families. | None |
| When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. | • Association with prior participation in IPCP activity |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. | • Positive association with the level of professional satisfaction (coefficient 0.182) |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. | None |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. | • Positive association with the level of professional satisfaction (coefficient 0.199)<br>• Association with the type of healthcare profession |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. | • Positive association with the level of professional satisfaction (coefficient 0.272) |

| | |
|---|---|
| | • Association with the type of healthcare profession<br>• Association with the use of an electronic health record |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. | None |
| The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. | • Association with work in patient care for at least 6 month<br>• Association with prior participation in IPCP activity |
| Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. | None |
| When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. | • Positive association with the level of professional satisfaction (coefficient 0.180)<br>• Association with the type of healthcare profession<br>• Association with the gross annual income |
| When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. | • Positive association with the level of professional satisfaction (coefficient 0.174) |
| When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | None |
| When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | None |
| The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. | • Positive association with the level of professional satisfaction (coefficient 0.259) |
| Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. | None |
| Difficulties in sharing information between different healthcare professionals and the broader healthcare | None |

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| system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). | |
| Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. | • Positive association with the level of professional satisfaction (coefficient 0.207) |
| The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. | • Positive association with the level of professional satisfaction (coefficient 0.185) |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. | None |
| Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patients. | • Positive association with the number of years having worked with urban disadvantaged population (coefficient 0.176)<br>• Association with prior participation in IPCP activity |
| Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practice and dentistry). | • Positive association with the number of years having worked with urban disadvantaged population (coefficient 0.186) |
| Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to the other). | None |
| The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. | • Positive association with the level of professional satisfaction (coefficient 0.195)<br>• Association with the type of healthcare profession |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. | None |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare | • Positive association with the level of professional |

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| professionals, which can limit their adherence to prescribed care plans. | satisfaction (coefficient 0.210) |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. | • Positive association with the level of professional satisfaction (coefficient 0.221)<br>• Association with use of an electronic health record |
| Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. | • Positive association with the level of professional satisfaction (coefficient 0.207) |
| Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. | None |
| I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. | • Association with the type of healthcare profession |
| I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. | None |

**Table 16.** Results of statistical significance testing for the relationship between each of the 9 demographic predictors and the 39 outcomes. Only p-values are shown here, and only for relationships where statistical significance was reached at an alpha of 0.05. Please refer to table 10 in the data analysis section for the full name and description of the variables. Outcome variables that have no significant relationships with any predictors are shaded in grey.

| **Var #** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |
|---|---|---|---|---|---|---|---|---|---|
| **10** | 0.016 | | | | 0.043 | | | | |
| **11** | 0.003 | | | | 0.046 | | | | 0.041 |
| **12** | 0.014 | | | | | | | | |
| **13** | | | 0.02 | 0.018 | | | | | |
| **14** | | 0.045 | | | | 0.038 | | | |
| **15** | | | | | | | 0.042 | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **16** | | | | | | | | | |
| **17** | | | | | | | | | |
| **18** | | | | | | | | | |
| **19** | | | | | | | | | |
| **20** | | | | 0.043 | | | | | |
| **21** | | | | | 0.026 | | | | |
| **22** | | | | | | | | | |
| **23** | 0.050 | | | | 0.015 | | | | |
| **24** | 0.045 | | | | 0.001 | 0.035 | | | |
| **25** | | | | | | | | | |
| **26** | | 0.038 | | 0.029 | | | | | |
| **27** | | | | | | | | | |
| **28** | 0.000 | | | | 0.028 | | | | 0.011 |
| **29** | | | | | 0.033 | | | | |
| **30** | | | | | | | | | |
| **31** | | | | | | | | | |
| **32** | | | | | 0.001 | | | | |
| **33** | | | | | | | | | |
| **34** | | | | | | | | | |
| **35** | | | | | 0.011 | | | | |
| **36** | | | | | 0.024 | | | | |
| **37** | | | | | | | | | |
| **38** | | | 0.031 | 0.001 | | | | | |
| **39** | | | 0.023 | | | | | | |
| **40** | | | | | | | | | |
| **41** | 0.004 | | | | 0.017 | | | | |
| **42** | | | | | | | | | |
| **43** | | | | | 0.010 | | | | |
| **44** | | | | | 0.007 | 0.029 | | | |
| **45** | | | | | 0.011 | | | | |
| **46** | | | | | | | | | |
| **47** | 0.036 | | | | | | | | |
| **48** | | | | | | | | | |

**Multivariable Linear Regression**

To fully answer the research question, a multivariable linear regression model was performed for each of the 39 outcomes. The goal was to determine whether there was an association between the demographic predictors and the outcomes. Because this study was exploratory in its character, there was no single variable identified *a priori* to serve

as the main predictor of interest, which would have allowed the determination of which of the other predictors would act as covariates that would be controlled for in the regression analysis. As such the decision of which predictor serves this role was made *a posteriori*.

The main predictor of interest that was selected for this purpose in this dissertation project is the number of years participants have worked with disadvantaged populations. The reasoning for this choice was that one of the goals of this study was to build as generalizable a conceptual model as possible regarding the phenomenon of interest. A key component of this is to ensure that the perspectives of the participants in this study, most of whom have worked with urban disadvantaged populations in the past, were not unique to the experience of having worked with the disadvantaged patient populations who inhabit the urban setting. Therefore, for all regression analyses in this study, the question being answered was as follows: *controlling for all given plausible confounders identified in this study, is there an association between the number of years healthcare professionals have worked with urban disadvantaged patient populations and their perceptions of the relationship between IPCP and patient health outcomes*?

During the performance of the multivariable linear regression tests, a number of assumptions were found to be violated. For example, none of the outcomes variables were found to be normally distributed, and all transformations attempted (including log base 10, natural log, and square root) did not yield normally distributed data. The normality of errors assumption was violated for a few of the outcome variables, and could not be corrected with the above stated transformations. However, since the sample

size is relatively large (Li, Wong, Lamoureux, & Wong, 2012; Lumley, Diehr, Emerson, & Chen, 2002), the model may still be valid.

There was no evidence of multicolinearity in the model for any of the regression analyses, as the tolerance values were greater than 0.2 and the variance inflation factor values were less than 10 (Harrell, Lee, & Mark, 1996). This suggested that the independent variables were not highly correlated with one another, which was beneficial for the validity of the regression models and the variables included in them. Lastly, there was no theoretical basis for selecting variables that may have an interaction (Harrell et al., 1996). Thus, no interaction terms were created for these regression analyses. Despite these challenges and limitations, the regression models were still carried out to demonstrate competence in this approach to data analysis and interpretation.

All regression models include the 9 predictors, as there is currently no known theoretical basis in the literature for linking specific subsets of these predictors to each outcome. Absence of statistical significance, despite having a reasonably powered sample, was considered suggestive that it is unlikely that there is an association between the healthcare professionals' personal characteristics and their perceptions on the phenomenon under study. Only statistically significant findings are discussed here. Non-statistically significant results are not discussed here but are presented in Appendix L, which also contains the results of all diagnostic tests for the regression models. Table 17 below summarizes the results of these multivariable linear regression models, while table 18 reports the p values for associations that are statistically significant at the alpha level of 0.05.

**Table 17.** Discussion of the statistically significant relationships between each of the 39 outcomes and the 9 demographic predictors, using multivariable linear regression.

| **Outcome** | **List of predictors showing a statistically significant association, with effect sizes (i.e. regression coefficients) when relevant** |
|---|---|
| Teamwork among all healthcare professionals is essential in making decisions for patient care. | • Overall model not significant<br>• Positive association with level of professional satisfaction (0.075)<br>• Negative association with gross annual income (-0.118) |
| Teamwork among all healthcare professionals is essential for sharing information with patients and families. | • Overall model not significant<br>• Negative association with type of profession (-0.094)<br>• Negative association with gross annual income (-0.112) |
| Effective communication among all healthcare professionals is essential for care coordination. | None |
| Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. | None |
| Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. | None |
| Effective communication among all healthcare professionals improves how well information is shared with patients and their families. | None |
| Effective communication among all healthcare professionals improves patient satisfaction. | None |
| Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. | None |
| Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. | None |
| Interprofessional collaboration facilitates effective decision-making and problem- | None |

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| solving among the healthcare team, including patients and their families. | |
| When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. | None |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. | • Overall model not significant<br>• Positive association with level of professional satisfaction (0.097) |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. | • Overall model is significant, $R^2$= 11.5%<br>• Positive association with level of professional satisfaction (0.099) |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. | • Overall model not significant<br>• Positive association with level of professional satisfaction (0.123) |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. | • Overall model is significant, $R^2$= 14.5%<br>• Positive association with level of professional satisfaction (0.132) |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. | • Overall model not significant<br>• Positive association with level of professional satisfaction (0.113) |
| The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. | • Overall model is significant, $R^2$= 11.3%<br>• Positive association with level of professional satisfaction (0.082)<br>• Negative association with type of profession (-0.072) |
| Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. | • Overall model not significant<br>• Positive association with level of professional satisfaction (0.097) |
| When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. | • Overall model is significant, $R^2$= 12.0%<br>• Positive association with level of professional satisfaction (0.086)<br>• Negative association with type of profession (-0.067)<br>• Negative association with gross |

| | |
|---|---|
| | annual income (-0.116) |
| When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. | • Overall model not significant<br>• Positive association with level of professional satisfaction (0.103) |
| When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | • Overall model not significant<br>• Negative association with gross annual income (-0.106) |
| When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | None |
| The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. | • Overall model is significant, $R^2$= 12.0%<br>• Positive association with level of professional satisfaction (0.119) |
| Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. | None |
| Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). | None |
| Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. | None |
| The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. | None |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. | • Overall model not significant<br>• Positive association with use of an electronic health record system (0.357) |
| Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times | • Overall model not significant<br>• Negative association with the type of profession (-0.062)<br>• Negative association with prior |

| | |
|---|---|
| due to large patient caseload volume) can create barriers to care for patients. | participation in IPE activity (-0.337) |
| Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practice and dentistry). | None |
| Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to the other). | None |
| The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. | • Overall model is significant, $R^2$= 12.7%<br>• Negative association with the type of profession (-0.117)<br>• Positive association with working in patient care for at least 6 months (0.474) |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. | None |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. | • Overall model not significant<br>• Positive association with level of professional satisfaction (0.113) |
| Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. | • Overall model is significant, $R^2$= 15.7%<br>• Negative association with the type of profession (-0.129)<br>• Positive association with level of professional satisfaction (0.127) |
| Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. | • Overall model not significant<br>• Negative association with gross annual income (-0.158) |
| Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to | • Overall model not significant<br>• Negative association with the type of profession (-0.115) |

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|---|---|
| achieve optimal health outcomes for them. | |
| I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. | • Overall model not significant<br>• Negative association with gross annual income (-0.100) |
| I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. | • Overall model not significant<br>• Association with the type of profession (-0.124) |

**Table 18.** Results of statistical significance testing for the relationship between the 9 predictors and the 39 outcomes using regression modeling. Please refer to table 10 in the data analysis section for the full name and description of the variables.

| Var # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | Model |
|---|---|---|---|---|---|---|---|---|---|---|
| **10** | | | | | 0.048 | | | | 0.020 | |
| **11** | 0.007 | | | | | | | | 0.035 | |
| **12** | | | | | | | | | | |
| **13** | | | | | | | | | | |
| **14** | | | | | | | | | | |
| **15** | | | | | | | | | | |
| **16** | | | | | | | | | | |
| **17** | | | | | | | | | | |
| **18** | | | | | | | | | | |
| **19** | | | | | | | | | | |
| **20** | | | | | | | | | | |
| **21** | | | | | 0.011 | | | | | |
| **22** | | | | | 0.010 | | | | | 0.041 |
| **23** | | | | | 0.006 | | | | | |
| **24** | | | | | 0.000 | | | | | 0.008 |
| **25** | | | | | 0.015 | | | | | |
| **26** | 0.026 | | | | 0.026 | | | | | 0.045 |
| **27** | | | | | 0.008 | | | | | |
| **28** | 0.041 | | | | 0.023 | | | | 0.021 | 0.032 |
| **29** | | | | | 0.012 | | | | | |
| **30** | | | | | | | | | 0.032 | |
| **31** | | | | | | | | | | |
| **32** | | | | | 0.001 | | | | | 0.032 |
| **33** | | | | | | | | | | |
| **34** | | | | | | | | | | |

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|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **35** | | | | | | | | | | | | |
| **36** | | | | | | | | | | | | |
| **37** | | | | | | | | 0.042 | | | | |
| **38** | 0.030 | | | | 0.020 | | | | | | | |
| **39** | | | | | | | | | | | | |
| **40** | | | | | | | | | | | | |
| **41** | 0.007 | 0.049 | | | | | | | | | | 0.022 |
| **42** | | | | | | | | | | | | |
| **43** | | | | | | 0.028 | | | | | | |
| **44** | 0.004 | | | | | 0.014 | | | | | | 0.004 |
| **45** | | | | | | | | | | 0.041 | | |
| **46** | 0.005 | | | | | | | | | | | |
| **47** | | | | 0.017 | | | | | | 0.048 | | |
| **48** | | | | | | | | | | 0.016 | | |

**The Conceptual Model: Validated After Cross Sectional Survey**

While the qualitative phase helped to explore the face validity of the conceptual model, this phase helped to explore its generalizability, by examining the association between the outcome variables measuring the perceptions of healthcare professionals on the phenomenon, and plausible confounding variables that could explain the variations in the outcome variables. This study found that the level of professional satisfaction was the most important predictor of the level of agreement with the identified thematic statements: participants who were more satisfied with their professional careers were more likely to agree with the thematic statements in the conceptual model. Other important predictors include the type of healthcare profession, gross annual income, and having worked in patient care for at least 6 months. These demographic factors are considered important because they retained their statistically significant relationship with the healthcare professionals' views of some of the fundamental pathways depicted in the model, even after controlling for all other covariates included in the statistical regression models. However, they only accounted for a relatively small proportion of the total

variation in the outcome variables; and when the corrected alpha level is applied to account for the fact that repeated statistical tests were used in this survey, none of the regression models achieved statistical significance. These two facts suggest that the theoretical model overall is robust against these chosen plausible confounders.

**Solving the Mystery of Collaboration by Linking Social Capital to Disparities**

It is clear that the literature had already revealed the basic or manifest pathway (i.e. the *how*) regarding the relationship between IPCP and patient health outcomes, although some key elements were missing as illustrated in this study. More importantly, the literature to date had not at all addressed the question of *why*. For example, why does IPCP facilitate care coordination? Although is commonly understood that IPCP should affect care coordination, how does it accomplish this effect? Why does better care coordination lead to improved patient care? Why does improved patient care lead to optimal health and system outcomes? If programs are going to be designed to measure how IPCP impacts health and system outcomes, then there is a need to identify and measure the outputs of IPCP, which had not been identified empirically to date. The literature has so far been silent on these aspects of the phenomenon.

This dissertation study has revealed that social capital and its facets of trust, sharing, and reciprocity, represent the underlying theoretical constructs that explains how IPCP works, forming the latent mechanism that facilitates IPCP's impact on patient health and system outcomes. Another major theoretical construct that this dissertation identified is the influence of disparities in health and healthcare on the phenomenon of interest. Prior to this dissertation study, there were no research studies specific to urban settings and looking at disadvantaged populations in the US within the interprofessional

care literature (Jadotte, 2015). However, there is ample literature on both the topic of social capital and the topic of disparities from outside of the realm of interprofessional care.

To fully explore and understand the relationship between IPCP and patient health outcomes in this setting, it is critical to review the literature on the relationship between social capital and disparities. Understanding this phenomenon in urban settings will ultimately require research-based explorations of the intersection of IPE (and its the associated variables of IPCP, care coordination and patient care) with social capital (and its corollaries of trust, sharing and reciprocity), but it is possible to envision how social capital interacts with disparities in health and healthcare, as this literature currently does exist.

A critical point of departure for this discussion is acknowledging the fact that the perceptions of patients and subjects are not often analyzed as important determinants of outcomes in the general healthcare setting (Copeland, 2005). Yet they have long been acknowledged as critical factors in multiple other disciplines of study. Sociology has given prime importance to the study of perception and its effects on human behavior. For example, there are many different measures that attempt to quantify social support, one of the many measures of social capital, but the one commonality among them is the need to decide whether to measure actual support received or perceived support (Berkman & Glass, 2000, p. 157). More recently, there has been an increasing trend in attempting to understand the roles that perceptions play in the healthcare arena. For example, in a study on the role of social capital, egalitarianism and health, Islam et al focus on the importance of perception as the primary component of cognitive social capital and its role in

individual health outcomes (2006). Perceptions play a critical role in the relationships between individuals and their environments, interactions that are manifested through the indices of trust, sharing and reciprocity (Islam et al., 2006).

Simultaneously, in the healthcare arena, policies traditionally have emphasized interventions targeting the individual behavioral factors that influence the health outcomes of patients. That is, the vast majority of the scientific literature, up until the last two decades, has emphasized the role of "downstream" mechanisms – namely individual behaviors with known negative health outcomes, such as smoking, alcoholism and inappropriate dietary habits – as the primary determinants of health. Increasingly, however, health outcomes are being linked to social and environmental factors, such as social capital (Macinko & Starfield, 2001). Berkman and Glass trace the history of the pioneers of this trend in their landmark book chapter, *Social Integration, Social Networks, Social Support, and Health* (2000).

To investigate the role that perceptions of the healthcare setting play in urban populations, certain critical questions need to be address first. What is meant by "perception"? How does it impact the healthcare encounter? What is meant by the "healthcare encounter"? How can we relate perception – an intrinsically individual phenomenon – to social determinants of health, which are factors operating specifically extrinsic to the individual? Merriam-Webster's dictionary defines perception as observation, mental depiction, awareness of the surrounding environment, sensation interpreted in the context of experience, or an ability to comprehend (Perception). For the purposes of this discussion, perception can be understood as the net aggregate of all of the above: it is the process through which individuals accept input from their physical and

social environments and through which their opinions of, expectations from, and satisfaction with norms and behaviors regarding their physical and social environments can be modulated. Here, emphasis will be placed on the role of the social environment.

The concept of the healthcare encounter is useful because it is broad enough to capture the breadth of the healthcare setting. I define the healthcare encounter as any point of contact between at least two individuals where either information or services are exchanged, and where one is the recipient and the other is the provider of these goods or services. This includes outpatient clinics and the inpatient hospital setting – both of which capture the different patient-provider relationships, including the patient-doctor relationship and the patient-nurse relationship – the clinical research setting, public health interventions or educational initiatives, and community health centers. This list is not exhaustive, but it does demonstrate the idea that perceptions can play critical roles in various healthcare settings. For the sake of simplicity, in this chapter, the words "patient" and "subject" are considered interchangeable and will be used to identify all individuals who are recipients of information or services within the healthcare encounter, as defined above.

However, it still remains unclear how perceptions relate to the social determinants of health. The notion of social capital is helpful to make that connection. Bourdieu's definition of social capital is particularly useful in this context. He defines social capital as "the aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance or recognition" (Bourdieu, 1986, p. 248). In other words, social capital is the sum of all the resources available to the individual, whether actual or perceived, which are linked to his

or her social relationships. Social capital, in essence, frames the individual's life chances, life course and his or her health outcomes, because it is both a product of and an actor upon the social determinants of health. More specifically, in terms of perception as it pertains to health outcomes, cognitive social capital is the *modus operandi* of the individual and it is dependent on the larger structural forms of social capital (Islam et al., 2006, p. 5), which in turn are direct reflections as well as potential modifiers of the social determinants of health.

In this synthesis of the literature, I first investigate how healthcare professionals' perceptions of this encounter are not only influenced by socio-structural forces, but also significantly impact the outcomes of this encounter. I then explore how urban disadvantaged patients' views are framed surrounding this encounter based on their social capital. I use Islam et al's social capital model to illustrate the importance of both cognitive social capital (as manifested through the indices of trust, sharing and reciprocity) and structural social capital (as determined by the density of networks and patterns of civic engagement) in influencing patient health outcomes (Islam et al., 2006). This theoretical framework shows how individuals use their cognitive social capital to interact in mutually beneficial ways with other individuals, while simultaneously using their structural social capital to deal with the greater forces that condition their lives. In other words, while cognitive social capital allows individuals to get other individuals to act on their behalf, structural social capital explains how individuals can get entire networks of persons to act on their behalf. This potentially means that individuals with broad structural social capital (such as most healthcare professionals and some patients) can have a significant influence on the socio-structural forces that affect their lives, and

by inference from this dissertation, a significant influence on IPCP and how it helps to improve patient health outcomes. Figure 19 is a depiction of this theoretical model.

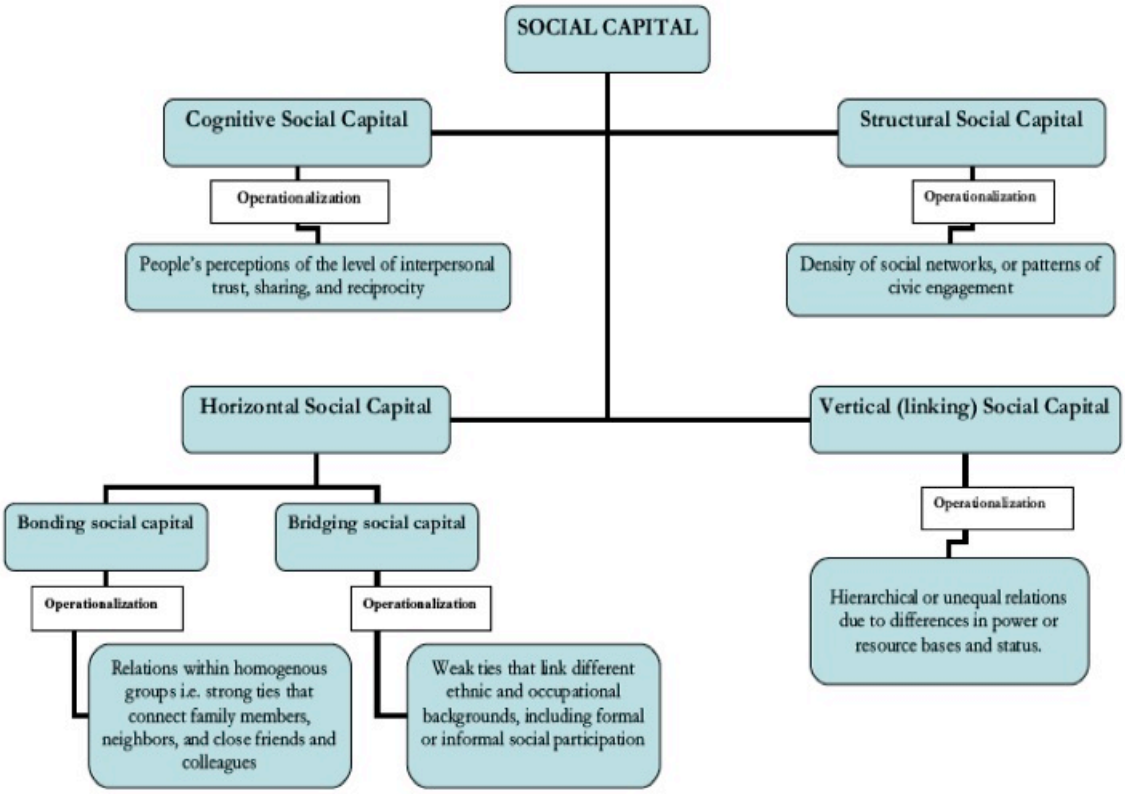


**Figure 19.** Social capital, egalitarianism and health theoretical model.

Source: Islam, M. K., Merlo, J., Kawachi, I., Lindstrom, M., & Gerdtham, U.-G. (2006). Social capital and health: Does egalitarianism matter? A literature review. International Journal for Equity in Health, 5(1), 3. Retrieved from http://www.equityhealthj.com/content/5/1/3.

However, this first theoretical model lacks an essential element: a connection between those socio-structural forces – the disparities embed in the broader social world and in healthcare systems – and social capital. Berkman and Glass' model provides that missing link: they use social network theories to show how all individuals are subject to

various sociopolitical, socioeconomic and sociocultural constraints (Berkman & Glass, 2000). Berkman and Glass' model thus helps to connect these upstream socio-structural forces all the way to downstream health behavioral, psychological and physiological pathways. Figure 20 depicts Berkman and Glass' theoretical model linking social networks to health outcomes. Figure 21 below is a visual representation of the amalgamation of both of these theories, which helps to conceptually solidify the theoretical literature synthesis that follows. The question marks in this figure help to locate the points at which interventions that facilitate the building of social capital, such as IPE, IPP and IPO, may have an impact on the healthcare encounter, and thereby influencing patient health as well as system outcomes.

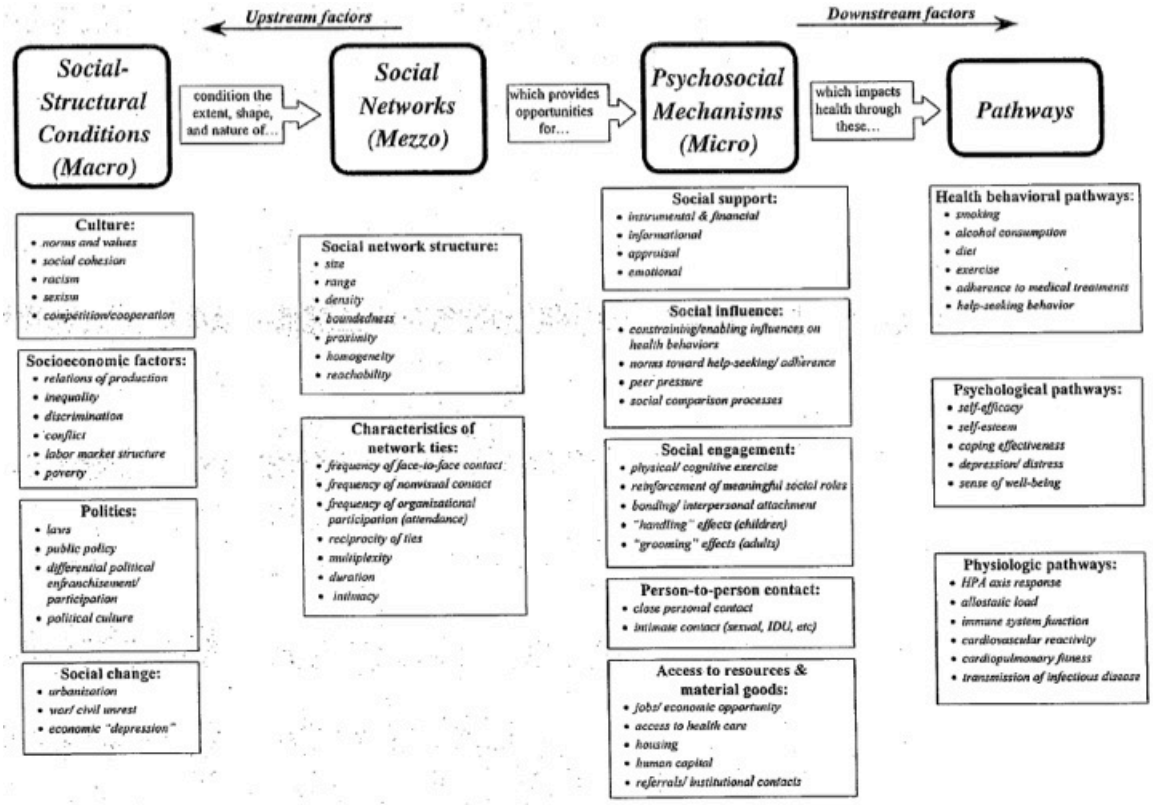


**Figure 20.** Social integration, social networks, social support and health theoretical model.

Source: Berkman, L. F., & Glass, T. (2000). Social Integration, Social Networks, Social Support, and Health. In L. Berkman & I. Kawachi (Eds.), Social Epidemiology. Oxford: Oxford University Press.

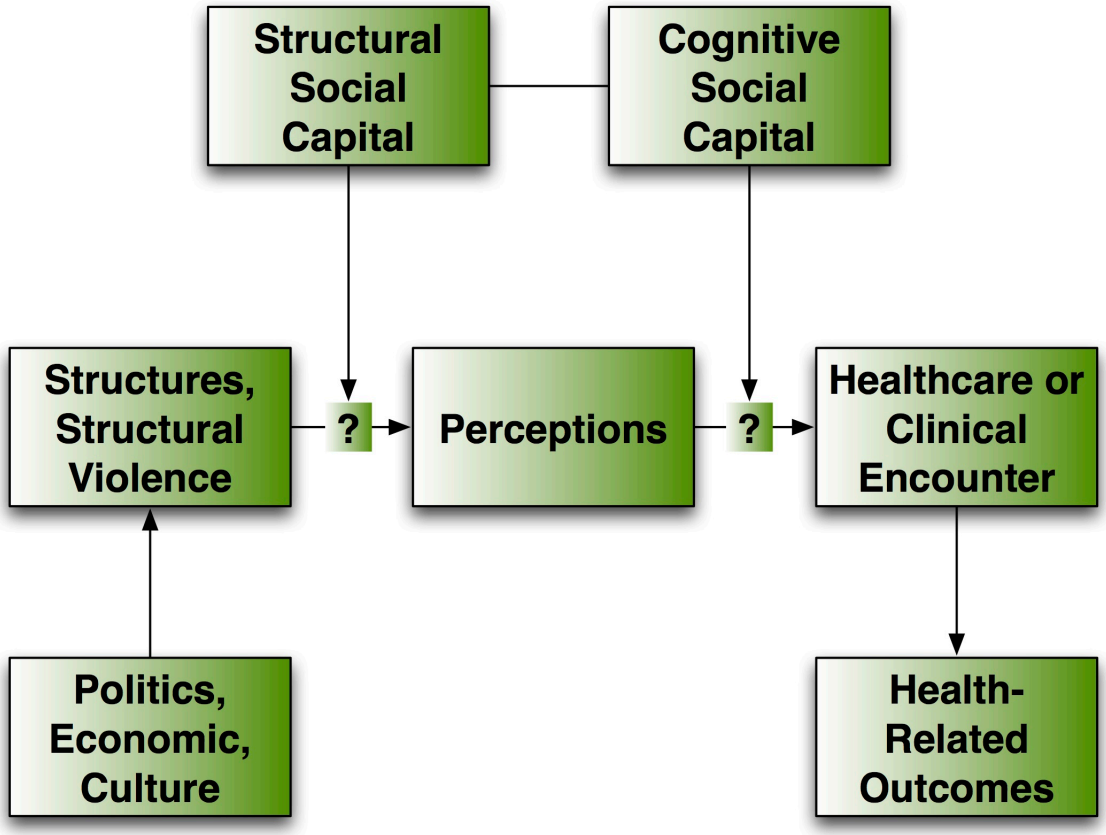


**Figure 21.** Amalgamation of Islam et al and Berkman and Glass' theories on social network, social support, social capital and health.

The next section of this chapter limits the analysis only to the connections between these socio-structural forces and the social networks of healthcare professionals, through network structure and patterns of civic engagement (Islam et al., 2006). Note that it is conceptually plausible to link the notion of network structures and patterns civic engagement to the notions of facilitating sharing and enhancing reciprocity, which are

two critical themes that emerged in this dissertation study. All of these, in turn, modulate the perceptions of the healthcare encounter among those who partake in it, by influencing their cognitive social capital, the latter of which affects their behaviors and the choices they make during the healthcare encounter (including perhaps the extent to which they embrace IPCP, the degree to which they trust other members of the healthcare team, the likelihood that they share information and partake fully in the coordination of care), and ultimately may impact patient care, and patient health and system outcomes. The role of social capital in the context of disparities for the other half of the healthcare team (i.e. patients, families and communities) and their participation in the phenomenon under study is explored in detail in the last section of this chapter.

There are currently no other studies in the literature that empirically link IPCP and patient health outcomes within the context of health and healthcare disparities embedded in urban settings in the US. There are also no prior research studies that identify social capital and disparities as the fundamental backbone of the relationship between IPCP and patient health outcomes. Therefore, to illustrate the relevance of these two theoretical concepts for this phenomenon, I discuss how social capital relates to disparities and how this relationship affects patients and healthcare professionals within healthcare encounters. This facilitates the identification of factors that can potentially inhibit the successful functioning of IPCP that perhaps had not been identified in the data from this dissertation study. It also illustrates why it has been so difficult to measure the impact of IPCP on health and system outcomes.

**The Social Capital of Urban Healthcare Professionals**

This dissertation study collected data directly from healthcare professionals on their perceptions of IPCP and how it may relate to patient health outcomes. Many of the healthcare professionals who participated in this study were asked to comment on the challenges that they face and how these may impact IPCP and the provision of patient care, based on what they have observed in their own clinical settings. In addition, most of them were explicitly asked to actually think about the role of disparities in the relationship between IPCP and patient health outcomes. As such, it is critical to review the literature on their perceptions and how it may be shaped by and how it may frame the clinical encounter with urban disadvantaged populations, which is the point at which IPCP is expected to act to improve patient health outcomes. In particular, given that this study has uncovered social capital as the theoretical underpinning of this phenomenon, the literature on the social capital of healthcare professionals who work in the urban setting and its role in the healthcare encounter is reviewed here.

Urban populations in the United States have become increasingly segregated along racial, ethnic, and socioeconomic lines (K. Fiscella & Williams, 2004). The excessive concentration of disadvantage embodied in these individuals not only significantly impairs their ability to maintain control over most realms of their public lives, but represents an area where thoughtful research and appropriate policies and practices are needed to improve the conditions of life (Krieger, 2012). The clinical encounter represents a critical moment when urban disadvantaged populations interface with healthcare systems, and as such, it represents an opportunity for healthcare professionals to connect with them and effect healthy change. IPE, IPP and IPO are a set

of interventions that, it is hoped, can make a difference in improving patient health and system outcomes in this setting (Jadotte, 2014). However, little is known about healthcare professionals' perceptions of this crucial encounter, much less about the way IPCP could play an important role in mitigating these disparities in the urban setting. In what ways are healthcare professionals' perceptions of the clinical encounter different from or similar to those of the patients who depend on them? What greater structural forces are at play in influencing the healthcare professionals' perceptions of the clinical encounter, and their collaborative relationships with other healthcare professionals? What impact does the healthcare professionals' perceptions have on the outcomes of the healthcare encounter? These are some of the questions partially uncovered and partially answered by this dissertation study, for which an examination of the literature is merited.

**Social Capital and Sociopolitical Structures**

The Berkman and Glass theoretical framework identifies 4 major areas where social structures act to influence social networks: politics, culture, socioeconomic factors, and social change (Berkman & Glass, 2000). In this discussion, I combine the categories of politics and social change into the category of sociopolitical structures, because they both fundamentally relate to one concept: power and its differential manifestation for different social groups, through laws, public policy, war, civil unrest, urbanization and political (dis-) enfranchisement and (non-) participation, all of which are themes discussed in Berkman and Glass' model (Berkman & Glass, 2000, p. 143), and some of which emerged in this dissertation study (ex. the role of disparities in laws and policies in framing care delivery and continuity of care). I will focus on four key themes that are pertinent to healthcare professionals as one social group: public policies in healthcare,

government programs that disenfranchise both patients and clinicians, long-standing negative perceptions that urban patients often have regarding the healthcare community and the impact of litigation on healthcare professionals.

**Challenges in healthcare policies.** One of the biggest challenges that physicians and other healthcare professionals face is the sheer number of limitations imposed upon them by the health insurance industry. There is an extensive history of policies being enacted that impede the work of healthcare professionals in the US healthcare system. One of the ways these policies have constrained the ability of healthcare professionals to act beneficially on behalf of patients is the fact that arbitrary rules, devised by policy makers with no clinical experience whatsoever, have continually encroached on the healthcare encounter. For example, virtually all healthcare professionals face specific time limits on the duration of their clinic visits. Physicians, who arguably represent the *de facto* and *de jure* dominant group within the healthcare professions, have long found their independence to act for the patient's best interest consistently constrained by the insurance industry (Jon & Redisch, 1979). Given that it is well known that more time with the physician leads to higher quality but more costly care (Ma & McGuire, 1997), it seems that there may be some merit to these constraints, in terms of encouraging more efficient use of the physician's time. This may be in fact an area where IPCP may be helpful because it can ensure the efficient use of clinical services by identifying other qualified healthcare professionals who can competently perform essential tasks.

Nevertheless, these visit time limitations nonetheless pose a significant burden on both the patient and healthcare professionals because they effectively lead to lower quality of care. For example, health insurance companies usually place a 15 minute time

limit on all non-initial visits: this is particularly true for primary care follow-up visits (Kevin Fiscella & Epstein, 2008). This is also true for other types of healthcare encounters, such as visits to arrange health-related social services (Chase, 2011), especially when they are not the initial visit, the latter of which one would logically expect to last longer. All of these constraints are driven by policy makers who are usually neither qualified to determine how long a clinic visit should last to provide adequate care, nor in a position to understand the uniqueness of each patient visit and how sometimes a visit that may not appear to require a lot of time might in fact represent a completely desperate attempt by a person seeking help for multiple problems. This is especially true for disadvantaged populations (Kevin Fiscella & Epstein, 2008; K. Fiscella & Williams, 2004), and this idea emerged consistent in this dissertation study. Again, this is an area where IPCP is thought to be potentially helpful as a solution, but the challenges nevertheless created by these policies still remains.

Viewed from the theoretical lens of social capital, one begins to realize that healthcare professionals constantly face significant challenges from various healthcare policies that subsequently constrain their ability to act fully and solely in the best interest of their patients. Cognitive social capital tells us that a healthcare professional's perceptions can become so distorted by these pressures that he or she begins to lose trust in the healthcare system, which subsequently engenders fewer attempts to reciprocate and attend to the patient's full needs. In essence, healthcare professionals working with urban disadvantaged populations are often left with the choice between the lesser of two evils: they can either see the patients beyond the 15-minute rule, at their own economic peril in the long term, or they can force every follow-up visit to conform to the 15-minute rule,

irrespective of the actual needs of the patient. It is no wonder that patients may sometimes feel that their healthcare professionals are in a rush and do not care about their well-being.

**Challenges in healthcare programs.** Healthcare professionals working in the urban setting also face significant challenges in various government healthcare programs that are supposedly designed to help disadvantaged populations. Medicaid is a state-sponsored insurance program for children and the very poor, while Medicare is a federally sponsored insurance program for the elderly and certain disabled individuals. It is well known that urban populations tend to consist of very young and very poor individuals (Orr, Charney, & Straus, 1988). Yet research has consistently shown that Medicaid reimburses physicians and other healthcare professionals significant less than Medicare or private health insurance programs (AAP, 2008). Thus, healthcare professionals in these settings, already strained by the excessively large number of disadvantaged patient they have to heal, also have to deal with a healthcare system that is intrinsically biased against them and their patients. While this also consists of a form of socioeconomic barrier, it is important to understand that it is the sociopolitical dimension of these programs that determines their socioeconomic impact. In other words, healthcare professionals are forced to bear the brunt of the cumulative disadvantage faced by their patients not because there is an inherent socioeconomic weakness or a lack of business acumen on their part, but because they are politically disenfranchised, at least more so than their peers who chose to avoid serving disadvantaged populations. The theme of lack of empathy and healthcare professionals viewing the urban neighborhood as a

stigmatized practice setting emerged clearly in this dissertation study, and is related to these greater sociopolitical challenges.

Viewed through the lens of social capital, it is not unreasonable to think that healthcare professionals facing these challenges can sometimes feel overwhelmed by the sheer lack of support from the healthcare system. Studies have found that healthcare professionals situated in urban clinics and hospitals, particularly primary care providers, have increasingly limited their acceptance of Medicaid as a payment source for services, and that this imbalance in payment levels is politically grounded (Perloff et al., 1995). One study posited that this decline in acceptance of Medicaid by these professionals is based not just on personal economic pursuit, but also on the perception that the density of healthcare professionals in the urban setting (as opposed to rural areas) creates a sufficient network of professionals who do accept Medicaid (Cunningham & May, 2006), although the latter may not hold true for much longer if this trend continues. From a social capital standpoint, these individuals feel less obligated to accept Medicaid for this reason, which can be thought of as a decrease in cognitive social capital in the realm of reciprocity. One could posit that they no longer feel the need to hold each other accountable for providing continuous patient care, which is a theme that emerged in this dissertation study related to the category of enhancing reciprocity. Furthermore, studies have shown that as a result of lower reimbursement rates from Medicaid, healthcare professionals in urban settings are engaging in less civic participation than ever before (Cunningham & May, 2006), which represents a significant sign of decline in their structural social capital. Might this be one reason the participants in this study thought it is challenging to implement IPCP in these settings?

**The long-standing challenges to social trust.** The cumulative effects of social deprivation on urban populations have an influence on their trust in the healthcare system. The most important challenge that healthcare professionals face here is particularly resilient in urban communities: it is the diminished social trust, on a community level, resulting from the social determinants of health that have historically conditioned the perspectives of disadvantaged populations, which will be reviewed in greater in the next section. Scholars have shown that the perpetual structural violence that urban populations face in the healthcare system has resulted in an overall negative perception of the medical community (Jadotte, 2012). For example, discrimination on the basis of lack of health insurance or having poorly reimbursing types of health insurance such as Medicaid have been linked to decreased trust in healthcare providers (Sheppard, Zambrana, & O'Malley, 2004). Studies have also shown that less trust in one's physician leads to lower adherence to prescribed treatment (Y.-Y. Lee & Lin, 2009), which is a theme that also emerged in this dissertation study, as well as decreased continuity of care (Mainous, Baker, Love, Gray, & Gill, 2001). In other words, a lack of trust could lead to poor patient health outcomes. What is often not examined is how this community-based lack of trust subsequently constrains the ability of healthcare professionals to fulfill their mission to heal.

Taking a social capital view from the perspective of healthcare professionals reveals in many if not most cases that the structural violence aimed at urban patients is also aimed at urban healthcare professionals, and that the latter also experience decreased cognitive social capital in the realms of trust, sharing and reciprocity as a result of these factors. For example, one study, seeking to elucidate the factors involved in the level of

trust of poor urban women in their care providers, revealed that the number of healthcare professionals available, the amount of time spent with them, and the type of clinic setting (i.e. private vs. public) all significantly affected the trust the patients had in the healthcare professionals (Sheppard et al., 2004). This could yet again be one way in which the implementation of IPCP could enhance the success of the clinical encounter, by making sure that patients do have access to a broader array of healthcare professionals who are working with and caring for them. Still, a closer analysis of these factors reveals that in fact they are primarily the result of the structural violence aimed at the healthcare professionals: there are fewer healthcare professionals available because there is less money to pay them, the time spent with the patient is often a function of the artificial time constraints determined by insurance companies, and there are fewer private clinics in the urban setting due to the sheer number of private practice healthcare professionals who choose not to locate there primarily because of socioeconomic or other sociopolitical reasons.

**The challenges of litigation.** No area of the healthcare professions is more discouraging for physicians in particular, and has a greater impact on their perceptions of the clinical encounter, than the extensive amount of litigation that is leveraged against them on a regular basis. Litigation has many consequences for the social capital of healthcare professionals. First, because of the increasing risk of litigation against them, and because of the increasing size of awards paid out to patients (Tabarrok & Agan, 2006), there is a greater need for more extensive malpractice insurance. Simultaneously, malpractice insurance costs have been rising for a long time (Wilbur, 1957), and have risen dramatically in recent years (Tabarrok & Agan, 2006). The response of healthcare

professionals to these trends is very telling of their social capital. For example, a large number of physicians are now increasingly practicing what is called defensive medicine, which can be defined as a deviation from standard medical advice and practice due to the fear of the risk of litigation (Studdert et al., 2005). In essence, this means that they are ordering more tests, or avoiding certain high risk patients, in order to minimize the likelihood of litigation from poor outcomes or decreased satisfaction with standard care. A recent study has shown this to be the case, particularly among high-risk specialties, such as obstetrics and gynecology (Studdert et al., 2005). From a social capital standpoint, it represents a significant decrease in trust of the justice system and of the patient. Fear of what the patient might do in case of poor outcomes (beyond the healthcare professional's control) or dissatisfaction with care has led many healthcare professionals to practice in this way. This fear, in turn, can be interpreted as originating from a decrease in trust as well.

**Social Capital and Socioeconomic Structures**

Berkman and Glass identify the socioeconomic structures impacting social networks: relations of production, inequality, discrimination, conflict, labor market structure, and poverty (Berkman & Glass, 2000, p. 143). I will focus on the concept of inequality in the healthcare system. However, for the sake of clarity, I have organized this section into practice-based and systems-based inequalities. Practice-based socioeconomic issues span from individual healthcare professional's practices to certain types of practice settings: they are considered to be practice-based because, while important in their own right, they do not represent issues faced by all physicians and other healthcare professionals. For example, clinicians who locate their practice in an urban setting face

challenges that are different than those that healthcare professionals in suburban or rural settings encounter. Also, specialty-based challenges can also be considered practice-based problems, because they tend to affect specific specialties but not others. On the other hand, systems-based socioeconomic issues are those that affect all healthcare professionals regardless of practice setting or type of specialty. This is the lens through which I will examine the impact of economic challenges on healthcare professionals' perceptions of the clinical encounter and their subsequent effects on patient care and health outcomes.

**The challenges of practice-based issues.** One of the most significant practice-based socioeconomic issues that affect healthcare professionals is the decision of their practice location. For example, the decision of physicians on their practice location is highly influenced by excessive educational debt during medical school. Studies have found an inverse correlation between educational debt levels and the likelihood of locating one's practice in an underserved urban or rural area (Krist et al., 2005). High educational debt levels have also been directly correlated to a decreased likelihood of medical students going into primary care (Rosenblatt & Andrilla, 2005). Socioeconomic obstacles are operating on multiple levels here. First, it is operating in the educational environment of healthcare professionals because they are being discouraged from choosing primary care, which tends to be a lower paying division of the medical field. Second, physicians who choose to locate their practice in urban settings are also facing the socioeconomic structural violence of poverty in the urban setting, due to the sheer lack of economic resources of their patients and local communities. All of these are identical to the challenges identified in the theme of differential support systems for teamwork in this

dissertation study, which poses a major challenge for achieving IPCP. Still, how do we explain the fact that some physicians still chose to practice in these settings?

A social capital view helps to explain all of these phenomena. First, the threat of socioeconomic challenges forces future physicians to consider the impact that financial considerations will have on their ability to care for their patient. Effectively, this is an exercise in envisioning the level of social support that the future physician perceives he or she can expect to receive in the provision of care to urban patients. In other words, in spite of the anticipated socioeconomic structural violence, some healthcare professionals bank on their ability to rely on their structural social capital to still provide medical care to those in need. Research has shown that some physicians decide to locate their practice in urban areas with full awareness of the socioeconomic challenges they will face. In the United States, African-American physicians in particular are the most likely group to make this choice (Lloyd & Johnson, 1982; Rosenblatt & Andrilla, 2005). This can also be seen, from the cognitive social capital point of view, as a desire to build trust, share responsibility for medical care and have reciprocal relationships with the patient and the local community. However, there is a downside to this desire to connect: research has shown that only physicians who have been able to escape from the issues they face or embrace the social challenges while managing to avoid fatigue and maintaining control over their professional lives are satisfied with their practice location (Dunstone & Reames, 2001). Recall that this dissertation study has shown that the level of professional satisfaction seems to be the most important predictor of healthcare professionals' perceptions of the phenomenon of IPCP and its relation to patient health and system outcomes.

The socioeconomic implications of primary care as compared to specialty practice affect the social capital of all physicians. A major issue is the fact that primary care physicians are paid tremendously poorly as compared to specialists (Hsiao, Dunn, & Verrilli, 1993). The net result of this trend is a shift in the perception of primary care practice by medical students. How can they be expected to care for their patients and trust that the healthcare system will allow their practice to remain economically viable, when the evidence increasingly speaks to the contrary? While the decision between primary care practice and specialty practice is multifaceted, economic concerns are known to be of prime importance. As long as the socioeconomic structural violence against primary care physicians, and other similar healthcare professionals, continues to worsen in the United States, it will further impinge on the agency of healthcare professions students in terms of choice of practice, by steering many of them towards specialties and subspecialties. This represents a significant decline in the structural social capital of healthcare professionals, in terms of decreased trust in a healthcare system that is supposed to support their mission to heal, and decreased civic activity due to increased work demands. Younger physicians, in line with these trends, seem to have less trust in organizations than their older peers (Shields & Shields, 2003). Furthermore, these physicians perceive the increased work burden so well that many are limiting their work hours so they can minimize burn out (Martin, 1999). This includes working in walk-in clinics and group practices (A. P. Williams et al., 2002), at the cost of continuity of care, one of the most revered goals in healthcare.

**The challenges of systems-based issues.** There can little doubt that economic considerations have an impact on healthcare professionals' behaviors in the clinical

encounter (Kassirer, 1998). The fundamental structural struggle at play here is between the perpetually greater pressure from health insurance companies and hospital administrators to maximize their profits, and the healthcare professional's need to do what is clinically optimal for each patient (Kassirer, 1998). One of the mechanisms of socioeconomic challenges healthcare professionals face in this realm is the non-payment of healthcare services beyond a certain time limit, which has already been shown to play a critical role in their perceptions of the healthcare encounter.

Another challenge to address is the overwhelming bureaucracy that the multi-insurance market has created. In particular, the sheer administrative costs of navigating the healthcare system can severely impact a healthcare professional's perceptions of the clinical encounter. For example, studies have shown that physicians are extremely dissatisfied with the amount of time and energy required to deal with insurance companies, time that could be better spent taking care of patients (Casalino et al., 2009). These costs are much higher for other healthcare professionals such as nurses and physician assistants. They are also much higher in the United States than any other developed country (Woolhandler, Campbell, & Himmelstein, 2003).

In effect, the excessive administrative costs associated with delivering care in the United States represent a major socioeconomic challenges for healthcare professionals, particularly those who serve urban populations and already find their resources stretched thin. This affects their social capital in many ways. For example, once again, they may have to work longer hours in order to sustain the economic viability of their practice. Recall that the patient caseload/volume is a theme that emerged in this study as an important difference between different healthcare facilities. Finally, many healthcare

professionals face certain economic challenges because of their participation in grant-dependent health organizations (Chase, 2011). This is especially true of larger grant-dependent health and social services organizations, because they have to move through their patient caseloads more quickly than smaller organizations in order to maintain their economic viability. This is once again done at the expense of the quality of care that their clients may need, while simultaneously creating the potential for burnout in the healthcare professionals, thereby diminishing their trust in the healthcare system. It is unclear at this time exactly how IPCP could help mitigate this challenge. However, perhaps one can envision that IPO interventions will facilitate health system redesign and ensure that these administrative problems are dealt with more efficiently and effectively.

### Social Capital and Sociocultural Structures

The following themes are highlighted in Berkman and Glass' social networks model: norms and values, social cohesion, racism, sexism, and competition/cooperation (Berkman & Glass, 2000, p. 143). These factors play a particularly important role in influencing the social capital of healthcare professionals. In this discussion, I will focus on two of these themes: the failure to cultivate a healthcare culture of prevention, and some gender-based issues in healthcare.

**The challenges to a culture of prevention.** Given the increasing burden of chronic diseases, most of which are preventable, there has been greater emphasis on the need for preventive services (Pommerenke & Dietrich, 1992), particularly with regards to the integration of preventive and public health services with medical care to improve population health outcomes (Institute of Medicine, 2012c). However, it cannot be denied that in the United States, there is a significantly lower societal value placed on preventive

services. Studies have identified numerous factors that impact the delivery of preventive services, several of which relate to sociocultural challenges that healthcare professionals have to face. For example, the fact that insurance companies pay so little for preventive services is a telltale sign of the low value placed on preventive services, even though they are known to have a greater societal impact than interventional services (Hulscher, Wensing, Grol, van der Weijden, & van Weel, 1999). Another significant example is demonstrated by the fact that practices that are successful at fully implementing preventive care services often depend on a physician-champion of preventive services who is able to create a local culture that values these services (Crabtree et al., 2005). This is further evidence of the low value that American society and the medical community place on preventing chronic, debilitating diseases, rather than attempting to manage them. It is a substantial sociocultural challenge that particularly affects healthcare professionals who truly value prevention. Failure of the healthcare system to appreciate and support their persistent attempts at improving preventive services can only lead to an erosion of their social capital. This erosion, in turn, can directly impact the mutual trust in the provider-patient relationship, particularly for socioeconomically disadvantaged patients (O'Malley, Sheppard, Schwartz, & Mandelblatt, 2004).

**The challenges of gender-based issues.** One of the best examples of the challenges that healthcare professionals face in the cultural realm occurs during the provision healthcare to women belonging to poor urban neighborhoods. American society has an extensive history of not only oppressing its women in general, but also of oppressing them to differential degrees based on ethnicity and race (with non-European women, particular Black and Latino women receiving the brunt of it all) and of oppressing the healthcare

professionals who seek to offer them competent care. Numerous authors have already demonstrated how urban female patients are being dealt this structural violence in healthcare (Chase, 2011; Fadiman, 1997; Sharff, 1998). However, if we are to make a difference in the lives of these patients, it is important to understand the challenges that the healthcare professionals who care for them face as well.

The challenges faced by obstetricians/gynecologists and their allied health colleagues, in their attempts to deliver medical care to women, is particularly disturbing because it often takes the form of actual physical violence. The issue of abortion provides the classic example of this phenomenon. So-called conservative groups in various parts of the US have been known to bomb abortion clinics, and to verbally assault, physically abuse and kill providers who offer these services to their patients (Nice, 1988). Furthermore, while urban populations already face a severe lack of access to adequate healthcare resources, urban women find themselves constantly under the threat of being deprived of essential and effective healthcare services such as birth control pills. The funding problems that the organization Planned Parenthood faced in February 2012 represent a classic example of this phenomenon. While it is clear that urban women would be most affected by the absence of this organization, it is important to keep in mind that the healthcare professionals who make up this organization are also under assault. They face repetitive threats of organization dissolution, based on the sociocultural biases of American politicians and the long-standing paternalistic views of the American justice system on women's reproductive issues (Daly, 1995). They too must endure the repercussions of these sociocultural forces. Nevertheless, a social capital perspective makes it clear that healthcare professionals do have a tremendous degree of

structural social capital to deal with these issues. For example, a New York Times article reported that the move by the Komen Foundation to dissolve ties with Planned Parenthood and withdraw its funding support was vehemently opposed not only by the general public, but also by scientists and medical professionals with significant ties to the Komen Foundation (Belluck, Preston, & Harris, 2012), and that together, they were effective in reversing this decision. This is a classic demonstration of how healthcare professionals can use their structural social capital to effect change. Achieving IPCP can only further strengthened the social capital of healthcare professionals and their ties to other significant stakeholders in society, which may broaden their reach and capacity to act on behalf of their patients.

**The Social Capital of Healthcare Professionals: a Tool to Tackle Healthcare Disparities**

Social capital operates in two distinct ways, through structural and cognitive mechanisms. Structural social capital helps explain the relationship between healthcare professionals and the greater socio-structural constraints that they must face while providing care for their patients. As gatekeepers between the healthcare system and disadvantaged urban populations, healthcare professionals working in urban settings shoulder a significant social burden, manifested within political, economic and cultural social structures. However, they also benefit from not only a great deal of social trust, but they can also use their networking relationships and involvement in civic activities in order to improve their practice conditions and the lives of their patients. Cognitive social capital helps to understand the factors that impact the patient provider relationship in a proximate manner, particularly in the realms of trust, sharing and reciprocity. In this

sense, social capital is a very useful lens for analyzing the socio-structural and individual elements that surround the clinical encounter and ultimately influence its outcomes. This dissertation study therefore suggests that improving the healthcare outcomes of urban populations requires an understanding of the perspectives of urban healthcare professionals, and perhaps implementation of active interventions to improve their social capital, such as IPE, IPP or IPO.

**The Social Capital of Urban Disadvantaged Patients**

Although this dissertation study did not collect data from patients with regards to their perceptions of IPCP and how it may relate to their own healthcare and health outcomes, many of the healthcare professionals who participated in this study commented on what it must be like for patients, based on what they have observed in their clinical settings. In addition, most of them were explicitly asked to actually put themselves in their patients' shoes when thinking about the role of disparities in the relationship between IPCP and patient health outcomes. As such, it is critical to review the literature on the perceptions of patients and how their perceptions are shaped by as well as frame the clinical encounter, which is the point at which IPCP is expected to act to improve health outcomes. In particular, given that this study has uncovered social capital as the theoretical underpinning of this phenomenon, the literature on the social capital of urban disadvantaged patients and its role in the healthcare encounter will be reviewed.

This discussion of the literature will demonstrate that urban populations have developed certain perceptions of the healthcare encounter as a result of numerous historical, cultural and social barriers. In keeping with the fundamental role of social capital in explaining the association between IPCP and patient health outcomes, I use the

social networks conceptual model proposed by Berkman and Glass to demonstrate how the macro-level determinants of health (i.e. sociopolitical or historical, socioeconomic, and sociocultural factors) have conditioned the extent, shape and nature of the social networks of urban populations, which have significantly influenced their general perspectives of the healthcare encounter as a potential source of psychosocial support (2000, p. 143). Emphasis will be placed on the social determinants of health for urban Black and Latino populations wherever possible. Based on this model, one can conclude that these barriers to care not only affect urban populations' perceptions of the clinical encounter, but also result in numerous negative downstream effects, such as poor health behaviors, inadequate psychological responsiveness, and nefarious physical effects. These downstream effects are well known, are beyond the scope of this dissertation study, and will not be reviewed here. Rather, I will shed light on the interactions between the social determinants of health, social capital, patient perceptions of the healthcare encounter, and their relationship with IPCP wherever possible.

Ultimately, I will show how the general perceptions of the healthcare encounter by urban disadvantaged populations significantly hamper their interactions with the healthcare system, even when their individual perceptions are favorable. This perspective is critical because clinicians as well as public health advocates must remain aware of the link between the macro-level, social-structural determinants of health, and their ultimate manifestations in the health of disadvantaged populations (Institute of Medicine, 2002). I will also show how the clinical encounter interacts with the macro, mezzo and micro mechanisms of health, as defined in Berkman and Glass' model, through the effects of perceptions. Ultimately, the erosion of urban disadvantaged populations' cognitive social

capital by the various social determinants of health is largely responsible for their negative perceptions of the healthcare encounter. This manifests as an increased level of mistrust, an unwillingness to share information about and responsibility for health outcomes, low levels of participation, and a loss of the expectation of reciprocity. That is how the social determinants of health interact with social capital to create specific perceptions of the healthcare encounter among urban disadvantaged patient populations, and these relationships and their association with IPCP will be elucidated below.

**Social Capital and Sociopolitical or Historical Barriers**

Berkman and Glass defined several sociopolitical factors that shaped the role of social capital on health outcomes. These include laws, public policy, differential political enfranchisement/participation, political culture, urbanization, war/civil unrest, and economic depression (Berkman & Glass, 2000, p. 143). Historical conditions have always played a significant role in shaping the social capital of African-Americans. For example, the so-called "second great migration" of Blacks from the South to the North of the United States around the time of World War II, combined with persistent discrimination by the White majority, led to massive residential segregation of Blacks in urban areas (Avila & Rose, 2009). This new pattern of living required the creation of new forms of social capital, in order to integrate the newly arrived migrants into the urban fabric. Many African-American communities had successfully learned how to accomplish this task, and some had done so quite successfully. Nevertheless, in her book, *Root shock: How tearing up city neighborhoods hurts America and what we can do about it*, Fullilove shows that, during the urban renewal movement, the social capital that had been created over several generations in urban communities was not taken into consideration in

assessing the value of the lands and properties that were to be seized (2005, p. 79). This led to the destruction of more than two thousand Black neighborhoods in nearly one thousand American cities, causing the forced displacement of approximately one million individuals (Fullilove, 2005, p. 5). A movement of this magnitude not only affected the cognitive social capital of the individuals directly affected, but it also had serious repercussions for the structural social capital of the African-American community as a whole. Urban renewal is well recognized historically as a major contributor to the reduction of social capital in disadvantaged communities within the United States (Coleman, 1985).

However, the erosion of social capital in the African-American community was not a new phenomenon. The race factor, in particular, has long been acknowledged as a key determinant of social capital in the United States (Putnam, 1995, p. 671). Although Putnam argues that race is not a primary determinant of social capital in the United States, he does acknowledge several important factors in relations to social capital in the African-American community. First, the location and duration of one's residence in a particular place are important determinants of the strength of social capital in a community (Putnam, 1995, p. 670). This is consistent with Fullilove's "root shock" hypothesis. In reference to the forced displacement in the African-American community during urban renewal, she defines root shock as having an effect on cognitive social capital at the individual level (via the destruction of trust and the promotion of anxiety and numerous negative mental and physical health outcomes) and on structural social capital at the societal level (via the destruction of the various bonds that tie people into social networks) (2005, p. 14).

Second, Putnam emphasizes that, during the mid-twentieth century, particularly around the time of urban renewal and the Civil Rights movement, there has been greater erosion of social capital among Blacks than among Whites: as evidence of this, he cites the greater "downturn in joining and trusting [of community associations]" among African-Americans (1995, p. 672). This diminution of social capital on the cognitive level, framed by the further loss of social capital on the structural level – as manifested by the physical destruction of communities, further residential segregation and social isolation, and disruption of older bonding and bridging ties – significantly affected Black populations in the United States. Thus, one can conclude that urban renewal further destroyed the social capital of African-Americans, thereby promoting an atmosphere of mistrust of public or governmental initiatives.

The roles of the healthcare professionals and public officials are often perceived to be one and the same (Whetten et al., 2006), and indeed sometimes they do share similar roles or goals. Urban renewal, for example, was often justified as being a public health initiative to clear the "slums", to reduce urban "blight", when the reality is that it was primarily designed to provide economic opportunities in strategically valuable urban zones for private companies or wealthy White Americans (Avila & Rose, 2009). Therefore, not surprisingly, this general mistrust of public interventions was already present in the African-American community long before the implementation of urban renewal. This fact can be demonstrated by analyzing two critical trends: the early emergence of population-level distrust of the medical establishment, epitomized by the Tuskegee experiments, and the later resurgence of this mistrust due the appearance of the HIV epidemic.

No single event has played a greater role in the public mindset regarding the erosion of the relationships between African-Americans and the medical community than the Tuskegee experiments (Freimuth et al., 2001; Gamble, 1997). These were a series of studies that began in 1931 and lasted for several decades, in which Blacks who were diagnosed with syphilis went untreated for years, many of whom died as a result. This was in spite of the fact that penicillin, the primary treatment for syphilis, was widely known to be curative at that time and was readily available. Nevertheless, the disease was allowed to take its uninterrupted course in these patients, without their consent or adequate compensation, to allow scientists to study its various stages. The erosion of trust at the societal level resulting from this study is undeniable (Gamble, 1997). Its fictionalization via television and literature has further contributed to its depiction as the single greatest cause of the distrust that the African-American community attributes to the medical profession, particularly in regards to research studies (Freimuth et al., 2001).

Yet, it is critical to note that the Tuskegee syphilis study is namely a prominent symbol of the perceived distrust of the medical establishment by the African-American community. Numerous prior abuses by the medical community against Blacks are well known. Gamble traces the history of these medical abuses in the United States, and shows that the Tuskegee incident, although pivotal, represents but one point in a very long list of bioethical grievances (1997). Other medical exploitations that took place prior to the Tuskegee experiment include medical experiments on the induction of heat stroke designed to prolong the working hours of slaves in Georgia, surgical experiments on the genitals of slave women in Alabama, designed to improve surgical techniques for white women, and the kidnapping of young Black men and women as well as grave-robbing of

Black cemeteries for commercial sale of human bodies to scientists. All of these events were fairly common, both in the North and South of the United States (Gamble, 1997).

The most significant aspect of the healthcare system that has been impacted by this historical legacy of eroded trust has been the realm of clinical research. HIV/AIDS clinical research and care have been particularly affected (Mallinson, Rajabiun, & Coleman, 2007; Sengupta et al., 2000; Whetten et al., 2006). Researchers have found that a lack of knowledge of the different types of research being conducted, a lack of understanding and trust of informed consent procedures, and distrust of researchers have all played a role in the low participation rates of the African-American community in clinical research trials (Freimuth et al., 2001).

A common theme that emerges, in an analysis of the historical events that have led to an erosion of trust, is the perception by African-American that their lives are not seen as being valuable to the greater American society (Gamble, 1997). Viewed through the lens of social capital, this pervasive belief can been seen as promoting a reduction in the number of bridging ties between African-Americans and non-African-American ethnic groups, further weakening the social capital of African-Americans. This decreases the capacity of the Black community to effectively mobilize its collective resources to address health problems via participation in clinical research trials for example. Researchers have discovered that greater social capital can effectively improve participation in clinical research studies. For example, Sengupta et al have found that although distrust of healthcare providers and institutions is a significant inverse predictor of willingness to participate in AIDS research trials, altruism and religiosity were associated with willingness to participate (2000). Both of these represent forms of social

capital, the former being more cognitive while the latter being more structural in nature. Nevertheless, this illustrates that social capital, and interventions that take social capital into consideration, may be useful in improving the participation of African-Americans in research trials. If, as suggested by this dissertation study, IPCP really does help build trust among members of healthcare teams, and if patients are included in that process, perhaps IPE, IPP and IPO might be ideal interventions to achieve this goal.

Ultimately, history has psychologically scarred the urban disadvantaged populations, and has imparted a legacy of mistrust by default that is so pervasive that many mental health researchers have grappled with how to deal with this issue (Arthur L. Whaley, 1998; Arthur L Whaley, 2001). The impact of sociopolitical policies on the perceptions of the healthcare encounter by African-Americans extends far beyond urban renewal or bioethical abuses. Policies of political disempowerment of African-Americans have also played a role in health disparities, and from a social capital perspective, it represents an absence of sharing of social power (LaVeist, 1992). This, in turn, further breeds an atmosphere of mistrust and perceived racism that has a direct effect on the patient's satisfaction with the clinical encounter (LaVeist, Nickerson, & Bowie, 2000). This dissertation study suggests that communication and information sharing within the context of IPCP may be useful in addressing challenges to improving patient satisfaction.

In the absence of sufficient gains of political power to make a significant difference in the healthcare of African-Americans, many researchers have contended that community empowerment may represent a powerful mechanism of social support that can help modify individual perceptions and improve health outcomes (Israel, Checkoway, Schulz, & Zimmerman, 1994). Also, the historical role of the church in building social

capital and facilitating public health interventions as well as increased participation and empowerment of African-Americans has long been acknowledged (Aaron, Levine, & Burstin, 2003; Campbell et al., 2007). These are other areas where IPCP yet again may play a role, by incorporating patient families and communities as much as possible as members of the healthcare team.

Another historical trend that has greatly impacted urban perceptions of the healthcare encounter is the prison-industrial system. The disproportionate targeting of African-Americans for incarceration not only generates a subsequent health burden for the Black community (Freudenberg, 2001), but it further breeds an atmosphere of stigma, fear and mistrust in the community at large, resulting in more social isolation of the former inmates and their families, if any, from the community at large (Golembeski & Fullilove, 2005). Social stigma aimed against disadvantaged community was a prominent theme in the findings of this dissertation study. Thus, it can be concluded that there is a historically grounded trend in which public interventions, programs and policies have consistently, to put it mildly, diminished the social capital of urban disadvantaged populations in the United States through the erosion of individual and social trust.

Although it is important to understand the historical causes of this tremendous erosion of trust, it is just as critical to realize that having an understanding of the meaning of "trust" offers ample opportunity to mitigate the effects of poor cognitive social capital on the healthcare encounter. In a study on African-Americans' participation in clinical research trials, Crawley identified three dimensions of trust that play independent roles in the healthcare setting: trust in the fiduciary relationship, trust as confidence in competence, and perception of trustworthiness (2000). In relation to social capital, the

fiduciary relationship, in particular, is critical. It is the formal relationship between the patient or research subject and the healthcare professional, and it is one in which there is an inherent power differential (Crawley, 2000). Thus, by definition, it depends on linking ties, which are crucial for the establishment of vertical social networks. The implication is therefore that it is inherently fragile. In contrast, horizontal social networks, which are linked via bonding and bridging ties, provide much stronger social connections and therefore also play a significant role in the relationship between social capital and health outcomes, particularly in terms of social support (Szreter & Woolcock, 2004). Viewed through the lens of social capital, it is thus easier to understand how breeches of trust in the healthcare setting, such as the Tuskegee experiments, can significantly damage the patient-provider relationship. An awareness of this inherently fragile situation suggests the need to promote greater emphasis by the healthcare professional on trustworthiness and competence. It is not clear whether IPCP can help address this particular challenge.

**Social Capital and Sociocultural Barriers**

Berkman and Glass identified several measures of the role of culture in social capital and health: racism, sexism, social cohesion, competition/cooperation, and norms and values (2000, p. 143). However, the goal in this discussion is to elucidate the role that culture plays in the perceptions of the healthcare encounter, and to accomplish this goal, it is important to demonstrate the role of culture in the establishment of trust, sharing and reciprocity. Lewis-Fernández and Díaz propose a systematic method for analyzing the role of cultural factors in the healthcare encounter (2002). Their cultural formulation model establishes five cultural factors that affect the clinical setting: cultural components of the patient-provider relationship, cultural identity of the patient, cultural explanations

of illness by the patient, cultural factors related to the psychosocial environment and functional status, cultural impact on diagnosis and care (Lewis-Fernández & Díaz, 2002). I will examine the first two cultural factors, as they relate more closely to the social capital of the patient.

Lewis-Fernández and Díaz's cultural components of the patient-provider relationship are essentially synonymous with the provider's cultural competency. Numerous authors have acknowledged the importance of the cultural competency of healthcare professionals (Eiser & Ellis, 2007; Kagawa-Singer & Kassim-Lakha, 2003), while many others have advocated for improvements in cross-cultural teaching in the academic curricula of healthcare professionals (Betancourt, 2003; Carrillo, Green, & Betancourt, 1999; Tervalon & Murray-Garcia, 1998; Weissman et al., 2005). But it is the role of cultural competency in establishing trust that is most pertinent here, as it will help elucidate how social capital impacts health outcomes in the healthcare encounter. Crawley identified cultural competency as an important dimension of trust in the healthcare setting (Crawley, 2000). An extensive discussion of various methods of improving the cultural competency of healthcare professionals is beyond the scope of this discussion. Nevertheless, suffice it to say that a healthcare professional's cultural competency plays a key role in the patient's satisfaction with the encounter. This is a task that IPCP is not currently designed to accomplish.

An equally essential component of culture is the notion that the cultural identity of the patient matters in the healthcare setting. Trust, which is inherent to cognitive social capital, is tightly bound to cultural identity: both share the notions of norms and values. This results in several important outcomes for the healthcare encounter. The first is that

patients are more likely to trust a clinician if they perceive that he or she shares their own cultural heritage or worldview. This idea is often known as “congruence” or “concordance” in the scientific literature. Krupat et al have shown that the extent of congruence is directly related to the way patients evaluate their physicians and the clinical encounter, although it does not determine the perception of specific encounters (2001). García et al demonstrate that African-Americans believe that race concordance promotes provider empathy (Garcia, Paterniti, Romano, & Kravitz, 2003). Viewed from a social capital perspective, the belief that race concordance can promote empathy is a direct reflection of the notion of reciprocity, and the logical implication is that Black patients are more likely to expect to have a reciprocal relationship with Black physicians. Although the theme of lack of empathy did emerge in this study, it was not possible to explore how it relates to the issue of race concordance, and thus it is unclear how this concept fits within the theoretical model created in this study.

The second is that patients who perceive a certain level of threat to their cultural identity are much less likely to fully participate in the healthcare encounter. Coyle specifically studied this idea and found that satisfaction within the clinical encounter is directly linked to perceived threat to individual identity (1999). She emphasizes that the notion of threat to personal identity as being a primary culprit in the ineffectiveness of the clinical encounter does not imply a lack of professional integrity on the part of the healthcare professionals. At the same time, it is also not possible for healthcare professionals to be fully aware of all the cultural idiosyncrasies of all their patients. Rather, the patient’s perception of threat depends on very basic human values, including respect for differences, personal worth, and the sense of self and individuality (Coyle,

1999). This again is consistent with the theme of stigma of poverty, which emerged repeatedly in this dissertation study.

Some studies suggest that sociodemographic factors such as race, gender, and socioeconomic status promote bias in the level of respect physicians give to their patients (Berger, 1998; Cooper-Patrick et al., 1999). Others have found that such factors are unrelated to physician's respect for their patients (Beach, Roter, Wang, Duggan, & Cooper, 2006). However, there is a general consensus that patients can detect their physician's perceived respect for them (Beach et al., 2006), which plays a significant role in their perception of threat and their level of participation in the healthcare encounter.

This idea becomes even more critical when one considers the fact that research has shown that healthcare professionals' biases play a significant role in the persistence of racial and ethnic disparities (van Ryn & Fu, 2003). van Ryn and Fu further demonstrate that healthcare professionals may be helping to perpetuate these disparities because the subtle nature of their "social cognition and social interaction processes that contribute to institutionalized discrimination" make them hard to address via policy interventions (2003, p. 252). In other words, healthcare professionals' biases are often fundamentally linked to the interaction of their social capital with that of the patient, and discrepancies between the two are not only perceptible to many patients, but they also perpetuate health disparities. On a more positive note, it may be possible to address this particular challenge via the full implementation of IPE, IPP and IPO interventions, where the patient is part of the team, and where everyone learns to overcome personal biases and to look beyond traditional hierarchies, as suggested in this dissertation study.

As a further reinforcement of the role that social capital plays in the perceptions of patients, it is important to consider the selection patterns of practice location for physicians, and the role that under-representation of African-American personnel in the healthcare system plays in perpetuating negative perceptions. First, the importance of place to social capital, a widely accepted idea, must be acknowledged in this instance. Berkman and Glass' theoretical model on social networks and health makes explicit references to proximity and reachability as key components of social network structure (2000, p. 143). Research has shown that healthcare professionals tend to locate their practice in areas where they can make a difference in the lives of people who share their cultural background. Kazanjian and Pagliccia (1996) found that physicians who choose to situate their practice in the urban setting do so primarily in a conscious search for certain community characteristics, the latter being consistently ranked as more important than professional and income considerations. This is especially true regarding African-American physicians. For example, a study by Lloyd and Johnson (1982) found that Black physicians are more likely to practice in urban settings and to serve communities that are predominantly populated by Black residents. Other studies have found that physicians who were born or raised in medically underserved communities are significantly likely to practice there (Tavernier, Connor, Gates, & Wan, 2003). These results are supported by numerous other studies (Carlisle, Gardner, & Liu, 1998; Komaromy et al., 1996).

The continued existence of a disadvantage in the proportion of healthcare professionals who originate from the African-American community perpetuates a serious shortage of culturally competent healthcare professionals. African-Americans represent

around 15% of the population, yet only about 5% of healthcare professionals, and it appears that the number of Blacks students attending public medical schools has been diminishing (Carlisle et al., 1998). Given the existence of persistent racially distributed disparities in health care, the evidence that Black healthcare professionals are more likely to care for Black patients in the most disadvantaged settings than their non-Black colleagues (Lloyd & Johnson, 1982), and the fact that physician-patient race-concordance is a predictor of patient satisfaction with the healthcare encounter (Chen, Fryer, Phillips, Wilson, & Pathman, 2005; Cooper et al., 2003), the need to increase the number of Black physicians is an undeniable imperative of social justice in the United States. Furthermore, given the fact that reciprocity of ties, duration, and intimacy are critical characteristics of social networks based on the Berkman and Glass model, and the fact that patient perceptions of the clinical encounter do affect health outcomes, a social capital perspective clearly helps to shed some light on the close relationship between the social determinants of health and the downstream factors that are so often emphasized in the healthcare literature.

The notion of John Henryism also plays a significant role in determining the perceptions of African-Americans in the healthcare setting. John Henryism is the hypothesis that a behavioral mechanism in which individuals actively and consciously work against psychosocial stressors in their environment can lead to poor health outcomes in those without sufficient socioeconomic means to cope (Bennett et al., 2004; James, 1994). It has led to a prevalent belief in many African-Americans that it is often better to solve personal problems without assistance. This, in turn, may lead to avoidance of the clinical encounter until the occurrence of a significant health event. The theme of

presentation at advanced stages of disease emerged in this dissertation study, and this may be a plausible theoretical explanation for why it occurs and how it is related to social capital. John Henryism may be a psychosocial protective mechanism (Neighbors, Njai, & Jackson, 2007). However, given that it is such an individually based strategy, it may also be a reflection of a lack of social support.

Racism has played a key role as a social determinant of health in American society. Research has demonstrated that it also has an influence on the patient's perception of the healthcare encounter. Fiscella describes three types of racism: institutionalized, individualized, and internalized (2004, p. 1140). All three types of racism represent areas where social capital plays an important role in mitigating the patient's perceptions of the healthcare encounter. In the realm of internalized racism, Balsa and McGuire show that the expectations from and satisfaction with the healthcare encounter are racially distributed; they posited that these differences may be due to cultural differences (2003). Culture is a measure of an individual's ingrained beliefs, norms and values. The implication is that, on average, Black patients are more likely to accept lower standards of care, which implies that they are likely to have internalized notions of inferiority imposed upon them by American society. This is partly a reflection of the lower social capital in the African-American community. Balsa and McGuire also discuss the fact that African-Americans have greater fears of unwillingly and unknowingly undergoing experimentation and higher levels of concern for the invasion of privacy (2003), both of which represent deteriorations of cognitive social capital in the realm of trust.

The patients' or subjects' perceptions of the healthcare encounter can also be affected by institutionalized or individualized racism. We have already seen the effects of institutionalized racism. They are particularly evident in the realm of the historical barriers to healthcare, given that during earlier periods in American history, laws and policies were much more clearly discriminatory. Nevertheless, institutionalized racism is very much still a part of life for African-Americans (Hilfiker, 2002). In terms of social capital, institutionalized racism is usually thought to operate more on a socioeconomic level (K. Fiscella & Williams, 2004), rather than on a cultural level.

Individualized racism, on the other hand, plays a slightly less visible but no less vicious role in the realm of perception of the clinical encounter, and it is more clearly based on cultural differences. Healthcare professionals' racist attitudes and beliefs, whether intentional or unconscious, are still pervasive in the American healthcare community. Balsa and McGuire have identified prejudice, clinical uncertainty and stereotypes as three areas in which the cultural perspectives of healthcare professionals can promote the perpetuation of disparities in health and utilization of healthcare services (2003). Other authors support this idea (Berger, 1998).

In direct contrast to racism and its impact on the perception of self and of the healthcare encounter, research has shown that social capital can help mitigate these negative effects via racial socialization. The latter can be defined as the process of socially inculcating individuals, through beliefs and experiences, with notions that help their particular social group face the barriers erected by the dominant group in a society. In other words, racial socialization is the process of creating a racial identity (Richman & Kohn-Wood, 2007). For African-Americans, racial socialization includes an awareness of

cultural difference and racism, reverence for spirituality and religion, and an appreciation of Black culture, heritage, and extended family ties (Fischer & Shaw, 1999, p. 397). All of these components of racial socialization are in fact grounded in both the cognitive and structural social capital of African-Americans.

Furthermore, based on research in the field of mental health, Fisher and Shaw suggest that racial socialization may represent a protective mechanism against perceived discrimination and racism (1999). Richman and Kohn-Wood found that high racial identity reduces the need for mental health services utilization (2007). This further supports the notion that although a lack of social capital may increase the likelihood that urban disadvantaged patient populations will negatively perceive the healthcare encounter – perhaps rightfully so under certain circumstances – it is equally crucial to note that different forms of social capital can help mitigate the negative effects of the social determinants of health, and may also offer areas for specific interventions by healthcare professionals who are seeking to connect with their Black patients. Racial socialization, in this sense, is a measure of resiliency (Brown, 2008), and represents an aggregate of bonding and bridging ties that strengthen African-Americans both individually and collectively. Interventions that foster IPCP may represent a unique opportunity to improve the social capital of urban disadvantaged patient populations.

In general, it is important to realize that many of the cultural factors that can frame the social capital of the individual also operate along socioeconomic lines as well. Race is a prototypical example of such factors. All forms of racism result in some level of social exclusion and deprivation, but the point at which it manifests may be different. As shown above, individualized racism on the part of healthcare professionals can be a

culturally based construct, and institutionalized racism is effectively a socioeconomic phenomenon, but with regard to social capital, they both promote the reduction of various psychosocial mechanism, such as social support and access to resources. It is in this light that the impact of socioeconomic barriers will now be addressed.

**Social Capital and Socioeconomic Barriers**

In the Berkman and Glass theoretical model on social networks, some of the socioeconomic barriers to health discussed include poverty, discrimination, labor market structure, relations of production, discrimination and conflict (2000, p. 143). In this section, I will focus on the socioeconomic factors that play a definitive role in the perceptions of the clinical encounter. In the realm of discrimination, perhaps no other issue more closely links social capital and socioeconomic determinants of health than racial residential segregation. In particular, the spatial dimensions of social capital have been the focus of research in recent years. In fact, Subramanian et al have found that social capital is so spatially embedded within neighborhoods that, even after controlling for confounders such as demographic and socioeconomic factors, substantial differences remained in terms of individual perceptions of trust (Subramanian, Kim, & Kawachi, 2002). It is therefore not surprising that African-Americans' perceptions of the healthcare encounter is marred by this atmosphere of spatially and socioeconomically generated lack of trust. The idea that disadvantaged patients are less likely to trust the healthcare system and healthcare professionals was strongly supported in the data from this dissertation study, particularly with regards to the sharing of information relevant to care, and this relationship persisted even after controlling for all identified confounders.

Similarly, Carpiano proposes a neighborhood resource-based theory to relate social capital and health (2006). He argues that social cohesion, an important characteristic of network ties, and social capital, embedded in specific social networks, are both preceded by certain socioeconomic structural antecedents, including income inequality, home ownership, and socioeconomic characteristics of adjacent neighborhoods (Carpiano, 2006, p. 169). Carpiano's structural antecedents of social capital are congruent with Berkman and Glass' socioeconomic barriers in that they both link socioeconomic conditions, social capital, and health.

The issue of residential segregation presents both a historical and a contemporary challenge for the reduction of health disparities. Research has consistently shown that racial residential segregation is a key promoter of health disparities and is directly intertwined with income level and educational status (Morello-Frosch & Lopez, 2006; D. R. Williams, 1997; D. R. Williams & Collins, 2001). African-Americans have long been segregated from the rest of American society, and the institutionalization of racism as a pervasive modulator of social capital is clear (Putnam, 1995, p. 672). However, the relationship between residential segregation – as a social determinant of health – and social capital – as a potential modulator of health outcomes – have often not been analyzed from the patient's perspective. The key question is the following: how has residential segregation manifested itself in the urban patient's perceptions of the healthcare encounter?

An important effect of residential segregation on cognitive social capital has been a further reinforcement of the Black community's mistrust of the healthcare establishment. This is essentially a spillover effect of the loss of social cohesion and

social trust, created at the neighborhood level, as a result of socioeconomic conditions (Carpiano, 2006). Another significant impact of residential segregation on social capital has been a diminution in the psychosocial mechanism discussed by Berkman and Glass, including social support and social influence. In the realm of social support, Kristenson et al document that individuals with lower socioeconomic status who find themselves in more environmentally challenging and segregated neighborhoods have fewer psychosocial resources (Kristenson, Eriksen, Sluiter, Starke, & Ursin, 2003). In regards to health, this can lead to chronic stress, expectation of negative health outcomes, strain, loss of coping ability, and hopelessness. According to Berkman and Glass' theoretical model, this is a distinct manifestation of an erosion of social capital, which, in turn, can manifest in the clinical encounter. The theme of learned helplessness emerged in this dissertation study as an element of the theoretical category named differential expectations.

Another significant socioeconomic factor that greatly influences the perceptions of urban patients is their health literacy. It is known to play a significant role in influencing various health outcomes, including awareness of cancer prevention and strategies, fear and fatalism (Peek, Sayad, & Markwardt, 2008; Wolff et al., 2003), health services utilization (S.-Y. D. Lee, Arozullah, & Cho, 2004), participation in health surveillance initiatives (Link, Mokdad, Stackhouse, & Flowers, 2005), and chronic disease management (Hawkins, Kantayya, & Sharkey-Asner, 2010). It is important to note that health literacy, in turn, depends on other factors, such as educational status and language proficiency (Shea et al., 2004), which themselves are tied to the issues of life course and cumulative disadvantage. The theme of health literacy was also identified in

this study as a fundamental barrier to the coordination of good patient care, via the limit it poses on the sharing of information. This is yet another challenge to IPCP that is created by disparities in health and healthcare.

What is not often acknowledged is the way in which social capital affects health literacy. Evidence of this includes the fact that even when researchers control for educational status, African-Americans still score significantly less on measures of health literacy (Shea et al., 2004). Social capital theories provide numerous potential explanations for this discrepancy. For example, Friedman et al found that among Black men who had adequate educational or functional literacy, the preference was to receive information about prostate cancer screening from church representatives or African-American women (2009). Other researchers have found that cancer screening interventions, based on social influence as a psychosocial mechanism, have been successful in improving the health literacy of African Americans (Wolff et al., 2003), and that community engagement policies are more likely to be successful in this group for disease screening than reliance on traditional individually-targeted strategies (Allen, Kennedy, Wilson-Glover, & Gilligan, 2007).

Another approach, based on improving social capital, is the use of health promotion strategies that help individuals and communities overcome barriers to healthcare (Nutbeam, 2000). These emphasize the role of social skills in facilitating communicative and critical literacy, which are measures of social capital, rather than just functional literacy, the traditional target of health education policies, which is primarily a measure of human capital. Since poor health illiteracy reduces the likelihood that a patient will participate fully in the healthcare encounter, due to perceptions of low self-

esteem, it represents an important area for public health policy initiatives. Perhaps this is one avenue via which public health professionals can make a difference in the implementation of IPCP within healthcare systems.

Addressing all the socioeconomic barriers to healthcare is beyond the scope of this discussion. Nevertheless, other socioeconomic barriers that perpetuate negative perceptions deserve to be mentioned. The notion of cumulative disadvantage, which depends primarily on socioeconomic exclusion, has impacted and continues to affect the urban disadvantaged communities, while the concept of poor life chances offers a closer look at how cumulative disadvantage manifests itself at the individual level. Persistent exposure to environmental degradation is an additional chronic stressor that disproportionately affects these populations. All of these are embedded in the societal mechanisms that have long promoted a lack of trust in the healthcare system (Randall, 1996). Another general effect of these factors on perceptions is a reduction in the level of concern for and ratings of individual health, which is usually associated with depressive symptoms (Finlayson, Williams, Siefert, Jackson, & Nowjack-Raymer, 2010; Gee & Payne-Sturges, 2004). It is clear that the absence of strong social capital mechanisms that can help attenuate these long-term, socioeconomically derived effects can further promote negative perceptions of the healthcare encounter, which in turn can make the achievement of IPCP difficult in urban settings.

**The Social Capital of Patients: the Key to Inclusion on the Healthcare Team**

The clinical encounter offers healthcare professionals a unique opportunity to mitigate some of the negative effects of the social determinants of health on urban populations' perceptions of the patient-provider relationship. The concept of social

capital is a useful theoretical framework for understanding patient behaviors in the healthcare setting, because it takes into account both individual and societal factors that affect health outcomes and their interaction with cognitive and structural processes.

The perceptions of urban populations are ultimately not the most direct measure of their overall wellness. Evidence suggests that the social determinants of health (i.e. upstream factors), as well individual health behaviors (i.e. downstream factors) each play a more direct and measurable contributory role in shaping health outcomes. However, individual perceptions, when examined in the context of cognitive and structural social capital, help to elucidate many of the links between the so-called upstream and downstream determinants of health that are often not taken into consideration in the healthcare encounter. In particular, patient perceptions of the healthcare encounter represent both a major challenge and a significant opportunity for achieving optimal health outcomes, on an individual as well as population basis, and this is why IPCP may play a key role in this realm. The importance of collective individual perceptions in modulating social trust at the population level is becoming increasingly evident (Subramanian et al., 2002). In other words, while it can be argued that individual perceptions of the clinical encounter may not be the direct determinants of health, when viewed in the context of social capital, they become essential components of community-based social trust, which is known to play an important role in population health. Thus, perceptions should be seen as an important area for public health interventions and research initiatives.

Negative perceptions alienate both the patient and the healthcare professional, putting significant strain on this important relationship, and making the healthcare

encounter much less fruitful. The professional satisfaction of healthcare providers is intimately linked to the perceptions and satisfaction of their patients, and as this dissertation study shows, to many of their views about how IPCP makes a difference in patient health outcomes. Given that ethnic minorities in the United States tend to report lower satisfaction with the healthcare services they receive (Haas et al., 2000), the potential for negative perceptions to push the entire patient-provider relationship into a downward spiral that further perpetuates healthcare disparities at the population level becomes all too evident. When examining the perceptions of urban disadvantaged populations in the healthcare setting, Crawley offers a word of caution by saying that "[they] should not be considered inherently mistrustful, even if the mistrust can be justified by injustices and disparities in access and care. Such characterization may create provider bias that, in turn, creates major barriers for referral and compliance in clinical trials" (2000). Thus, while it is true that healthcare professionals must tread carefully in order to maintain the trust of African-American patients or subjects in light of glaring inequalities and health and healthcare disparities, policies should assist healthcare professionals in their mission to heal by facilitating healthcare delivery via public health initiatives at the population level.

Regarding social relations and their effects on perception, Almedom believes that social capital can be both "an asset and a liability" (2005, p. 943). In other words, it can serve as a mechanism that helps to modulate the negative perceptions within the healthcare encounter, while it can also simultaneously serve to hamper its effectiveness. Ultimately, healthcare professionals must become more aware of the urban disadvantaged patient's perceptions, and understand the numerous historical, sociocultural and

socioeconomic factors that contribute to the production of those perceptions, in order to adequately address the patient's needs and concerns, and to improve the patient-provider relationship via the healthcare encounter. Viewed in this light, policies that are meant to improve the effectiveness of the clinical encounter, and by inference the quality of healthcare offered to the general population, must therefore target the social determinants of health, which are particularly important sources of disparity among vulnerable populations. Approaches that take into consideration the role of social capital as both a reflection of and a mitigating factor for these social determinants of health may be beneficial in this endeavor. This dissertation study suggests that IPE, IPP and IPO interventions, and the IPCP they produce, may just be able to serve in this capacity.

Social capital works via the pattern of trust, sharing, and reciprocity. The way interprofessional collaboration works is uncannily parallel to social capital. First, IPCP helps to build *trust* among team members and with the patients, families and communities. Second, trust leads to the seamless *sharing* of information, decision-making, and the approach to accomplishment of tasks (i.e. care delivery modeling). Finally, sharing results in *reciprocity* at the level of patient care: from the patient (i.e. adherence), from other healthcare professionals and healthcare systems (i.e. defragmentation of care) and from families and communities (i.e. holistic care) as well as from policymakers (i.e. the design and implementation of more socially equitable policies promoting efficiency in care). Healthcare disparities, if they are allowed to break the bond of social capital among all healthcare stakeholders, present a fundamental impediment to the achievement of successful patient outcomes via IPCP. Simultaneously, healthcare professionals, who are faced with daunting healthcare disparities in their

practice settings and among the patient populations they are caring for, can still wield the power of social capital that is embedded in IPCP to leverage the resources needed to care for their patients.

## Discussion

### Comparison of Study Findings with Current Systematic Review and Meta-Synthesis

Having examined how the underlying theoretical model developed in this study is supported by the extant literature on social capital and disparities in health and healthcare, it is critical to evaluate how the phenomenon of interest itself, which is the relationship between IPCP and patient health outcomes as elaborated in this study, fits with the existing literature. When the chosen methodology is grounded theory, it is usually recommended that the literature review be conducted at the end of the research study (Charmaz, 2006; Giles, King, & de Lacey, 2013). This is done to allow the researcher to minimize the introduction of preconceived notions into the emergent theory. The same approach was adopted for this dissertation study. However, one fundamental difference is that the researcher still conducted a systematic review of the literature prior to the conduct of the research study. This is generally a highly recommended precursor to all primary research studies, designed to focus the research question, identify all current evidence that is related to the topic, determine the gaps in the evidence, and synthesize this evidence in a way that facilitates the creation of recommendations for current practice and future research regarding the phenomenon under study. All of these key elements of a systematic review were performed at the proposal stage of this dissertation project, ultimately culminating in the dissemination of a systematic review with meta-synthesis on this phenomenon (Jadotte, 2015). Thus, it was concluded that an additional

literature review is not needed at this stage. Rather, a discussion of how the findings of this dissertation study relate to what is already known currently about the phenomenon of interest is merited. First, I will discuss how the study findings are similar to those of the prior systematic review with meta-synthesis (Jadotte, 2015). Then, I will examine how this dissertation study advances these prior findings.

A meta-synthesis is a compilation of qualitative findings from 2 or more research studies that are known to be relevant to a particular research or clinical question (Joanna Briggs Institute, 2014; Pearson et al., 2005). Achieving this synthesis can be done via two methods: meta-ethnography and meta-aggregation. The meta-ethnographic approach requires that researchers identify themes in select research studies they believe to be pertinent, extract those themes, and combine them in such a way as to generate a new rendering of a phenomenon (Atkins et al., 2008). In the meta-aggregation approach, all themes are extracted from all relevant studies, and all themes are used in formulating declamatory statements about the phenomenon of interest (Joanna Briggs Institute, 2014). As such, the meta-aggregation approach lends itself to greater transparency in the synthesis process (Lockwood & Pearson, 2013). It is also more closely aligned with the philosophical traditions of qualitative pragmatism (Hannes & Lockwood, 2011), which are consistent with the paradigm of choice for this dissertation study.

The prior meta-synthesis on this phenomenon had revealed a number of key themes, which are congruent with the findings of this study. First, it already quite clearly revealed the manifest pathway between IPCP and patient health outcomes. This includes: the attainment of the 4 IPCP core competencies as a fundamental initial goal; care coordination as the most proximal variable affected by IPCP; and patient care as the next

most relevant step in the pathway (Jadotte, 2015). Other key ideas that were already known from this synthesis of the literature include: the importance of team leadership as a key element in care coordination; the value of shared decision-making and problem-solving in healthcare; the role that continuity of care (or lack thereof) as well as social, economic and cultural barriers can play in patient care; and finally the impact that the lack of mutual accessibility and commitment on the part of healthcare professionals and healthcare systems can have on the successful achievement of IPCP (Jadotte, 2015).

Definitions for these various known themes can be found in the results section of the systematic review embedded in this dissertation study as well as in the final codebook found in Appendix J. Yet there are a number of insights that were uncovered during this dissertation study, which either expanded upon the themes that already existed in the literature and led to more in-depth assessments of them, or helped to clearly create links between the existing themes, thereby finally advancing knowledge of how these themes relate to each other. It is from this standpoint that the discussions in this chapter will proceed.

**Expansion of Existing Themes**

A number of key ideas have been explored more fully as a result of this dissertation study. For example, it was found that the themes of information sharing, decision-making, problem-solving, and care delivery modeling are all part and parcel of the broader theme of care coordination. In other words, care coordination consists of these 4 major aspects, all of which must be achieved successfully if one hopes to influence patient health outcomes through IPCP. While there is currently no literature on the relationship between IPCP and care coordination, a prior systematic review has

explored the literature on care coordination, with the goals of developing a working definition of care coordination, and identifying theoretical frameworks that explain how care coordination relates to healthcare factors and interventions and patient health outcomes (McDonald et al., 2007). The authors settled on the following working definition: "care coordination is the deliberate organization of patient care activities between two or more participants (including the patient) involved in a patient's care to facilitate the appropriate delivery of health care services. Organizing care involves the marshalling of personnel and other resources needed to carry out all required patient care activities, and is often managed by the exchange of information among participants responsible for different aspects of care" (McDonald et al., 2007). Note that the themes of information sharing and care delivery modeling identified in this review were also found in this dissertation study. However, this dissertation study helps to clarify what "the marshalling of personnel and other resources" might actually mean: namely, that there is a need to establish mechanisms for decision-making and problem-solving.

The theme of care delivery, which consists of the approaches chosen by healthcare professionals and healthcare systems to implement patient care interventions, had not yet appeared as an important element in this pathway in the interprofessional care literature (Jadotte, 2015). One of the key insights that this brings about is the idea that IPCP cannot be successful without care delivery models that are supportive of its function. There are numerous well known care delivery models currently in existence, including the patient centered medical model, nurse managed health clinic, and accountable care organizations (American Nurses Association, 2010). Prior studies on the phenomenon of interest had not yet identified that the care delivery model chosen may

have an influence on IPCP (Jadotte, 2015). This study also suggests that a number of other models of care delivery may be linkable to IPCP, including the one-stop shop model, and the community health worker model. These insights were absent in the literature to date.

The importance of information sharing as a fundamental step in achieving good outcomes using IPCP had also been known in the literature, but prior studies had not explored this construct in depth. This dissertation study found that information sharing has a number of processes that must be taken into account to facilitate the full functioning of IPCP. This includes identifying the patients' information sharing needs (ex. How do they want news to be delivered, what is their literacy level), understanding the information sharing processes involved in patient care (ex. meetings, written and verbal media), and setting up appropriately supportive information sharing systems (ex. electronic health records and patient portals). No prior study had specifically identified these as important aspects of how to share information between healthcare professionals, patients and families in the context of interprofessional collaboration.

This dissertation study also suggests that with regards to the influence of IPCP, patient care should be conceptualized as the combination of continuity of care (which itself consists of the defragmentation of care and the provision of holistic care), adherence, and institutional policies. No prior studies had identified which specific aspects of patient care can theoretically be affected by IPCP (Jadotte, 2015). A prior systematic review on the definition of continuity concluded the following: "Continuity of care is achieved by bridging discrete elements in the care pathway – whether different episodes, interventions by different providers, or changes in illness status – as well as by

supporting aspects that endure intrinsically over time, such as patients' values, sustained relationships, and care plans. Processes designed to improve continuity – for example, care pathways and case management – do not themselves equate to continuity. For continuity to exist, care must be experienced as connected and coherent" (Haggerty et al., 2003). The concepts of defragmentation of care and provision of holistic care are evident in this prior review's definition of continuity, but they had not yet been linked as potential outputs of IPCP. Also, this dissertation study suggests that the processes designed to improve continuity as mentioned above, can now be thought of as care coordination. For example, what is case management but the coordination of information sharing between healthcare professionals, patients, families and healthcare systems? Thus, this dissertation study advances knowledge by identifying specifically what the continuity of care should consist of with regards to IPCP.

**New Links Between Existing and New Themes**

In addition to helping to expand the definition and conceptualization of existing themes, this dissertation study also provides a number of explanations of how these themes are linked to each other. I have shown that various elements of IPCP interact in certain ways with the variables of care coordination, which then interact in certain ways with the variables of patient care, which themselves interact in specific ways that lead to changes in patient health and system outcomes. While there is still little literature on these mechanisms that is specific to interprofessional care, the findings of this dissertation study do offer some insights that are congruent with the general literature on these themes. For example, a prior systematic review found that care coordination is most effective at improving outcomes for "patients who have congestive heart failure, diabetes

mellitus, severe mental illness, a recent stroke, or depression" (McDonald et al., 2007). This is consistent with the mechanistic theme identified in this dissertation study, stating that IPCP helps improve care coordination for patients with complex problems, which include chronic diseases as well as complicated socioeconomic challenges.

Another important theme that emerged from this dissertation study, which also has a strong presence in the literature and is supported by a prior systematic review, is the concept of "being part of the team" as an important element of care coordination. This prior review concluded that "involving patients has contributed to changes in the provision of services across a range of different settings. An evidence base for the effects on use of services, quality of care, satisfaction, or health of patients does not exist" (M. J. Crawford et al., 2002). This is congruent with two central thematic findings of this dissertation study. The first is that having all stakeholders be part of the team, including patients, is a fundamental underlying explanatory element in care coordination; and the second is that care coordination primarily works by improving the continuity of care, which consists again of ensuring that healthcare services are delivered seamlessly across different settings. However, no prior study specific to the interprofessional care literature had brought this link to light as a fundamental output of IPCP.

Another interesting new link that is elucidated by this dissertation study is the role of health information technology in information sharing. A prior systematic review examining the role of health information technology (HIT) – such as electronic health record systems – in improving the Triple Aim of cost, quality and outcomes, concluded that there is a link between the use of such technology and the use of evidence-based guidelines for patient care, enhanced surveillance and monitoring of patient conditions,

and decreased medication errors (Chaudhry et al., 2006). This dissertation study suggests that perhaps this relationship occurs because HIT can facilitate information sharing, which is a key element of care coordination. Since this dissertation study suggests that care coordination is thought to play a key role in prevention of errors and medical complications, it is not far fetched to envision that this may be the pathway by which HIT helps reduce medication errors, as indicated in this prior review. No prior studies had examined this particular phenomenon in the interprofessional care literature by making the link between these different variables (Jadotte, 2015).

## Conclusion

### Summary of Study Findings and Results

An inductively grounded and deductively validated theoretical model has been produced from this dissertation study, and it suggests several pathways via which IPCP works to influence patient health as well as system outcomes in the context of disparities in health and healthcare. This study reveals that healthcare professionals believe IPCP consists of: having an appreciation for the different specialties, including learning to respect professional boundaries while collaborating; valuing diversity in professional skills, with the explicit understanding that healthcare professionals must understand each other's roles on the healthcare team; communicating with each other as well as with the patient, paying attention to his/her needs and stories, and how they may explain his/her behaviors; and working in teams, knowing full well that the patient is watching and is able to detect the depth of collaboration. These 4 components of interprofessionalism are consistent with the national US guidelines for assessment of interprofessional competency (Interprofessional Education Collaborative Expert Panel, 2011). From the

findings of this study, we conclude that healthcare professionals working in the urban context are well aware of interprofessionalism, its formal definition, its manifestation in the clinical encounter, and what it should mean for them and their patients.

The study also reveals that healthcare professionals believe IPCP cannot happen in a vacuum or for its own sake. First, it must be nurtured using IPE, IPP or IPO interventions. Second, it must be grounded in common goals all healthcare professionals can share and believe in, and these goals must be readily relatable to various forms of patient care. The need to bring efficiency to the healthcare system and to improve patient outcomes are the two goals that must be linked to interprofessionalism, and these must be met within the context of providing holistic, non-fragmented care, thereby ensuring continuity in care and facilitating patient adherence to care plans. It is this type of care, in their opinion, that is most likely to help the healthcare team reach the desired patient outcomes (such as decreased anxiety, lower likelihood of medical error or disease complication, and improved patient adherence, satisfaction, and overall quality of life and health), as well as healthcare system goals (including saving time, and reducing readmission rate, length of stay and healthcare costs).

Healthcare professionals view care coordination as the central element via which interprofessionally competent healthcare teams can effect change in patient health and system outcomes. This process occurs through three important components of care coordination: effective context-specific care delivery that takes into consideration different models of care (such as the one-stop-shop model, the patient medical home or the community health worker model) and the variations in approaches to care that exist in different specialties (such as pediatric, mental health and palliative care); well supported

information sharing processes and tools (such as a patient navigator) that assess and respond to the patient's needs; and reliance on team-based decision-making and problem-solving that truly value and include the perspectives of patients, their families, and in some cases the communities where they are from, at all times.

Although the four accepted domains of interprofessionalism are clearly important and interrelated, this study suggests that it is teamwork and communication that are most directly related to plausible mechanisms by which IPCP can impact patient health and system outcomes. For the most part, it is teamwork and communication that directly influence care coordination, which optimizes patient care, and eventually leads to improved patient health and system outcomes. This is the first study to my knowledge that has empirically identified care coordination as one plausible mechanism by which interprofessionalism acts to change patient health and system outcomes.

Achieving these lofty goals, however, requires having an in-depth understanding of how exactly IPCP works. This study has identified social capital and its 3 elements of trust, sharing and reciprocity, as the fundamental explanatory pathway for this phenomenon. Specifically, this phenomenon happens in 4 steps. First, interprofessional interventions build trust among healthcare teams, by helping all those involved in them to look beyond traditional hierarchies and perspectives, and overcome the entrenched attitudes that have for so long stalled the development of truly effective teams. Once trust has been built within a team of healthcare professionals and the patient, the sharing of information, decision-making authority, problem-solving tasks, and care delivery modeling becomes possible, because everyone is then part of the team, and everyone works hard to improve the work environment. As this process continues, team members

over time learn to work well together, and become more likely to hold each other accountable for ensuring optimal patient care: this means providing care that is continuous (that is, non-fragmented and holistic), that patients adhere to, and that is well supported by institutional policies. Finally, when patient care takes on this optimized form, improvements in patient health and system outcomes can take place both in the objective and subjective realms. Once change has been effected in these two realms of measurement, there is further motivation for healthcare professionals to continue working collaboratively, and the cycle repeats itself.

Health and healthcare disparities that are embedded systemically and that are embodied in some patients are, however, a major impediment to effective interprofessional collaboration to provide team-based, coordinated, continuous, and patient-centered care. With regards to healthcare systems, it is clear that major disparities exist in the types of support systems that are available to facilitate teamwork (such as the unavailability of potential collaborators or the long distances separating them), which often requires that healthcare professionals undergo role adaptations and perform tasks beyond their usual practice. The healthcare system also inherently treats its stakeholders differently, and this then influences how all stakeholders are able to work together in teams to achieve the common goals of patient care. This includes: the inherent power differentials amongst healthcare professionals, as well as between healthcare professionals and patients; the large gaps in compensation for healthcare professionals who work in poor and underserved areas, as well as for those who work in preventive or primary care; the differences in the healthcare facilities themselves (including the availability of language services, large patient caseloads and prolonged waiting times);

the unevenly distributed capabilities and limitations of information technology or electronic health record systems; and the numerous inequitable healthcare laws and policies that disparately affect some populations more than others, resulting in either challenges in care delivery or the fragmentation of care.

Information sharing is another element that can be severely impeded by healthcare system disparities. More specifically, there is often a substantial disconnect in the sharing of information between healthcare professionals and healthcare facilities, which is thought to be responsible for much of the healthcare misconduct that is associated with some locales. This includes patient misconduct (such as doctor shopping and misuse of opioid prescriptions) and healthcare professional misconduct (such as accepting kickbacks for referrals).

Although the aforementioned disparities are seen as being embedded throughout the healthcare system and not applicable to any specific disadvantaged patient population, there are certain disparities that apply primarily to the latter only. Low socioeconomic status was seen as the most substantial disparity for patients, and it was linked to patients being essentially denied access to care, being forced to choose between their lives and their health (such as having to choose to pay for food over medications), and to the induction of frustration in the providers who care for them. Because of these formidable challenges to accessing care, many patients (particularly those who have been especially disadvantaged and have historically been mistreated by the healthcare system, such as poor Blacks and Latinos) have a lower level of trust in the healthcare system and the healthcare professionals who attempt to care for them, have learned to be helpless and fail to demand that their care be collaborative in nature, and often give up on pursuing

adequate care. The ultimate results of these disparities in the patient's support system are: greater failure to adhere to all forms of care, even when it may be available to them and is offered by healthcare professionals working collaboratively, and the embodiment of the disparities in the healthcare system and the patient's environment in the form of presentation at advanced stages of disease and having chronic diseases at a much younger age than otherwise expected.

This study also determined that the views of healthcare professionals as discussed here are, for the most part, independent of their personal backgrounds. More specifically, this study found that healthcare professionals' views of the relationship between IPCP and patient health outcomes did not depend on either the type of healthcare delivery model or the type of healthcare system practice they work in. There were a number of associations between some of the remaining predictors identified in this study and the healthcare professionals' perceptions of the phenomenon of interest. In particular, the level of satisfaction of healthcare professionals with their careers was found to be a statistically significant predictor of a number of views on the phenomenon, even after controlling for all other identified covariates: whether effective sharing of information among healthcare team members influences patient satisfaction and the continuity of care; whether coordination improves the continuity of care; whether appreciation for different professions improves the delivery of care; the idea that the interprofessional competencies are interrelated and act together to influence patient health and system outcomes; and whether disadvantaged patients are less likely to trust the healthcare system and therefore less likely to share information relevant to their care. From all of these associations, two conclusions can be made. First, it is that the higher the level of

professional satisfaction, the greater was the level of agreement of healthcare professionals with these statements. The second is that by virtue of the sheer number of outcome variables it influenced, the level of professional satisfaction is the most important predictor identified in this dissertation study.

The type of healthcare profession was the next most important predictor, and it had an influence on the level of agreement regarding a number of outcome variables: whether coordination improves the continuity of care; whether appreciation for different professions improves the delivery of care; the idea that the lack of empathy towards disadvantaged patients can influence how well information is shared with these patients and their families; and whether disadvantaged patients are less likely to trust the healthcare system and thus less likely to share information relevant to their care. In all these cases, however, it remains unclear which of the professions had higher or lower levels of agreement on these aspects of the phenomenon. Nevertheless, all of these associations were negative: that is, depending on a participant's type of profession, the level of agreement was likely to be lower regarding these statements, even after controlling for other plausible covariates.

Two other statistically significant associations are worth noting. First, the gross annual income category of participants had a significant association with their views on whether appreciation for different professions improves the delivery of care. Second, engagement in patient care for at least 6 months since completion of professional educational training was significantly associated with the view that the lack of empathy towards disadvantaged patients can influence how well information is shared with these patients and their families. Both of these associations remained true even after controlling

for all other predictors. While it is unclear where the differences in perception lie among the gross annual income groups, the patient care experience predictor's association is quite clear: having worked for more than 6 months in patient care led to greater level of agreement with the proposed statement.

Regarding the remaining predictors, which include the number of years spent working with disadvantaged populations, whether there had been previous exposure to IPE, IPP or IPO interventions, and whether an electronic health record system was used in the work place, there were statistically significant relationships present with the outcomes, but only at the bivariate level: these associations disappeared when all other predictors were accounted for. Also, despite the large number of predictors included, none of the regression models accounted for more than 16% of the total variance. Lastly, none of the regression models were statistically significant once the correction had been made to the alpha level to avoid a type I error.

All of this suggests that the theoretical model as presented is potentially valid, since most of these plausible confounders did not seem to influence it, and of the few that did, they could not explain much of the variation in the outcomes, and none remained significant when more a more stringent chance threshold is applied. In particular, that the number of years spent working with urban disadvantaged populations had no significant association with the outcomes suggests that the theoretical model may also be potentially generalizable to healthcare professionals who work in settings other than the urban environment.

Overall, this study suggests that while it is important to ensure that healthcare professionals become increasingly more interprofessionally competent, as proposed by

the Interprofessional Education Collaborative Expert Panel 2011 report, there is a need to provide additional support for those who work with disadvantaged patient populations, if they are to accomplish their task of providing holistic, non-fragmented, and patient-centered team-based care. By making the first empirical link between interprofessionalism and the perennial problem of health and healthcare disparities that is endemic in the United States, this study suggests that there is a substantial need for further study on the impact of disparities on the function of healthcare teams. This includes the impact of disparities on the patients and families as integral members of the team, as well as on the healthcare professionals, who are tasked with the role of healing them in a context that is unsupportive and more cumbersome than it ought to be.

**Study Limitations**

While the qualitative phase of this dissertation study was concerned with identifying the relationships between IPCP and patient health outcomes in the urban setting with a focus on disadvantaged populations, the quantitative phase focused on the determination of whether the identified relationships are due to chance, due to confounding variables that better explain the views of the healthcare professionals, or due to real relationships between the identified variables. As such, two important distinctions between the two phases must be made and what each was designed to accomplish.

Given that the qualitative phase was designed to identify the proposed relationships, it had to pursue a number of avenues which phase II did not need to grapple with. The first goal of phase I was to identify themes from the healthcare professionals' views related to the topic of interest: this meant finding concepts, ideas, thoughts and statements that seemed to coalesce into concrete processes and patterns that could be

made visible. While these are presented as themes and in some cases as constructs in phase I, they became the *variables* in phase II. While this is certainly a distinct departure from the constructivist philosophy that framed the first phase of this dissertation study, and while constructivist researchers may find this re-definition of themes into variables problematic (Charmaz, 2006), this approach is consistent with the pragmatic worldview that was adopted as the overall philosophical stance of the study. Furthermore, this departure is not so dramatic, as the discussion of the literature at the conclusion of phase II has shown that the themes turned into variables are well represented in a variety of disciplines (including but not limited to healthcare), suggesting that they are viewed as valid social constructs by those who experience them (which in phase I of the study is limited to the population of healthcare professionals working in urban settings). This then suggests a reasonable link between the emergent themes of the constructivist worldview and the quantifiable variables of the objectivist worldview.

The second important distinction to be made between the two phases of this study is that while the first was concerned with identifying all themes that could become variables, the second sought to quantify only those themes that served as *conceptual links between themes*. In other words, phase I sought to identify *discrete themes that also could be seen as separate real world constructs*, as well as *conceptual links between these themes*, whether or not they are seen as separate real world constructs, while phase II sought to *bring only the themes that formed conceptual links to life*. This is a fundamental distinction to make because it not only demonstrates clearly the relationship between the two phases, but it also shows that each phase mutually reinforces the other in a classically mixed methods fashion. Phase I facilitated the construction of a set of themes into living

variables, some of which were already known to exist in one form or another in the real world (especially those that appear to exist in isolation and were not yet known to be linked to other themes found in this study), as well as many conceptual links that had not yet been recognized in the interprofessional care literature. As such, this dissertation study extends what is known about isolated constructs in the general literature, and helps to bring together those disparate pieces to provide *one plausible answer* to the question of how IPCP works to change patient health outcomes. This is fundamentally the biggest contribution of phase I of the dissertation, as it is the first study to propose a comprehensive, qualitative data-driven theoretical model of this particular phenomenon.

The biggest limitations of this particular contribution are that like all primary qualitative research, this theoretical model will inevitably be seen as being very subjective, first as a construct of a small sample, ergo subject to sampling error (which means its findings could be entirely due to chance), and second as a derivative of a convenience sample, ergo subject to poor external validity (which means it does not represent the broader world of interprofessional care). In the latter critique, one could go even so far as to posit that, given that the sample originated solely from the urban setting, the study's findings are limited only to this otherwise small setting and cannot in any way be generalizable to the broader healthcare environment of the US.

Yet addressing these critiques are exactly the fundamental contributions of phase II of this dissertation study, which further strengthens the importance of mixed methods research. The first critique is addressed in phase II by the sheer fact of seeking a much larger sample, which is magnified by approximately 8-fold compared to the sample from the qualitative phase. This alone means that the phenomenon was studied among a much

larger group of people, and this substantially reduces the risk of type II error (i.e. failing to detect an effect, or more precisely in this case, to find an association between pairs of variables, when one in fact does exist) that could otherwise be present in the data as produced in phase I only. Unfortunately, the second critique could not be fully addressed in phase II, in which a stratified random sampling approach was to be used initially to capture a sample that represents proportions of the healthcare professions that are consistent with national labor statistics. This was no longer possible due to the lack of access to the full list of eligible participants and their healthcare professions, which required the use of the convenience sampling method instead to obtain the survey data needed to complete the study in a timely fashion.

However, one important way in which this critique is addressed in phase II is that data was collected about both healthcare professionals who work with disadvantaged populations and those who do not, although the former represented the largest group. As such, this phase of the study extends knowledge about the perspectives of a broad cross section of healthcare professionals, including those who are not part of the urban setting, which facilitated a statistical determination that having worked with disadvantaged populations itself is not a confounding variable for the phenomenon under study from the perspective of healthcare professionals.

Two additional critiques must be discussed here as well. First, the profession of social work was underrepresented in the sample for this study (there was only one social worker in the qualitative sample, and she was only included because she worked at one of the other healthcare institutions at the study site). This is because the protocol for this study modeled the sample after the IPEC 2011 expert panel report, which was produced

by a committee of healthcare professional organizations in the US. The profession of social work was not represented in this panel, even though now it is recognized that social work plays an important role in collaborative practice. More importantly, the profession of nursing, which is arguably the largest of the healthcare professions, was also underrepresented in the quantitative phase of this study. The exact reasons for this are unclear, but some possible causes may include greater survey fatigue, professional dissatisfaction and burnout among nurses than other healthcare professionals.

Finally, an additional limitation of this study is the inability to fully explore the phenomenon via the cross sectional survey due to practical challenges. Recall that two sets of survey questions were developed based on the qualitative themes: one set relates to the most manifest themes explaining *how* IPCP leads to changes in patient health and system outcomes, and another set explaining *why* IPCP works in this way by delving into the theory of social capital as the underlying pathway of action. On the one hand, it was untenable to send out both sets of survey questions, which would have likely substantially limited the response rate for this dissertation study. On the other hand, having data that suggests *how* the phenomenon of interest functions without delving into the *why* of it leaves something to be desired. This is especially disconcerting because there is truly an absence of any such evidence in the current literature. Nevertheless, since this is a limitation that can easily be addressed in a subsequent research study, the choice was made in favor of feasibility and timely production of new knowledge over more in-depth exploration and delayed generation of evidence.

**Study Contributions to the Literature**

This study makes a number of important and clear contributions to the literature. First, it is clear that from the perspectives of healthcare professionals, IPCP functions, in essence, as a tool to build social capital, both among healthcare professionals as well as between them and their patients, families and communities. Analysis of the healthcare professionals views suggests that the four interprofessional competencies proposed as key components of IPCP form the core of what this social construct is about, although they identified a number of new aspects of each of those competencies that should be taken into account. The competencies of teams/teamwork, values/ethics, roles/responsibilities, and interprofessional communication were represented in this study as the themes of teamwork, appreciation for different specialties, diversity, and communication. This study also identified relationships among these themes and how they work to build social capital: while teamwork and communication represent the action-oriented mechanistic themes that lead to concrete changes in care coordination, patient care and health and system outcomes, appreciation for different specialties and diversity are the fundamental implicit backbones that makes the actions of IPCP possible.

Second, this study also identified care coordination as the fundamental next step in the pathway between IPCP and systems or patient health outcomes. Care coordination is a complex phenomenon that is well studied in the literature in general, and a previous meta-synthesis, grounded in a systematic review of the qualitative literature, on the relationship between IPCP and health and system outcomes already found that the coordination of care is a fundamental element in this pathway (Jadotte, 2015). However, this is the first study to specifically identify which aspects of care coordination can be

affected by IPCP and how. These aspects include: the design of care delivery approaches, the sharing of decision-making among healthcare stakeholders, the clear identification of the patient's, families' and communities' information sharing needs and the implementation of key information-sharing processes and systems to support them. This dissertation study suggests that these are the fundamental variables that IPCP can influence, and, if done well, it can help optimize them to ensure they are responsive to the two overarching goals of improving patient health and system outcomes.

Third, this study identifies patient care as the next central variable in the pathway between IPCP and health or system outcomes. More importantly, it offers a renewed vision of what patient care is (i.e. the sum of activities implemented to improve the health outcomes of patients, their families and communities), what it should mean if it is to be linkable to good IPCP and good care coordination (i.e. a holistic and non-fragmented approach to conducting the sum of activities implemented to improve the health outcomes of patients, their families and communities), and what it must mean if it is to achieve the aim of improving health as well as system outcomes (i.e. a holistic and non-fragmented approach that is supported by policies that encourage effective and efficient care, which together facilitate the conduct of the sum of activities implemented to provide healthcare to which patients, their families and communities can adhere to achieve better health and system outcomes). Furthermore, this study provides clear linkages between aspects of IPCP and care coordination that should make the achievement of good patient care via IPCP theoretically possible.

Fourth, to my knowledge, this is the first primary research study to use inductive data-driven methods to document that social capital is the fundamental underlying theory

that explains the functioning of IPCP among healthcare professional teams. This empirically confirms what previous researchers had alluded to either in opinion papers, such as editorials (Soubhi, 2010), or in deductive empirical studies (Godley et al., 2011; Godley & Russell-Mayhew, 2010). Similarly, it is the first study to simultaneously confirm its inductive findings on this pathway using the deductive method of cross sectional survey validation.

Furthermore, this study adds much to the interprofessional care literature by answering the call made by many researchers (B. Brandt et al., 2014; B. F. Brandt, 2014; Reeves et al., 2013; Reeves et al., 2008; Merrick Zwarenstein et al., 2009) and organizations (Institute of Medicine, 2015) to specifically study the role of context in the pathway between IPCP and health and system outcomes. In particular, the IOM's model on measuring the impact of IPE on collaborative practice and patient outcomes is worthy of discussion. Figure 22 below visually summarizes this model.

At first glance, this model may appear to be different than the proposed conceptual model elaborated in this dissertation study; however, they are actually not only very similar but the theoretical model developed in this study substantially expands the IOM model. While the various clusters of categories in the IOM model have different names than those found in this dissertation study, they represent very similar themes when compared to those identified in this study. For example, the *learning continuum* category identified in the blue box in the IOM model is identical to the theme of *interprofessional interventions* as discussed in this study; the *learning outcomes* category in the pink box to the left in the IOM model is also identical to the theme of *interprofessional collaboration* as stated in this study; and the *health and system*

*outcomes* category in the pink box to the right in the IOM model is similar to the theme of *common goals* in this study. Furthermore, the conceptual relationships illustrated in the IOM model are also similar to those depicted in the theoretical model in this study. For example, the idea that *IPE* influences *learning outcomes* is captured in both models, and the idea that the *learning outcomes* share a relationship with *health and system outcomes* is also present in both models. As such, the findings of this dissertation study are well aligned with current expert knowledge on this phenomenon.

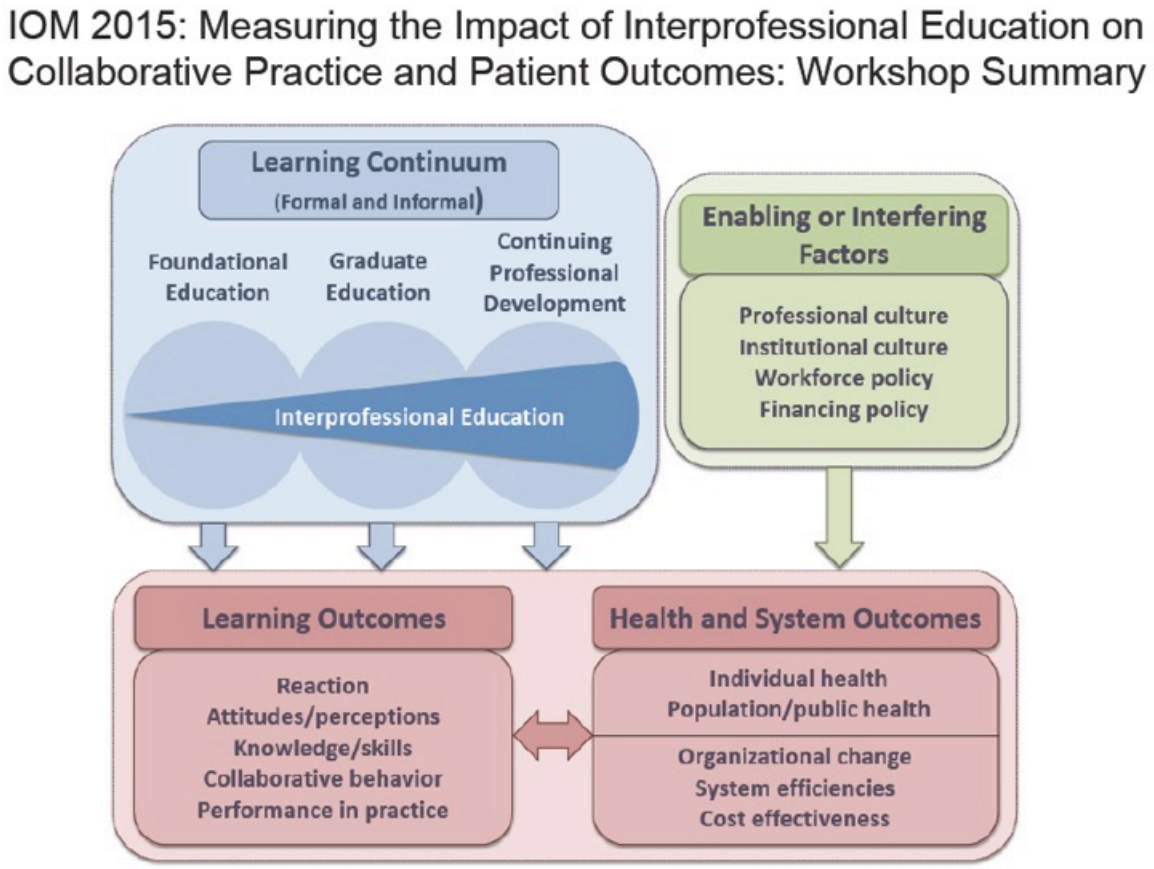


**Figure 22.** Institute of Medicine model on measuring the impact of interprofessional education on collaborative practice and patient outcomes.

Source: Institute of Medicine. (2015). Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes: Workshop Summary. Committee on Measuring the Impact of Interprofessional Education on Collaborative Practice and Patient Outcomes; Board on Global Health. Retrieved from: http://www.nap.edu/catalog.php?record_id=21726

However, there are two important differences, which illustrate some of the major contributions of this study to the literature. First, in the IOM model, the relationship between the *learning outcomes* of IPE (i.e. IPCP) and *health and system outcomes* is depicted as a double-headed arrow, with no clear indications as to what that relationship entails. Yet deciphering this particular relationship was the principal objective achieved in this dissertation study, which found that the *learning outcomes* of IPE are linked to better care coordination, which leads to improved patient care, and results in optimization of *health and system outcomes*: this is perhaps the most fundamental contribution of this dissertation study to the current body of knowledge on this phenomenon. Second, the green box in the IOM model lists some *enabling or interfering factors* that may influence *learning outcomes* as well as *health and system outcomes*. When examined closely, these factors are congruent with the *systems disparities* identified in this study. For example, the IOM categories of *financing policy* and *workforce policy* are related to the themes of *institutional policies* and *sociopolitical disparities* in this dissertation study. More importantly, however, this study elaborates clear pathways via which these types of factors influence the phenomenon of interest, which had not yet been done in the literature.

By establishing explicit measurable variables in this pathway, this study not only empirically clarifies what prior conceptual models had proposed using consensus methods (Institute of Medicine, 2015), but it also provides a base of evidence that can be useful to practice as well as future research. For example, because this study has shown that social capital is the key canonical theory underlying IPCP, healthcare professionals can now be made aware of the fact that their perceptions of interprofessional collaboration itself is a key element in optimizing patient/population health and system outcomes. They must also contend with the fact that the social ties they build with their colleagues and their patients may play a key role in the achievement of these desired outcomes. Even more importantly, this study renews the call that healthcare professionals and policy makers must contend with the reality that disparities in healthcare systems as well as among patient populations are fundamental barriers that must be addressed to truly facilitate the optimization of health and system outcomes via IPE, IPP/IPO and IPCP.

Interestingly, looking the conceptual model developed in this dissertation study, particularly the major theme of patient care, it is noteworthy that the three types of IPCP interventions (i.e. IPE, IPP and IPO) may in fact match up well conceptually with the three identified elements of patient care (i.e. adherence, continuity, and institutional policies), and that they can each serve as targeted interventions for improving patient care, suggesting a pathway via which each of these interventions can ultimately help improve patient health and system outcomes. For example, *IPE* can play a fundamental role in improving the *adherence* of patients to care, by educating the patient as well as healthcare professionals in the different ways to get better adherence, as elucidated in this

dissertation study (ex. IPCP enhances information sharing, which increases patient adherence; IPCP also enhances shared decision-making which then improves patient adherence by engaging the patient as a true partner in his or her own care). On the other hand, *IPP* may improve the *continuity of care*, by both reducing the fragmentation of care and improving the holistic nature of care (ex. IPCP improves information sharing among healthcare professionals which then reduces fragmentation of care, an essential element of continuity; IPCP ensures a diversity of healthcare professional perspectives are at the decision-making table, which then may improve the holistic nature of care by making sure that health and wellness needs beyond healthcare – i.e. beyond medical care – are taken into account, such as social and psychological needs).

Finally, *IPO* may namely improve the *efficiency* of care, by bringing all healthcare professionals and patients or patient advocates to the table to tackle institutional, local, state and federal healthcare *policies* that frame the delivery of healthcare, such as reimbursement policies (ex. IPCP brings all stakeholders to the decision-making table which facilitates the identification of and the development of resolutions and solutions to problematic policies and laws that impede the provision of good patient care to achieve optimal individual and population health outcomes). Note that each of these 3 types of IPCP interventions would, in theory, function via the same basic mechanism: the coordination of information-sharing, decision-making and care delivery modeling.

While this proposed conceptual model remains to be empirically validated, the identification of the same basic theoretical mechanism, across 3 different interventions based on the same underlying construct, is strongly suggestive that these may in fact

represent the fundamental real-world psycho-behavioral pathways by which the social construct of IPCP works to influence patient health outcomes. Future studies on this central phenomenon should consider deeper exploration and perhaps measurement of the proposed links between the 3 types of IPCP interventions and the 3 corresponding aspects of patient care that they seem to impact.

Also note that having identified the three key elements of patient care, it seems important to theoretically relate these elements to the Triple Aim, which provided the theoretical foundation for this dissertation study. Recall that the Triple Aim model proposes that all interventions in healthcare should be designed to achieve 3 key goals: improving patient and population health outcomes, optimizing the patient experience of care, and reducing per capita healthcare costs (Stiefel & Nolan, 2012). Unfortunately this model was designed to be broad based and applicable to all healthcare interventions; as such, it does not necessarily help identify how specific healthcare interventions are supposed to help achieve these outcomes. This dissertation indirectly proposes one plausible answer to this question, which is that the 3 key elements of patient care identified here may in fact be the ones through which the Triple Aim can be achieved through IPCP healthcare interventions. More specifically, from this study, we can surmise that *patient adherence to care is essential for improving population health outcomes*; *continuity of care is essential for optimizing the patient experience of care*; and *effective institutional policies are essential to reducing healthcare costs*.

Certainly there is already evidence of each of these elements in the general literature. For example, there is a long history of research on the relationship between patient adherence and health outcomes (Vermeire, Hearnshaw, Van Royen, & Denekens,

2001), and a recent systematic review with meta-analysis of 63 studies on this topic has concluded that there is a 26% difference in overall health outcomes among patients with high versus low adherence (Dimatteo, Giordani, Lepper, & Croghan, 2002). While this association between adherence and health outcomes is influenced by numerous factors (such as the quality of the adherence assessment tool and chronicity or acuity of disease, among others), the conclusion is still relatively clear: that adherence to treatment plans matters with regards to changing health outcomes (Dimatteo et al., 2002). With regards to the relationship between continuity of care and the patient experience of care, a systematic review without meta-analysis found that the literature largely supports the fact that there is a relationship between continuity of care and the patient experience of care (i.e. patient satisfaction), as well as early diagnosis, improved adherence and reduced healthcare resource consumption (Van Servellen, Fongwa, & Mockus D'Errico, 2006). It also suggests that that the variable most immediately related to the continuity of care might in fact be the patient experience of care (Van Servellen et al., 2006).

Finally, on the association between institutional policies and healthcare costs, the literature is deplete of good evidence supporting this fact, as no systematic review or meta-analysis could be located on this topic. However, a perspective article in the New England Journal of Medicine offers some insight into this idea (Orszag & Emanuel, 2010). In this paper, the authors evaluate the role that the Affordable Care Act is expected to play in terms of framing institutional care policies in the US, and conclude that indeed the care policy changes resulting from the ACA will be the fundamental drivers for lowering healthcare costs (Orszag & Emanuel, 2010). In any case, this dissertation project is the first study to my knowledge to inductively suggest which

elements of patient care may be affected by interprofessional collaboration, how these elements may be influenced by interprofessional collaboration, as well as why interprofessional collaboration can potentially effect these changes. Evidently, experimental research is needed to test these proposed theoretical pathways and determine conclusively if the 3 types of IPCP interventions act through each of those respective pathways, or if they act through combinations of them.

Furthermore, with regards to future research, there are a number of aspects that remain to be investigated. As the data and findings in study are based entirely on the perceptions of healthcare professionals, it is clear that additional studies using less subjective methods must be performed to truly study this phenomenon. These studies should employ methods such as non-participant observations of the behaviors of healthcare professionals interacting with each other as well as with patients (which will yield more credible data on how behaviors among the research subjects truly affects care coordination, patient care, patient/population health and system outcomes), and comparator groups to which healthcare professionals are randomized (which will reduce the effect of the endless number of potential confounders that can theoretically mask the relationship of interest). Such studies should also take care to collect data on all of the variables identified in this dissertation study, which represent specific confounders, moderators and mediators that must be dealt with in studying this phenomenon. They may form useful components of statistical regression models, which may further improve the possibility of successfully and statistically detecting an effect, in the relationship under study, should one actually exist.

Moreover, while this study provides a number of insights about how social capital underlies the pathways via which IPCP works to influence patient health outcomes (namely, via building trust within interprofessionalism, facilitating sharing within care coordination, enhancing reciprocity within patient care, and effecting change within patient health and system outcomes), many aspects of these pathways remain unclear. In particular, more inductive and deductive research is needed not only confirming that social capital is indeed the theoretical mechanism in action, but also examining other aspects of social capital, such as the types of social networks that IPCP helps build, and the kinds of social ties (i.e. strong or weak) by which it binds healthcare stakeholders. There is some early work already on separate aspects of this phenomenon, looking at the social networks of patients and how they impact health outcomes (Christakis & Fowler, 2009), as well as the social networks of healthcare professionals and how they facilitate collaborative work (Godley et al., 2011; Godley & Russell-Mayhew, 2010). While this dissertation study has begun the work of bringing these two distinct areas together, to date, it still remains unclear whether the social capital (including types of social networks and social ties) of healthcare professionals actually influences the health outcomes of the patients they care for. By looking at the association between IPCP and patient health outcomes, this study suggests one theoretical pathway by which that phenomenon could take place, but the latter truly is still an unknown in the literature at this time.

Lastly, this study suggests that patient health and system outcomes themselves form *the alpha and the omega* of IPCP. They are *the alpha* in the sense that establishing the achievement of these outcomes as the foundation for doing IPCP is the first step in the pathway under study, because it provides a fundamental force that can motivate all

healthcare stakeholders to commit to doing IPCP for the long haul. This includes the current usual suspects, such as healthcare professionals, patients, their families and communities, but also, as suggested in this dissertation study, policymakers, healthcare systems administrators, professionals from the non-healthcare disciplines such as education and criminal justice, and even politicians. At the same time, they are also *the omega* because they are the product of doing good IPCP, good care coordination, and good patient care, thus forming the last step in the pathway between IPCP and patient health and system outcomes.

Thus, this study suggests that IPCP is not only possible and plausible, given what we know about how to build social capital among healthcare professionals, patients, families and communities, how to coordinate care, and how to provide good patient care, it is also potentially self-sustaining, once it becomes a well-established component of a healthcare system and society. It may be then that IPCP is potentially one of the best interventions we have yet conceived of to achieve the Triple Aim of improving the patient experience of care, attaining good population health outcomes, and reducing healthcare costs.

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# Appendices

## Appendix A: JBI Critical Appraisal and Data Extraction Tools

### JBI Critical Appraisal Checklist for Systematic Reviews and Research Syntheses

Reviewer_____Date_____

Author _____Year_____Record Number_____

| | Yes | No | Unclear | Not applicable |
|---|---|---|---|---|
| 1. Is the review question clearly and explicitly stated? | ☐ | ☐ | ☐ | ☐ |
| 2. Were the inclusion criteria appropriate for the review question? | ☐ | ☐ | ☐ | ☐ |
| 3. Was the search strategy appropriate? | ☐ | ☐ | ☐ | ☐ |
| 4. Were the sources and resources used to search for studies adequate? | ☐ | ☐ | ☐ | ☐ |
| 5. Were the criteria for appraising studies appropriate? | ☐ | ☐ | ☐ | ☐ |
| 6. Was critical appraisal conducted by two or more reviewers independently? | ☐ | ☐ | ☐ | ☐ |
| 7. Were there methods to minimize errors in data extraction? | ☐ | ☐ | ☐ | ☐ |
| 8. Were the methods used to combine studies appropriate? | ☐ | ☐ | ☐ | ☐ |
| 9. Was the likelihood of publication bias assessed? | ☐ | ☐ | ☐ | ☐ |
| 10. Were recommendations for policy and/or practice supported by the reported data? | ☐ | ☐ | ☐ | ☐ |
| 11. Were the specific directives for new research appropriate? | ☐ | ☐ | ☐ | ☐ |

Overall appraisal: Include ☐ Exclude ☐ Seek further info ☐

_____

_____

## JBI Critical Appraisal Checklist for Randomised Control / Pseudo-randomised Trial

Reviewer _____ Date _____

Author _____ Year _____ Record Number _____

| | Yes | No | Unclear | Not Applicable |
|---|---|---|---|---|
| 1. Was the assignment to treatment groups truly random? | ☐ | ☐ | ☐ | ☐ |
| 2. Were participants blinded to treatment allocation? | ☐ | ☐ | ☐ | ☐ |
| 3. Was allocation to treatment groups concealed from the allocator? | ☐ | ☐ | ☐ | ☐ |
| 4. Were the outcomes of people who withdrew described and included in the analysis? | ☐ | ☐ | ☐ | ☐ |
| 5. Were those assessing outcomes blind to the treatment allocation? | ☐ | ☐ | ☐ | ☐ |
| 6. Were the control and treatment groups comparable at entry? | ☐ | ☐ | ☐ | ☐ |
| 7. Were groups treated identically other than for the named interventions | ☐ | ☐ | ☐ | ☐ |
| 8. Were outcomes measured in the same way for all groups? | ☐ | ☐ | ☐ | ☐ |
| 9. Were outcomes measured in a reliable way? | ☐ | ☐ | ☐ | ☐ |
| 10. Was appropriate statistical analysis used? | ☐ | ☐ | ☐ | ☐ |
| | ☐ | ☐ | ☐ | ☐ |

Overall appraisal: Include ☐ Exclude ☐ Seek further info. ☐

Comments (Including reason for exclusion)

_____

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## JBI Critical Appraisal Checklist for Comparable Cohort/ Case Control

Reviewer _____ Date _____

Author _____ Year _____ Record Number _____

| | Yes | No | Unclear | Not Applicable |
|---|---|---|---|---|
| 1. Is sample representative of patients in the population as a whole? | ☐ | ☐ | ☐ | ☐ |
| 2. Are the patients at a similar point in the course of their condition/illness? | ☐ | ☐ | ☐ | ☐ |
| 3. Has bias been minimised in relation to selection of cases and of controls? | ☐ | ☐ | ☐ | ☐ |
| 4. Are confounding factors identified and strategies to deal with them stated? | ☐ | ☐ | ☐ | ☐ |
| 5. Are outcomes assessed using objective criteria? | ☐ | ☐ | ☐ | ☐ |
| 6. Was follow up carried out over a sufficient time period? | ☐ | ☐ | ☐ | ☐ |
| 7. Were the outcomes of people who withdrew described and included in the analysis? | ☐ | ☐ | ☐ | ☐ |
| 8. Were outcomes measured in a reliable way? | ☐ | ☐ | ☐ | ☐ |
| 9. Was appropriate statistical analysis used? | ☐ | ☐ | ☐ | ☐ |

Overall appraisal: Include ☐ Exclude ☐ Seek further info. ☐

Comments (Including reason for exclusion)

_____

_____

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## JBI QARI Critical Appraisal Checklist for Interpretive & Critical Research

Reviewer _____ Date _____

Author _____ Year _____ Record Number _____

| | Yes | No | Unclear | Not Applicable |
|---|---|---|---|---|
| 1. Is there congruity between the stated philosophical perspective and the research methodology? | ☐ | ☐ | ☐ | ☐ |
| 2. Is there congruity between the research methodology and the research question or objectives? | ☐ | ☐ | ☐ | ☐ |
| 3. Is there congruity between the research methodology and the methods used to collect data? | ☐ | ☐ | ☐ | ☐ |
| 4. Is there congruity between the research methodology and the representation and analysis of data? | ☐ | ☐ | ☐ | ☐ |
| 5. Is there congruity between the research methodology and the interpretation of results? | ☐ | ☐ | ☐ | ☐ |
| 6. Is there a statement locating the researcher culturally or theoretically? | ☐ | ☐ | ☐ | ☐ |
| 7. Is the influence of the researcher on the research, and vice- versa, addressed? | ☐ | ☐ | ☐ | ☐ |
| 8. Are participants, and their voices, adequately represented? | ☐ | ☐ | ☐ | ☐ |
| 9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body? | ☐ | ☐ | ☐ | ☐ |
| 10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data? | ☐ | ☐ | ☐ | ☐ |

Overall appraisal: ☐ Include ☐ Exclude ☐ Seek further info. ☐

Comments (Including reason for exclusion)

_____

_____

_____

## JBI Data Extraction Form for Experimental / Observational Studies

Reviewer _____ Date _____

Author _____ Year _____

Journal_____ Record Number_____

**Study Method**

| | | | | | |
|---|---|---|---|---|---|
| RCT | ☐ | Quasi-RCT | ☐ | Longitudinal | ☐ |
| Retrospective | ☐ | Observational | ☐ | Other | ☐ |

**Participants**

Setting

Population

**Sample size**

Group A _____ Group B _____

**Interventions**

Intervention A

Intervention B

Authors Conclusions:

Reviewers Conclusions:

**Study results**

**Dichotomous data**

| Outcome | Intervention ( ) number / total number | Intervention ( ) number / total number |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

**Continuous data**

| Outcome | Intervention ( ) number / total number | Intervention ( ) number / total number |
|---|---|---|
| | | |
| | | |
| | | |
| | | |

## JBI QARI Data Extraction Form for Interpretive & Critical Research

Reviewer _____ Date _____

Author _____ Year _____

Journal_____ Record Number _____

**Study Description**

Methodology

Method

Phenomena of interest

Setting

Geographical

Cultural

Participants

Data analysis

Authors Conclusions

Comments

Complete Yes ☐ No ☐

| Findings | Illustration from Publication (page number) | Evidence | | |
|---|---|---|---|---|
| | | Unequivocal | Credible | Unsupported |
| | | | | |
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Extraction of findings complete Yes ☐ No ☐

## Appendix B: Systematic Review Results

### Database Search Strategies

***MEDLINE Search Strategy and Results***

September 16, 2014

| Item | Search Terms | Results |
|---|---|---|
| 1 | (Interprofessional or interprofessional education or interprofessional practice or collaborative practice or interprofessional relations).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] | 45975 |
| 2 | (disparities or health disparities or healthcare disparities or urban or disadvantaged or socioeconomic or social status or poor or minority or black or latino).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] | 683439 |
| 3 | (health outcomes or disease or illness or patient health or death or mortality or heart or infarction or stroke or chronic or infection or hospital).mp. [mp=title, abstract, original title, name of substance word, subject heading word, keyword heading word, protocol supplementary concept word, rare disease supplementary concept word, unique identifier] | 5906959 |
| 4 | 1 and 2 and 3 | 593 |
| 5 | **limit 4 to yr="2008 -Current"** | **236** |

***CINAHL Search Strategy and Results***

September 17, 2014

| Item | Search Terms | Results |
|---|---|---|
| S1 | TX ( Interprofessional or interprofessional education or interprofessional practice or collaborative practice or interprofessional relations ) AND TX ( disparities or health disparities or healthcare disparities or urban or disadvantaged or socioeconomic or social status or poor or minority or black or latino ) AND TX ( health outcomes or disease or illness or patient health or death or mortality or heart or infarction or stroke or chronic or infection or hospital )<br>**Limiters** - Published Date: 20080101-20141231; English Language; | **417** |

| | | |
|---|---|---|
| | Human<br>**Narrow by SubjectMajor:** - physician attitudes<br>**Narrow by SubjectMajor:** - nurse-physician relations<br>**Narrow by SubjectMajor:** - attitude of health personnel<br>**Narrow by SubjectMajor:** - teamwork<br>**Narrow by SubjectMajor:** - multidisciplinary care team<br>**Narrow by SubjectMajor:** - nurse attitudes<br>**Narrow by SubjectMajor:** - education, interdisciplinary<br>**Narrow by SubjectMajor:** - collaboration<br>**Narrow by SubjectMajor:** - interprofessional relations<br>**Search modes** - Boolean/Phrase | |

***Web of Science Search Strategy and Results***

September 17, 2014

| Item | Search Terms | Results |
|---|---|---|
| S1 | **TOPIC** ( Interprofessional or interprofessional education or interprofessional practice or collaborative practice or interprofessional relations ) *AND* **TOPIC** ( disparities or health disparities or healthcare disparities or urban or disadvantaged or socioeconomic or social status or poor or minority or black or latino ) *AND* **TOPIC** ( health outcomes or disease or illness or patient health or death or mortality or heart or infarction or stroke or chronic or infection or hospital )<br>Indexes=SCI-EXPANDED, SSCI, A&HCI Timespan=2008-2014 | **349** |

***ProQuest Dissertations and Theses Database Search Strategy and Results***

September 21, 2014

| Item | Search Terms | Results |
|---|---|---|
| | (Interprofessional) AND (disparities OR health disparities OR healthcare disparities OR urban OR disadvantaged OR socioeconomic OR social status OR poor OR minority OR black OR latino) AND (health outcomes OR disease OR illness OR patient health OR deaths OR mortality OR heart OR infarction OR stroke OR chronic OR infection OR hospital)<br>Additional Limits: Full text; Date: From January 01, 2008 to December 31, 2014; Language English | **177** |

**List of Studies Excluded by Full Review of Text and Reasons for Exclusion**

Abley, C., Bond, J., & Robinson, L. (2011). Improving interprofessional practice for vulnerable older people: gaining a better understanding of vulnerability. Journal of Interprofessional Care, 25(5), 359-365.

- **Reasons for exclusion:** wrong phenomenon (vulnerability).

Adler-Milstein, J., Neal, K., & Howell, M. D. (2011). Residents' and nurses' perceptions of team function in the medical intensive care unit. Journal of Critical Care, 26(1), 104.e107-115.

- **Reasons for exclusion:** cross sectional quantitative design; does not examine the link between IPCP and patient outcomes.

Akeroyd, J., Oandasan, I., Alsaffar, A., Whitehead, C., & Lingard, L. (2009). Perceptions of the role of the registered nurse in an urban interprofessional academic family practice setting. Canadian Journal of Nursing Leadership, 22(2), 73-84.

- **Reasons for exclusion:** wrong phenomenon (role of the RN).

Alavi, M., Irajpour, A., Abdoli, S., & SaberiZafarghandi, M. B. (2012). Clients as mediators of interprofessional collaboration in mental health services in Iran. Journal of Interprofessional Care, 26(1), 36-42. doi: 10.3109/13561820.2011.623803

- **Reasons for exclusion:** wrong phenomenon (the patient as the mediator of IPCP).

Alford, D. P., LaBelle, C. T., Kretsch, N., Bergeron, A., Winter, M., Botticelli, M., & Samet, J. H. (2011). Collaborative Care of Opioid-Addicted Patients in Primary Care Using Buprenorphine Five-Year Experience. Archives of Internal Medicine, 171(5), 425-431.

- **Reasons for exclusion:** does not include any patient health or healthcare outcomes.

Allen, M., Macleod, T., Zwicker, B., Chiarot, M., & Critchley, C. (2011). Interprofessional education in chronic non-cancer pain. Journal of Interprofessional Care, 25(3), 221-222.

- **Reasons for exclusion:** no healthcare or patient health outcomes considered.

Apesoa-Varano, E. C. (2013). Interprofessional conflict and repair: a study of boundary work in the hospital. Sociological Perspectives, 56(3), 327-349.

- **Reasons for exclusion:** wrong phenomenon (focus on boundary work).

Arora, S., Thornton, K., Komaromy, M., Kalishman, S., Katzman, J., & Duhigg, D. (2014). Demonopolizing Medical Knowledge. Academic Medicine, 89(1), 30-32.

- **Reasons for exclusion:** not a research study.

Bainbridge, L. A. (2009). The power of prepositions: Learning with, from, and about others in interprofessional health education. (3367836 Ph.D.), Union Institute and University, Ann Arbor. Retrieved from http://search.proquest.com/docview/305172635?accountid=13626

- **Reasons for exclusion:** wrong phenomenon (no linkage to IPCP and health outcomes).

Baker, L., Egan-Lee, E., Martimianakis, M. A., & Reeves, S. (2011). Relationships of power: implications for interprofessional education. Journal of Interprofessional Care, 25(2), 98-104.

- **Reasons for exclusion:** wrong phenomenon (focus on perceptions of power).

Baldwin, D. C., Jr., & Daugherty, S. R. (2008). Interprofessional conflict and medical errors: results of a national multi-specialty survey of hospital residents in the US. Journal of Interprofessional Care, 22(6), 573-586.

- **Reasons for exclusion:** wrong population (uni-professional).

Banez, C., Tully, S., Amaral, L., Kwan, D., Kung, A., Mak, K., . . . Alibhai, S. M. H. (2008). Development, implementation, and evaluation of an interprofessional falls prevention program for older adults. Journal of the American Geriatrics Society, 56(8), 1549-1555.

- **Reasons for exclusion:** quantitative study design.

Bath, B. L., Bourassa, R. J., & Dueck, R. G. (2009). Advanced practice physiotherapy triage assessment of spinal conditions: a collaborative partnership with orthopaedic surgeons. Physiotherapy Canada, 61, 22-23.

- **Reasons for exclusion:** quantitative study design and wrong phenomenon.

Bell, A. V., Michalec, B., & Arenson, C. (2014). The (stalled) progress of interprofessional collaboration: the role of gender. Journal of Interprofessional Care, 28(2), 98-102.

- **Reasons for exclusion:** wrong phenomenon (focus on gender).

Bissonnette, J., Woodend, K., Davies, B., Stacey, D., & Knoll, G. (2011). Evaluation of an advanced practice nurse led collaborative chronic kidney care model for renal transplant patients. CANNT Journal, 21(2), 20-21.

- **Reasons for exclusion:** quantitative study design.

Björkman, R. K., Wengler, Y., Asplund, K., & Svedlund, M. (2010). Multidisciplinary team's promoting a rehabilitative approach among older people in home care... Fourth European Nursing Congress. Journal of Clinical Nursing, 19, 85-86.

- **Reasons for exclusion:** wrong phenomenon (multidisciplinary collaboration).

Bours, G., Hupperetz, A., van Gastel, M., van de Bosch, P., Bodecker, R., Peeters, J., . . . van Rossum, E. (2010). The evaluation of a care model for elderly on a rehabilitation unit in a Dutch nursing home... Fourth European Nursing Congress. Journal of Clinical Nursing, 19, 87-87.

- **Reasons for exclusion:** wrong phenomenon (multidisciplinary collaboration).

Bradley, F., Elvey, R., Ashcroft, D. M., Hassell, K., Kendall, J., Sibbald, B., & Noyce, P. (2008). The challenge of integrating community pharmacists into the primary health care team: a case study of local pharmaceutical services (LPS) pilots and interprofessional collaboration. Journal of Interprofessional Care, 22(4), 387-398.

- **Reasons for exclusion:** wrong phenomenon (no linkage to IPCP and health outcomes).

Brown, J. B., Lewis, L., Ellis, K., Beckhoff, C., Stewart, M., Freeman, T., & Kasperski, M. J. (2010). Sustaining primary health care teams: what is needed? Journal of Interprofessional Care, 24(4), 463-465.

- **Reasons for exclusion:** wrong phenomenon (focus is on team sustaining activities only, not interprofessional collaboration).

Bruner, P., Waite, R., & Davey, M. P. (2011). Providers' perspectives on collaboration. International Journal of Integrated Care, 11, 11.

- **Reasons for exclusion:** quantitative study design.

Buljac-Samardzic, M., van Wijngaarden, J. D. H., van Wijk, K. P., & van Exel, N. J. A. (2011). Perceptions of team workers in youth care of what makes teamwork effective. Health & Social Care in the Community, 19(3), 307-316.

- **Reasons for exclusion:** wrong phenomenon (limited to teamwork only).

Buxton, J. A., Chandler-Altendorf, A., & Puente, A. E. (2012). A novel collaborative practice model for treatment of mental illness in indigent and uninsured patients. American Journal of Health-System Pharmacy, 69(12), 1054-1062.

- **Reasons for exclusion:** quantitative study design.

Cahall, M., Jerome, R. N., & Powers, J. (2008). The impact of a literature consult service on geriatric clinical care and training in falls prevention. Journal of the Medical Library Association, 96(2), 88-100.

- **Reasons for exclusion:** literature review.

Cartmill, C., Soklaridis, S., & David Cassidy, J. (2011). Transdisciplinary Teamwork: The Experience of Clinicians at a Functional Restoration Program. Journal of Occupational Rehabilitation, 21(1), 1-8.

- **Reasons for exclusion:** wrong phenomenon (focus is on transition from interdisciplinary to transdisciplinary collaboration).

Casserly, B., Baram, M., Walsh, P., Sucov, A., Ward, N. S., & Levy, M. M. (2011). Implementing a Collaborative Protocol in a Sepsis Intervention Program: Lessons Learned. Lung, 189(1), 11-19.

- **Reasons for exclusion:** quantitative study design.

Catangui, E. J., & Slark, J. (2012). Development and evaluation of an interdisciplinary training programme for stroke. British Journal of Neuroscience Nursing, 8(1), 8-11.

- **Reasons for exclusion:** quantitative study design and wrong phenomenon.

Cioffi, J., Wilkes, L., Cummings, J., Warne, B., & Harrison, K. (2010). Multidisciplinary teams caring for clients with chronic conditions: Experiences of community nurses and allied health professionals. Contemporary Nurse: A Journal for the Australian Nursing Profession, 36(1/2), 61-70.

- **Reasons for exclusion:** wrong phenomenon (multidisciplinary collaboration).

Clarke, D. J. (2010). Achieving teamwork in stroke units: the contribution of opportunistic dialogue. Journal of Interprofessional Care, 24(3), 285-297.

- **Reasons for exclusion:** wrong phenomenon (multidisciplinary collaboration).

Conway, J. (2009). Implementing interprofessional learning in clinical education: findings from a utility-led evaluation. Contemporary Nurse: A Journal for the Australian Nursing Profession, 32(1-2), 187-200.

- **Reasons for exclusion:** wrong population (included students).

Cramm, J. M., & Nieboer, A. P. (2012). In the Netherlands, rich interaction among professionals conducting disease management led to better chronic care. Health Affairs, 31(11), 2493-2500.

- **Reasons for exclusion:** quantitative study design.

Curran, V. R., Heath, O., Kearney, A., & Button, P. (2010). Evaluation of an interprofessional collaboration workshop for post-graduate residents, nursing and allied health professionals. Journal of Interprofessional Care, 24(3), 315-318.

- **Reasons for exclusion:** wrong population (included students).

Curtis, J. R., Ciechanowski, P. S., Downey, L., Gold, J., Nielsen, E. L., Shannon, S. E., . . . Engelberg, R. A. (2012). Development and evaluation of an interprofessional communication intervention to improve family outcomes in the ICU. Contemporary Clinical Trials, 33(6), 1245-1254.

- **Reasons for exclusion:** quantitative study design.

Delva, D., Jamieson, M., & Lemieux, M. (2008). Team effectiveness in academic primary health care teams. Journal of Interprofessional Care, 22(6), 598-611.

- **Reasons for exclusion:** wrong phenomenon (no emphasis on how IPCP may influence patient health outcomes).

Egan-Lee, E., Hollenberg, E., Dematteo, D., Tobin, S., Oandasan, I., Beduz, M., . . . Reeves, S. (2008). Catalyzing and sustaining communities of collaboration around interprofessional care: an evaluation of four educational programs. Journal of Interprofessional Care, 22(3), 317-319.

- **Reasons for exclusion:** no data available on phenomenon of interest.

Farahani, M. A., Sahragard, R., Carroll, J. K., & Mohammadi, E. (2011). Communication barriers to patient education in cardiac inpatient care: A qualitative study of multiple perspectives. International Journal of Nursing Practice, 17(3), 322-328.

- **Reasons for exclusion:** wrong phenomenon (focus on communication only).

Farland, M. Z., Byrd, D. C., McFarland, M. S., Thomas, J., Franks, A. S., George, C. M., . . . Suda, K. J. (2013). Pharmacist-Physician Collaboration for Diabetes Care: The Diabetes Initiative Program. Annals of Pharmacotherapy, 47(6), 781-789.

- **Reasons for exclusion:** quantitative study design.

Fejzic, J., Emmerton, L., & Tett, S. E. (2010). Towards concordance in healthcare: perspectives of general practitioners, complementary and alternative medicine practitioners and pharmacists in Australia. Journal of Clinical Pharmacy & Therapeutics, 35(3), 309-321.

- **Reasons for exclusion:** wrong phenomenon of interest.

Fortune, T., & Fitzgerald, M. H. (2009). The challenge of interdisciplinary collaboration in acute psychiatry: impacts on the occupational milieu. Australian Occupational Therapy Journal, 56(2), 81-88.

- **Reasons for exclusion:** wrong phenomenon of interest.

Freeth, D., Ayida, G., Berridge, E. J., Mackintosh, N., Norris, B., Sadler, C., & Strachan, A. (2009). Multidisciplinary obstetric simulated emergency scenarios (MOSES): promoting patient safety in obstetrics with teamwork-focused interprofessional simulations. Journal of Continuing Education in the Health Professions, 29(2), 98-104.

- **Reasons for exclusion:** wrong phenomenon (no linkage to IPCP and patient health outcomes).

Gaboury, I., M. Lapierre, L., Boon, H., & Moher, D. (2011). Interprofessional collaboration within integrative healthcare clinics through the lens of the relationship-centered care model. Journal of Interprofessional Care, 25(2), 124-130.

- **Reasons for exclusion:** quantitative study design.

Gaines, R., Missiuna, C., Egan, M., & McLean, J. (2008). Interprofessional care in the management of a chronic childhood condition: developmental coordination disorder. Journal of Interprofessional Care, 22(5), 552-555.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Garcia, M. L. (2013). Can we get along, long enough to collaborate? (3601705 Ph.D.), City University of New York, Ann Arbor. Retrieved from http://search.proquest.com/docview/1467469216?accountid=13626

- **Reasons for exclusion:** study not available for review.

Gloede, T. D., Hammer, A., Ommen, O., Ernstmann, N., & Pfaff, H. (2013). Is social capital as perceived by the medical director associated with coordination among hospital staff? A nationwide survey in German hospitals. Journal of Interprofessional Care, 27(2), 171-176.

- **Reasons for exclusion:** wrong phenomenon (focus is on social capital as a plausible theory to explain IPCP) and quantitative design.

Haller, G., Morales, M., Pfister, R., Garnerin, P., Chipp, P., Guillemot, V., . . . Kern, C. (2008). Improving interprofessional teamwork in obstetrics: a Crew Resource Management based training programme. Journal of Interprofessional Care, 22(5), 545-548.

- **Reasons for exclusion:** quantitative study design.

Jacob, A., Roe, D., Merrigan, R., & Brown, T. (2013). The Casey Allied Health Model of Interdisciplinary Care (CAHMIC): Development and implementation. International Journal of Therapy & Rehabilitation, 20(8), 387-395.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Jensen, D. C., Nørgaard, B., Draborg, E., Vestergaard, E., Odgaard, E., & Sørensen, J. (2012). Organizational evaluation of an interprofessional study unit - Results from a Danish case study. Journal of Interprofessional Care, 26(6), 497-504.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Jiwa, M., Longman, G., Sriram, D., Sherriff, J., Briffa, K., & Musiello, T. (2013). Cancer care coordinator: promoting multidisciplinary care -- a pilot study in Australian general practice. Collegian, 20(1), 67-73.

- **Reasons for exclusion:** wrong phenomenon (multidisciplinary collaboration).

Keshet, Y., Ben-Arye, E., & Schiff, E. (2013). The use of boundary objects to enhance interprofessional collaboration: integrating complementary medicine in a hospital setting. Sociology of Health & Illness, 35(5), 666-681.

- **Reasons for exclusion:** wrong phenomenon (limited to collaboration from a sociological framework of boundary actors and objects).

Kilgore, R. V., & Langford, R. W. (2010). Defragmenting care: testing an intervention to increase the effectiveness of interdisciplinary health care teams. Critical Care Nursing Clinics of North America, 22(2), 271-278.

- **Reasons for exclusion:** quantitative study design.

Kisely, S., & Chisholm, P. (2009). Shared mental health care for a marginalized community in inner-city Canada. Australasian Psychiatry, 17(2), 130-133.

- **Reasons for exclusion:** wrong phenomenon of interest (not related to IPCP).

Knight, A. W., Caesar, C., Ford, D., Coughlin, A., & Frick, C. (2012). Improving primary care in Australia through the Australian Primary Care Collaboratives Program: a quality improvement report. BMJ Quality & Safety, 21(11), 948-955.

- **Reasons for exclusion:** not a research study.

Lancaster, G. (2014). Understanding interdisciplinary communication and collaboration among physicians, nurses, and unlicensed assistive personnel. (3583290 D.Ed.), University of Phoenix, Ann Arbor. Retrieved from http://search.proquest.com/docview/1552485358?accountid=13626

- **Reasons for exclusion:** wrong population (included non-health and social professionals).

McDonald, J., Powell Davies, G., Jayasuriya, R., & Fort Harris, M. (2011). Collaboration across private and public sector primary health care services: benefits, costs and policy implications. Journal of Interprofessional Care, 25(4), 258-264.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Micklos, L. (2014). Transition and Interprofessional Collaboration In Moving from Pediatric to Adult Renal Care. Nephrology Nursing Journal, 41(3), 311-317.

- **Reasons for exclusion:** wrong phenomenon (emphasis is on transition of care).

Miller, K. L., Reeves, S., Zwarenstein, M., Beales, J. D., Kenaszchuk, C., & Conn, L. G. (2008). Nursing emotion work and interprofessional collaboration in general internal medicine wards: a qualitative study. Journal of Advanced Nursing, 64(4), 332-343.

- **Reasons for exclusion:** wrong phenomenon (focus is on emotion work).

Mitchell, R., Parker, V., & Giles, M. (2013). An interprofessional team approach to tracheostomy care: A mixed-method investigation into the mechanisms explaining tracheostomy team effectiveness. International Journal of Nursing Studies, 50(4), 536-542.

- **Reasons for exclusion:** wrong phenomenon (focus is on teamwork).

Mohaupt, J., van Soeren, M., Andrusyszyn, M.-A., MacMillan, K., Devlin-Cop, S., & Reeves, S. (2012). Understanding interprofessional relationships by the use of contact theory. Journal of Interprofessional Care, 26(5), 370-375.

- **Reasons for exclusion:** wrong population (included students).

O'Brien, J. L., Martin, D. R., Heyworth, J. A., & Meyer, N. R. (2009). A phenomenological perspective on advanced practice nurse-physician collaboration within an interdisciplinary healthcare team. Journal of the American Academy of Nurse Practitioners, 21(8), 444-453.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Pingleton, S. K., Carlton, E., Wilkinson, S., Beasley, J., King, T., Wittkopp, C., . . . Williamson, T. (2013). Reduction of venous thromboembolism (VTE) in hospitalized patients: aligning continuing education with interprofessional team-based quality improvement in an academic medical center. Academic Medicine, 88(10), 1454-1459.

- **Reasons for exclusion:** quantitative study design.

Porteous, S., & van der Woerd, C. (2011). A collaborative team approach to increase use of peritoneal dialysis. CANNT Journal, 21(2), 31-32.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Pullon, S. (2008). Competence, respect and trust: key features of successful interprofessional nurse-doctor relationships. Journal of Interprofessional Care, 22(2), 133-147.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Reeves, S., Rice, K., Conn, L. G., Miller, K., Kenaszchuk, C., & Zwarenstein, M. (2009). Interprofessional interaction, negotiation and non-negotiation on general internal medicine wards. Journal of Interprofessional Care, 23(6), 633-645.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

Robarts, S., Kennedy, D., Denis, S., Juma, S., & Winter-DiCola, J. (2009). Interprofessional collaboration: a clinical audit of advanced practice physiotherapists in arthroplasty. Physiotherapy Canada, 61, 22-22.

- **Reasons for exclusion:** wrong phenomenon (no linkage of IPCP and patient health outcomes).

San Martin-Rodriguez, L., D'Amour, D., & Leduc, N. (2008). Outcomes of interprofessional collaboration for hospitalized cancer patients. Cancer Nursing, 31(2), E18-27.

- **Reasons for exclusion:** quantitative study design.

Trojan, L., Suter, E., Arthur, N., & Taylor, E. (2009). Evaluation framework for a multi-site practice-based interprofessional education intervention. Journal of Interprofessional Care, 23(4), 380-389.

- **Reasons for exclusion:** not a research study.

Vivian, L., Marais, A., McLaughlin, S., Falkenstein, S., & Argent, A. (2009). Relationships, trust, decision-making and quality of care in a paediatric intensive care unit. Intensive Care Medicine, 35(9), 1593-1598.

- **Reasons for exclusion:** wrong phenomenon (focus on caregiving practices).

Washington, O. G. M., & Moxley, D. P. (2013). Self-efficacy as a unifying construct in nursing-social work collaboration with vulnerable populations. Nursing Inquiry, 20(1), 42-50.

- **Reasons for exclusion:** not a research study.

**List of Studies Excluded by Methodological Appraisal and Reasons for Exclusion**

Zwarenstein, M., Rice, K., Gotlib-Conn, L., Kenaszchuk, C., & Reeves, S. (2013). Disengaged: a qualitative study of communication and collaboration between physicians and other professions on general internal medicine wards. BMC Health Services Research, 13, 494.

- **Reasons for exclusion:** inappropriate representation of the data (unclear how all findings are linked to illustrations in tables), absence of participant voice for two major themes identified by the authors, and presence of conclusions unsupported by the findings of the study.

**List of Study Findings/Themes and Illustrations**

**The metamorphosis of a collaborative team: from creation to operation**

| Finding1 | Team roles |
|---|---|
| Illustration | "We've gotten more comfortable with each other in terms of what we're able to do and what our areas of expertise are, and the flow of what happens in the clinic with patients is better" |
| Finding2 | Team roles |
| Illustration | Team members reported that role clarity was the product of communication, experience, and trial and error. It took time for team members to become familiar with the skills others had, both as professionals and individuals. The process was both challenging and stressful. "The new member is still feeling her way, and I don't think she's quite integrated yet . . . she's still learning what her place is. The new team member … she came in late, and so she herself felt, I think, that she's not part of the team yet" |
| Finding3 | Team roles |
| Illustration | It is worth noting that the lack of role clarity was not evident to the patients interviewed several months into the clinic's operation. Patients reported being impressed with the team and its functioning. "The whole damn team was there initially. And there was no confusion. Everyone knew their role, and knew what to do . . . They had experience, and seemed seasoned, like they had done this before. I was impressed" |
| Finding4 | Communication and conflict resolution |
| Illustration | Further, meetings enhanced the rapport amongst team members, and ensured information flow. Roles were discussed in team meetings, and people began to get an appreciation for others' skills |

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| | and expertise: “When we were talking . . . there were a lot of things [where] I was like ‘Oh, I didn’t know that that’s what you guys did’.” |
| Finding5 | Communication and conflict resolution |
| Illustration | Communication ensured there was minimal conflict. Team members stated there was little conflict in the team. That which did arise often centered on jurisdictional disputes: members with overlapping scopes of practice sometimes stepped on each others’ toes. “Conflicts are occurring and they’re being dealt with on, you know a one to one basis. [There’s] not a lot of conflict though, there hasn’t been a lot. We’ve had a really good team and team members are really trying to make it work . . .” |
| Finding6 | Communication and conflict resolution |
| Illustration | Patients interviewed were unanimous in their opinion that communication amongst care providers, and between providers and patients, was excellent: “I could interact with them and share my thoughts and opinions on how care was provided”. “They listened to my concerns. They listened to me”. As a result, patient satisfaction with the team’s contribution to their care was reported to be high. |
| Finding7 | Leadership |
| Illustration | Being based in a community setting, this team was not subject to traditional hospital hierarchies. There was a clear team leader, but effort was made to ensure that decision-making and problem-solving were shared. |
| Finding8 | Leadership |
| Illustration | The team leader set a good tone, which fostered a positive working environment “When you’re around her you’re just . . . no way you cannot be excited about any little thing…And she carries you with her”. “She’s a really good encourager . . . so . . . that then translates down to the whole culture and atmosphere of the whole team . . . It makes the rest of us be encouraging of each other and take on that same spirit of co-operation and collaboration.” |
| Finding9 | Benefits of interprofessional care |
| Illustration | “You’re really able to think and do clinical reasoning together, and help problem solve issues for the patient, and draw on the knowledge, or the expertise of other professionals and put it together with yours.” |
| Finding10 | Benefits of interprofessional care |
| Illustration | Further, all of the participants emphasized how much they had learned from working closely with their colleagues. The team was so broad that most were working with at least some professionals they had never collaborated with before: “I’ve gained new skills and new appreciation for . . . what team members can actually do when they get down to it and work together.” |
| Finding11 | Benefits of interprofessional care |

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| Illustration | Similarly, patients described the team as effective and patient-centred: "They emphasized that there were 10 members of the team and I was one of the ten . . .. I couldn't have got better care. I love the team approach . . . Everybody knew his or her specialty and they all worked together…When all the professionals come together in one place and the patient sees them at a time for what they need, it's great." |

**Building positive relationships in healthcare: Evaluation of the teams of interprofessional staff interprofessional education program**

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|---|---|
| Finding1 | Knowledge and skills |
| Illustration | Participants elaborated that their involvement in the project helped them understand some of the potential barriers of IPE. "We learned that each person has a certain role and skill set that can be a complement to a team." |
| Finding2 | Awareness and relationships |
| Illustration | Participants said three of the biggest things they gained from their involvement in TIPS were an increased awareness of: what IPP is; the roles and responsibilities of their team members; and effective team functioning. |
| Finding3 | Trust |
| Illustration | Spending time together contributed to developing trust and respect among teams. One social worker discussed how their team developed trust: "You need a certain level of trust. I think it is just time in. You learn what those persons' responses are, the kind of values they are coming from, where you can collaborate or where it isn't useful." |
| Finding4 | Commitment |
| Illustration | Team members discussed the commitment they had to their team and the TIPS project. They shared stories that involved coming to work early, staying late or coming in on their days off to attend team meetings. A recreational therapist stated, "We all have choices to make in our day and we develop priorities. We have made this [the TIPS project] a priority." |
| Finding5 | Change |
| Illustration | Participants talked about how they initially were skeptical about IPP and now were beginning to believe in the merits of working collaboratively toward patient care. "Initially [I] thought that it [interprofessional care] wouldn't work. [Now] I feel like we are beginning to conquer something that felt in surmountable and that is very satisfying." |
| Finding6 | Change |
| Illustration | Other participants reported that their involvement in TIPS changed and renewed their enthusiasm for their work. Team members discussed that they changed their attitudes toward IPP during the eight month project. One nurse described her initial feelings and the change in their team over time. "Only in the last month or so have I |

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| | started to feel that we were pushing something that was not going to change but now actually feels like we might." |
| Finding7 | Pride |
| Illustration | A theme that emerged in the Final Summit session that was not evident in the previous two sessions was the pride participants had in their team's accomplishments |
| Finding8 | Pride |
| Illustration | Team members elaborated on how their communication procedures had improved; they had gained a better understanding for each other's roles and responsibilities, and they had developed strategies and mechanisms that resulted in improving the workplace environment and patient care |
| Finding9 | Personal Growth |
| Illustration | A physician described her development with coming to terms with the whole idea of team leadership. "We all have to take leadership roles. Somebody might have a better idea and it might not be me." |
| Finding10 | Team Growth |
| Illustration | One physician described it this way: "We are in the forming stage but it is fun to actually see what particular collaborative relationships you can develop with one another…to deliver programs or problem solve about frustrations" |
| Finding11 | Transfer of learning |
| Illustration | In the follow-up interviews, after the end of the project, participants reinforced that they were transferring their learning to their workplace and the team mentors/facilitators supported this. "One of the best things about the experience was the ripple effect. I heard several comments about this not only from nurses but many other professionals that were involved with the TIPS program." |
| Finding12 | Transfer of learning |
| Illustration | One participant conferred how their team felt they had an obligation and responsibility to pass on and share what they had learned from the project with colleagues. "We brought this up in a team meeting and it was suggested that we have all benefited from being involved in TIPS and we have a responsibility to speak up when we see interprofessional relationships not working well." |
| Finding13 | Better patient care |
| Illustration | Some participants said they were able to offer better patient care as a result of their involvement in the project. "One of the things I have noticed is that having a clear understanding of everyone's roles has helped reduce some of the repetitiveness, and make the experience of the patient a little less stressful." |
| Finding14 | Better patient care |
| Illustration | A physician reported that she was able to deliver better patient care due to an improved working relationship with her team |
| Finding15 | Better patient care |
| Illustration | She explained when she asked a colleague for advice about resources |

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| | for clients she found out things she did not know which resulted in improved patient care |
| Finding16 | Better patient care |
| Illustration | A social worker illustrated how she changed and grew during the eight-month project. She indicated that the changes resulted in better patient care: "Before I was very focused on what my role was and what to do in a specific situation. Now, I am thinking more along the lines of how others' roles can help…those strengths and use them for the benefit of the patient." |

**Professional collaboration -- support for children with cancer and their families -- focus group interview -- a source of information and knowledge -- professionals' perspectives**

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| Finding1 | Professionals working together can enhance knowledge |
| Illustration | Professionals working at local hospitals stated that a well-functioning collaboration was more dependent upon the professional's personality and the department they worked with than their professional background: "Language (professional jargon) within the individual professions can make communication difficult, it can signify a sense of power both inside and outside of the hospital arena . . . communication is dependent upon the professional and their personality and not their professional background" |
| Finding2 | Professionals working together can enhance knowledge |
| Illustration | Participants stated that collaboration enabled professionals to work together making use of each other's knowledge and resources thus, giving better follow-up care |
| Finding3 | Professionals working together can enhance knowledge |
| Illustration | Collaboration gives security to the family since they see that we (professionals) are all working in the same direction |
| Finding4 | Professionals working together can enhance knowledge |
| Illustration | "Collaboration is significant for parents assuming that it functions well and has a purpose, it allows us to follow-up the family both physically and psychologically, independent of the individual's professional status (background). Collaboration takes into consideration the family's wishes and needs, but it is essential that the family knows who they can contact when the need arises. Collaboration is time saving for the patient, the families don't have to tell everyone everything a hundred times" |
| Finding5 | Well-established routines and structure |
| Illustration | "I believe that interdisciplinary collaboration will be more binding under the assumption that collaboration is well functioning and goal orientated. Structure is important and will contribute to a more effective system, for example the primary nursing system." |
| Finding6 | Well-established routines and structure |
| Illustration | "There often is not enough collaboration and seldom contact between us professionals, no one seems to take responsibility. . ..it depends who (professional) you are in touch with" |

**Multiple perspectives on shared decision-making and interprofessional collaboration in mental healthcare**

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|---|---|
| Finding1 | Perceived level of interprofessional collaboration among healthcare providers |
| Illustration | The frequency of interprofessional collaboration was reported to be limited and involved primarily referrals, with limited communication between the different healthcare professions: ". . . [there is] a divide between the primary healthcare setting . . . there are these different silos, different professional groups who may refer to each other but there isn't a whole lot of communication [between the healthcare professionals]." |
| Finding2 | Perceived level of interprofessional collaboration among healthcare providers |
| Illustration | More specifically, they noted that there were gaps in communication between providers that may affect the continuity of care for mental health consumers after hospital discharge: "The GP is [usually] sent a discharge letter [from hospital providers], but I personally think a phone call or something to the GP to tell the GP about the patient's episode of care in the hospital is what is needed, but often doesn't happen . . . [The communication of information] could be done better. It's not done very well, I'd have to say." |
| Finding3 | Perceived influence of interprofessional collaboration on shared decision-making |
| Illustration | Interprofessional collaboration was perceived to facilitate shared decision-making by addressing time barriers and providing more opportunities for consumers to discuss their medical-related concerns. Some healthcare providers also perceived that mental health consumers may be more comfortable in discussing certain treatment concerns with non-medical providers (such as pharmacists) compared to their medical practitioners: "So the decision-making about benefits vs. risks . . . can be helped by that process of education and information, which isn't time to do all of in the clinical encounter in many instances . . . . a GP can't do all of it because there just simply isn't time to do it all. So there's a fair bit of reliance on the pharmacists to also be part of that." |
| Finding4 | Perceived influence of interprofessional collaboration on shared decision-making |
| Illustration | One medical practitioner described using an interprofessional approach to get a consensus opinion on consumers capacity to make informed decisions: ". . . one thing I always do is get the maximum number of opinions from other colleagues [from the multidisciplinary team] and make a consensus opinion [on consumers' decisional capacity] rather than making a single opinion . . . . Our own personal views might color sometimes our decisions, so if you have more than one person it minimizes that personal view about various things." |

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| Finding5 | Perceived influence of interprofessional collaboration on shared decision-making |
| Illustration | A few medical practitioners also voiced their concerns that a lack of collaboration among different healthcare professionals would lead to inconsistency of therapeutic messages to consumers, which would create confusion and lead to consumers' decisional conflict. |

**A collaborative approach to home care delivery for older clients: perspectives of home care providers**

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|---|---|
| Finding1 | Sharing of information |
| Illustration | Sharing of information occurred in weekly meetings, by telephone and via notebooks. In weekly meetings the HCNs and the HHWs shared information about clients' health status. The GP met with the HCN once per week during which time he/she was informed of clients' situations. Telephone consultations occurred for everyday concerns and problematic issues: "In the case of a client's skin integrity and we were unclear as to the causation and course of action to take, we were able to contact the GP by phone to share our assessment of the situation and to seek clarification of what should be done." |
| Finding2 | Sharing of information |
| Illustration | The participants described a hierarchical structure of information collection, with information sharing being primarily bottom-up, from the HHW to the HCN and to the GP with little, if any, lateral-mutual decision-making about client management. The GP rarely met the clients: "I get to hear what the HHW have told the HCN and then I make decisions as to which measures are to be taken, and then the information is passed on to the HHW and the clients." |
| Finding3 | Collegial consensus |
| Illustration | Challenges occurred in relation to differing perceptions of participants' roles and the most appropriate management approach, which caused tension between the professional groups, as well as competition as to whose opinion was correct. Thus, collaboration was hampered by conflicting perspectives and courses of action. Each professional group wanted to use its own course of action and reaching a consensus on the client's situation as a whole was sometimes difficult: "As a team we should focus on the needs of the client rather than fighting between each other as to whose opinion is the right one." |
| Finding4 | Consistent approach to client care |
| Illustration | There was a shared goal that "the clients can live at home for as long as possible", but the goal for the individual client's care was not elaborated. This consistent approach to client care was impeded at times, though, by the participants' attitudes and behaviours." |

**Collaboration between general practitioners and mental health care professionals: a qualitative study**

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| Finding1 | Interpersonal knowledge and communication |

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| Illustration | In situations where participants knew the collaboration partners either by meeting them briefly or even only being familiar with their names, the communication tended to be easier, faster and more effective than in situations in which they had no knowledge of each other. One GP said: "I think it's much easier to have a dialogue when I know who I'm talking to." |
| Finding2 | Mutual accessibility (including ambulatory care) |
| Illustration | Both GPs and psychiatric nurses at outpatient clinics experienced problems when they needed to contact physicians and specialists in the acute wards. The focus groups with GPs were dominated by outspoken frustration over unavailable mental health professionals, especially competent consultants. |
| Finding3 | Mutual accessibility (including ambulatory care) |
| Illustration | "I can't sit and wait for 15 minutes for a phone call about an acute situation. It's frustrating both for me and the patient. The patient is pending, in and out of the office, sometimes kept an eye on by the police. It's a messy situation." |
| Finding4 | Mutual accessibility (including ambulatory care) |
| Illustration | Distances and opportunities to travel were mentioned as factors that increased this problem. This problem was not mentioned by GPs working in the municipality where specialized mental health care was localized, however, reinforcing the impression that localization and distance do matter. One GP said: "It would be easier if you knew that, for example, every 14th day a specialist in mental health care would come here to meet patients and talk to us." |
| Finding5 | Unfamiliarity with existing system and resources |
| Illustration | There is no lack of professionals to handle the patient, but the clue is to put things in a system where no one falls away. |

**Interprofessional collaboration in family health teams: An Ontario-based study**

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|---|---|
| Finding1 | Rethinking traditional roles and scopes of practice |
| Illustration | While many had experience working in their professions before joining FHTs, there was much uncertainty about how this professional expertise would be applied within the FHT context: "I'm a pharmacist so I know how to be a pharmacist. I don't know how to be a pharmacist in a FHT because nobody knows about that yet. I walked in and I did pharmacy things, but I didn't know what that meant in relation to what the nurse does or what the dietitian does." |
| Finding2 | Rethinking traditional roles and scopes of practice |
| Illustration | Some discussed the concepts of shared responsibility and accountability. For example, in one FHT, the importance of changing notions of who is the primary contact person was stressed: "[Physicians need to] relinquish in concrete identifiable ways power over all aspects of their work, including who controls patient load, contact with patients, and decision making about patients." |
| Finding3 | Management and leadership |

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| Illustration | Numerous participants discussed the essential role of a manager or executive director responsible for the overall management and team development of FHTs. It was reported that this individual should be innovative and creative, as well as possess project development and management skills: "[The executive director] has a very clear vision as to where she sees our family health team going and how can we get that in action. So I think her communication skills are great. And really, having discussions with all of us versus just the doctors, just the allied health, or just the front staff, that really, really helps get everyone on the same page." |
| Finding4 | Time and space |
| Illustration | Many FHTs included large numbers of team members, who were frequently located at more than 1 site or on different floors within a building. This geographic separation resulted in a lack of shared time and space, which was believed to impede FHT development: "I think the biggest challenge for us currently is space, because our offices weren't designed to incorporate interprofessional staff and interprofessional care. So that's one of the biggest issues." |
| Finding5 | Time and Space |
| Illustration | In addition, it was generally agreed that FHT development required time for ongoing discussion and negotiation of roles and scopes of practice: "You have to have meetings to find a way to handle the uncertainty and ambiguity [when developing a FHT]. You're going to have to sit down and talk to each other about the ambiguity and uncertainty of the work they do. Yeah, it's a big change" |
| Finding6 | Interprofessional initiatives |
| Illustration | The challenge of defining job descriptions and recruiting qualified individuals who could work collaboratively was reported: "We need to be flexible, both the new team members and the more established team members. I think people are quite prepared to be flexible, but it's a little bit of putting up with the uncertainty. So if you can imagine yourself as a person coming to a role that's never existed in a team, that you're being asked, as a newcomer joining a new team, to help define." |
| Finding7 | Interprofessional initiatives |
| Illustration | The key aim of these organizational activities was to create systems to support the goal of the most effective provider providing the necessary care: "The [key to] access and efficiency is making sure that people are getting to the right profession; for example, if somebody is coming in for their second hep B shot, they don't need to see a physician. They could see a nurse. That opens up a 15-minute slot for the physician to use." |
| Finding8 | Interprofessional initiatives |
| Illustration | The electronic medical record (EMR) was a further tool being used within some practices to facilitate collaboration. A number of successes were reported; for example, in one FHT the EMR was |

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| | used by the physicians, nurse, and dietitian to enter and share patient information, thus avoiding duplication of effort in the interprofessional diabetes program. While challenges with EMRs were encountered, their potential to facilitate communication was recognized. |
| Finding9 | Early perceptions of collaborative care |
| Illustration | Some particularly valued the interprofessional interactions that were occurring, such as an increasing focus on collaborative patient-centered care: "It's great to be able to do the teaching for somebody (a patient) who has a high cholesterol level and has hypertension and talk to them about the changes that they need to make and how it will affect their long-term health from a medical point of view, but then it's great to just be able to refer them to a dietitian and know that they're getting the best." |
| Finding10 | Early perceptions of collaborative care |
| Illustration | Participants also thought the FHT transition was an adjustment for patients, who were accustomed to seeing their physicians, and in some cases nurses, for their primary care visits. A few participants discussed the need for patient education to explain this new model of care: "You would explain to them [patients] that their primary care person was going to be the nurse practitioner and that there was a physician partner that they were attached to but their primary person wasn't going to be a physician. [M]ost people were receptive to having a nurse practitioner" |

**Developing interprofessional collaboration: A longitudinal case of secondary prevention for patients with osteoporosis**

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| Finding1 | Bottom-up approach |
| Illustration | This approach aimed at stimulating professionals and patients to actually make a change based on their own experience. The professionals were encouraged to act creatively about how to implement fracture prevention by finding new forms of collaboration. One of the professionals described this participative process at a workshop in year 2 as follows: "In contrast to what is traditionally done, we did not begin by coordinating our health care program policies, based on top-down decisions instead, we begun by trying to find forms for collaboration." |
| Finding2 | Bottom-up approach |
| Illustration | The professionals developed vast responsibility for achieving shared goals that regularly fit to the role of an assistant director. One participant experienced such responsibility in maintaining the inpatient flow: "As regards our activities, I can see that now that the flow of patients from the ER is smoother, everything else works, too. However, this is because I am a very observant person. I have to keep the new physicians continually informed, and I am not always able to do this in a group, so instead I have to take them aside one by one when I see that a doctor has made a mistake or forgotten |

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| | something. |
| Finding3 | Feedback triggers interprofessional motivational forces |
| Illustration | Experiences from workshops and meetings elucidated that a variety of feedback was triggering interprofessional motivational forces. "We get feedback from patients, for instance in the form of information from the telephone follow-ups now done by the osteoporosis nurse. The patients think it's fantastic because they, in turn, also get more feedback. We also know that the new assessments we make will be followed" |
| Finding4 | Feedback triggers interprofessional motivational forces |
| Illustration | These face-to-face interactions stimulated interprofessional communication and facilitated for a sense of shared responsibility, vital for strengthening trust between professionals. Accordingly, increased awareness of the major differences in professional roles in a shared clinical context resulted in the professions feeling that they were confirmed in their perceptions of their own and each other's roles. This shared awareness of each other's specialties increased the sense of professional meaningfulness in terms of role identifications, as this woman said at a workshop in year 3: "Two years ago we didn't even know how the chain of care looked, what routes the patients took. All of us who work in this area didn't even know each other. Today I just lift the receiver and call the person I need to talk to. I know what my role is, and yours (pointing to someone from another unit) and yours (pointing at someone else from a third unit)" |
| Finding5 | Developing shared values and preventive innovations |
| Illustration | The collaboration advanced and a shared awareness developed about the impact of supporting patients with consistent information, coherent ways of communicating and facilitating behavior change at every unit of the chain of care: "It's better for the patients because there is now a more distinct chain of care with several points at which any possible misunderstandings or confusion can be sorted out. There are also more people who provide the patients with uniform information and reminders." |
| Finding6 | Increased transparency and control |
| Illustration | "The collective control and interprofessional transparency achieved thus resulted in improved collaboration among the healthcare units involved. These efforts have resulted in increased collaboration. Today we know more about what happens in primary care, at the rehabilitation clinic and at the orthopedics department" |
| Finding7 | Increased transparency and control |
| Illustration | Working like this is very inspiring, as is seeing patients at the hospital and knowing they will be followed up at the primary care unit. Today we have a strong chain of care, and we can feel it |

**Multidisciplinary care: experience of patients with complex needs**

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| Finding1 | Views of multidisciplinary team care |
| Illustration | When patients were asked about what they thought about having a |

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| | team of health professionals manage their diabetes, most of them (11/13) said that being referred to different professionals was inconvenient because of the amount of time involved to schedule and attend the appointments with each health professional, lack of team sport, travel distance, long waiting times and lack of social support. |
| Finding2 | Views of multidisciplinary team care |
| Illustration | Having many health professionals also increased the number of medicines they were taking as each was seen to prescribe different sets of medication for different conditions. They also found it inconvenient to have to re-tell their medical histories to each health practitioner they visit. One patient with multiple health professionals takes a list of her medications with her for fear of forgetting the names of the medicines when she visits her many doctors. “I don't like too many people managing my care. My medicine list gets too long, I don't speak English well, I have to make many appointments and sometimes my daughter cannot take me.” |
| Finding3 | Views of multidisciplinary team care |
| Illustration | Only two people thought that being managed by a team would improve their diabetes care. One patient felt that the hospital was better equipped to take care of diabetic patients because the expertise is all in one location. “If there are more experts taking care of my diabetes like it is in the hospital and they do things on a big scale, then my diabetes will improve.” |
| Finding4 | Views of multidisciplinary team care |
| Illustration | The information provided by the different health professionals was conflicting and confusing for half of the patients interviewed. Many found that each health professional instructed them differently about different aspects of their diabetes care. Many felt overwhelmed by the amount of information and the pace at which this information was delivered to them, especially those who have less English language proficiency. There was no health education follow up to supplement what had been provided during their first appointment. “I was taught about diabetes by the nurse when I was diagnosed but I could not remember what she taught me, it was one session when I was in the hospital. So many health people visited me, I don't know who.” |
| Finding5 | Barriers to multidisciplinary care |
| Illustration | Being referred to many health professionals was seen to dramatically increase health care costs which discouraged patients in following up with their health care professionals. “The hospital told me the date to go and change the bandage. When we went there they charged me $150 to take out the bandage, only the bandage but not the stitch and when I came back I tried to open by myself, because I did not have the money because they wanted a fee to just open the bandage. Then I went back again to take for the stitches and I had to pay money for the stitch. |

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| Finding6 | Barriers to multidisciplinary care |
| Illustration | In addition to socioeconomic factors, cultural issues, such as food preferences, were also seen as issues not addressed by health professionals. When this patient was asked why she didn't want to be referred to a dietician, her carer answered that “We eat more spices and then the dietitian recommends something with less salt, less sugar, less fruits, then it becomes difficult.” |
| Finding7 | Co-morbidities as barriers |
| Illustration | While patients with multiple co-morbidities acknowledged the need for specialized allied health support services for their diabetes care, they found it harder to participate in team care because of the difficulties in juggling priorities, not only their medical needs but also more pressing socioeconomic and cultural concerns. |
| Finding8 | Co-Morbidities as Barriers |
| Illustration | Some of the patients felt that their co-morbid conditions were being dealt with by different health professionals rather than a multi-professional team managing them as one patient who has all the conditions. “My diabetes doctor checks my blood sugar and my eye doctor looks at my eyes and scheduled me for laser treatment and my heart doctor gives me tablets and my arthritis doctor gives me steroid shots. I feel like many diseases and each piece of me is being treated by different doctors. Too many doctors.” |
| Finding9 | Co-morbidities as Barriers |
| Illustration | Physical co-morbidities present as a challenge to participation in integrated care, which may be seen as non-compliance to follow up. One of the patients interviewed had problems with urinary incontinence and refrained from drinking water from the night before her appointment. “I have to stop drinking water from midnight till I come back from the appointment because I don’t want to have to look for toilets everywhere.” |
| Finding10 | Lack of support from health professionals |
| Illustration | Patients also reported a poor understanding of their diabetes and self-management. They felt that there was lack of support from health professionals for health education and need for more information, for follow-up care and for setting goals for their diabetes control, making the motivation to self-manage very low. |
| Finding11 | Lack of support from health professionals |
| Illustration | “Some of the patients who were referred to community health diabetes education programs and support groups were disinclined to participate because of their poor English language ability. My English is not so good and so I don't like attending groups or going to consult many health people.” |
| Finding12 | Lack of communication among health professionals |
| Illustration | Another patient was seen as non-compliant because he failed to follow up with his specialists and GP for treatment for a diabetic foot ulcer. He said that he had neither transport nor the financial |

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| | resources to go to the specialist and his GP no longer bulk billed which discouraged follow up. |
| Finding13 | Lack of communication among health professionals |
| Illustration | Over time he noticed inconsistencies between the community health nurses in the method of wound dressing saying, They don't seem to communicate with each other. The health professionals involved in his care, including his regular GP. The staff specialist from the local hospital and the community health team confirmed that communications between them had been through referral letters carried by the patient as he journeyed through the fragmented health system. |
| Finding14 | Carer as coordinator |
| Illustration | The presence of a dedicated care coordinator like a family member seemed to be an important resource that enhanced integration of care for one patient |

**Diagram of Study Findings, Review Categories and Meta-Synthesis**

| **Findings** | **Categories** | **Meta-Synthesis** |
|---|---|---|
| Barriers to multidisciplinary care (U)<br>Lack of communication among health professionals (C)<br>Lack of support from health professionals (U)<br>Views of multidisciplinary team care (U) | Barriers to patient care | **Committing to collaborate for better patient care**<br>Interprofessional collaborative practice consists of an active commitment by all healthcare professionals to communicating effectively, working in teams, and clearly understanding each others' roles, for the common purpose of effectively and |

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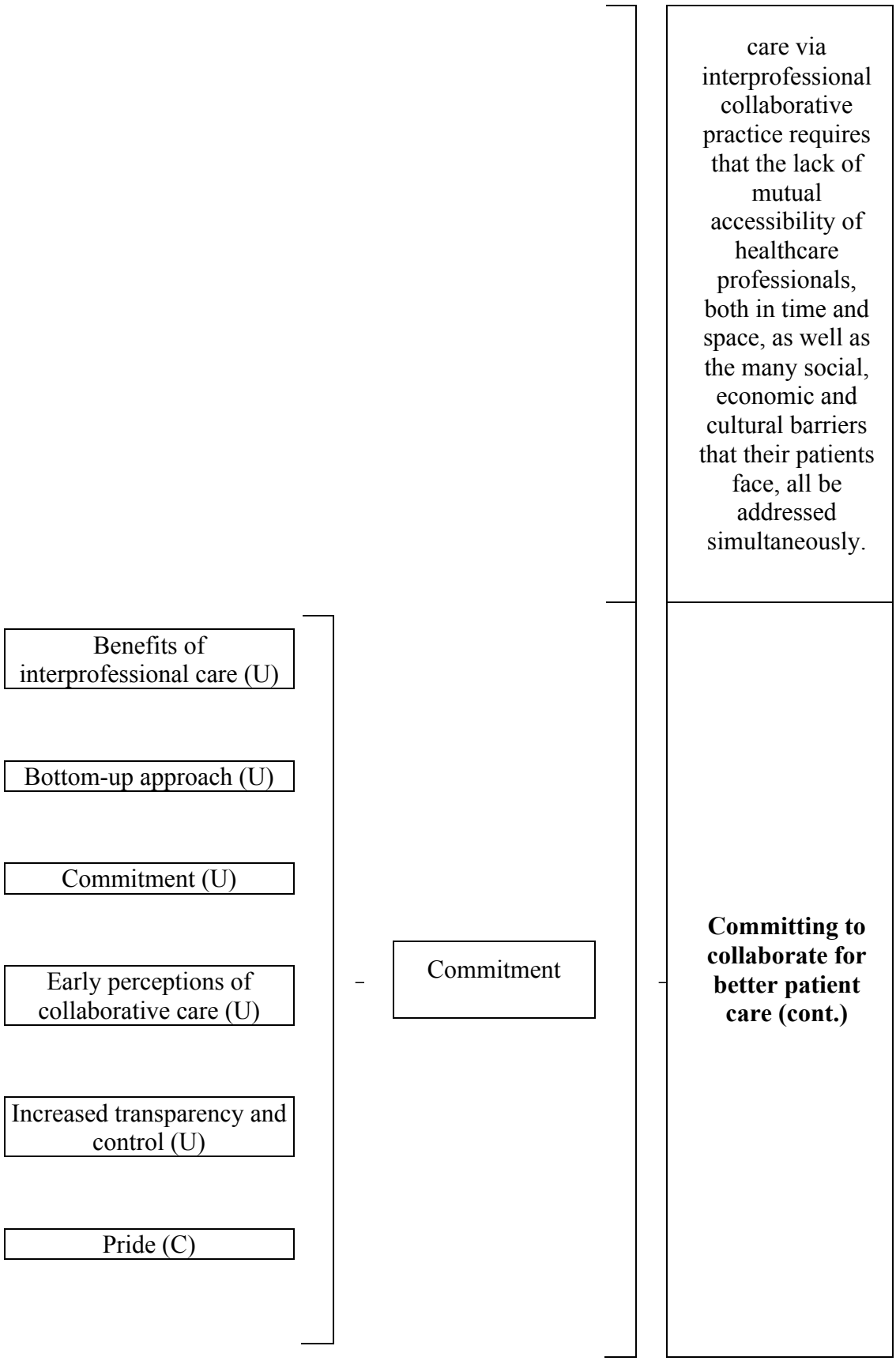
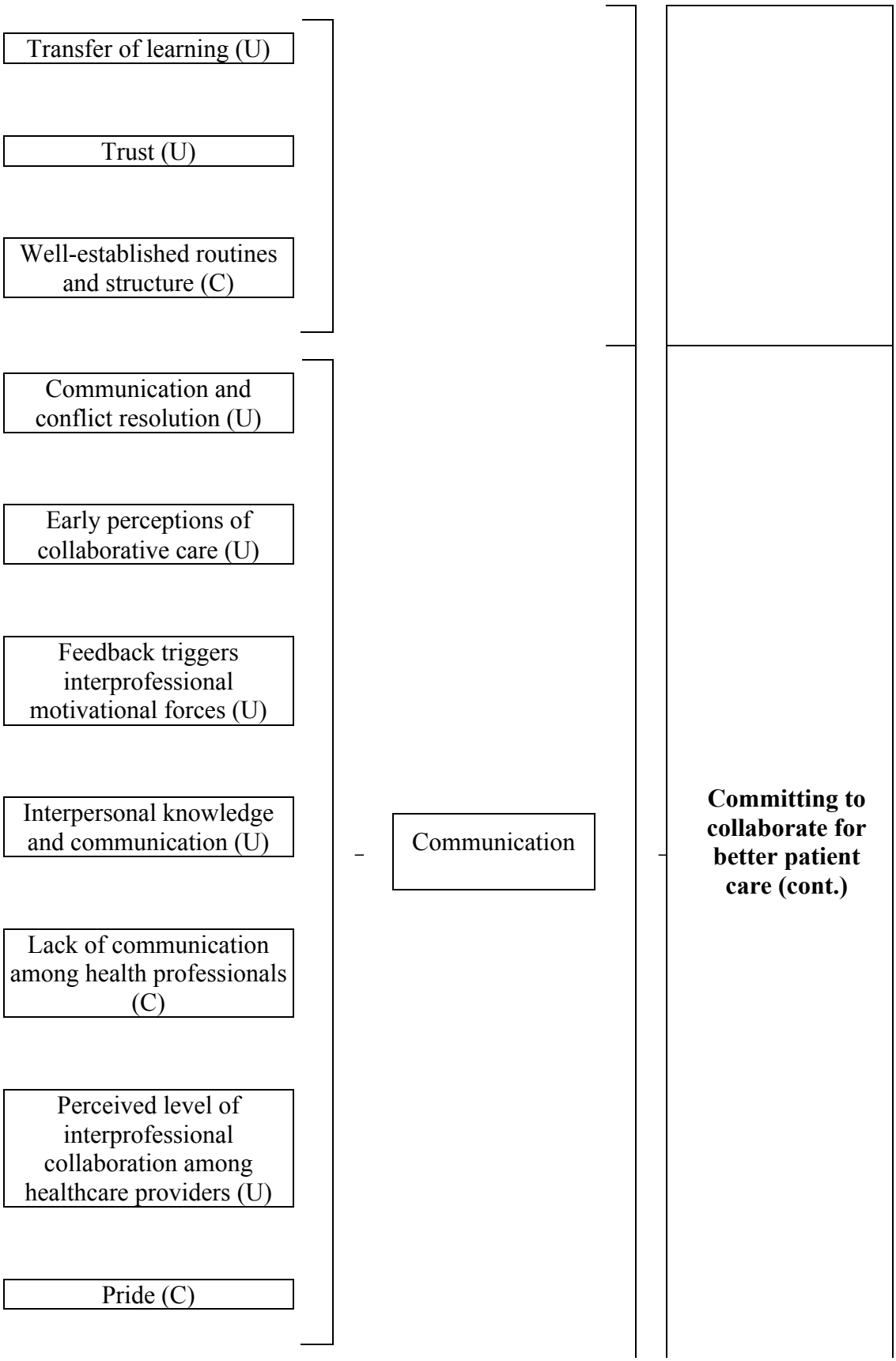
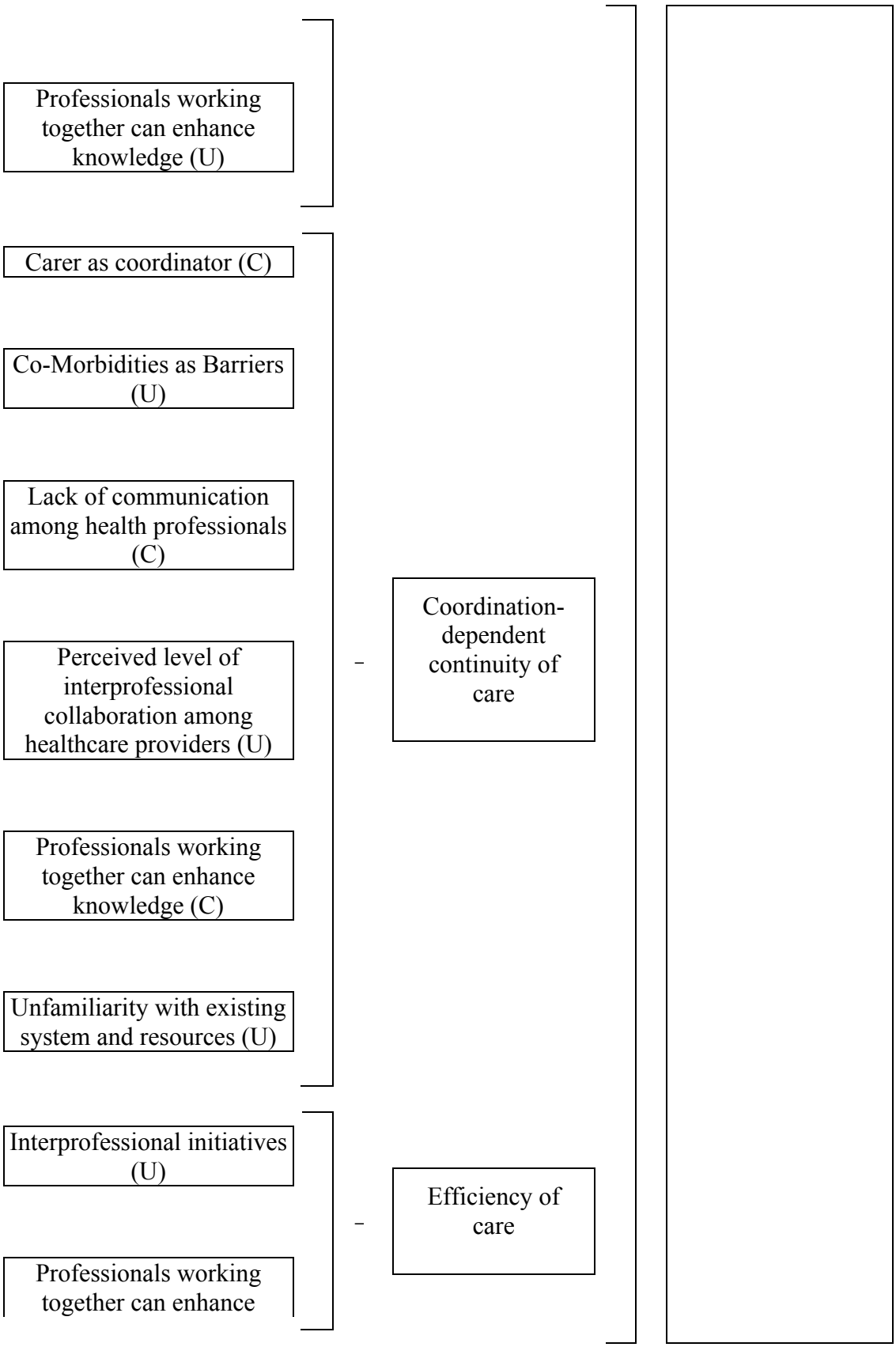
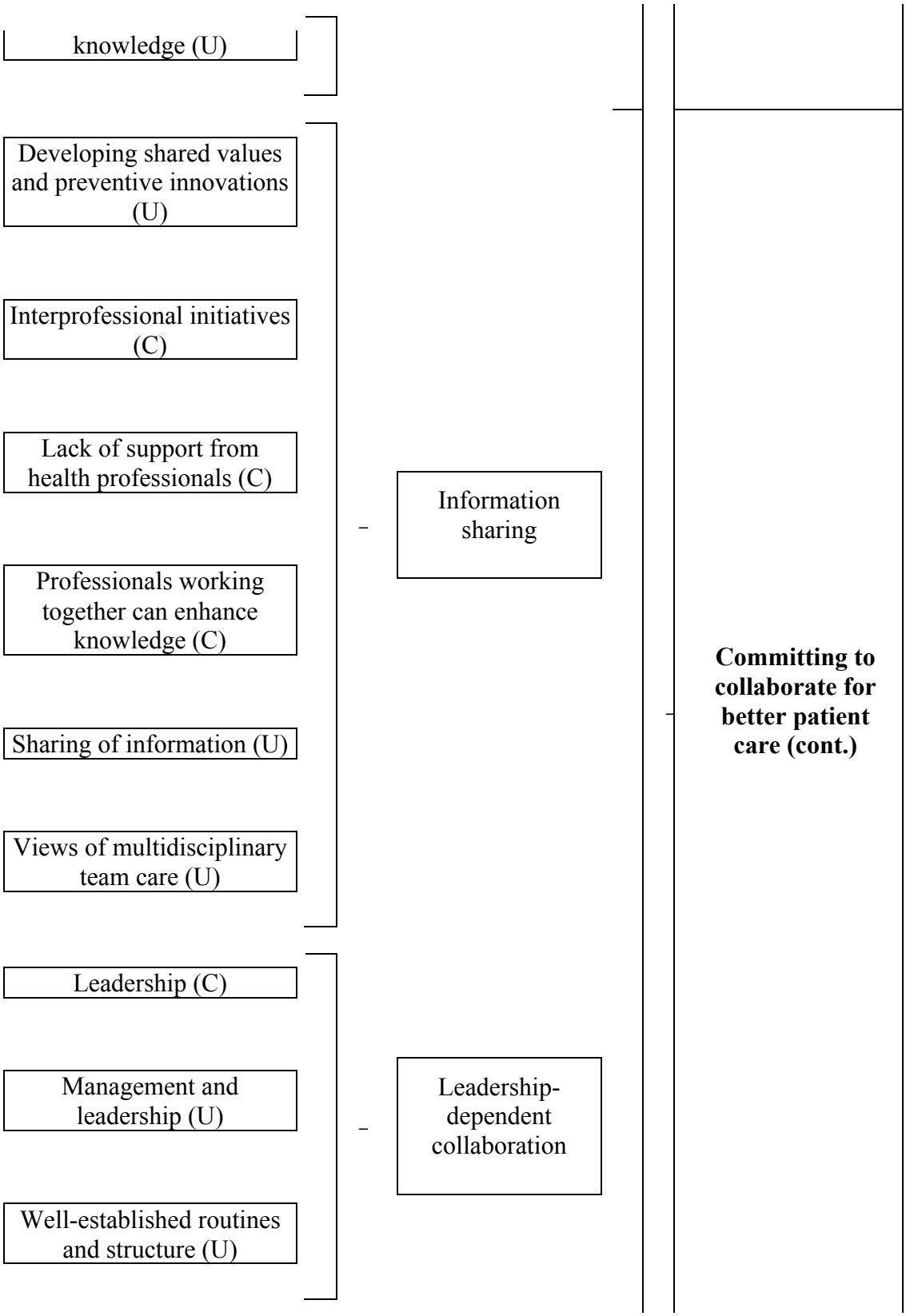
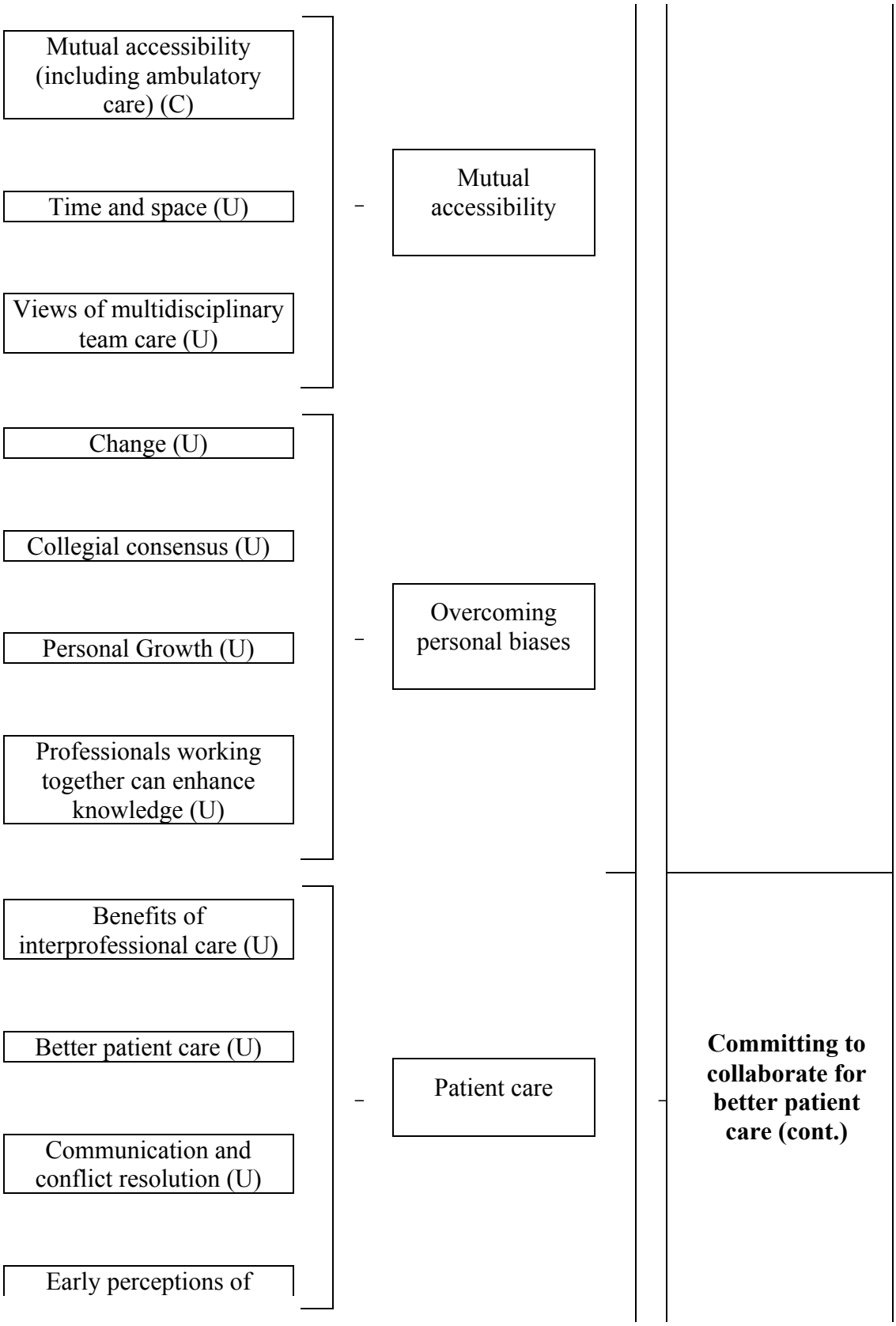
| | efficiently achieving optimal patient care. Attaining interprofessional collaborative practice first and foremost requires that healthcare professionals overcome personal biases about themselves and each other, thereby facilitating effective collaboration-dependent coordination of continuous patient care. The latter entails the implementation of team-based problem solving approaches, where information is shared systematically, and a team leader is dedicated to ensuring that solutions generated by the team are carried forward within the context of shared decision-making among healthcare professionals, the patients and their families. Achievement of optimal patient |

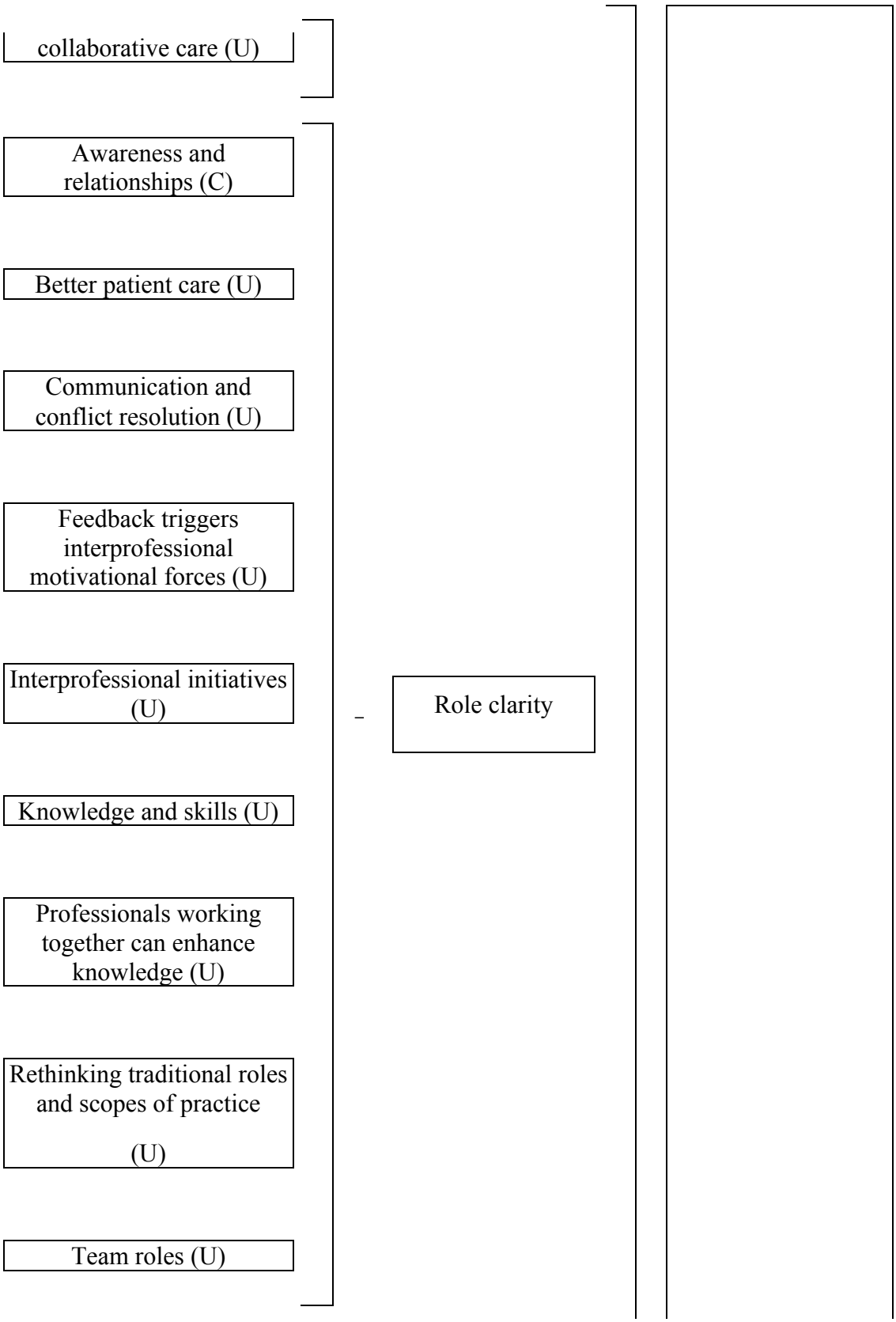

care via interprofessional collaborative practice requires that the lack of mutual accessibility of healthcare professionals, both in time and space, as well as the many social, economic and cultural barriers that their patients face, all be addressed simultaneously.
Benefits of interprofessional care (U)
Bottom-up approach (U)
Commitment (U)
Early perceptions of collaborative care (U)
Increased transparency and control (U)
Pride (C)
Commitment
Committing to collaborate for better patient care (cont.)

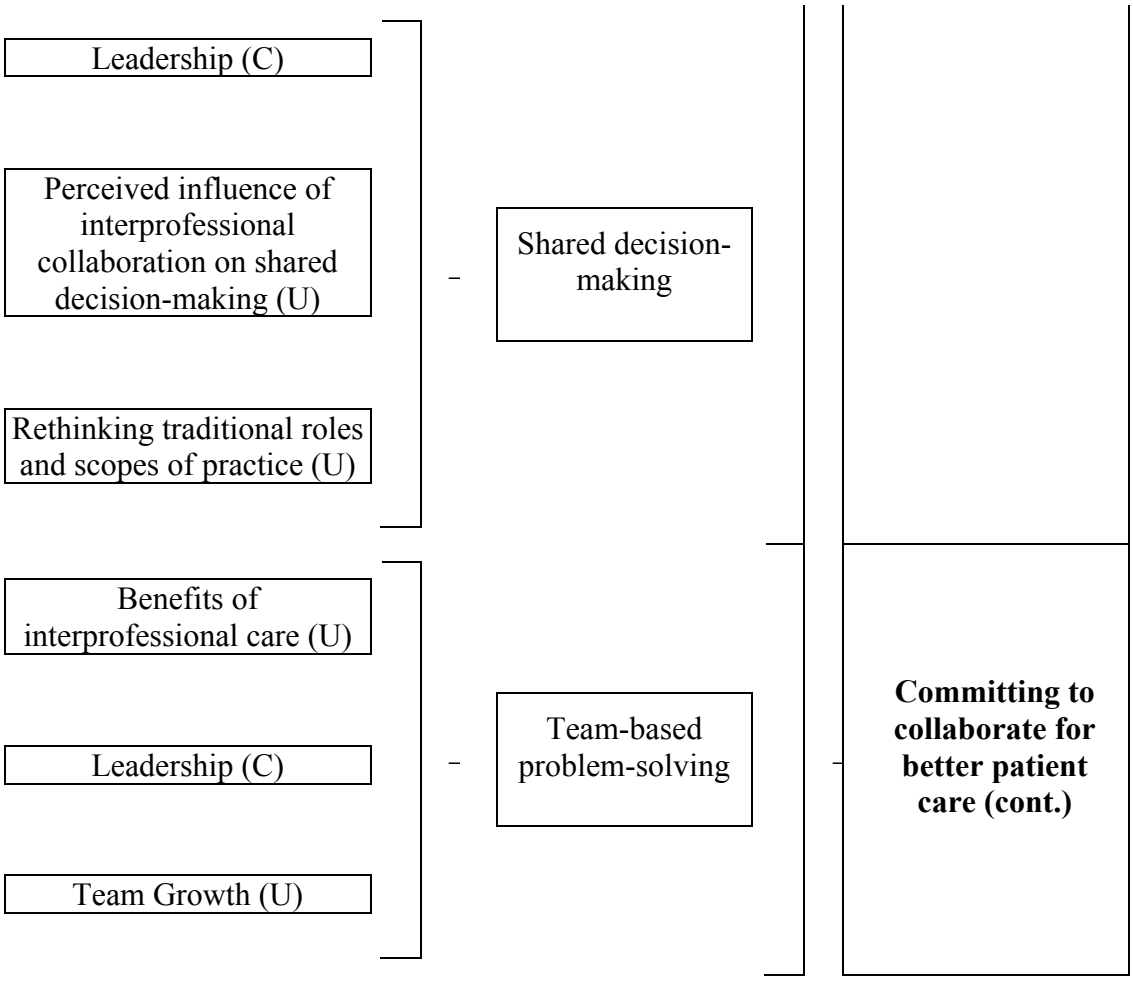

Transfer of learning (U)
Trust (U)
Well-established routines and structure (C)
Communication and conflict resolution (U)
Early perceptions of collaborative care (U)
Feedback triggers interprofessional motivational forces (U)
Interpersonal knowledge and communication (U)
Lack of communication among health professionals (C)
Perceived level of interprofessional collaboration among healthcare providers (U)
Pride (C)
Communication
Committing to collaborate for better patient care (cont.)


Professionals working together can enhance knowledge (U)
Carer as coordinator (C)
Co-Morbidities as Barriers (U)
Lack of communication among health professionals (C)
Perceived level of interprofessional collaboration among healthcare providers (U)
Professionals working together can enhance knowledge (C)
Unfamiliarity with existing system and resources (U)
Coordination-dependent continuity of care
Interprofessional initiatives (U)
Professionals working together can enhance
Efficiency of care


knowledge (U)
Developing shared values and preventive innovations (U)
Interprofessional initiatives (C)
Lack of support from health professionals (C)
Professionals working together can enhance knowledge (C)
Sharing of information (U)
Views of multidisciplinary team care (U)
Information sharing
Leadership (C)
Management and leadership (U)
Well-established routines and structure (U)
Leadership-dependent collaboration
Committing to collaborate for better patient care (cont.)


Mutual accessibility (including ambulatory care) (C)
Time and space (U)
Views of multidisciplinary team care (U)
Mutual accessibility
Change (U)
Collegial consensus (U)
Personal Growth (U)
Professionals working together can enhance knowledge (U)
Overcoming personal biases
Benefits of interprofessional care (U)
Better patient care (U)
Communication and conflict resolution (U)
Early perceptions of
Patient care
Committing to collaborate for better patient care (cont.)


collaborative care (U)
Awareness and relationships (C)
Better patient care (U)
Communication and conflict resolution (U)
Feedback triggers interprofessional motivational forces (U)
Interprofessional initiatives (U)
Knowledge and skills (U)
Professionals working together can enhance knowledge (U)
Rethinking traditional roles and scopes of practice (U)
Team roles (U)
Role clarity


Leadership (C)
Perceived influence of interprofessional collaboration on shared decision-making (U)
Rethinking traditional roles and scopes of practice (U)
Shared decision-making
Benefits of interprofessional care (U)
Leadership (C)
Team Growth (U)
Team-based problem-solving
Committing to collaborate for better patient care (cont.)

**Appendix C: Focus Group and Individual Interview Protocol**

**Interprofessional Practice, Health Outcomes and Disparities**
**Focus Group Facilitator's Guide**

**Date:** _____
**Institution:** _____

*Please select the appropriate response for each question.*

1. Have you ever attended or participated in an interprofessional education or practice session, lecture or other related activity?
    a. Yes
    b. No
2. To your knowledge, did your health professional school training or curriculum include an assessment of interprofessional competency?
    a. Yes
    b. No
3. Are you familiar with the Interprofessional Education Collaborative (IPEC) 2011 consensus paper?
    a. Yes
    b. No

**Interview Introduction**

Thank you for agreeing to participate in this research study on interprofessional practice in the US. The goal of this project is to explore the perceptions of health professionals on interprofessional practice, which occurs anytime health professionals from 2 or more professions learn together or collaborate to achieve the common goal of improving patient care. Today, we are specifically interested in understanding your views on the relationship between interprofessional practice, patient health outcomes and health/healthcare disparities.

Everyone here today is a health professional in some way, whether at the present time or at a prior point in his or her career. I will begin by asking you a few questions concerning your experience with the concept of interprofessionalism and whether you have participated in any such educational or collaborative practice activities. Your task today will be to interact with each other and discuss your thoughts on this topic, with my questions serving as starting points and guides for discussion.

You do not need to speak in any specific order, as this is an open forum where all ideas are welcomed from everyone here at any moment. I will ask, however, that you be aware that I may sometimes ask additional questions to try to keep the group on topic, to help encourage all individuals to speak, and to explore issues that may be important to the main research question. Feel free to share your ideas at any time, to pick up the discussion where someone left off, and to share your thoughts openly. Anything you say in this focus group will be helpful to me as a student researching this topic, but also possibly to all health professionals who will benefit from the knowledge we create in the near future.

Note that we are audiotaping this session. This recording will be kept confidential and is being collected only to allow me to focus on your discussions and comments in

person now, and later on to better recall and analyze the information after this focus group is over. Do you have any questions at this time? If none, then let us begin.

**Interprofessional Practice**

1. With regards to health professionals, what does interprofessionalism or collaboration between health professionals mean to you?
2. How does this relate to patients?
3. Thinking back to the last time you were a patient in the care of various health professionals at a hospital, how would you describe these health professionals' collaborative competence?
4. If you could go back to the last time one of your loved ones was ill and in need of care at a hospital, what would you change about the way the health professionals there worked together in that situation?

**Interprofessionalism Practice and Patient Health Outcomes**

5. In your opinion, which patient clinical care outcomes are most affected by the way health professionals works together?
6. Describe some mechanisms by which you think interprofessional practice could influence a patient's clinical care outcomes.

**Interprofessional Practice and Health/Healthcare Disparities**

7. What role do you think health and healthcare disparities play in interprofessional practice?
8. In your opinion, how do the systematic health and healthcare disparities that healthcare professionals face (ex. working in poor, highly segregated neighborhoods, and having large numbers of very sick patients with inadequate or no health insurance coverage or low literacy rates) influence their ability to collaborate with each other?
9. Imagine being a patient facing substantial health and healthcare disparities (ex. living in high poverty and racially segregated neighborhoods, and having low literacy), and being cared for in an environment where health professionals are able to collaborate well with each other. How would this affect your health outcomes?
10. Imagine being a patient in the same life scenario above, except this time you are being cared for in an environment where health professionals are NOT able to collaborate well with each other. How would this affect your health outcomes?

Is there anything you think we missed that should be emphasized? We thank you for taking the time to participate in this focus group. Your insights will really help us better understand interprofessionalism in the US, and the potential impact of this phenomenon for all stakeholders in the US healthcare system.

## Appendix D: Inter-Rater Reliability Validation Results

**Table D1.** Individual and overall percent agreement reliability table for the 69 codes in the initial codebook. The red highlighting indicates variables that did not meet the initial 75% inter-rater reliability cutoff score. "Var" = variable, "Trans" = transcript.

| Item | Var1 | Var2 | Var3 | Var4 | Var5 | Var6 | Var7 | Var8 |
|---|---|---|---|---|---|---|---|---|
| Trans1 | 75 | 50 | 50 | 100 | 100 | 100 | 100 | 100 |
| Trans2 | 100 | 75 | 0 | 0 | 100 | 0 | 0 | 100 |
| Trans3 | 100 | 50 | 0 | 0 | 100 | 100 | 100 | 0 |
| Trans4 | 100 | 100 | 0 | 100 | 100 | 100 | 100 | 100 |
| Mean | 93.75 | 68.75 | 12.5 | 50 | 100 | 75 | 75 | 75 |
| Item | Var9 | Var10 | Var11 | Var12 | Var13 | Var14 | Var15 | Var16 |
| Trans1 | 100 | 0 | 100 | 100 | 100 | 100 | 100 | 100 |
| Trans2 | 100 | 100 | 100 | 100 | 0 | 100 | 100 | 100 |
| Trans3 | 0 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Trans4 | 100 | 100 | 0 | 100 | 100 | 100 | 100 | 100 |
| Mean | 75 | 75 | 75 | 100 | 75 | 100 | 100 | 100 |
| Item | Var17 | Var18 | Var19 | Var20 | Var21 | Var22 | Var23 | Var24 |
| Trans1 | 50 | 100 | 50 | 100 | 100 | 50 | 100 | 100 |
| Trans2 | 50 | 100 | 100 | 100 | 100 | 100 | 100 | 0 |
| Trans3 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 100 |
| Trans4 | 0 | 100 | 100 | 0 | 0 | 0 | 100 | 100 |
| Mean | 50 | 100 | 87.5 | 75 | 75 | 37.5 | 100 | 75 |
| Item | Var25 | Var26 | Var27 | Var28 | Var29 | Var30 | Var31 | Var32 |
| Trans1 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Trans2 | 100 | 100 | 100 | 100 | 33 | 100 | 100 | 0 |
| Trans3 | 100 | 50 | 100 | 100 | 0 | 100 | 100 | 100 |
| Trans4 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Mean | 100 | 87.5 | 100 | 100 | 58.25 | 100 | 100 | 75 |
| Item | Var33 | Var34 | Var35 | Var36 | Var37 | Var38 | Var39 | Var40 |
| Trans1 | 100 | 50 | 50 | 100 | 100 | 100 | 100 | 100 |
| Trans2 | 100 | 100 | 100 | 0 | 0 | 100 | 100 | 100 |
| Trans3 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Trans4 | 100 | 100 | 100 | 100 | 100 | 0 | 100 | 100 |
| Mean | 100 | 87.5 | 87.5 | 75 | 75 | 75 | 100 | 100 |
| Item | Var41 | Var42 | Var43 | Var44 | Var45 | Var46 | Var47 | Var48 |
| Trans1 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Trans2 | 100 | 100 | 100 | 100 | 75 | 100 | 100 | 100 |
| Trans3 | 100 | 0 | 100 | 100 | 75 | 100 | 100 | 100 |
| Trans4 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 0 |
| Mean | 100 | 75 | 100 | 100 | 87.5 | 100 | 75 | 75 |

| Item | Var49 | Var50 | Var51 | Var52 | Var53 | Var54 | Var55 | Var56 |
|---|---|---|---|---|---|---|---|---|
| Trans1 | 100 | 33 | 100 | 100 | 100 | 100 | 100 | 100 |
| Trans2 | 100 | 0 | 75 | 100 | 100 | 100 | 50 | 100 |
| Trans3 | 100 | 100 | 50 | 100 | 100 | 100 | 50 | 100 |
| Trans4 | 100 | 0 | 100 | 50 | 100 | 100 | 100 | 100 |
| Mean | 100 | 33.25 | 81.25 | 87.5 | 100 | 100 | 75 | 100 |
| Item | Var57 | Var58 | Var59 | Var60 | Var61 | Var62 | Var63 | Var64 |
| Trans1 | 100 | 100 | 100 | 100 | 100 | 100 | 0 | 100 |
| Trans2 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 50 |
| Trans3 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |
| Trans4 | 100 | 0 | 100 | 100 | 100 | 0 | 100 | 100 |
| Mean | 100 | 75 | 100 | 100 | 100 | 75 | 75 | 87.5 |
| Item | Var65 | Var66 | Var67 | Var68 | Var69 | Overall | | |
| Trans1 | 100 | 100 | 100 | 100 | 50 | 89.971 | | |
| Trans2 | 100 | 100 | 100 | 33 | 100 | 80.304 | | |
| Trans3 | 100 | 100 | 100 | 100 | 100 | 86.594 | | |
| Trans4 | 100 | 100 | 100 | 100 | 100 | 81.884 | | |
| Mean | 100 | 100 | 100 | 83.25 | 87.5 | 84.688 | | |

## Appendix E: Online Survey Tool

### Preliminary Online Survey Instrument

**Interprofessional Practice, Health Outcomes and Disparities**
**Online Survey**

**Date:** _____
**Institution:** _____

**Introduction**

Thank you for agreeing to complete this survey on interprofessional practice and patient health outcomes in the US. The goal of this survey is to explore the perceptions of healthcare professionals on interprofessional practice, which occurs anytime healthcare professionals from 2 or more professions learn together or collaborate to achieve the common goal of improving patient care. Your responses to these survey questions will be kept confidential, and you may choose to not participate or discontinue your participation at any time. If you have any questions, you may contact the primary investigator at the following number: (973) 972-9731.

*Please select the appropriate response for each question or statement below.*

**Demographics**

1. Which of the following healthcare professional best describes you?
    a. Registered Nurse
    b. Doctor (attending physician, resident or intern)
    c. Pharmacist
    d. Public Health Worker
    e. Dentist
    f. Other
2. Have you been actively involved in caring for patients in the last 6 months?
    a. Yes
    b. No
3. Have you ever attended or participated in an interprofessional education or practice session, lecture or other related activity?
    a. Yes
    b. No
4. Which of the following type of healthcare delivery model applies to your practice setting?
    a. Accountable Care Organization
    b. Patient-Centered Medical Home
    c. Other (please list here)
5. What is your approximate gross annual income? Please round to the nearest $1,000. Ex. $95,444 should be entered as $95,000; $150,550 should be entered as $151,000.

**Interprofessional Practice and Health Outcomes**

For each of the following statements, please rate your level of agreement: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree.

6. Teamwork among all healthcare professionals is essential in making decisions for patient care in my practice.
7. Teamwork among all healthcare professionals is essential for sharing information with patients and families in my practice.
8. Effective communication among all healthcare professionals is essential for care coordination in my practice.
9. Effective communication among all healthcare professionals directly impacts the efficiency of the healthcare system in my practice setting.

**Interprofessional Practice and Disparities**

10. Lack of clear communication between my practice, other health professions and the broader healthcare system makes it easy for patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications)
11. I face difficulties in collaborating with colleagues from other health professions because the healthcare setting where I work makes it difficult to do so.
12. The patient populations I work with in my practice setting are much less likely to trust the healthcare system and healthcare professionals, which limits their adherence to prescribed care.

**Final Online Survey Instrument**

**Interprofessional Collaboration and Patient Health Outcomes in Urban Settings**

**Date:** _____
**Institution:** _____

**Introduction**

Thank you for agreeing to complete this survey on interprofessional collaboration and patient health outcomes in the US. The goal of this survey is to explore the perceptions of healthcare professionals on interprofessional collaboration, which occurs anytime healthcare professionals from two or more professions learn together or collaborate to achieve the common goal of improving patient care and health outcomes. Your responses to these survey questions will be kept confidential, and you may choose to not participate or discontinue your participation at any time. If you have any questions, you may contact the principal investigator at the following number (973) 353-3861 or email yuri.jadotte@rutgers.edu.

*Please select the appropriate response for each question or statement below.*

**Part I – Demographics**

1. Which of the following best describes your healthcare profession?
    a. Registered Nurse
    b. Doctor (attending physician, resident or intern)
    c. Pharmacist
    d. Public Health Worker
    e. Dentist
    f. Other (please specify _____)
2. Have you been actively involved in patient care for at least 6 months since completing your health professional schooling?
    a. Yes
    b. No
3. How many years have you worked as a healthcare professional serving urban, socioeconomically disadvantaged populations? (please enter years using only numbers; you may use decimals if needed)
    a. _____ years
4. Have you ever attended or participated in an interprofessional education, practice, session, lecture or other related activity?
    a. Yes
    b. No
5. One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is your level of overall satisfaction with your career as a healthcare professional?
    a. (select number from 1 to 10)
6. Do you use an electronic health record system in your daily work tasks?
    a. Yes
    b. No

7. Which one of the following healthcare delivery models best applies to your primary practice setting?
    a. Accountable Care Organization
    b. Traditional Fee-for-Service
    c. Patient-Centered Medical Home
    d. Nurse-Managed Health Clinic
    e. Other (please list here _____)
8. What type of healthcare system practice do you predominantly work in? Please select only one.
    a. Community-based hospital
    b. Academic medical center hospital
    c. Public outpatient practice
    d. Private outpatient practice
    e. Other (please list here _____)
9. What is your approximate gross annual income?
    a. Less than $50,000
    b. $50,000 to $99,999
    c. $100,000 to $149,999
    d. $150,000 to $199,999
    e. $200,000 to $249,999
    f. $250,000 or greater

*For each of the following statements, please rate your level of agreement: 1-strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree.*

**Part II – Interprofessional Collaboration, Patient Care and Health Outcomes**

10. Teamwork among all healthcare professionals is essential in making decisions for patient care.
11. Teamwork among all healthcare professionals is essential for sharing information with patients and families.
12. Effective communication among all healthcare professionals is essential for care coordination.
13. Effective communication among all healthcare professionals impacts the efficiency of the healthcare system.
14. Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics.
15. Effective communication among all healthcare professionals improves how well information is shared with patients and their families.
16. Effective communication among all healthcare professionals improves patient satisfaction.
17. Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families.
18. Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges.
19. Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families.

20. When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team.
21. Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare.
22. Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction.
23. Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety.
24. Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care.
25. Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans.
26. The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care.
27. Poor care coordination can lead to medical complications, including medical errors and poor health outcomes.
28. When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved.
29. When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans.
30. When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes.
31. When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes.
32. The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes.

**Part III – Interprofessional Collaboration, Patient Care and Health Outcomes and Disparities**

33. Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families.
34. Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications).
35. Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered.

36. The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals.
37. Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care.
38. Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patients.
39. Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practice and dentistry).
40. Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to the other).
41. The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care.
42. Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans.
43. Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans.
44. Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care.
45. Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families.
46. Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them.
47. I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare.
48. I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families.

## Appendix F: Quantitative Question Development Matrices

### IPCP and Patient Health Outcomes

**Matrix 1A: Building Trust within Interprofessionalism**

| Items | Looking beyond traditional hierarchies and perspectives | Overcoming entrenched attitudes |
|---|---|---|
| **Diversity in professional skills** | Interprofessional collaboration brings diverse voices to the table, which facilitates looking beyond traditional hierarchies and perspectives. | Interprofessional collaboration brings diverse voices to the table, which allows everyone to overcome entrenched professional or individual attitudes. |
| **Teamwork** | Teamwork allows all stakeholders in healthcare to look beyond traditional hierarchies and perspectives. | Teamwork allows all stakeholders in healthcare to overcome entrenched professional or individual attitudes. |
| **Communication** | Interprofessional communication helps all stakeholders in healthcare learn to look beyond traditional hierarchies and perspectives. | Interprofessional communication helps all stakeholders in healthcare learn to overcome entrenched professional or individual attitudes. |
| **Appreciation for different specialties** | Developing an appreciation for different specialties allows all team members to look beyond traditional hierarchies and perspectives. | Developing an appreciation for different specialties is an important part of overcoming entrenched professional or individual attitudes. |

**Matrix 2A: Facilitating Sharing within Care Coordination**

| Items | Being part of the team | Improving the work environment |
|---|---|---|
| **Care delivery** | Having everyone be part of the team facilitates care delivery. | Actively striving to improve the work environment enhances care delivery. |
| **Information sharing** | Systematically sharing | Systematically sharing |

| | | |
|---|---|---|
| | information helps everyone be part of the team. | information helps improve the work environment. |
| **Decision-making** | Making decisions at all steps of patient care is easier if everyone is part of the team, including the patient and his or her family. | Making decisions together with other healthcare professionals is important to improving the work environment. |
| **Problem-solving** | Solving problems at all steps of patient care is easier if everyone is part of the team, including the patient and his or her family. | Solving problems together with other healthcare professionals is important to improving the work environment. |

**Matrix 3A: Enhancing Reciprocity within Patient Care**

| **Items** | **Working together over time** | **Holding each other accountable** |
|---|---|---|
| **Adherence/compliance** | Working together over time with patients helps to improve patient adherence/compliance. | Holding all stakeholders accountable (including patients, families, healthcare professionals and policymakers) for the care given helps improve patient adherence/compliance. |
| **Fragmented care** | When the different healthcare professions work together over time, care becomes less fragmented. | When the different healthcare professions are held accountable for the care given, care becomes less fragmented. |
| **Holistic care** | When the different healthcare professions work together over time with patients, families and other disciplines, care becomes more holistic. | When the different healthcare professions, patients, families and other disciplines are held accountable for the care given, care becomes more holistic. |
| **Care efficiency policies** | Institutional policies can influence how well different healthcare professionals work together over time with patients, families and communities. | Institutional policies can influence how or whether different healthcare professionals, patients, families and communities are held accountable for the care given. |

**Matrix 4A: Effecting Change within Patient and System Outcomes**

| Items | Influencing subjective outcomes | Impacting objective outcomes |
|---|---|---|
| **Bringing efficiency to healthcare systems** | Interprofessional collaboration can bring greater efficiency to healthcare systems, thereby improving subjective system outcomes, such as employee work satisfaction scores. | Interprofessional collaboration can bring greater efficiency to healthcare systems, thereby improving objective system outcomes, such as the cost of care. |
| **Improving patient outcomes** | Interprofessional collaboration can influence subjective patient outcomes, such as patient anxiety and patient satisfaction. | Interprofessional collaboration can impact objective patient outcomes, such as morbidity and mortality. |

**Disparities in Health and Healthcare**

**Matrix 1B: Interprofessionalism within the Context of Disparities**

| Items | Healthcare System Disparities | Patient/Population Disparities |
|---|---|---|
| **Diversity in professional skills** | | Disadvantaged patients often do not have the expectation that interprofessional collaboration should be the norm. |
| **Teamwork** | Teamwork is often difficult in some healthcare settings because there are few support systems to facilitate it (ex. team members may be non-existent, colleagues may be located far away) | |
| **Communication** | There is often a | |

| | | |
|---|---|---|
| | disconnect between healthcare professionals and healthcare facilities (ex. outpatient clinics and inpatient sites), which makes communication and collaboration difficult. | |
| **Appreciation for different specialties** | Interprofessional collaboration should be used as a tool to tackle healthcare disparities (ex. collaborating to find ways to change health policies and laws). | Interprofessional collaboration should be used as a tool to tackle health disparities (ex. healthcare professionals working disadvantaged populations should focus on utilizing IPCP as a resource to address some of the barriers to care that their patients face). |

**Matrix 2B: Care Coordination within the Context of Disparities**

| **Items** | **Healthcare System Disparities** | **Patient/Population Disparities** |
|---|---|---|
| **Care delivery** | Factors within healthcare facilities can influence how well healthcare professionals are able to deliver care (ex. absence of specific professions may require others to perform roles they are not used to performing). | Disparities in healthcare laws and policies can influence how well care is delivered to some patients or populations (ex. Medicaid does not pay two different types of primary care professionals, such as a nurse practitioner and a dentist, to see the same patient in the same day even if the health problem merits it). |
| **Information sharing** | Factors within healthcare facilities can influence how well information is shared among healthcare professionals (ex. whether or not a good information technology/electronic medical record system is present). | Factors within healthcare facilities can influence how well information is shared with patients and families (ex. availability of language services, duration of waiting times). |
| **Decision-making** | Factors within healthcare facilities can impede making decisions together | |

| | | |
|---|---|---|
| | with other healthcare professionals (ex. Having a large patient caseload/volume makes it difficult to setup meetings between the different professions to make decisions together). | |
| **Problem-solving** | Factors within healthcare facilities can impede problem solving together with other healthcare professionals (ex. Not having access at the host institution to resources for evidence-based problem solving). | |

**Matrix 3B: Patient Care within the Context of Disparities**

| **Items** | **Healthcare System Disparities** | **Patient/Population Disparities** |
|---|---|---|
| **Adherence/compliance** | The lack of empathy that healthcare professionals often feel towards disadvantaged populations can limit adherence/compliance with care (ex. stigma of poverty; refusal to locate clinical practice in disadvantaged neighborhoods). | Many of the challenges that disadvantaged patients face can limit adherence/compliance with care (ex. historical grievances related to all forms of racism reduce patient trust, thereby decreasing adherence; lack of transportation decreases adherence). |
| **Fragmented care** | Disparities in healthcare laws and policies can lead to the fragmentation of care for some patients or populations (ex. by law, patients must receive acute or emergency care, but not chronic or preventive care). | Many of the challenges that disadvantaged patients face can lead to the fragmentation of care (ex. lack of insurance can result in a lack of access to care, which limits use of preventive or chronic health services). |
| **Holistic care** | | Socioeconomically disadvantaged patients are |

| | | |
|---|---|---|
| | | forced to choose between life (ex. paying essential household bills) and health (ex. purchasing healthy foods for beneficial nutrition). |
| **Care efficiency policies** | | Disadvantaged patients are often not fully engaged in care due to a mismatch in their level of health literacy compared to institutional healthcare policies. |

**Matrix 4B: Patient and System Outcomes within the Context of Disparities**

| **Items** | **Healthcare System Disparities** | **Patient/Population Disparities** |
|---|---|---|
| **Bringing efficiency to healthcare systems** | | |
| **Improving patient outcomes** | | Due to socioeconomic challenges, patients often present with complex problems (ex. advanced stage of disease, multiple chronic conditions), which makes it difficult to achieve good patient health outcomes. |

## Appendix G: Descriptive Statistics and Diagnostics

### Discrete Demographic Variables (SPSS#1, 3, 5, 7, 8, 10, 12)

**Table G1.** Identification of missing data.

**Statistics**

| | | Which of the following best describes your healthcare profession? | Have you been actively involved in patient care for at least 6 months since completing your healt... | Have you ever attended or participated in an interprofessional education, practice, session, lect... | Do you use an electronic health record system in your daily work tasks? | Which one of the following healthcare delivery models best applies to your primary practice setting? | What type of healthcare system practice do you predominantly work in? Please select only one. | What is your approximate gross annual income? |
|---|---|---|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

**Table G2.** Frequencies of the different categories within each discrete variable.

**Which of the following best describes your healthcare profession?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Registered Nurse | 31 | 20.7 | 20.7 | 20.7 |
| | Doctor (attending physician, resident or intern) | 45 | 30.0 | 30.0 | 50.7 |
| | Pharmacist | 2 | 1.3 | 1.3 | 52.0 |
| | Public Health Worker | 16 | 10.7 | 10.7 | 62.7 |
| | Dentist | 10 | 6.7 | 6.7 | 69.3 |
| | Other (please specify) | 46 | 30.7 | 30.7 | 100.0 |
| | Total | 150 | 100.0 | 100.0 | |

**Have you been actively involved in patient care for at least 6 months since completing your healt...**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 125 | 83.3 | 83.3 | 83.3 |
| | No | 25 | 16.7 | 16.7 | 100.0 |
| | Total | 150 | 100.0 | 100.0 | |

**Have you ever attended or participated in an interprofessional education, practice, session, lect...**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 126 | 84.0 | 84.0 | 84.0 |
| | No | 24 | 16.0 | 16.0 | 100.0 |
| | Total | 150 | 100.0 | 100.0 | |

**Do you use an electronic health record system in your daily work tasks?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Yes | 114 | 76.0 | 76.0 | 76.0 |
| | No | 36 | 24.0 | 24.0 | 100.0 |
| | Total | 150 | 100.0 | 100.0 | |

**Which one of the following healthcare delivery models best applies to your primary practice setting?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Accountable Care Organization | 26 | 17.3 | 17.3 | 17.3 |
| | Traditional Fee-for-Service | 38 | 25.3 | 25.3 | 42.7 |
| | Patient-Centered Medical Home | 14 | 9.3 | 9.3 | 52.0 |
| | Nurse-Managed Health Clinic | 9 | 6.0 | 6.0 | 58.0 |
| | Other (please specify) | 63 | 42.0 | 42.0 | 100.0 |
| | Total | 150 | 100.0 | 100.0 | |

**What type of healthcare system practice do you predominantly work in? Please select only one.**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Community-based hospital | 14 | 9.3 | 9.3 | 9.3 |
| | Academic medical center hospital | 71 | 47.3 | 47.3 | 56.7 |
| | Public outpatient practice | 19 | 12.7 | 12.7 | 69.3 |
| | Private outpatient practice | 11 | 7.3 | 7.3 | 76.7 |
| | Other (please specify) | 35 | 23.3 | 23.3 | 100.0 |
| | Total | 150 | 100.0 | 100.0 | |

**What is your approximate gross annual income?**

| | | Frequency | Percent | Valid Percent | Cumulative Percent |
|---|---|---|---|---|---|
| Valid | Less than $50,000 | 34 | 22.7 | 22.7 | 22.7 |
| | $50,000 to $99,999 | 66 | 44.0 | 44.0 | 66.7 |
| | $100,000 to $149,999 | 24 | 16.0 | 16.0 | 82.7 |
| | $150,000 to $199,999 | 9 | 6.0 | 6.0 | 88.7 |
| | $200,000 to $249,999 | 7 | 4.7 | 4.7 | 93.3 |
| | $250,000 or greater | 10 | 6.7 | 6.7 | 100.0 |
| | Total | 150 | 100.0 | 100.0 | |

## Continuous Demographic Variables (SPSS#4, 6)

**Table G3.** Mean, median, mode, standard deviation (SD), skewness, kurtosis, minimum and maximum values.

**Statistics**

| | | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... |
|---|---|---|---|
| N | Valid | 150 | 150 |
| | Missing | 0 | 0 |

| | | |
|---|---|---|
| Mean | 11.1967 | 7.94 |
| Median | 7.5000 | 8.00 |
| Mode | .00 | 8 |
| Std. Deviation | 11.23827 | 1.602 |
| Skewness | 1.170 | -1.271 |
| Std. Error of Skewness | .198 | .198 |
| Kurtosis | .638 | 2.842 |
| Std. Error of Kurtosis | .394 | .394 |
| Minimum | .00 | 1 |
| Maximum | 45.00 | 10 |

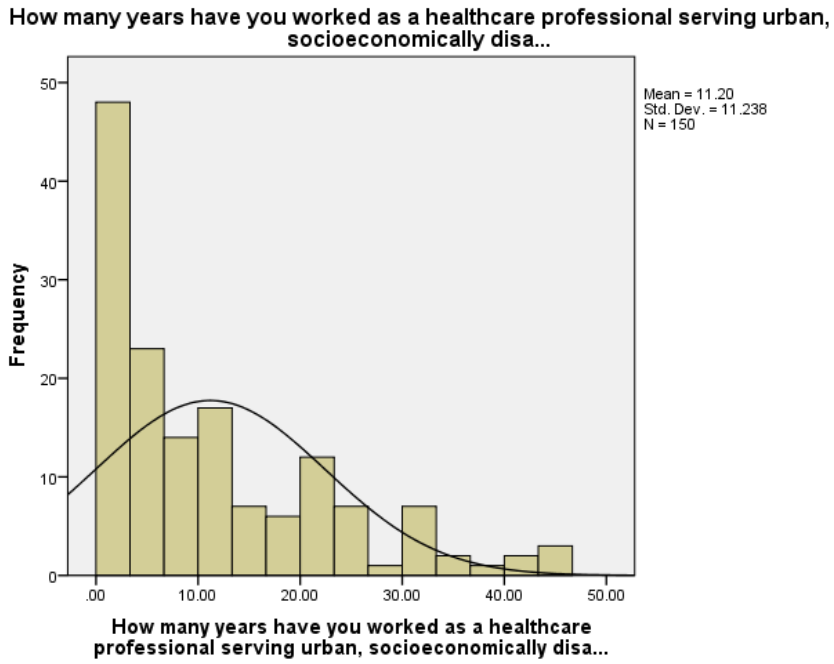



**Figure G1.** Visual evaluation of normality for the continuous variable "Years_served".

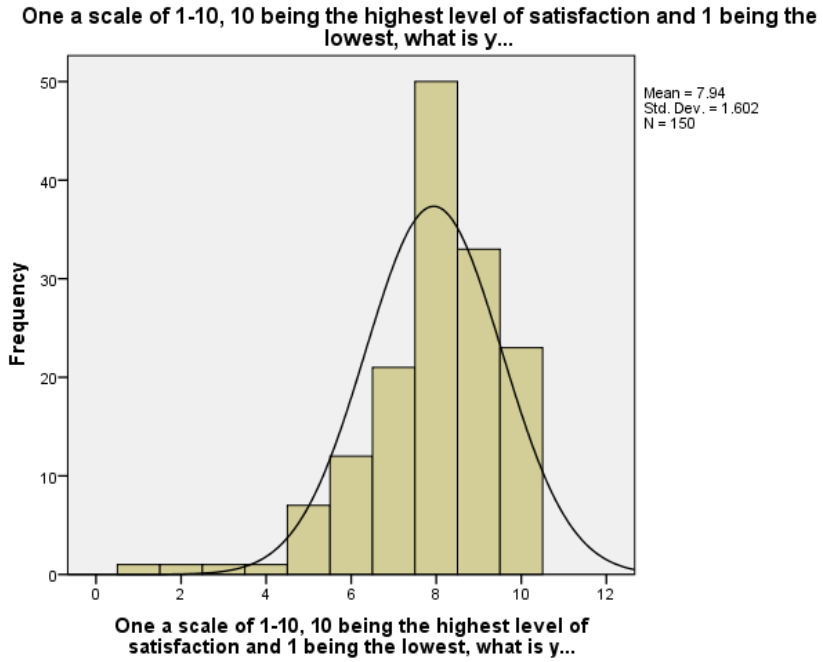



**Figure G2.** Visual evaluation of normality for the ordinal variable "Prof_satisfaction".

### Continuous Outcome Variables (SPSS#13-51)

**Table G4.** Mean, median, mode, standard deviation (SD), skewness, kurtosis, minimum and maximum values for all outcome variables.

**Statistics**

| | | Teamwork among all healthcare professionals is essential in making decisions for patient care. | Teamwork among all healthcare professionals is essential for sharing information with patients and families. | Effective communication among all healthcare professionals is essential for care coordination. | Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.58 | 4.52 | 4.73 | 4.72 |

| | | | | |
|---|---|---|---|---|
| Median | 5.00 | 5.00 | 5.00 | 5.00 |
| Mode | 5 | 5 | 5 | 5 |
| Std. Deviation | .735 | .775 | .675 | .667 |
| Skewness | -2.232 | -2.086 | -3.199 | -3.191 |
| Std. Error of Skewness | .198 | .198 | .198 | .198 |
| Kurtosis | 6.457 | 5.443 | 12.261 | 12.571 |
| Std. Error of Kurtosis | .394 | .394 | .394 | .394 |
| Minimum | 1 | 1 | 1 | 1 |
| Maximum | 5 | 5 | 5 | 5 |

**Statistics**

| | | Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. | Effective communication among all healthcare professionals improves how well information is shared with patients and their families. | Effective communication among all healthcare professionals improves patient satisfaction. | Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.28 | 4.54 | 4.48 | 4.52 |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 |
| Mode | | 5 | 5 | 5 | 5 |
| Std. Deviation | | .898 | .774 | .800 | .766 |
| Skewness | | -1.204 | -1.984 | -1.725 | -1.929 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | 1.211 | 4.730 | 3.474 | 4.737 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 | 5 |

**Statistics**

| | | Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. | Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families. | When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.67 | 4.53 | 4.56 | 4.49 |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 |
| Mode | | 5 | 5 | 5 | 5 |
| Std. Deviation | | .730 | .739 | .773 | .739 |
| Skewness | | -2.646 | -2.014 | -2.238 | -1.569 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | 8.074 | 5.644 | 5.992 | 2.975 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 | 5 |

**Statistics**

| | | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. | Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.44 | 4.23 | 4.57 | 4.17 |
| Median | | 5.00 | 4.00 | 5.00 | 4.00 |
| Mode | | 5 | 5 | 5 | 5 |
| Std. Deviation | | .755 | .853 | .689 | .896 |
| Skewness | | -1.310 | -.784 | -1.799 | -.804 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | 1.831 | -.007 | 4.223 | -.006 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 | 5 |

**Statistics**

| | | The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. | Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. | When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. | When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.53 | 4.58 | 4.49 | 4.35 |
| Median | | 5.00 | 5.00 | 5.00 | 5.00 |
| Mode | | 5 | 5 | 5 | 5 |
| Std. Deviation | | .721 | .707 | .740 | .786 |
| Skewness | | -1.621 | -1.960 | -1.490 | -1.037 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | 3.117 | 4.704 | 2.474 | .899 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 | 5 |

**Statistics**

| | | When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. | Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.48 | 4.40 | 4.50 | 4.23 |
| Median | | 5.00 | 5.00 | 5.00 | 4.00 |
| Mode | | 5 | 5 | 5 | 5 |
| Std. Deviation | | .712 | .786 | .730 | .883 |
| Skewness | | -1.458 | -1.346 | -1.518 | -.935 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | 2.881 | 1.950 | 2.691 | .032 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 | 2 |
| Maximum | | 5 | 5 | 5 | 5 |

**Statistics**

| | | Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). | Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. | The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. | Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.15 | 4.19 | 4.33 | 4.47 |
| Median | | 4.00 | 4.00 | 5.00 | 5.00 |
| Mode | | 5 | 5 | 5 | 5 |
| Std. Deviation | | .922 | .872 | .839 | .808 |
| Skewness | | -.713 | -1.126 | -1.094 | -1.591 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | -.573 | 1.406 | .771 | 2.412 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 2 | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 | 5 |

**Statistics**

| | | Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient | Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi | Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to | The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.64 | 4.53 | 4.53 | 4.21 |
| Median | | 5.00 | 5.00 | 5.00 | 4.00 |
| Mode | | 5 | 5 | 5 | 5 |
| Std. Deviation | | .638 | .720 | .739 | .971 |
| Skewness | | -2.352 | -1.755 | -1.710 | -1.273 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | 7.994 | 3.831 | 3.351 | 1.463 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 | 5 |

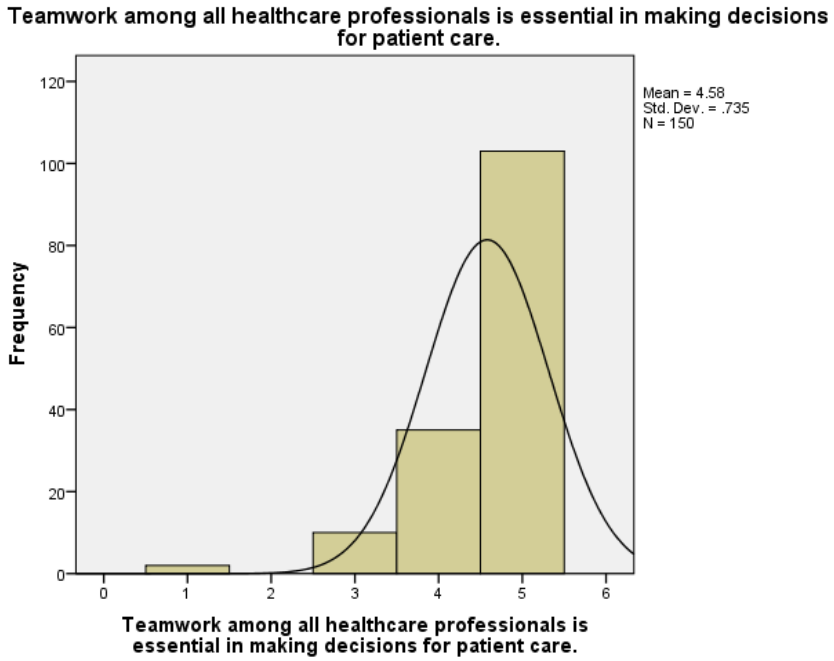
**Statistics**

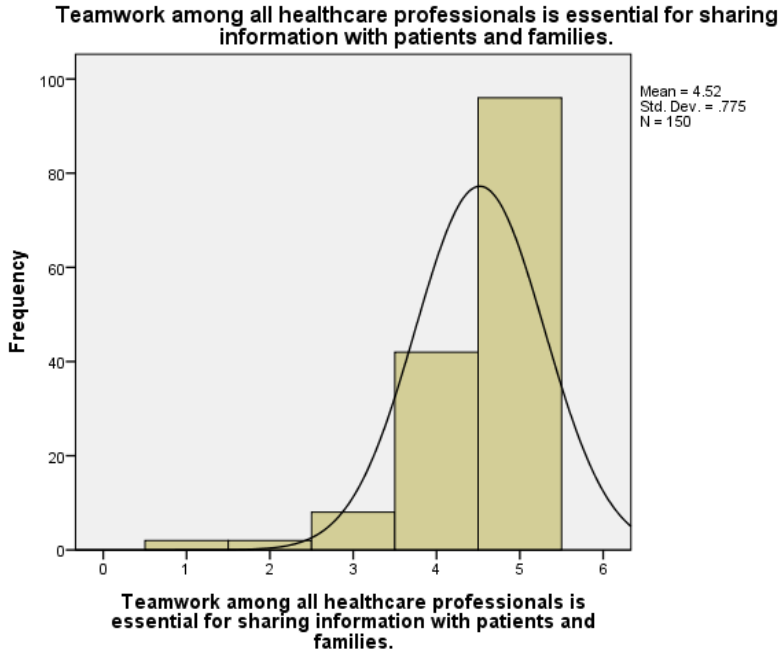
| | | Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. | Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. |
|---|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 | 0 |
| Mean | | 4.57 | 3.91 | 3.99 | 3.67 |
| Median | | 5.00 | 4.00 | 4.00 | 4.00 |
| Mode | | 5 | 5 | 5 | 4 |
| Std. Deviation | | .755 | .999 | 1.036 | 1.109 |
| Skewness | | -2.225 | -.588 | -.817 | -.594 |
| Std. Error of Skewness | | .198 | .198 | .198 | .198 |
| Kurtosis | | 6.177 | -.353 | -.026 | -.287 |
| Std. Error of Kurtosis | | .394 | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 | 5 |

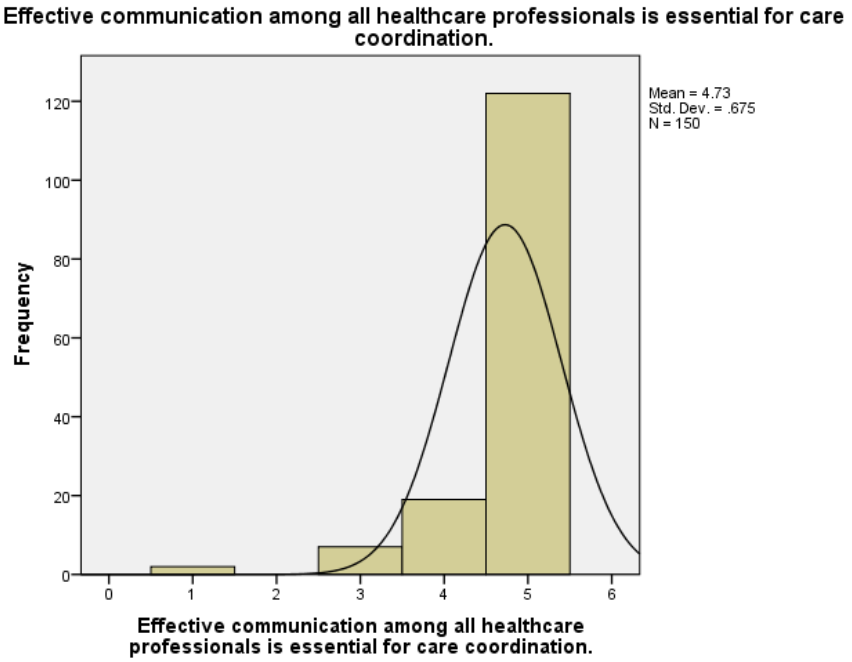
**Statistics**

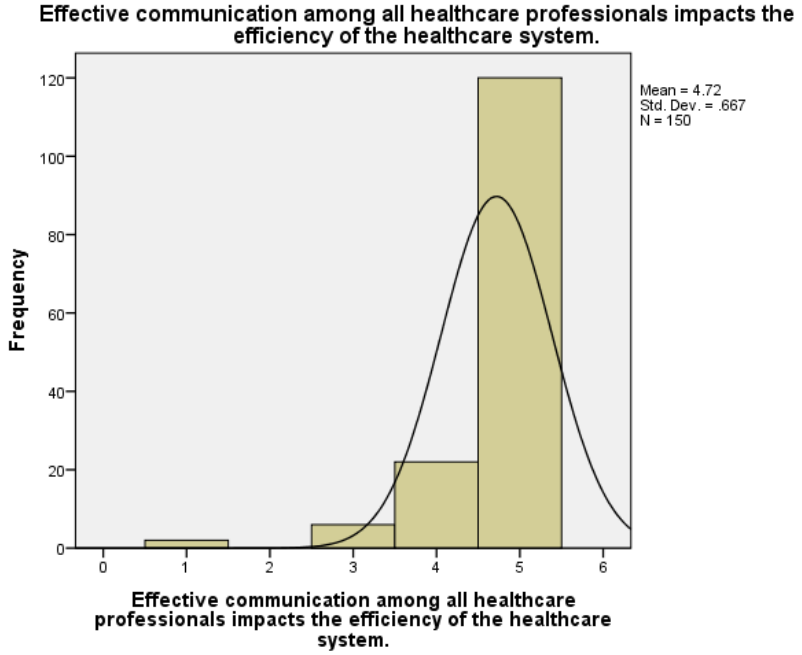
| | | Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. | I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. | I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. |
|---|---|---|---|---|
| N | Valid | 150 | 150 | 150 |
| | Missing | 0 | 0 | 0 |
| Mean | | 4.31 | 4.45 | 4.38 |
| Median | | 5.00 | 5.00 | 5.00 |
| Mode | | 5 | 5 | 5 |
| Std. Deviation | | .891 | .729 | .748 |
| Skewness | | -1.354 | -1.469 | -1.240 |
| Std. Error of Skewness | | .198 | .198 | .198 |
| Kurtosis | | 1.711 | 2.921 | 2.065 |
| Std. Error of Kurtosis | | .394 | .394 | .394 |
| Minimum | | 1 | 1 | 1 |
| Maximum | | 5 | 5 | 5 |

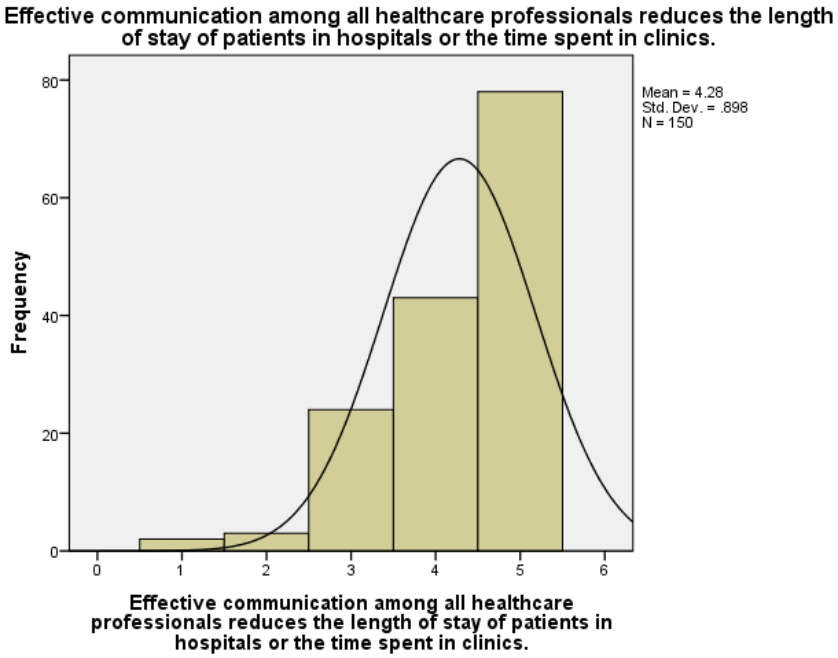
**Figure G3.** Visual evaluation of normality for all outcome variables.

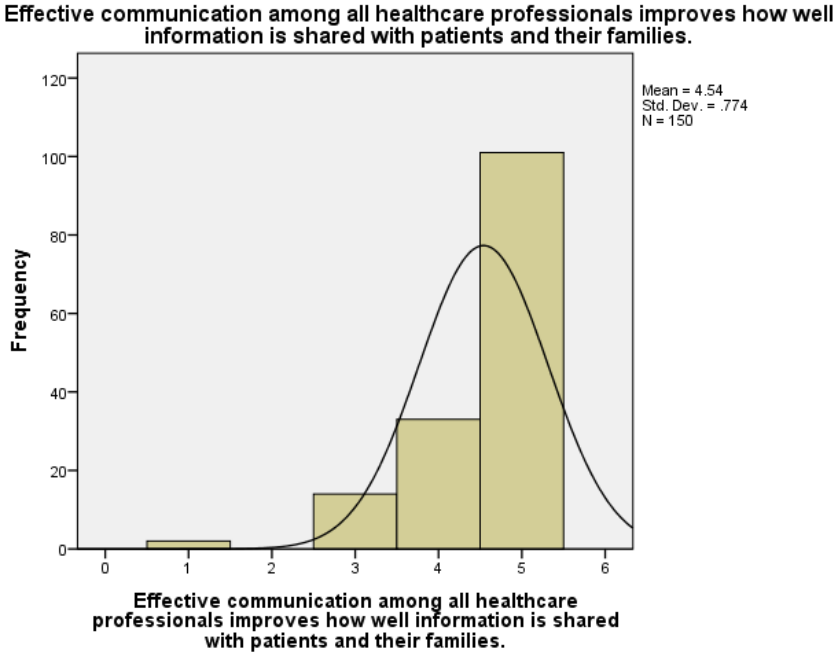


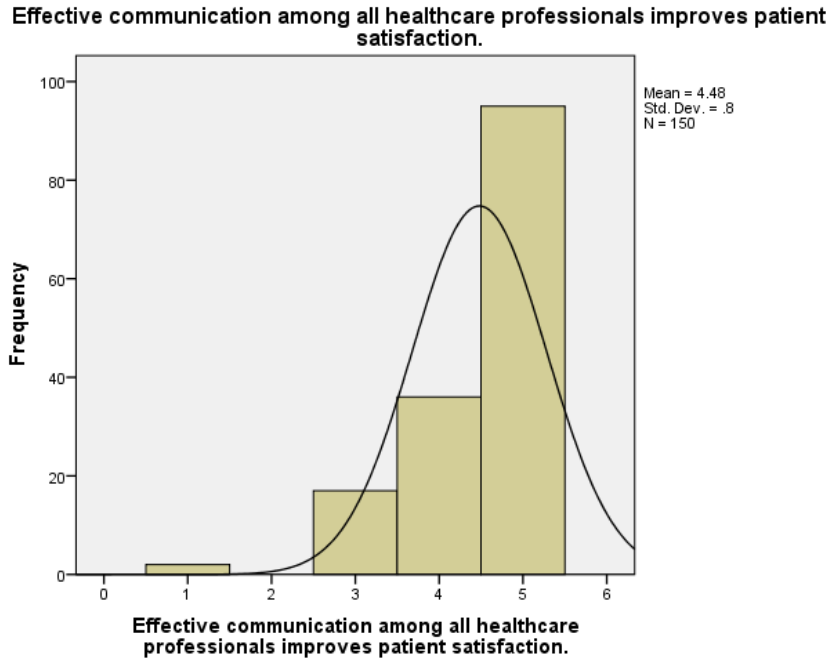



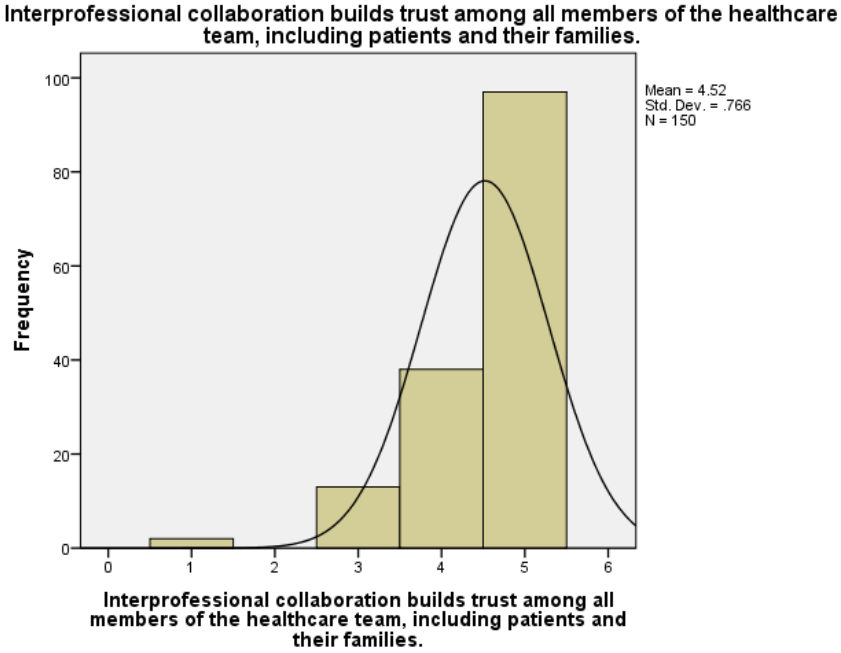

Effective communication among all healthcare professionals is essential for care coordination.
Mean = 4.73
Std. Dev. = .675
N = 150
Frequency
120
100
80
60
40
20
0
0
1
2
3
4
5
6
Effective communication among all healthcare professionals is essential for care coordination.

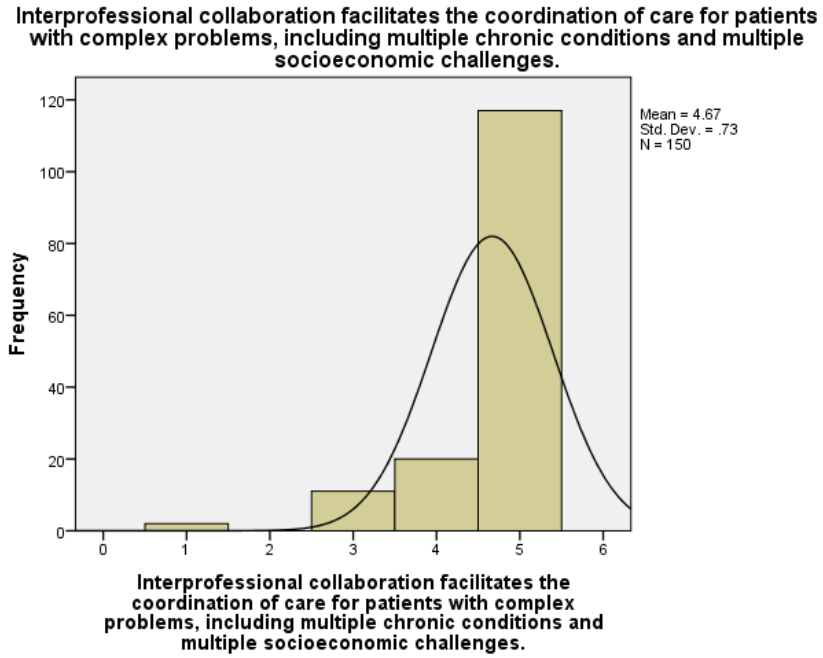

Effective communication among all healthcare professionals impacts the efficiency of the healthcare system.
Mean = 4.72
Std. Dev. = .667
N = 150
Frequency
120
100
80
60
40
20
0
0
1
2
3
4
5
6
Effective communication among all healthcare professionals impacts the efficiency of the healthcare system.

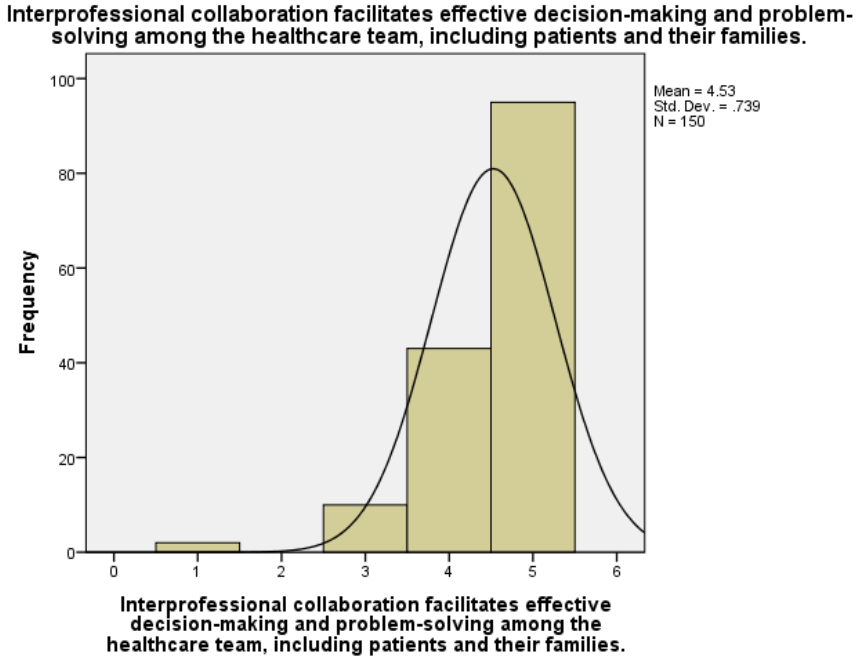

Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics.
Mean = 4.28
Std. Dev. = .898
N = 150
Frequency
0
20
40
60
80
0
1
2
3
4
5
6
Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics.

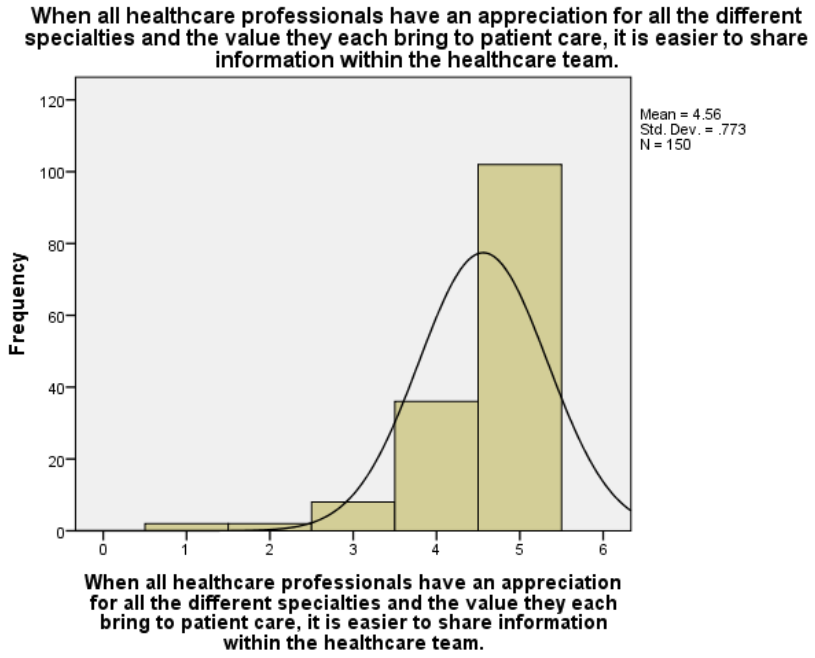

Effective communication among all healthcare professionals improves how well information is shared with patients and their families.
Mean = 4.54
Std. Dev. = .774
N = 150
Frequency
0
20
40
60
80
100
120
0
1
2
3
4
5
6
Effective communication among all healthcare professionals improves how well information is shared with patients and their families.

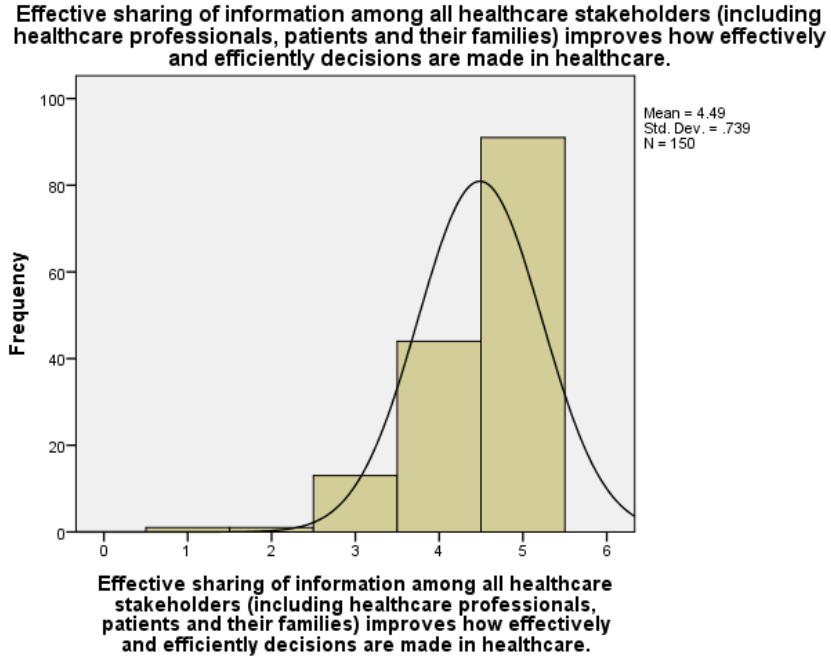

Effective communication among all healthcare professionals improves patient satisfaction.
Mean = 4.48
Std. Dev. = .8
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
Effective communication among all healthcare professionals improves patient satisfaction.

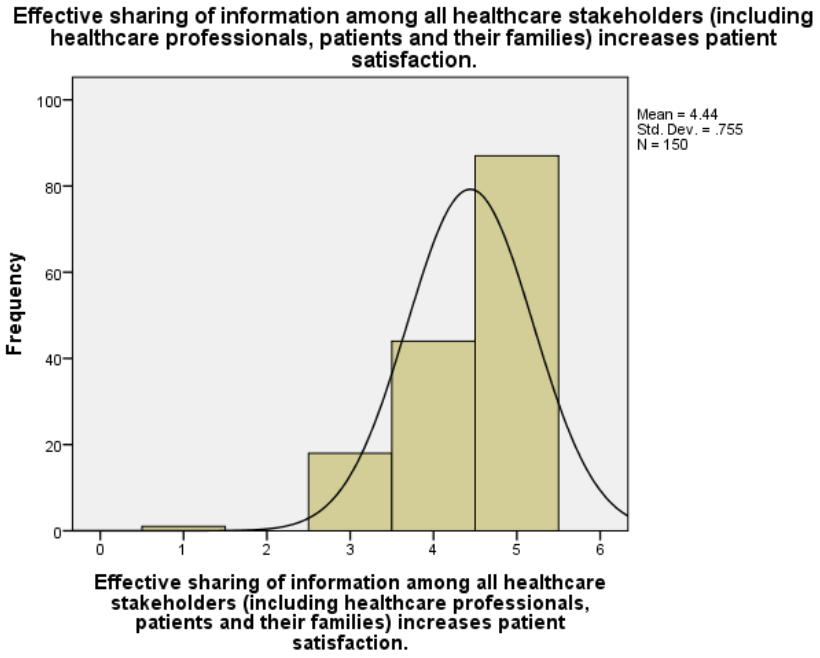

Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families.
Mean = 4.52
Std. Dev. = .766
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families.

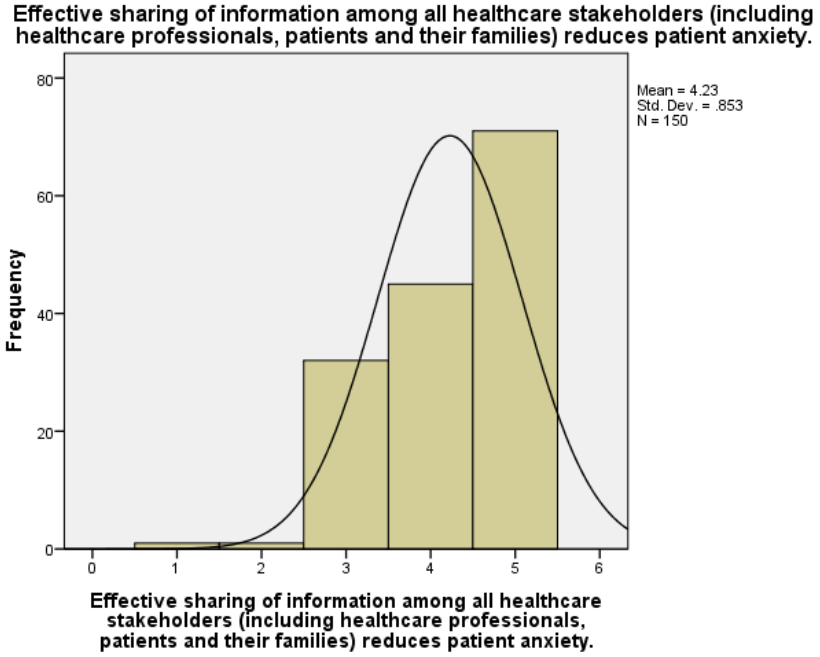

Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges.
Mean = 4.67
Std. Dev. = .73
N = 150
Frequency
120
100
80
60
40
20
0
0
1
2
3
4
5
6
Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges.

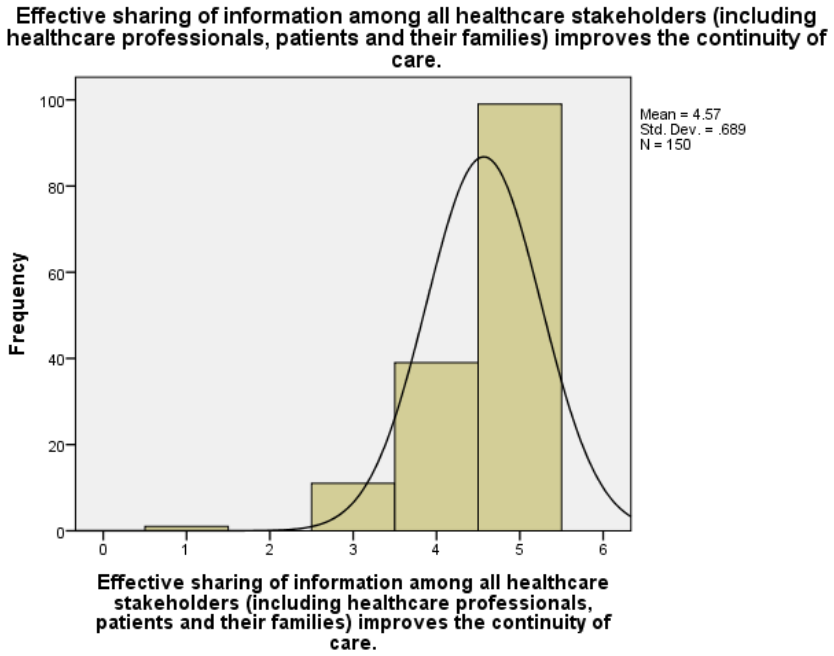

Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families.
Mean = 4.53
Std. Dev. = .739
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families.

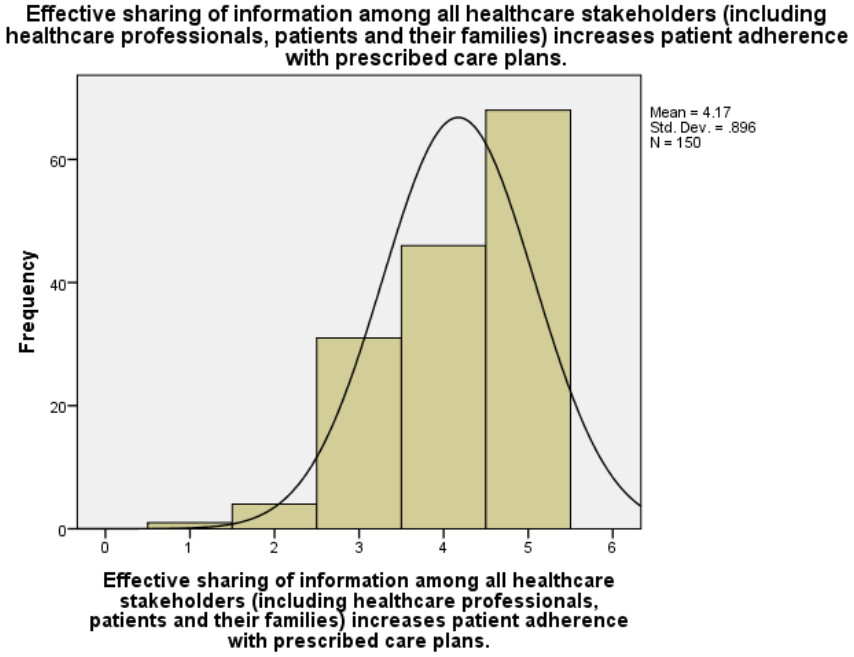

When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team.
Mean = 4.56
Std. Dev. = .773
N = 150
Frequency
120
100
80
60
40
20
0
0
1
2
3
4
5
6
When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team.

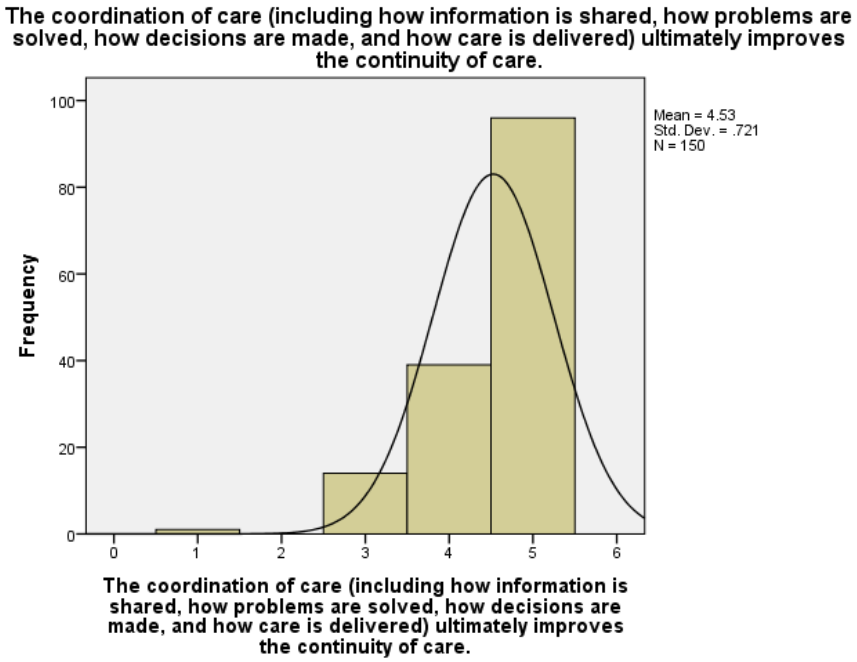

Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare.
Mean = 4.49
Std. Dev. = .739
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare.

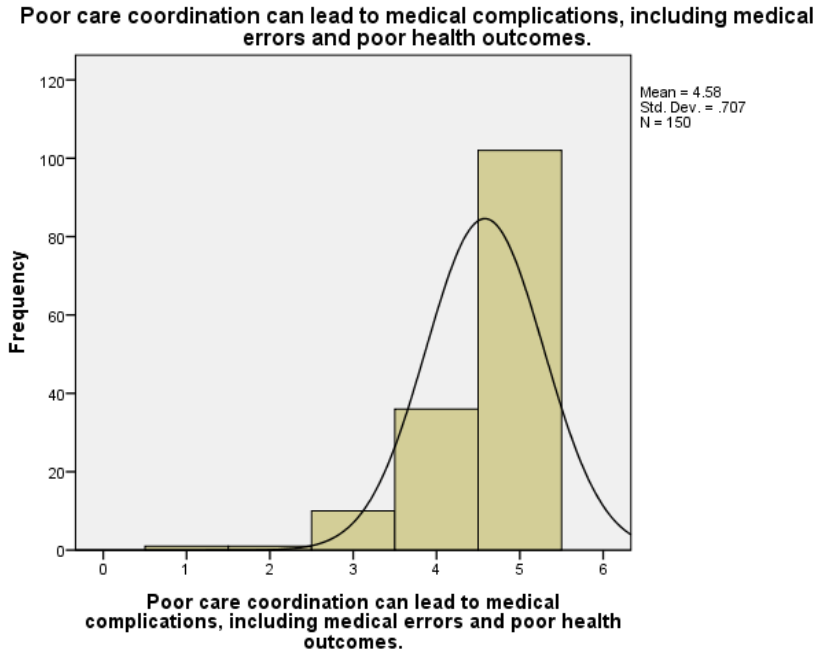

Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction.
Mean = 4.44
Std. Dev. = .755
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction.

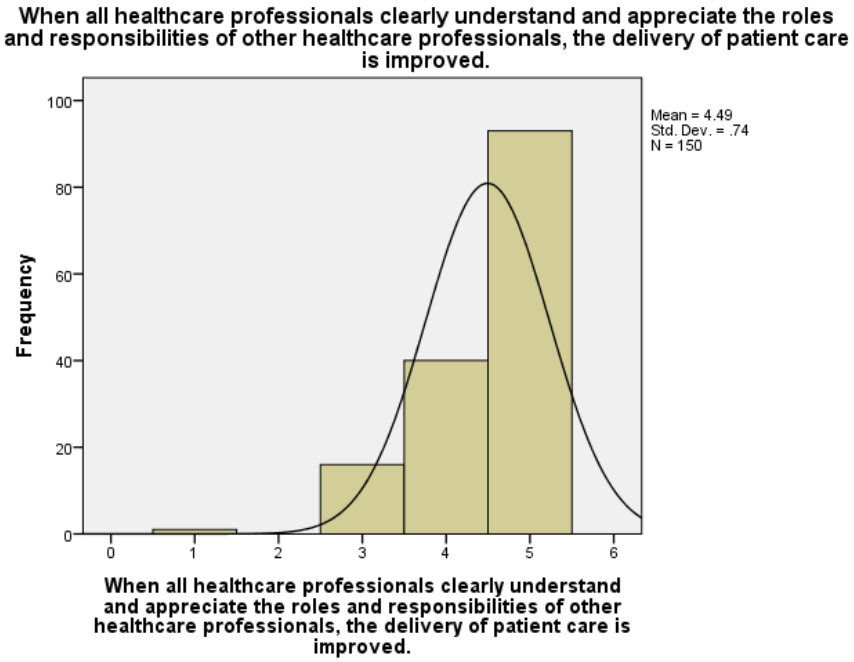

Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety.
Mean = 4.23
Std. Dev. = .853
N = 150
Frequency
80
60
40
20
0
0
1
2
3
4
5
6
Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety.

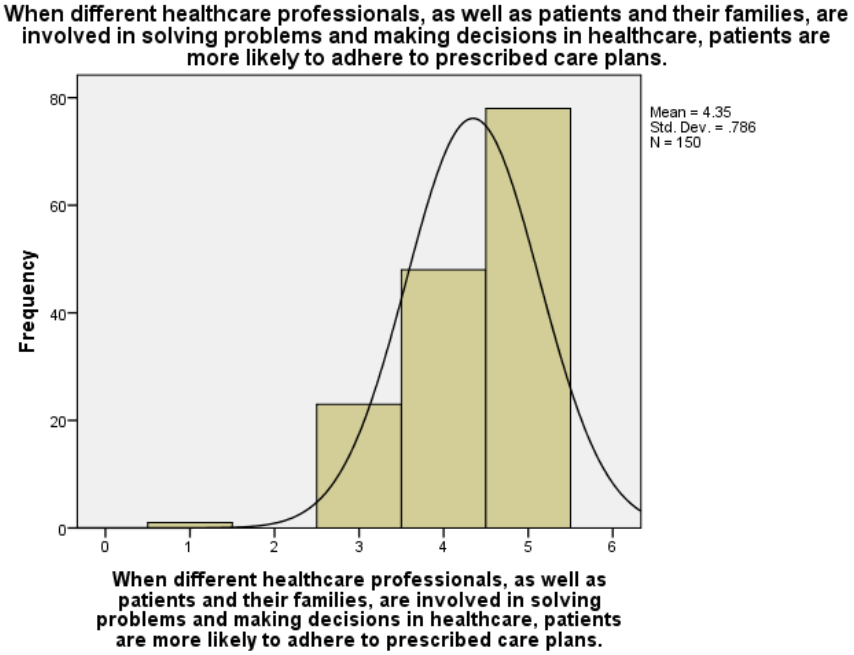

Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care.
Mean = 4.57
Std. Dev. = .689
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care.


Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans.
Mean = 4.17
Std. Dev. = .896
N = 150
Frequency
60
40
20
0
0
1
2
3
4
5
6
Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans.

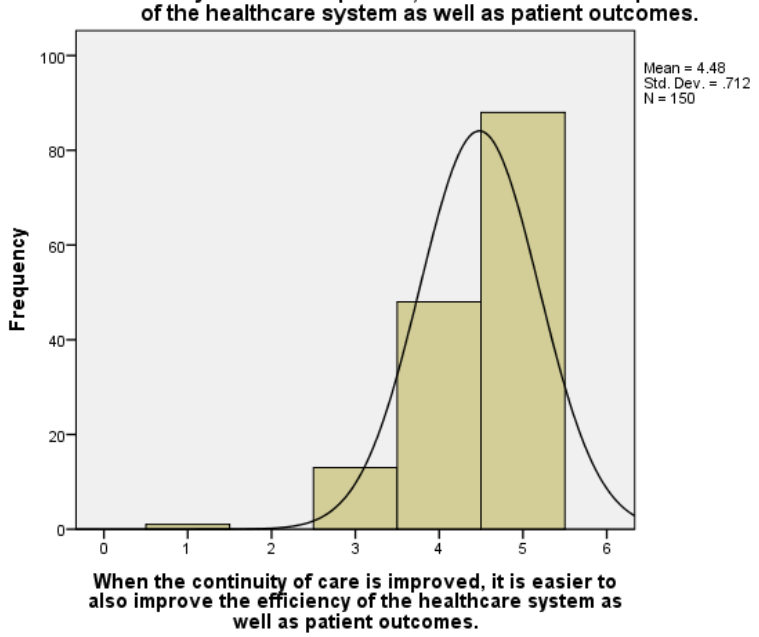

The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care.
Mean = 4.53
Std. Dev. = .721
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care.


Poor care coordination can lead to medical complications, including medical errors and poor health outcomes.
Mean = 4.58
Std. Dev. = .707
N = 150
Frequency
120
100
80
60
40
20
0
0
1
2
3
4
5
6
Poor care coordination can lead to medical complications, including medical errors and poor health outcomes.

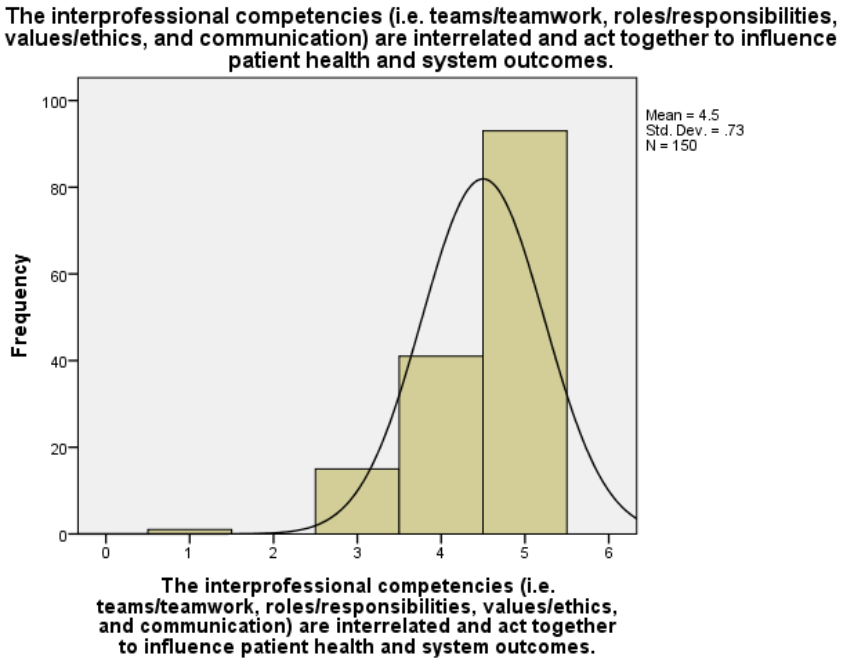

When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved.
Mean = 4.49
Std. Dev. = .74
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved.

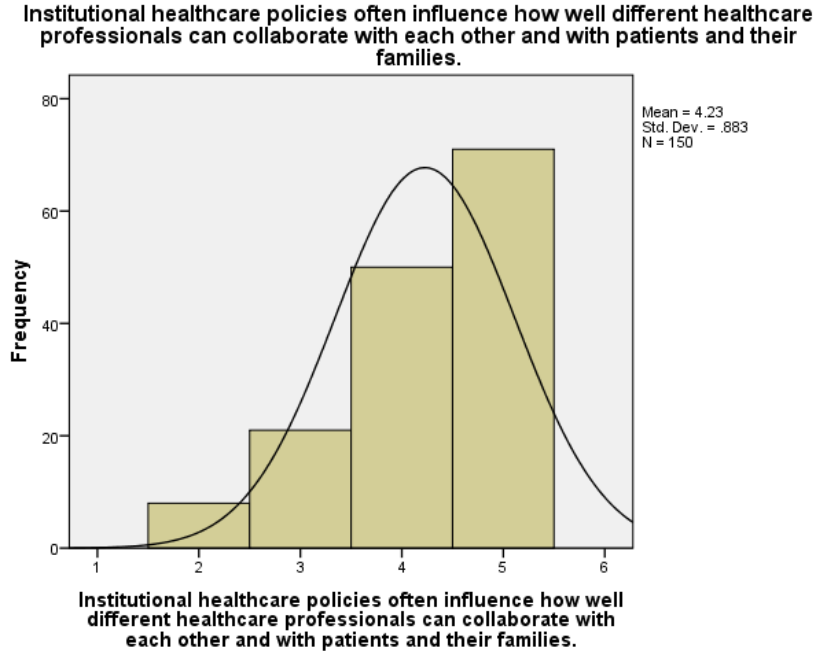

When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans.
Mean = 4.35
Std. Dev. = .786
N = 150
Frequency
80
60
40
20
0
0
1
2
3
4
5
6
When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans.

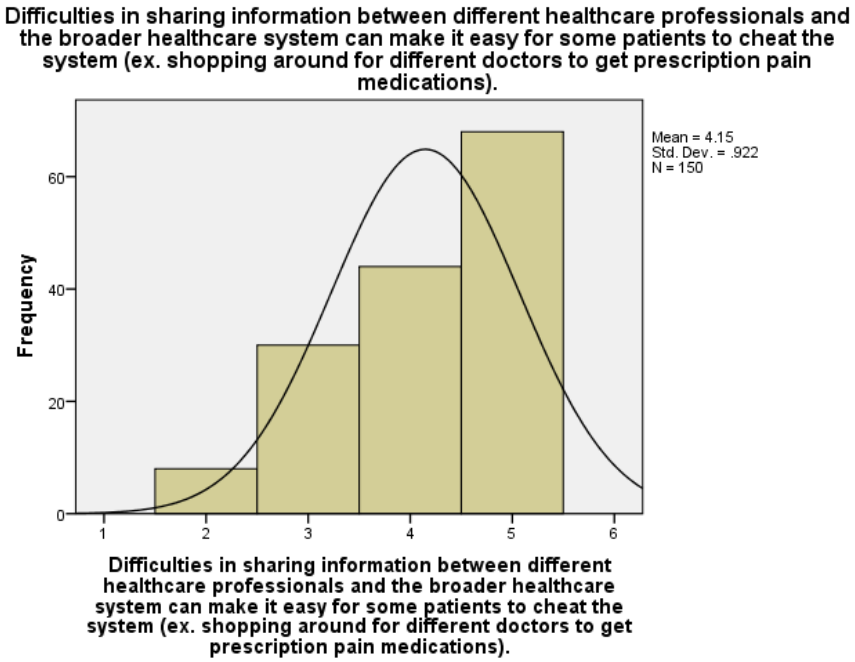
When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes.

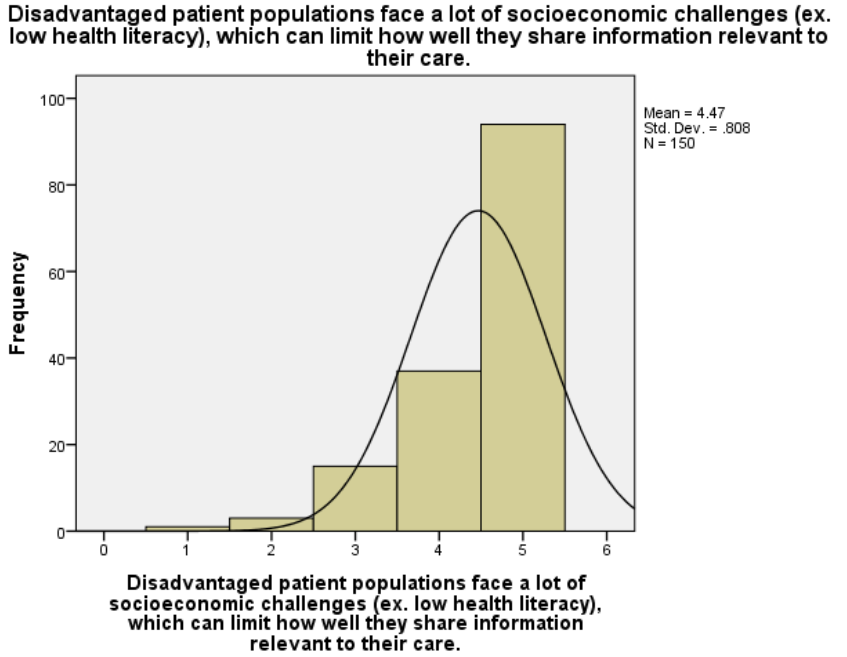



When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes.


The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes.
Mean = 4.5
Std. Dev. = .73
N = 150
Frequency
100
80
60
40
20
0
0
1
2
3
4
5
6
The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes.


Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families.
Mean = 4.23
Std. Dev. = .883
N = 150
Frequency
80
60
40
20
0
1
2
3
4
5
6
Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families.


Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications).
Mean = 4.15
Std. Dev. = .922
N = 150
Frequency
0
20
40
60
1
2
3
4
5
6
Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications).


Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care.
Mean = 4.47
Std. Dev. = .808
N = 150
Frequency
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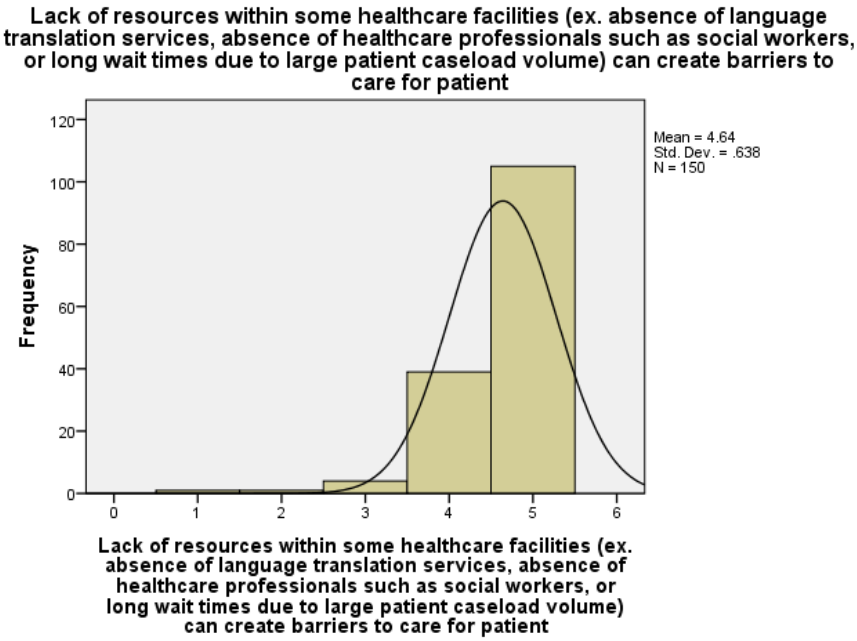
Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care.


Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient
Mean = 4.64
Std. Dev. = .638
N = 150
Frequency
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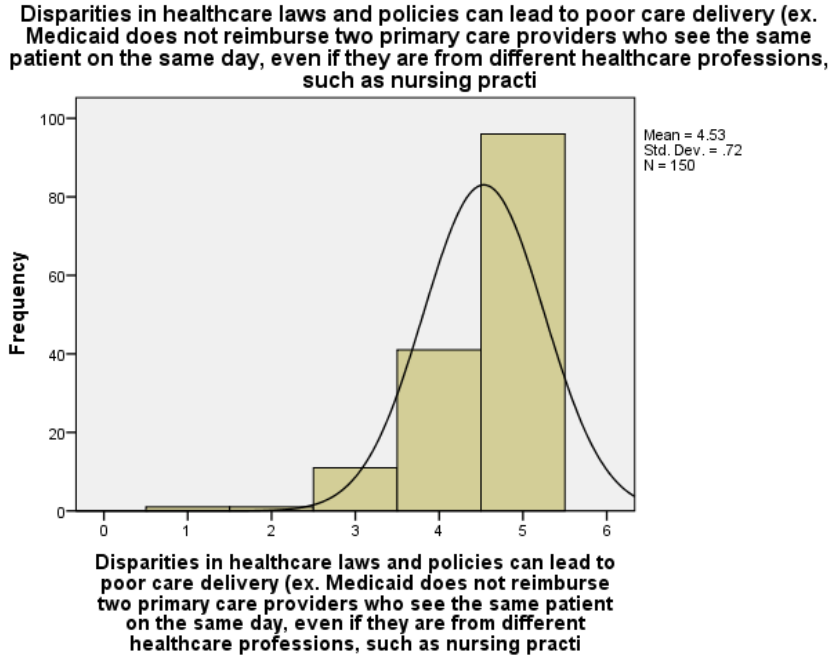
Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient


Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi
Mean = 4.53
Std. Dev. = .72
N = 150
Frequency
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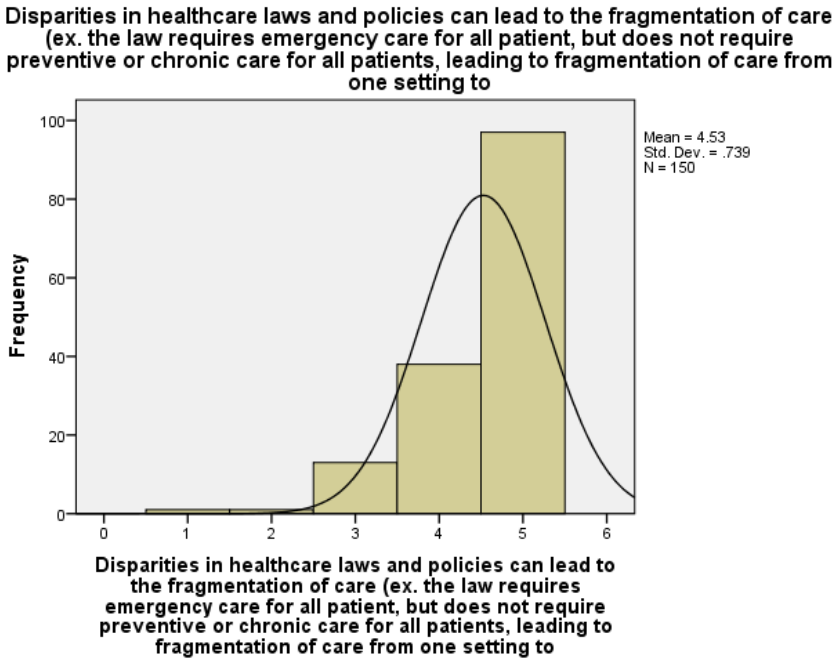
Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi


Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to
Mean = 4.53
Std. Dev. = .739
N = 150
Frequency
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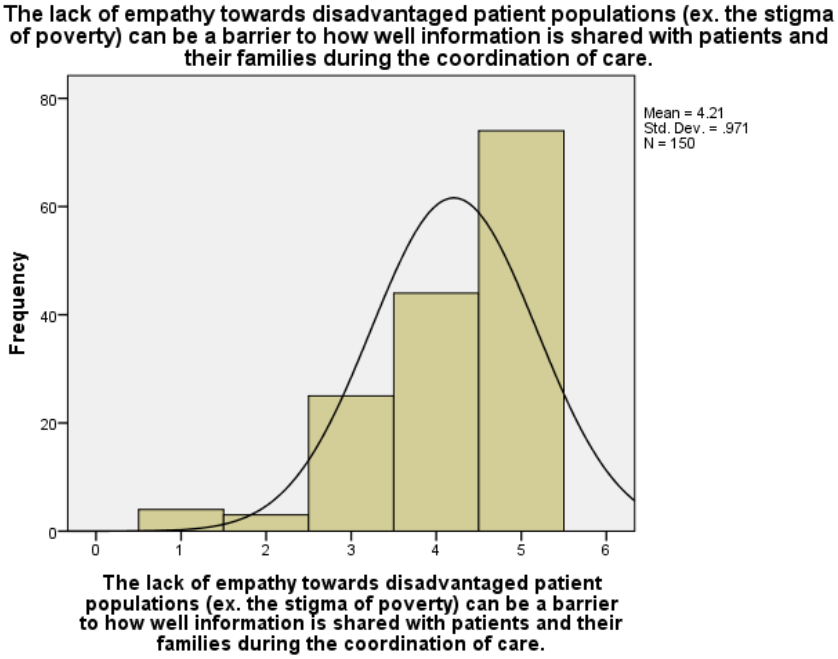
Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to


The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care.
Mean = 4.21
Std. Dev. = .971
N = 150
Frequency
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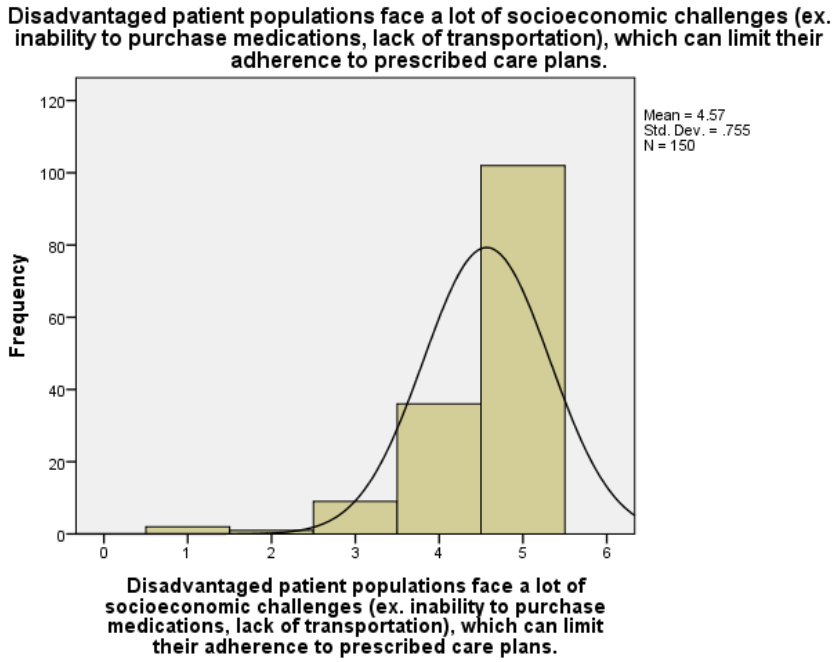
The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care.


Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans.
Mean = 4.57
Std. Dev. = .755
N = 150
Frequency
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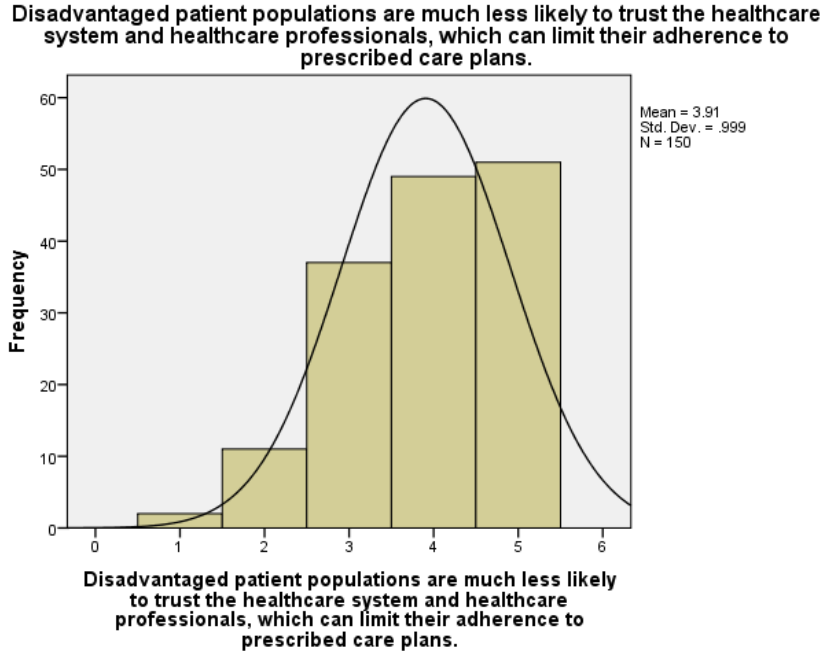
Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans.


Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans.
Mean = 3.91
Std. Dev. = .999
N = 150
Frequency
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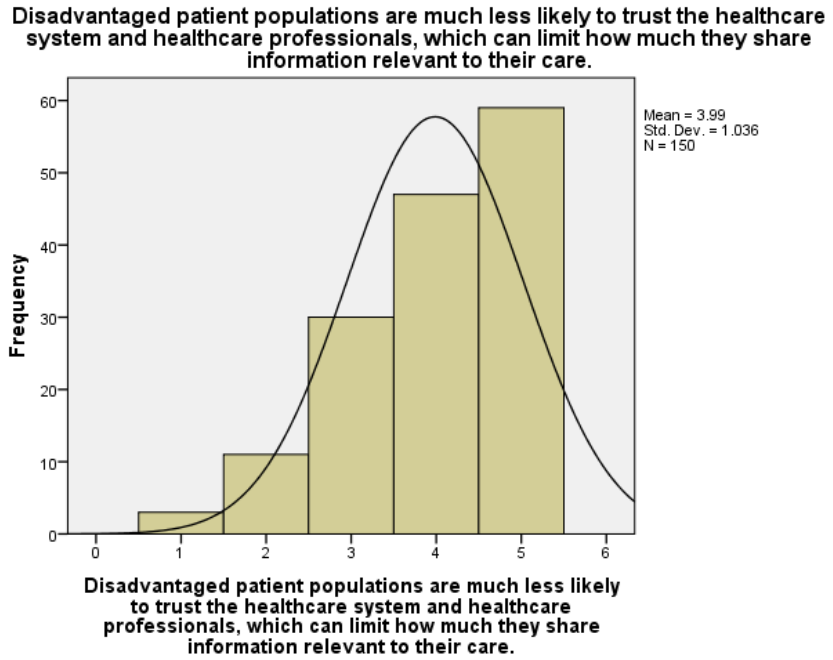
Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans.


Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care.
Mean = 3.99
Std. Dev. = 1.036
N = 150
Frequency
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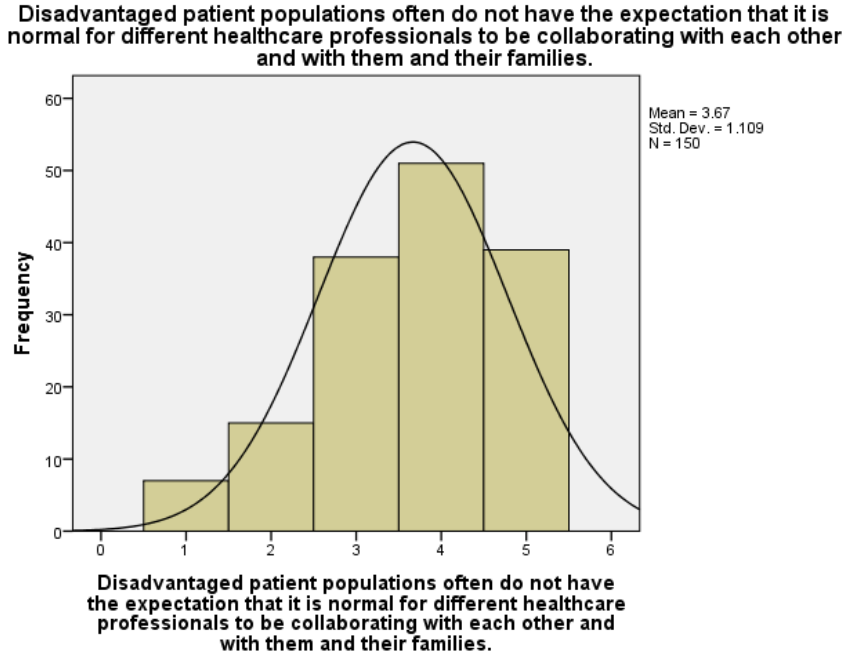
Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care.


Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families.
Mean = 3.67
Std. Dev. = 1.109
N = 150
Frequency
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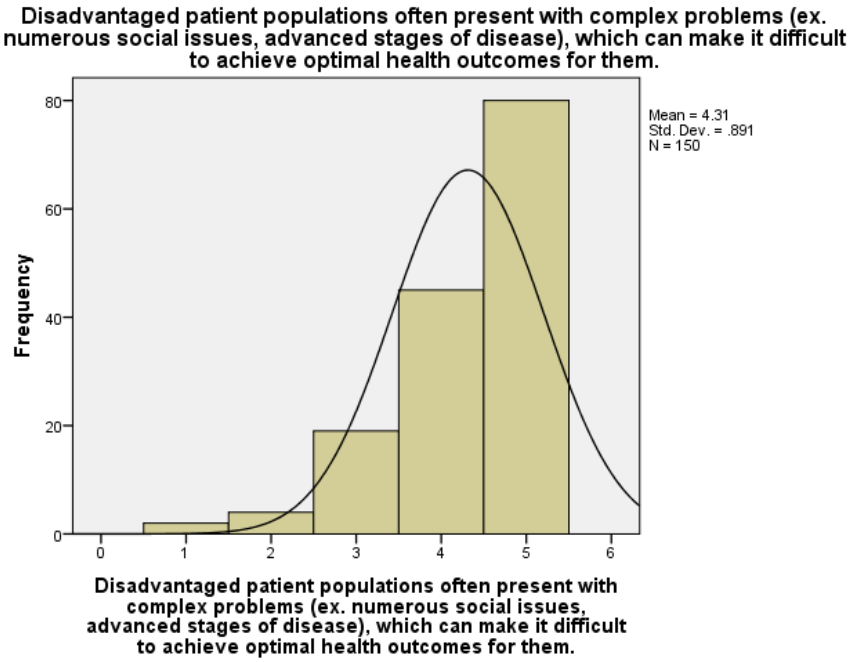
Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families.


Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them.
Mean = 4.31
Std. Dev. = .891
N = 150
Frequency
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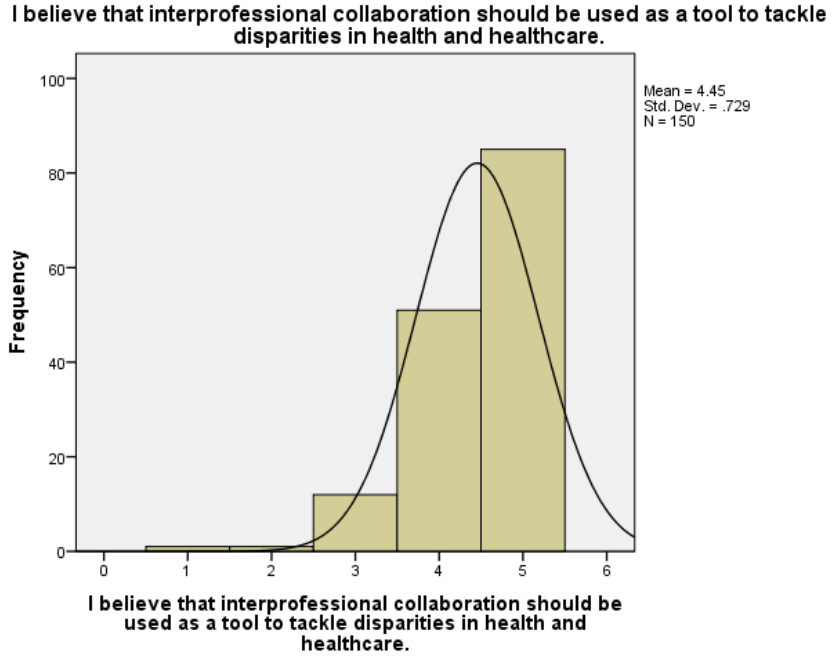
Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them.


I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare.
Mean = 4.45
Std. Dev. = .729
N = 150
Frequency
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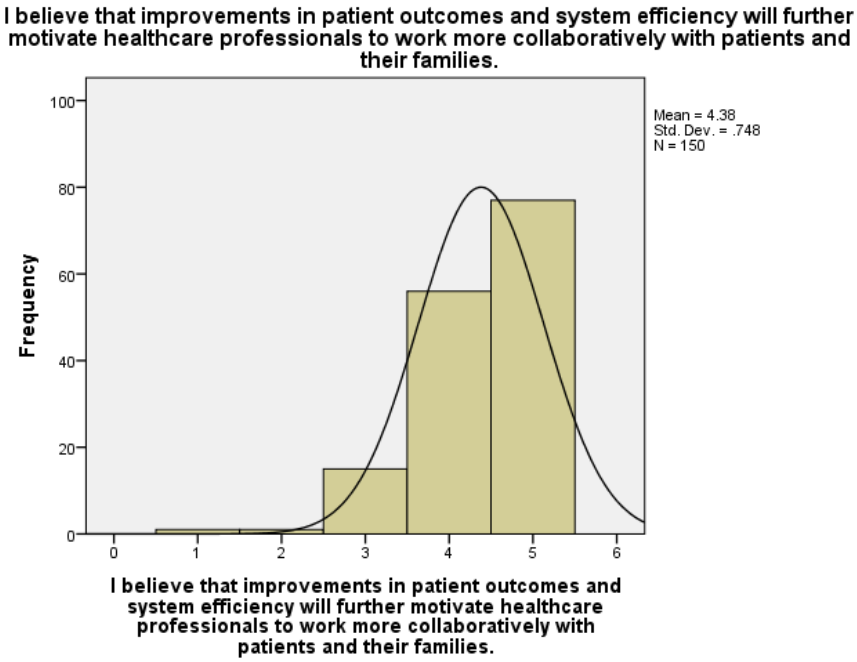
I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare.


I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families.
Mean = 4.38
Std. Dev. = .748
N = 150
Frequency
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I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families.

**Appendix H: Power Calculation Output from G*Power 3.1**

F tests - Linear multiple regression: Fixed model, $R^2$ increase

| | | | |
|---|---|---|---|
| Analysis: | A priori: Compute required sample size | | |
| Input: | Effect size $f^2$ | = | 0.1 |
| | $\alpha$ err prob | = | 0.05 |
| | Power (1-$\beta$ err prob) | = | 0.8 |
| | Number of tested predictors | = | 9 |
| | Total number of predictors | = | 9 |
| Output: | Noncentrality parameter $\lambda$ | = | 16.6000000 |
| | Critical F | = | 1.9403478 |
| | Numerator df | = | 9 |
| | Denominator df | = | 156 |
| | **Total sample size** | **=** | **166** |
| | Actual power | = | 0.8026627 |

## Appendix I: Dissertation Research Plan

### Project Deliverables

Total Dissertation Project Duration = 1 year (February 2015-February 2016)

- Secure university-wide Rutgers IRB approval for all RBHS sites (Newark and New Brunswick) for both interviews and online survey
- Conduct 5-7 focus groups at RBHS
- Conduct 15-20 individual interviews at RBHS
- Produce quantitatively tested, grounded theory-based theoretical model offering plausible mechanisms for the relationship between IPCP, patient health outcomes, and health or healthcare disparities, based on responses from 150 online survey participants
- Utilize and clearly document the use of all available research funds, and write grant report post funding timeline
- Submit 3 manuscripts (systematic review + grounded theory design + cross sectional model validation) in high impact/pertinent journals immediately post dissertation defense
- Copyright dissertation immediately post dissertation defense

## Appendix J: Qualitative Findings

### Table J1: Final Codebook

| Category, Code, and Subcode | Description/Memo |
|---|---|
| **Interprofessionalism** | This code captures instances where healthcare professionals refer to collaboration amongst each other and patients as being a desirable or integral element in healthcare. |
| **Interprofessional interventions** | Participants identified the need to actively promote interprofessionalism by doing interprofessional interventions. This may include interprofessional education, practice or organization interventions. They identified this as being important because interprofessionalism rarely happens on its own without one of these types of interventions. They believed that there is a need to use these interventions to remove professional silos. |
| **Diversity in professional skills** | Health professionals should learn to recognize that they all have different talents, skills and knowledge bases, and that they bring this diversity to team-based care. |
| **Role clarity** | Understanding the diversity of skills among health professionals leads them to recognize each others' roles in caring for the patient. Health professionals identified this as an important component of what interprofessionalism means. |
| **Tackling disparities** | Healthcare professionals emphasized that they believe interprofessional collaboration can and should be a tool to help tackle disparities. |
| **Transitioning from interprofessional to interdisciplinary** | Healthcare professionals believe that to truly address health and healthcare disparities, all stakeholders interested in the health and wellbeing of patients and populations must be involved, including those from professions not typically involved in traditional healthcare, such as preventive medicine/public health and complementary/alternative medicine, as well as other disciplines, particularly social work and education. |
| **Appreciation for different specialties** | This is different from using the diversity in health professionals' skills, but rather gets at the desire by health professionals to recognize and be recognized as valuable contributors to team based care. |
| **Respecting professional boundaries while collaborating** | Participants identified the need to respect and appreciate professional boundaries, and how this appreciation and respect then engenders willingness of professionals to collaborate with others of a different profession, for example through increasing referrals of patient cases to other professionals different than ourselves. Part of this is also |

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| | understanding that there are overlapping competencies between certain types of healthcare professionals, and that there is a need to respectfully assess when it is more appropriate for one profession to handle a patient care issue than another. |
| **Communication** | Communication is how well health professionals and patients are able to talk to and with each other in the context of health and healthcare. |
| **Understanding the patient's stories and behaviors** | Health professionals identified the fact that interprofessional communication can help them learn the patients' stories and their reasons for behaving a certain way or another, including adherence/compliance related behaviors. |
| **Teamwork** | Teamwork among health professionals consists of effective collaboration between two or more professions for the goal of improving patient care. |
| **Patient view of collaboration** | Providers believe that patients do perceive whether they are working together effectively or not. |
| **Team leader** | Healthcare professionals identified the need for a team leader to facilitate team-based care. In identifying the need for a team leader, participants also emphasized that there needs to be room for different members of the healthcare team to play a leadership role depending on the circumstances and the particular patient issue that needs to be addressed. |
| **Interrelatedness of interprofessional competencies** | The idea here is that participants view the competencies of interprofessional collaboration as being highly co-dependent/interrelated. This code captures all such instances, regardless of which competency is being discussed or how they are thought to be interrelated. |
| **Mechanisms of interprofessional impact on care outcomes** | This is perhaps the most important code of this project and relates directly to the research question, which seeks to uncover provider perspectives on this topic. Here providers are linking multiple codes that may or may not have been identified independently elsewhere by the researcher. This code will form the primary conceptual category that links the other codes, and its child codes will also allow the emergence of links between other codes that are not considered mechanisms but instead represent outcomes for patients, health professionals or the healthcare system. |
| **Communication leads to better care coordination** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Communication reduces length of stay** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Communication improves the** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of |

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|---|---|
| **coordination of information sharing** | interprofessionalism. |
| **Communication improves patient satisfaction** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Interprofessional collaboration builds trust** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Appreciation for different specialties facilitates information sharing** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Coordination improves the continuity of care** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Coordination of information sharing enhances decision-making** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Coordination of information sharing increases patient satisfaction** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Coordination of information sharing reduces anxiety** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Coordination of information sharing improves the continuity of care** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Poor care coordination can lead to medical complications** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Teamwork leads to better coordination of information sharing** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Teamwork enhances decision-making and problem-solving** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Coordination of information sharing increases patient adherence/compliance** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Interprofessional collaboration** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of |

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| **facilitates the coordination of care for patients with complex problems** | interprofessionalism. |
| **Interprofessional collaboration facilitates effective decision-making and problem-solving** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Role clarity facilitates care delivery** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Shared decision-making improves adherence to care** | This code captures explicit linkages of factors made by the participants in response to questions on the mechanism of interprofessionalism. |
| **Social capital** | Social capital is a canonical theoretical construct in socio-behavioral sciences. It states that people learn to use their social networks to their benefit via different types of social ties based on trust, sharing, and reciprocity. This term is not in vivo, as healthcare professionals did not explicitly use this term; however, constant comparative analysis has revealed that this is in fact a core underlying mechanism via which IPCP acts. |
| **Building trust** | This code captures instances where healthcare professionals refer to ideas that suggest they view the building of trust as playing a role in the provision of care. This includes enhancing the patient's trust in the healthcare team, and emphasizing the need to overcome biases and attitudes as a reflection of the healthcare professionals' trust in each other, the patient and the healthcare system. |
| **Overcoming entrenched attitudes** | Healthcare professionals identified the fact that many stakeholders in healthcare hold entrenched ideas, attitudes, and biases about how healthcare should be done, and that this is an important problem to overcome in order to successfully implement interprofessional collaborative practice. |
| **Looking beyond traditional hierarchies and perspectives** | Healthcare professionals discussed this as an important output of interprofessional collaboration. They can learn to look beyond professional hierarchies (such as the doctor always being in charge) and perspectives (such as by getting a different kind of profession or discipline involved) for the benefit of facilitating effective patient care. |
| **Facilitating sharing** | This code captures instances where healthcare professionals refer to ways that interprofessional collaboration facilitates the sharing of information, decision-making, problem-solving, and care delivery modeling. |
| **Being part of the team** | Healthcare professionals believe that feeling like one is part |

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| | of "the team" is an essential output of interprofessional collaboration, both for themselves as well as for patients, families and communities. Part of this is empowering the patient to understand that they have a team and what role each team member should play, and part of it is empowering all healthcare professionals such that they can serve as advocates for the patient at all steps within the coordination of care. |
| **Improving the work environment** | This code captures instances where participants stated that they believe interprofessional collaboration helps to improve the work environment, allowing healthcare professionals to work better together. |
| **Enhancing reciprocity** | This code captures instances when healthcare professionals state that they believe that the coordination of information sharing, decision-making, problem-solving, or care delivery modeling should lead to enhanced reciprocity in all aspects of patient care, including on the part of other healthcare professionals, healthcare systems, as well as patients and their families. |
| **Working together over time** | Healthcare professionals identified the fact that there is a need to work collaboratively in teams over time, which will often help build trust among the team members, help facilitate their effectiveness as a team and help ensure the sustainability of their working relationships. |
| **Holding each other accountable** | Healthcare professionals identified the need to hold all team members and stakeholders accountable for their roles and tasks as an essential step in truly improving patient health outcomes. One part of this entails holding the patient accountable for adhering to the care plan, and another part of this entails holding the healthcare system accountable for providing the patient with what he or she needs to have better health outcomes, including addressing issues of medication costs, insurance status, etc. Lastly, this also includes instances where healthcare professionals feel a sense of responsibility for the patient's wellbeing and are willing to challenge or question each other's work for the sake of the patient. |
| **Effecting change** | Healthcare professionals identified the fact that effecting change for the betterment of patients and health systems is not only the ultimate goal of IPCP, it is also the fundamental motivating factor that will facilitate the continuation of IPCP itself. |
| **Impacting objective outcomes** | Participants identified these as one of the essential goals of IPCP, which will make the intervention worthwhile. These outcomes can be measured concretely and can lead to benefits to the various stakeholders in healthcare, from patients and healthcare professionals themselves (ex. increased survival, |

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| | quality of life and compensation for care provided) to society (ex. more efficient health systems, increased sustainability, increased funding for the interprofessional approach). Achieving change in these areas truly makes IPCP sustainable on a pragmatic basis. |
| **Influencing subjective outcomes** | According to healthcare professionals, achieving change in subjective outcomes is also important to the sustainability of IPCP. For example, many participants felt that IPCP may still be worthwhile even if it only leads to changes in attitudes and behaviors of healthcare professionals towards each other. Other subjective outcomes that may be improved include patient satisfaction and employee satisfaction with the work environment. |
| **Coordination** | Coordination consists of a method of performing patient care tasks such that they are done efficiently, in terms of not wasting resources and minimizing unnecessary disruptions in the patient's experience of care, without compromising the effectiveness of care. |
| **Care delivery** | Care delivery has to do with the actual implementation of health interventions, and whether or not this is well orchestrated. This code applies whenever health professionals or the healthcare system deliver a treatment or management intervention. |
| **Context of care/setting matters** | This idea is represented by many factors, such as having a one-stop shop approach. All of these, however, are the context or setting-dependent factors that either facilitate or inhibit care delivery. These are different than factors that might indicate an inherent disparity in healthcare systems. For example, many participants identified the fact that federally qualified health centers (FQHCs) and many community hospitals are by design setup to facilitate some team meetings, due to the sheer needs of their patient populations. This then shapes how care is delivered. This is in contrast to private community-based practice where the opportunities are more spares. |
| **One-stop shop model** | This model is based on the idea that geographic proximity of all patient care services has a major impact on care delivery. |
| **Community health worker model** | Some participants identified this care delivery model as being an important method of improving patient health outcome. In this model, members of a community are trained as community health workers and then serve as liaisons between the patients in that community and the healthcare system. |
| **Medical home** | Participants identified the need for patients to have a medical home, which is a type of healthcare delivery model whereby one or more primary care providers will serve as the central coordinating bodies for patients as they access different |

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| | services within the healthcare system. |
| **Medical specialty matters** | The care delivery specialty matters. Some providers made it clear that pediatric acute care tends to be delivered in a better-coordinated manner than adult care. Others insisted that mental health has always been a well-coordinated interdisciplinary arena. Still others felt that palliative care offers great examples of ongoing collaborative care. |
| **Information sharing** | Part of effective care coordination is the effective and full sharing of information by health professionals with each other and with the patient. |
| **Information sharing needs** | Patients have special needs when it comes to sharing information, and health professionals would do well to learn to pay attention to those needs. |
| **Information sharing processes** | This entails the actual steps in sharing information among providers and patients. This includes the fact that healthcare professionals must be able to "meet" across time and space at some point. Some examples of processes include: writing notes, making referrals, and setting up meetings. |
| **Information sharing systems** | This has to do with whatever it is that needs to be setup by the healthcare system in order to ensure that information is coordinated and shared effectively with patients. One example is a patient navigator. Another example is having an information technology system that facilitates seamless information sharing. Still another example is the availability of telemedicine, as a tool to facilitate information sharing and collaboration with specialties that may not be readily available. |
| **Patient navigator** | A patient navigator is a person who is a member of the healthcare team whose task is specifically to gather all the information relevant to the patient's healthcare for the duration of his or her care and to share this information with the patient and help the patient make his or her wishes known to the healthcare team. |
| **Decision-making** | Both health professionals and patients must make decisions regarding how to deal with illness and disease. This captures the points at which these decisions happen. |
| **Problem-solving** | Healthcare professionals identified this as an essential component of decision-making. Problem-solving can take many forms (such as determining the proper diagnosis, or identifying the appropriate resources that a patient needs to fully benefit from the care being provided). Problem-solving consists identifying the best decision to make based on information about the patient and his or her health or healthcare situation. Problem-solving in an interprofessional context also entails the search for and implementation of the best available evidence for a given patient health or |

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| | healthcare challenge. |
| **Common goals** | Health professionals recognize that there should be a common goal in the way they interact with each other. Most of the time this common goal is improving patient health outcomes or maximizing patient care, but in theory it could represent something else entirely. |
| **Bringing efficiency to healthcare systems** | This means that there is a perceived need among health professionals to improve the efficiency of health and healthcare systems. |
| **Length of stay** | This has to do with how long a patient stays in the care of providers, typically in the acute care/hospital setting. |
| **Discharge** | Participants identified this as an important outcome to achieve. Discharge consists of the patient's exit from a healthcare entity and everything that needs to happen to make that possible. This often includes medication reconciliation, providing the patient with prescriptions for medications as well as for specialist or primary care follow-up, or transfer to another healthcare facility. The concept of sign-out is incorporated here as well as it is an instance of the patient being discharged to the care of another healthcare professional or team. |
| **Saving time** | This has to do with the idea that interprofessionalism "saves times" for both patients and providers. Health professionals view this as an important end goal of interprofessional collaboration. |
| **Readmission** | This represents a core patient care outcome measure that is also related to efficiency in acute care health systems, and it has to do with the frequency at which patients return to the hospital for the same medical reason that they were treated for at an earlier time. |
| **Cost reduction** | Many healthcare professionals identified the idea that IPCP should help improve the cost effectiveness of healthcare interventions. Some stated that it might be more expensive in the beginning but will likely save the healthcare system and society money in the long run. |
| **Improving patient outcomes** | The health professionals often describe this as a common goal. |
| **Errors and disease complications** | This entails poor outcomes that are thought to result from deterioration of a health condition, particularly if this deterioration could be modulated by modifiable factors, such as better care coordination, adequate type and dose of the intervention given the stage of disease, etc. This is in contrast to a natural progression of disease (i.e. an incurable or untreatable disease taking its natural pathological course). This also includes complications in disease that results from preventable actions, such as giving the wrong medication, or |

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| | the wrong dose (i.e. medical errors), or the prevention of such outcomes (such as stopping the occurrence, progression or recurrence of a disease). |
| **Patient anxiety** | Health professionals consider the patient's level of anxiety while in their care as an important outcome that ought to improve from interprofessionalism. |
| **Patient satisfaction** | This is also an important core outcome measure that health professionals pay attention to, and that health systems, such as hospitals, have been really honing in on. |
| **Quality of life, health and wellbeing** | This relates to all instances where the degree of disease morbidity (or burden) is identified as a patient outcome that is affected by interprofessionalism. This includes the severity of a disease, its frequency of recurrence, and its distribution in the population. This code also captures instances where healthcare professionals refer to various aspects of health and wellbeing, including mental and oral health. |
| **Patient care** | Patient care represents the sum of activities performed by health professionals and by patients that are thought to affect patient health outcomes. This ranges from patient adherence/compliance, to the fragmentation of care, to the adoption of a holistic care approach by healthcare providers. |
| **Adherence/compliance** | According to providers, patient care can be greatly influenced by the extent to which patients adhere to their recommended treatments. |
| **Continuity of care** | The continuity of care is a multifaceted concept according to healthcare providers. It is one of the critical outputs of a well functioning healthcare system for all patients, but especially for those with complex problems. Two key aspects of continuity of care are the reduction of the fragmentation of care among different healthcare professionals, and the provision of holistic care that accounts for patient health and wellness needs beyond just healthcare. |
| **Fragmented care** | Patient care can manifest in a discombobulated manner, ex. Disconnect between teams based on time of day, weekday vs. weekend, inappropriate seeking of primary care in the ED, etc. This is different than care coordination because fragmented care can still be well coordinated within each of the fragments. Fragmentation can be seen as siloing of care, and is related to the lack of a holistic approach to care but it is separate from it. This code also captures instances where healthcare professionals refer to the lack of follow-up on the part of the healthcare system (such as primary care practitioners not receiving feedback from specialist referrals). |
| **Holistic care** | Patient care, to the extent possible, should be holistic: that is, providers and patients should be aiming to provide care that takes into consideration a broad range of patient health needs, |

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| | including medical, mental, social and spiritual needs. |
| **Institutional policies** | This code deals with any aspect of patient care whereby there is enhanced or reduced efficiency, i.e. how well an activity is performed given the finite resources at the disposal of the stakeholders who are delivering that care, based on institutional policies (but not healthcare laws, which are better captured by a different code). This is different than care delivery in terms of coordination among team members, but instead has to do with system-wide factors that can influence efficiency, such as reimbursement policies, hospital assessment core measures, hospital discharge policies, etc. |
| **Institutional policies can influence interprofessional collaboration** | Healthcare professionals identified the fact that institutional policies (which may or may not be related to disparities in healthcare laws) can inhibit or facilitate interprofessional collaboration (ex. giving healthcare professionals a lighter caseload and reimbursing based on quality not volume). |
| **Healthcare system disparities** | This code represents the disparities (i.e. the unfair, unjust and avoidable differences) in the healthcare system, whether they are due to provider related factors (since providers are part of the system), socioeconomic environment of the care facilities or other matters. They specifically exclude patient-related factors such as race, ethnicity, social class, etc. |
| **Differential demeanor of system toward stakeholders** | This code captures the idea that the healthcare system treats people differently, unfairly and unjustly based on stakeholder groups. These groups may include being a patient, being a provider, being a health administrator, being an insurer, etc. One example is the fact that doctors are generally legally held liable for poor care, which may influence their willingness to share decision-making with other professionals. This does not include being treated differently based on race, socioeconomic status or other individual patient qualities. These are not indicative of disparities inherent to the healthcare system itself but rather the differential treatment by this system based on individual patient characteristics, which is better captured by another code. |
| **Differential compensation** | The idea behind this code is that in some instances, healthcare challenges can be directly linked to the disparities in compensation that certain providers face (such as primary care providers and all providers working in certain disadvantaged settings). This can make it difficult to collaborate with other healthcare professionals. |
| **Patient inherent status disadvantage** | This code represents all the ways in which patients may not be able to successfully interact with the healthcare system that is specifically related to their status as patients, and relates to power differentials between those who are in the system and those who are outside of it but seek to access it. |

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| | This does not include patient disadvantages related to patient population or group-specific disparities. |
| **Provider inherent status advantage** | This represents all the ways in which providers can use their skills to engage the healthcare system, based on their status as providers. In this sense, there is a disparity in the agency of providers as compared to patients: that is, providers have an advantage in dealing with the healthcare system by virtue of their professional status, skills or knowledge. |
| **Facility-provider disconnect** | This has to do with the lack of communication, particularly information sharing, between healthcare facilities and healthcare professionals, which is a healthcare system disparity and is not specific to any one patient population or group. |
| **Healthcare misconduct** | This code captures instances where there are disparities in how potentially criminal actions manifest in the healthcare system, such as differential opioid prescription and policies related to substance control, provider acceptance of kickbacks for referrals, etc. |
| **Lack of interprofessional communication facilitates patient misconduct** | The degree of effective interprofessional communication (i.e. between providers from different health professions) is related to the extent to which some patients can get away with abusing the healthcare system. This is a system-wide problem and not tied to any specific patient group or population. |
| **Information technology/electronic medical record limitations** | The presence, absence or limitations of medical record systems as well as other health information technologies have been identified as potential sources of disparity across facilities (such as the VA having a unified medical record system and how this may facilitate better care coordination, as compared to other healthcare systems). |
| **Differential support systems for team work** | This code capture instances when health professionals believe that systemic disparities in the work environment, which may be due to socioeconomic or political factors, reduce their ability to work in teams. Teams may simply be unavailable, or colleagues may be located in far distances, etc. |
| **Collaborative resource limitations require role adaptations** | Many health professionals often have to perform healthcare role that they were not trained in how to perform, and this is a direct result of limited availability of collaborators who normally perform these roles, ex. Doctors in primary care offices having to act as social workers for their patients because they cannot afford to hire one, or healthcare professionals in other countries doing work they are not technically licensed to do because the licensed professionals are just not there. |
| **Healthcare facility differences** | These are the differences in resources and implementation/use of these resources that vary across facilities and thereby create disparities when comparing |

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| | facilities with plentiful resources to those without. These differences must be independent of the resource disparities that the facility's targeted patient population faces. |
| **Language accommodations** | This applies when health professionals pinpoint the variation in language accommodations at healthcare facilities as a source of disparity. This is not the same as when they identify that some patients face substantial barriers, as the latter represents a patient disparity, not a healthcare system disparity. |
| **Waiting times** | This differs depending on what facilities patients have access to, and has been identified by providers as being an important source of difficulties for patients seeking care. |
| **Patient caseload/volume** | Healthcare professionals identified the volume of patients to be seen, i.e. the caseload, as being a fundamental challenge to the provision of effective collaborative patient care. They also noted that these vary depending on the healthcare facility where the patient is being care for, and whether or not that facility has the resources to appropriately accommodate this caseload. |
| **Sociopolitical disparities can lead to poor care delivery or fragmentation of care** | Healthcare professionals identified this as an important challenge to the provision of good patient care. This refers to healthcare laws and policies and other challenges that disparately affect some populations more than others, leading to challenges in care delivery (ex. How Medicaid will not pay for a patient to see two primary providers on the same day, even if they are from different healthcare professions, such as dentistry and nursing practice), or to care fragmentation (ex. Patients must receive acute/emergency care by law, but not outpatient/preventive or chronic care; this ultimately leads to the fragmentation of care across different care settings). |
| **Patient individual, group or population disparities** | These represent all other disparities in contrast to healthcare system disparities. These may include difficulties due to socioeconomic status, race/ethnicity or culture, area of residence, immigration status, difficulty with transportation, etc. This code captures disparities that affect specific patients but not all patients. |
| **Empathy Gap** | This code describes the idea that healthcare professionals and other healthcare system stakeholders (including other societal actors in general) often have a lack of empathy for the plight of disadvantaged populations. |
| **Stigma of poverty** | Healthcare professionals identified this as a negative element in the lives of disadvantaged populations: it consists of the negative attitudes, beliefs, and behaviors of others towards these population groups. They believe it influences these patients' level of engagement in their care. |
| **Stigmatized practice** | Healthcare professionals often do not want to work in areas |

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| **setting** | where disadvantaged populations are located, due to the many challenges that they themselves may potentially face as a result of those disparities (ex. Fearing for one's safety while working in an urban area). |
| **Lack of trust** | Patients in certain social groups are thought to have less trust in health providers or the healthcare system in general. |
| **Historical grievances generate mistrust** | Health professionals have identified this as a major issue in many populations, including immigrants who lived in oppressive governments, and African-Americans. |
| **Lack of trust decreases information sharing and adherence with care** | Health professionals made it clear that the patients who lived in disadvantaged settings are substantially more likely than others to demonstrate a lack of trust in the healthcare system or in their providers, which they also believe directly influence their likelihood to share information freely as well as adhere to care. |
| **Differential Expectations** | This code applies when healthcare professionals state that different patient populations, due to their differential life circumstances, have varying levels of awareness about how interprofessional collaboration should be the norm, and thus may not expect those caring for them to implement it. |
| **Learned helplessness** | This code applies when health professionals state that patients from disadvantaged groups have given up because of the challenges to accessing care they feel they cannot overcome. |
| **Complex problems** | This code captures instances where healthcare professional acknowledge that some patients present with challenges that make their care complex from the standpoint of the healthcare professionals and the healthcare system. These challenges may or may not be medical, but they do potentially complicate the provision of healthcare for these patients. These include patients with chronic diseases, those who present at advanced stages of disease, and those who face social issues that impede the provision of care. |
| **Presentation at advanced stages of disease** | This code captures the fact that disadvantaged patients tend to present with more advanced stages of disease. This code also captures instances when healthcare professionals refer to the challenge that advanced stages of disease in general can limit how much IPCP can do in terms of getting good patient outcomes. |
| **Chronic conditions** | This code captures instances where healthcare professionals refer to chronic conditions, which are diseases that are incurable and require coordinated treatment, as being an important problem that some patients face. |
| **Low socioeconomic status** | This has been identified as a major cause of disparities in health and healthcare by the participants, and specifically has to do with patients. This also includes the challenges that the low socioeconomic status of the community of practice |

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| | presents for the providers who work there, as these challenges stem directly from the life situations of poor patients and not from the healthcare system per say. |
| **Denied access to care** | Low socioeconomic status denies poor patients access to care. This is particularly true of holistic, effective and well-coordinated care. Patient can even have difficulty access urgent/acute care because of low SES. This code is meant to capture all of these instances. |
| **Forced to choose between life and health** | Patients with low socioeconomic status are often forced to choose between life and health. An example is choosing to buy food for one's family vs. paying for prescription drugs to maintain health. These are choices that only certain patient populations have to make, and represent substantial disparities to seeking healthcare and being healthy. |
| **Induction of provider frustration** | This has to do with all the ways that dealing with patients who have low socioeconomic status can frustrate the efforts of health professionals to provide healthcare. Examples includes constant changes of addresses and telephone numbers, resulting in loss to follow-up, etc. |
| **Health literacy** | Healthcare professionals believed that the level of health literacy of some patient populations poses challenges to the provision of good patient care. |
| **Transportation issues reduce adherence/compliance** | This code describes instances when health professionals specifically identify transportation problems as being directly linked to patient adherence to their care plans. |

**Table J2: Excerpts for Sub-Codes: IPCP Mechanistic Themes**

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| **Communication leads to better care coordination** | "If there's poor communication, then nothing is going to get accomplished, nothing is going to get done, and it could be a negative outcome. But I think if they explain things more instead of everybody being so rushed, that would be something I would want to change, to improve." |
| **Communication reduces length of stay** | "[For communication] well, what I see in the inpatient setting a lot is length of stay." |
| **Communication improves the coordination of information sharing** | "Yeah, let's see. I really think that most of the collaboration depends mostly on communication and how effectively we communicate. And communication can be in the form of writing, in the form of electronic orders, or in the form of just oral communication. And I truly believe that collaboration hinges hugely on communication. We have to communicate because there's no way that X is knowing what you're doing if you don't let X know what's going on." |
| **Communication improves patient satisfaction** | "Well, I think it's about the communication mechanism around how you're communicating with each other and then how you're translating into the work that you're doing with the person. And I think then it's helping them to develop whatever the knowledge or the skills or the motivation to do what they have to do, or to be able to say, "Ah, I like that," or come away with that checking a five rather than a one on the different scores that they're being asked to answer questions on." |
| **Interprofessional collaboration builds trust** | "Because the right thing in an interprofessional setting is to all get along with each other, to all know what's going on, do the same type of approach. If they're not, then it would just make me think that they're doing something wrong. Someone's doing something wrong somewhere because of that lack of communication and proper collaboration with one another." |
| **Appreciation for different specialties facilitates information sharing** | "But, look, when they try to do all of that in Hackensack, you get angry at them. So how are they going to win? How are they going to win? You're angry that the nurse just didn't tell you when the patient became less responsive down here. Up there when the nurse called you and told you that the patient became less responsive, you got pissed off that she kept calling you and kept freaking out about little things. So you're not going to have more proactive nursing, and you're not going to have more proactive other professions, be they pharmacy or whatever, if when they try to be proactive and get more involved and work better with you, you blow them off and get mad at them." |
| **Coordination improves the** | "This is where I want to tell you why I was interested. I held a health fair for my mental health clients, but I needed help. |

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| **continuity of care** | And I was very interested in wellness and prevention, and a lot of them were falling between the cracks because they're very sick people and they don't follow-up. So I was able to collaborate with ophthalmology, the dental school, and some other allied professionals through Rutgers. And we had a very successful health fair for our clients, nutrition, everything. So we were able to do that two years in a row. And they were able to network and know where to go for the services that they needed. We worked in that framework, and it was very, very positive. And then we were able to follow through with them. It was very positive, very. So I totally believe in it, and I think it needs to occur a lot more." |
| **Coordination of information sharing enhances decision-making** | "I think like when I was working at East Orange, there was a lot of interdisciplinary collaboration. We were sitting on councils and stuff like that and I was the nutrition rep. And just being able to sit down and create some type of standard with the care of a patient, like if someone has pneumonia or CHF or COPD, the groups kind of sat down and collaborated – okay, what's the most important thing that this patient needs to focus on to get better?" |
| **Coordination of information sharing increases patient satisfaction** | "There are probably, I would guess, a lot of other hard outcomes that are affected. I think patient satisfaction is probably another outcome that's really affected, patients feeling like they have a place to go with specific concerns, and also just feeling like everyone's on the same page and the patient is not the one trying to tell the doctor what the nurse said or explaining to the pharmacist what the doctor meant because the communication has already taken place" |
| **Coordination of information sharing reduces anxiety** | "'Like if they communicated well, and had everything setup, patient anxiety would be less. So you know explaining to the patient and getting the team together before…introduce them…would actually reduce the patient's anxiety, and you know it's part of recovery. And recovery may be shorter if the patient feels better cared for." |
| **Coordination of information sharing improves the continuity of care** | "And just sharing information because the patient sometimes will tell the social worker one thing that they don't tell the nurse practitioner. I mean, I don't have to tell you that. And having good communication between the team is just critical. Otherwise, you're going to be prescribing something that the patient isn't going to be able to take because they can't get to that whatever, that pharmacy or that physical therapist or whatever the case may be. So to me it's just critical." |
| **Poor care coordination can lead to medical complications** | "If the idea is to just get to the end and not really care about how you get there, I think you can have patient care and patient management without involving a lot of people, but it's not optimal and it's certainly subject to error." |

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| **Teamwork leads to better coordination of information sharing** | "Somebody may not have lupus, and someone with that specialty may diagnose it as such, treat as such, without looking at the whole picture that there's something else going on. And from the reports of people I know, that seems to be happening quite often. And it would be important for people who are family medicine people – we're looking at them to really coordinate the care, to be able to look at the person completely, and then refer appropriately to the specialist or a least have the specialist give their feedback without a hardline diagnosis that may be inaccurate. I don't know how else to say it but that's been what I'm hearing a lot about." |
| **Teamwork enhances decision-making and problem-solving** | "So I think teams really help. Not only when you work together you get better outcomes because, one, you get to brainstorm about things that you need to work on, but I think when you're looking at a community, there can be so many problems. " |
| **Coordination of information sharing increases patient adherence/compliance** | "I have seen that when there's been a nurse practitioner and a pharmacist involved, there's better adherence because what's happened over at the clinic, for example, is that you have patients who have, and this is an urban setting where people are on many different medications, and the nurse and the pharmacist working together are able to adjust the medication regimen because they often have prescriptions from lots of different providers, to simplify the regimen. And that usually helps with the patient adherence." |
| **Interprofessional collaboration facilitates the coordination of care for patients with complex problems** | "Well, I think in the setting of a chronic disease where multiple medications or therapies or even surgeries are part of how the patient needs to be taken care of, those complicated complex times really require multi-disciplinary interactions. And there are obvious times in the primary doctor's office where a patient comes in and their single complaint may be simple or straightforward, where the health professional physician may take the bull by the horns, talk to the patient, get a history and make the diagnosis, and provide treatment without interrelating too much." |
| **Interprofessional collaboration facilitates effective decision-making and problem-solving** | "Yeah, yeah, yeah, this is what you do. I would literally come with journal articles on the floors to give to doctors of, okay, like use this way to feed this patient instead of this old way. And sometimes it was kind of hard to break out of their norm because they didn't want to do anything that was new. I don't blame them, because it was kind of more work if you did more new stuff. " |
| **Role clarity facilitates care delivery** | "There are more drugs. There are more treatments. There are more therapies. A physician has to know about where are all the resources available to me to best help my patients. And sometimes, it's other institutions. And so the role of the |

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| | physician, at least in this health care team, is if they can't provide the services, to make sure that they get the patient to where the services are that will help them." |
| **Shared decision-making improves adherence to care** | "Well I think adherence to shared treatment plans, like the plans that you come up with, I think that's a big important component of it, especially when you're involving the patient as part of the team and you're getting the perspective of let's say the social worker." |

**Table J3: Excerpts for Sub-Codes: Interprofessionalism**

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| **Role clarity** | "But when you're defining the roles, I think each role that you're defining, that's also collaboration. You need to work together to figure out what roles each person can do, and make sure if they're not comfortable with those roles, that either they get training or education so that way they can practice those roles. But the roles are important, even though sometimes things get blended time to time when you're a team. But you do need defined roles, yeah." |
| **Transitioning from interprofessional to interdisciplinary** | "That's number one. Number two, until we fully appreciate the related disciplines outside of health care that contribute to the delivery of health care service from the people who are greeting your patients at the door, to the individuals who do your billing, your follow-up, your social workers, all of the individuals who contribute to the health care experience, your extended team as I like to call it." |
| **Respecting professional boundaries while collaborating** | "And I think that there are instances where that role differentiation can be somewhat complicated. As a family physician, it's really easy for me to differentiate my role from that of a physical therapist. We do different stuff, and I don't have to sort of pretend like I can do what they can do. On the other hand, as a family physician much of what I'd do, a family nurse practitioner does and a PA does. There are some instances where it's important if we are providing care as a team to a particular patient where we actually may want to have a conversation about under what circumstances might it be better for that patient to see me the physician, or under what circumstances might it be better for that patient to see you as a nurse practitioner?" |
| **Understanding the patient's stories and behaviors** | "It also helps providers know each others' perspectives, patients' perspectives, because you may not have thought of what…why the patient did what they did, why that person is non compliant…you know you may get the other person's stories…and also I think it saves times…" |

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| **Patient view of collaboration** | "Yeah, I thought they were fine. I didn't actually see any collaboration in front of me, but the fact that like, oh, the doctor says you're going to get this, or the PA says you're going to get this or that medication, and then the nurse comes in the room a few minutes later with that medication tells me that they are communicating and collaborating at some level because, yeah." |
| **Team leader** | "If there's something I could do different in the system where this individual is being cared for, I wish there was a quarterback – I kind of like that for phrase, it's football season – or a point person who is really taking that chart and looking at the various health care providers and examining the diagnoses, the medications, kind of overlaying them and just going okay wait a minute, this person prescribed pain medication, this person prescribed a narcotic, this person maybe prescribed something else, how do these medications interact with each other, is there a dietary consult, a nutritional consult, and let me make sure that all those things are being done." |

**Table J4: Excerpts for Sub-Codes: Coordination**

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| **Context of care/setting matters** | "You look at the private practice world. Even if we got out of underserved patients, what we increasingly see are patients getting their care in more diversified settings, multi-specialty practices for example. And some of these multi-specialty practices are really getting creative and they are sort of having nutritionists and physical therapists and acupuncturists. I think in general what they don't have that clinicians working with underserved populations have are connections to social services. I think that becomes extremely important, even given the sort of limitations of the magic that social workers can perform." |
| **One-stop shop model** | "Reassuring he's coming next week. Because there are frequent visits that they come over and it's almost like their second home because I think that we spend a lot of education on them. It's not a 15 minutes, that's it, let's go. We get to see pharmacists; we get to see social worker. And I don't think you get that in other clinics just like that. They have to come frequently to other specialties. It's just like one stop shop. " |
| **Community health worker model** | "Respondent 1: But I think we have to do outreach before we can really demonstrate a change in outcomes. We have to have community health workers, we have to have somebody out there to go out and get these people and bring them back, check on them. That needs to be part of the team. |

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| | Respondent 2: That's a hole we have right now.” |
| **Medical home** | “Well I think the facilitator is what he brought up. I love getting my letter, you know, when I refer to a specialist, that I saw your patient, Mr. Jones, very pleasant guy. He's got COPD and I did this, this and this, and I recommended that he do that, that and that. I know sometimes if I refer for people out and the specialist is telling me this is what he has and this is what he needs to do, depending on the situation maybe I'll just continue the meds or continue it. And say when I hit another speed bump, then I'll send him back. But in primary care, my role is to decide how best to use all these talents in the medical home. Who needs to be brought in and who needs to be left out? So I think that's part of the responsibility of having a primary care in the medical home is coordination of care.” |
| **Medical specialty matters** | “Yeah, historically the interprofessional team was always part and parcel of the mental health psychiatric patient. Historically, we always met as a team. There were always psychiatrists, social workers, psychologists, case manager, people who went into the home. So historically that's the model that I'm most familiar with, and it was always very effective to be able to manage and work as a team, and everybody needed to work as the patients were very fragile and vulnerable. So I do think that the type of patient, the long-term chronic illness and mental illness is ideal for the interprofessional [care].” |

**Table J5: Excerpts for Sub-Codes: Patient Care**

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| **Institutional policies can influence interprofessional collaboration** | “I think I see what you're asking. Let me start by saying that the biggest obstacle to highly functional interprofessional teams is the way in which we reimburse health care. We have a perverse incentive actually that kind of says the money is generated by what a physician does. So a physician has to generate visits in order to generate the fee-for-service dollars that sustain the practice. And obviously, nurse practitioners and PAs, depending on the state but in most states, can also generate revenue in that way.” |

**Table J6: Excerpts for Sub-Codes: Common Goals**

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| **Length of stay** | “And hopefully their length of stay, how long they stay in the hospital, will be less.” |
| **Discharge** | “But for the most part, people leave when they're ready, but with the incorporation of the full team, they may be ready to |

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| | leave earlier, or maybe they're ready to leave but they're not because they don't have that full team. So the interprofessionalism I think guides appropriate timing of discharge.” |
| **Saving time** | “And it made that visit very long. I didn't think one person knew everything about me, and it was very disjointed.” |
| **Readmission** | “God, I think it's the patient because we're also worried about readmissions.” |
| **Cost reduction** | “I even had someone in upper administration very concerned about the future of my field since so many people, so many other professions could do my job. And I said well that's very interesting because you would have to go tell one of the local hospitals where there might be 40 ventilators running in a NICU they have to pull in one more nurse. As I’m standing over an oscillator and the nurse and the doctor are trying to save an extremely critically ill baby, that's not going to work. So there's perception, but people don't know what I do, so therefore can't maximize my potential as a cheaper provider for the patient because they’re unaware of what my scope is. Because oftentimes I get siloed into a certain perception.” |
| **Errors and disease complications** | “And like I said, just kind of having to put your health care together in a piece meal fashion just leads to potential complications, really, so drug interactions and whatever else. ” |
| **Patient anxiety** | “And they probably if they were less anxious they’ll remember their care instructions better.” |
| **Patient satisfaction** | “But, you know, definitely patient or client satisfaction. You’re going to see major improvements on those numbers, which a lot of hospitals or health care facilities are looking at. It’s hard to know for sure. I think that’s a hard question because, depending on the person’s issue or whatever they’re coming in for treatment, there are so many factors that even if it’s poor communication…” |
| **Quality of life, health and wellbeing** | “But I think it definitely has a good potential to have a real positive outcome on people’s quality of life and hopefully whatever their health issue is, resolving it or help them to manage it in a better way.” |

**Table J7: Excerpts for Sub-Codes: Healthcare System Disparities**

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| **Differential compensation** | “And thirdly and probably the most importantly, until we look at the policies that govern the compensation models that drive health care delivery, this disciplinary team is always going to fall short because you need to figure out what's the funds flow to drive the machine.” |

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| **Patient inherent status disadvantage** | "but when it comes to…if I send my loved ones on their own, they would not get the service that they got when I was around you know. So I can see what a person who doesn't have any connections, who doesn't have any background, who doesn't have an advantage what they go through. So it's very different because as we pointed out already, the system is really…it doesn't work as a whole yet." |
| **Provider inherent status advantage** | "I'm an outlier because I'm a health care professional, and I come from an academic medical center environment which means that most of my care providers are either colleagues or friends. And so I walk into the health care setting with a certain baseline of information and awareness that I tend to think the average patient doesn't have. My internist is also a social friend. So we can have very candid dialogue, maybe that even goes into the gray area beyond professional exchange. So we can use less than professional terms and colorful terms, especially if I'm not taking my blood pressure meds, my cholesterol meds, and she wants to make a point. But I think with that, what works there also is she understands who I am as a client. And what I mean by that is this, so for her typical patient at her private practice, she sends them out to get their labs done. "" |
| **Lack of interprofessional communication facilitates patient misconduct** | "Nobody knows, because the hospital doesn't know what the physician is prescribing, they actually have to be sent in for pain management at some point, to reduce their dependency and not making them dependent on those drugs. But the whole thing is lost in that lack of communication net or mess. So there are several lapses in care where patients somehow take advantage of that missed…what do you call it…lack of interprofessional communication. So they're playing you, everybody against each other. So…you know." |
| **Language accommodations** | "And you have everything translated into whatever language they speak but you're not sure that they read that language either. It's a lot harder." |
| **Waiting times** | "She had an injury and she had to get stitches. Everything was done in the emergency room, but I thought that the wait in the emergency room was longer than what it should have been." |
| **Patient caseload/volume** | "They historically were the individuals who did this. But if the primary care provider has to see, just for the sake of numbers, 100 patients, versus the specialist seeing 10 patients to make enough money to pay off their loans and pay bills, how can you spend adequate time with each of those 100 patients?" |

**Table J8: Excerpts for Sub-Codes: Patient Individual, Group or Population Disparities**

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| **Stigma of poverty** | "And I think just having that sense of importance is something that a lot of people just they don't get on a day to day basis. There's a lot of stigma on many aspects of their lives" |
| **Stigmatized practice setting** | "Yeah, wow. Right? So that definitely interferes with interprofessional collaboration. I want this child to be able to pick up the phone and send this kid here. They won't let us see them. Or just the grouping. Again, we look at social determinates. And so for those high-need areas, they're not the suburbs. You walk around here with headphones on or a phone in your hand or whatever, you could get mugged for your stuff. You come out late in the evening time, you could get mugged, somebody could carjack you or whatever. So there are not a whole bunch of providers probably beating down the door to come here." |
| **Historical grievances generate mistrust** | "But I mean with some population, there's definitely some documented mistrust because either they come from governments that are just very oppressive or even among African Americans there is mistrust of the healthcare system. Now you're talking about even underserved populations where they…there is…there are a lot of examples around mistrust because "we don't have healthcare services", "we don't have doctors around us", "we have to wait 3 months to get an appointment" and things like that. So that just contributes to the disparities and prevents people from getting into practice that may have interprofessional collaboration and may actually provide good outcomes." |
| **Chronic conditions** | "Right, because it's chronic and it's ongoing for a lot of what we see. It's not going to go away. Most of our patients have these chronic processes that if they don't take care of it, it gets worse. So then we see them with the exacerbations." |
| **Health literacy** | "Because we don't understand just like literacy is one thing, but the health literacy and how people really understand and can translate, it's a lot of the medical jargon or a lot of things." |
| **Transportation issues reduce adherence/compliance** | "You've just got to know where the resources are at in your community, resources that they're able to get to as well because transportation is always an issue." |

## Appendix K: Bivariate Statistical Test Results

**Table K1.** Results of the Spearman's rho correlation test for the relationship between the number of years working with disadvantaged populations (variable#3) and all outcomes. Statistically significant relationships are highlighted.

| | | | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... |
|---|---|---|---|
| Spearman's rho | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | Correlation Coefficient | 1.000 |
| | | Sig. (2-tailed) | . |
| | | N | 150 |
| | Teamwork among all healthcare professionals is essential in making decisions for patient care. | Correlation Coefficient | .125 |
| | | Sig. (2-tailed) | .128 |
| | | N | 150 |
| | Teamwork among all healthcare professionals is essential for sharing information with patients and families. | Correlation Coefficient | .067 |
| | | Sig. (2-tailed) | .415 |
| | | N | 150 |
| | Effective communication among all healthcare professionals is essential for care coordination. | Correlation Coefficient | .062 |
| | | Sig. (2-tailed) | .450 |
| | | N | 150 |
| | Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. | Correlation Coefficient | .190* |
| | | Sig. (2-tailed) | .020 |
| | | N | 150 |
| | Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. | Correlation Coefficient | .052 |
| | | Sig. (2-tailed) | .527 |
| | | N | 150 |
| | Effective communication among all healthcare professionals improves how well information is shared with patients and their families. | Correlation Coefficient | .155 |
| | | Sig. (2-tailed) | .058 |
| | | N | 150 |
| | Effective communication among all healthcare professionals improves patient satisfaction. | Correlation Coefficient | .012 |
| | | Sig. (2-tailed) | .887 |
| | | N | 150 |
| | Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. | Correlation Coefficient | .036 |
| | | Sig. (2-tailed) | .666 |
| | | N | 150 |
| | Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. | Correlation Coefficient | .127 |
| | | Sig. (2-tailed) | .121 |
| | | N | 150 |
| | Interprofessional collaboration facilitates effective decision-making | Correlation Coefficient | -.003 |
| | | Sig. (2-tailed) | .967 |

| | | |
|---|---|---|
| and problem-solving among the healthcare team, including patients and their families. | N | 150 |
| When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .105<br>.201<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .077<br>.347<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .055<br>.507<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .036<br>.666<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .115<br>.160<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.075<br>.359<br>150 |
| The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .067<br>.415<br>150 |
| Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .079<br>.337<br>150 |
| When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.023<br>.778<br>150 |
| When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.001<br>.989<br>150 |
| When the continuity of care is | Correlation Coefficient | -.005 |

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| improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | Sig. (2-tailed)<br>N | .950<br>150 |
| When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .031<br>.707<br>150 |
| The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .042<br>.609<br>150 |
| Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.016<br>.845<br>150 |
| Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .073<br>.373<br>150 |
| Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .120<br>.143<br>150 |
| The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .049<br>.553<br>150 |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .049<br>.553<br>150 |
| Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .176*<br>.031<br>150 |
| Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .186*<br>.023<br>150 |
| Disparities in healthcare laws and policies can lead to the | Correlation Coefficient<br>Sig. (2-tailed) | .051<br>.534 |

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|---|---|---|---|
| | fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to | N | 150 |
| | The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.045<br>.584<br>150 |
| | Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .123<br>.135<br>150 |
| | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.135<br>.100<br>150 |
| | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.107<br>.194<br>150 |
| | Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | -.102<br>.214<br>150 |
| | Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .118<br>.151<br>150 |
| | I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .110<br>.181<br>150 |
| | I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .042<br>.609<br>150 |

**Table K2.** Results of the Spearman's rho correlation test for the relationship between the level of professional satisfaction (variable #5) and all outcomes. Statistically significant relationships are highlighted.

| | | | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... |
|---|---|---|---|
| Spearman's rho | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | Correlation Coefficient | 1.000 |
| | | Sig. (2-tailed) | . |
| | | N | 150 |
| | Teamwork among all healthcare professionals is essential in making decisions for patient care. | Correlation Coefficient | .165* |
| | | Sig. (2-tailed) | .043 |
| | | N | 150 |
| | Teamwork among all healthcare professionals is essential for sharing information with patients and families. | Correlation Coefficient | .163* |
| | | Sig. (2-tailed) | .046 |
| | | N | 150 |
| | Effective communication among all healthcare professionals is essential for care coordination. | Correlation Coefficient | .103 |
| | | Sig. (2-tailed) | .210 |
| | | N | 150 |
| | Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. | Correlation Coefficient | .078 |
| | | Sig. (2-tailed) | .345 |
| | | N | 150 |
| | Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. | Correlation Coefficient | .091 |
| | | Sig. (2-tailed) | .267 |
| | | N | 150 |
| | Effective communication among all healthcare professionals improves how well information is shared with patients and their families. | Correlation Coefficient | .072 |
| | | Sig. (2-tailed) | .379 |
| | | N | 150 |
| | Effective communication among all healthcare professionals improves patient satisfaction. | Correlation Coefficient | -.013 |
| | | Sig. (2-tailed) | .873 |
| | | N | 150 |
| | Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. | Correlation Coefficient | .118 |
| | | Sig. (2-tailed) | .151 |
| | | N | 150 |
| | Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. | Correlation Coefficient | .141 |
| | | Sig. (2-tailed) | .086 |
| | | N | 150 |
| | Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families. | Correlation Coefficient | .142 |
| | | Sig. (2-tailed) | .082 |
| | | N | 150 |
| | When all healthcare professionals | Correlation Coefficient | .137 |

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| have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. | Sig. (2-tailed)<br>N | .095<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .182*<br>.026<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .132<br>.107<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .199*<br>.015<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .272**<br>.001<br>150 |
| Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .153<br>.062<br>150 |
| The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .149<br>.069<br>150 |
| Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .159<br>.053<br>150 |
| When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .180*<br>.028<br>150 |
| When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .174*<br>.033<br>150 |
| When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .090<br>.271<br>150 |
| When patient adherence is | Correlation Coefficient | .039 |

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|---|---|---|
| improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. | Sig. (2-tailed)<br>N | .637<br>150 |
| The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .259**<br>.001<br>150 |
| Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .141<br>.084<br>150 |
| Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .102<br>.215<br>150 |
| Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .207*<br>.011<br>150 |
| The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .185*<br>.024<br>150 |
| Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .098<br>.231<br>150 |
| Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .139<br>.091<br>150 |
| Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .140<br>.089<br>150 |
| Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .128<br>.119<br>150 |

| | | | |
|---|---|---|---|
| | The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .195*<br>.017<br>150 |
| | Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .135<br>.100<br>150 |
| | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .210**<br>.010<br>150 |
| | Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .221**<br>.007<br>150 |
| | Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .207*<br>.011<br>150 |
| | Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .116<br>.159<br>150 |
| | I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .125<br>.127<br>150 |
| | I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. | Correlation Coefficient<br>Sig. (2-tailed)<br>N | .119<br>.147<br>150 |

**Table K3.** Results of bivariate statistical tests for all other demographic variables versus all outcomes.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Teamwork among all healthcare professionals is essential in making decisions for patient care. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .016 | Reject the null hypothesis. |
| 2 | The distribution of Teamwork among all healthcare professionals is essential for sharing information with patients and families. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .003 | Reject the null hypothesis. |
| 3 | The distribution of Effective communication among all healthcare professionals is essential for care coordination. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .014 | Reject the null hypothesis. |
| 4 | The distribution of Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .182 | Retain the null hypothesis. |
| 5 | The distribution of Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .150 | Retain the null hypothesis. |
| 6 | The distribution of Effective communication among all healthcare professionals improves how well information is shared with patients and their families. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .469 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 7 | The distribution of Effective communication among all healthcare professionals improves patient satisfaction. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .138 | Retain the null hypothesis. |
| 8 | The distribution of Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .289 | Retain the null hypothesis. |
| 9 | The distribution of Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .198 | Retain the null hypothesis. |
| 10 | The distribution of Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .363 | Retain the null hypothesis. |
| 11 | The distribution of When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .090 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 12 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .155 | Retain the null hypothesis. |
| 13 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .426 | Retain the null hypothesis. |
| 14 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .050 | Reject the null hypothesis. |
| 15 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .045 | Reject the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 16 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .521 | Retain the null hypothesis. |
| 17 | The distribution of The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .070 | Retain the null hypothesis. |
| 18 | The distribution of Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .098 | Retain the null hypothesis. |
| 19 | The distribution of When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .000 | Reject the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 20 | The distribution of When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .097 | Retain the null hypothesis. |
| 21 | The distribution of When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .151 | Retain the null hypothesis. |
| 22 | The distribution of When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .647 | Retain the null hypothesis. |
| 23 | The distribution of The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .070 | Retain the null hypothesis. |
| 24 | The distribution of Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .134 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 25 | The distribution of Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .213 | Retain the null hypothesis. |
| 26 | The distribution of Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .127 | Retain the null hypothesis. |
| 27 | The distribution of The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .505 | Retain the null hypothesis. |
| 28 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .110 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 29 | The distribution of Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .078 | Retain the null hypothesis. |
| 30 | The distribution of Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .085 | Retain the null hypothesis. |
| 31 | The distribution of Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .325 | Retain the null hypothesis. |
| 32 | The distribution of The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .004 | Reject the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 33 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .054 | Retain the null hypothesis. |
| 34 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .351 | Retain the null hypothesis. |
| 35 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .060 | Retain the null hypothesis. |
| 36 | The distribution of Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .081 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 37 | The distribution of Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .095 | Retain the null hypothesis. |
| 38 | The distribution of I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .036 | Reject the null hypothesis. |
| 39 | The distribution of I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. is the same across categories of Which of the following best describes your healthcare profession?. | Independent-Samples Kruskal-Wallis Test | .070 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Teamwork among all healthcare professionals is essential in making decisions for patient care. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .105 | Retain the null hypothesis. |
| 2 | The distribution of Teamwork among all healthcare professionals is essential for sharing information with patients and families. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .105 | Retain the null hypothesis. |
| 3 | The distribution of Effective communication among all healthcare professionals is essential for care coordination. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .175 | Retain the null hypothesis. |
| 4 | The distribution of Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .109 | Retain the null hypothesis. |
| 5 | The distribution of Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .045 | Reject the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 6 | The distribution of Effective communication among all healthcare professionals improves how well information is shared with patients and their families. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .183 | Retain the null hypothesis. |
| 7 | The distribution of Effective communication among all healthcare professionals improves patient satisfaction. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .791 | Retain the null hypothesis. |
| 8 | The distribution of Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .350 | Retain the null hypothesis. |
| 9 | The distribution of Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .204 | Retain the null hypothesis. |
| 10 | The distribution of Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .742 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 11 | The distribution of When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .070 | Retain the null hypothesis. |
| 12 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .451 | Retain the null hypothesis. |
| 13 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .729 | Retain the null hypothesis. |
| 14 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .683 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 15 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .535 | Retain the null hypothesis. |
| 16 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .312 | Retain the null hypothesis. |
| 17 | The distribution of The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .038 | Reject the null hypothesis. |
| 18 | The distribution of Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .122 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 19 | The distribution of When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .661 | Retain the null hypothesis. |
| 20 | The distribution of When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .735 | Retain the null hypothesis. |
| 21 | The distribution of When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .347 | Retain the null hypothesis. |
| 22 | The distribution of When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .056 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 23 | The distribution of The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .155 | Retain the null hypothesis. |
| 24 | The distribution of Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .421 | Retain the null hypothesis. |
| 25 | The distribution of Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .269 | Retain the null hypothesis. |
| 26 | The distribution of Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .090 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 27 | The distribution of The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .865 | Retain the null hypothesis. |
| 28 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .849 | Retain the null hypothesis. |
| 29 | The distribution of Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .418 | Retain the null hypothesis. |
| 30 | The distribution of Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .236 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 31 | The distribution of Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .669 | Retain the null hypothesis. |
| 32 | The distribution of The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .111 | Retain the null hypothesis. |
| 33 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .985 | Retain the null hypothesis. |
| 34 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .411 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 35 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .100 | Retain the null hypothesis. |
| 36 | The distribution of Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .246 | Retain the null hypothesis. |
| 37 | The distribution of Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .212 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 38 | The distribution of I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .575 | Retain the null hypothesis. |
| 39 | The distribution of I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. is the same across categories of Have you been actively involved in patient care for at least 6 months since completing your healt.... | Independent-Samples Mann-Whitney U Test | .964 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Teamwork among all healthcare professionals is essential in making decisions for patient care. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .433 | Retain the null hypothesis. |
| 2 | The distribution of Teamwork among all healthcare professionals is essential for sharing information with patients and families. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .373 | Retain the null hypothesis. |
| 3 | The distribution of Effective communication among all healthcare professionals is essential for care coordination. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .675 | Retain the null hypothesis. |
| 4 | The distribution of Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .018 | Reject the null hypothesis. |
| 5 | The distribution of Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .267 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 6 | The distribution of Effective communication among all healthcare professionals improves how well information is shared with patients and their families. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .216 | Retain the null hypothesis. |
| 7 | The distribution of Effective communication among all healthcare professionals improves patient satisfaction. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .052 | Retain the null hypothesis. |
| 8 | The distribution of Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .655 | Retain the null hypothesis. |
| 9 | The distribution of Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .129 | Retain the null hypothesis. |
| 10 | The distribution of Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .282 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 11 | The distribution of When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .043 | Reject the null hypothesis. |
| 12 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .603 | Retain the null hypothesis. |
| 13 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .145 | Retain the null hypothesis. |
| 14 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .289 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 15 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .858 | Retain the null hypothesis. |
| 16 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .721 | Retain the null hypothesis. |
| 17 | The distribution of The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .029 | Reject the null hypothesis. |
| 18 | The distribution of Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .391 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 19 | The distribution of When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .082 | Retain the null hypothesis. |
| 20 | The distribution of When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .192 | Retain the null hypothesis. |
| 21 | The distribution of When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .734 | Retain the null hypothesis. |
| 22 | The distribution of When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .233 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 23 | The distribution of The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .051 | Retain the null hypothesis. |
| 24 | The distribution of Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .714 | Retain the null hypothesis. |
| 25 | The distribution of Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .852 | Retain the null hypothesis. |
| 26 | The distribution of Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .873 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 27 | The distribution of The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .078 | Retain the null hypothesis. |
| 28 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .252 | Retain the null hypothesis. |
| 29 | The distribution of Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .001 | Reject the null hypothesis. |
| 30 | The distribution of Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .052 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 31 | The distribution of Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .128 | Retain the null hypothesis. |
| 32 | The distribution of The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .106 | Retain the null hypothesis. |
| 33 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .117 | Retain the null hypothesis. |
| 34 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .925 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 35 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .336 | Retain the null hypothesis. |
| 36 | The distribution of Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .829 | Retain the null hypothesis. |
| 37 | The distribution of Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .106 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 38 | The distribution of I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .249 | Retain the null hypothesis. |
| 39 | The distribution of I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. is the same across categories of Have you ever attended or participated in an interprofessional education, practice, session, lect.... | Independent-Samples Mann-Whitney U Test | .084 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Teamwork among all healthcare professionals is essential in making decisions for patient care. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .987 | Retain the null hypothesis. |
| 2 | The distribution of Teamwork among all healthcare professionals is essential for sharing information with patients and families. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .539 | Retain the null hypothesis. |
| 3 | The distribution of Effective communication among all healthcare professionals is essential for care coordination. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .577 | Retain the null hypothesis. |
| 4 | The distribution of Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .211 | Retain the null hypothesis. |
| 5 | The distribution of Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .038 | Reject the null hypothesis. |
| 6 | The distribution of Effective communication among all healthcare professionals improves how well information is shared with patients and their families. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .659 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 7 | The distribution of Effective communication among all healthcare professionals improves patient satisfaction. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .759 | Retain the null hypothesis. |
| 8 | The distribution of Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .725 | Retain the null hypothesis. |
| 9 | The distribution of Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .998 | Retain the null hypothesis. |
| 10 | The distribution of Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team including patients and their families is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .772 | Retain the null hypothesis. |
| 11 | The distribution of When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .156 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 12 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .286 | Retain the null hypothesis. |
| 13 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .068 | Retain the null hypothesis. |
| 14 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .441 | Retain the null hypothesis. |
| 15 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .035 | Reject the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 16 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .452 | Retain the null hypothesis. |
| 17 | The distribution of The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .110 | Retain the null hypothesis. |
| 18 | The distribution of Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .650 | Retain the null hypothesis. |
| 19 | The distribution of When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .692 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 20 | The distribution of When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .592 | Retain the null hypothesis. |
| 21 | The distribution of When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .262 | Retain the null hypothesis. |
| 22 | The distribution of When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .588 | Retain the null hypothesis. |
| 23 | The distribution of The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .902 | Retain the null hypothesis. |
| 24 | The distribution of Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .503 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 25 | The distribution of Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .192 | Retain the null hypothesis. |
| 26 | The distribution of Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .181 | Retain the null hypothesis. |
| 27 | The distribution of The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .112 | Retain the null hypothesis. |
| 28 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .255 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 29 | The distribution of Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .620 | Retain the null hypothesis. |
| 30 | The distribution of Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .256 | Retain the null hypothesis. |
| 31 | The distribution of Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .827 | Retain the null hypothesis. |
| 32 | The distribution of The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .144 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 33 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .658 | Retain the null hypothesis. |
| 34 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .089 | Retain the null hypothesis. |
| 35 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .029 | Reject the null hypothesis. |
| 36 | The distribution of Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .286 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 37 | The distribution of Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .302 | Retain the null hypothesis. |
| 38 | The distribution of I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .683 | Retain the null hypothesis. |
| 39 | The distribution of I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. is the same across categories of Do you use an electronic health record system in your daily work tasks?. | Independent-Samples Mann-Whitney U Test | .550 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Teamwork among all healthcare professionals is essential in making decisions for patient care. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .299 | Retain the null hypothesis. |
| 2 | The distribution of Teamwork among all healthcare professionals is essential for sharing information with patients and families. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .514 | Retain the null hypothesis. |
| 3 | The distribution of Effective communication among all healthcare professionals is essential for care coordination. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .524 | Retain the null hypothesis. |
| 4 | The distribution of Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .384 | Retain the null hypothesis. |
| 5 | The distribution of Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .508 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 6 | The distribution of Effective communication among all healthcare professionals improves how well information is shared with patients and their families. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .042 | Reject the null hypothesis. |
| 7 | The distribution of Effective communication among all healthcare professionals improves patient satisfaction. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .722 | Retain the null hypothesis. |
| 8 | The distribution of Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .728 | Retain the null hypothesis. |
| 9 | The distribution of Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .651 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 10 | The distribution of Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team including patients and their families is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .718 | Retain the null hypothesis. |
| 11 | The distribution of When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .619 | Retain the null hypothesis. |
| 12 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .643 | Retain the null hypothesis. |
| 13 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .190 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 14 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .356 | Retain the null hypothesis. |
| 15 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .608 | Retain the null hypothesis. |
| 16 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .762 | Retain the null hypothesis. |
| 17 | The distribution of The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .183 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 18 | The distribution of Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .564 | Retain the null hypothesis. |
| 19 | The distribution of When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .843 | Retain the null hypothesis. |
| 20 | The distribution of When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .176 | Retain the null hypothesis. |
| 21 | The distribution of When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .628 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 22 | The distribution of When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .915 | Retain the null hypothesis. |
| 23 | The distribution of The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .991 | Retain the null hypothesis. |
| 24 | The distribution of Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .177 | Retain the null hypothesis. |
| 25 | The distribution of Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .574 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 26 | The distribution of Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .490 | Retain the null hypothesis. |
| 27 | The distribution of The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .241 | Retain the null hypothesis. |
| 28 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .999 | Retain the null hypothesis. |
| 29 | The distribution of Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .954 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 30 | The distribution of Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .608 | Retain the null hypothesis. |
| 31 | The distribution of Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .464 | Retain the null hypothesis. |
| 32 | The distribution of The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .423 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 33 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .688 | Retain the null hypothesis. |
| 34 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .715 | Retain the null hypothesis. |
| 35 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .190 | Retain the null hypothesis. |
| 36 | The distribution of Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .556 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 37 | The distribution of Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .836 | Retain the null hypothesis. |
| 38 | The distribution of I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .899 | Retain the null hypothesis. |
| 39 | The distribution of I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. is the same across categories of Which one of the following healthcare delivery models best applies to your primary practice setting?. | Independent-Samples Kruskal-Wallis Test | .585 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Teamwork among all healthcare professionals is essential in making decisions for patient care. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .740 | Retain the null hypothesis. |
| 2 | The distribution of Teamwork among all healthcare professionals is essential for sharing information with patients and families. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .511 | Retain the null hypothesis. |
| 3 | The distribution of Effective communication among all healthcare professionals is essential for care coordination. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .870 | Retain the null hypothesis. |
| 4 | The distribution of Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .718 | Retain the null hypothesis. |
| 5 | The distribution of Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .122 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 6 | The distribution of Effective communication among all healthcare professionals improves how well information is shared with patients and their families. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .246 | Retain the null hypothesis. |
| 7 | The distribution of Effective communication among all healthcare professionals improves patient satisfaction. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .258 | Retain the null hypothesis. |
| 8 | The distribution of Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .760 | Retain the null hypothesis. |
| 9 | The distribution of Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .479 | Retain the null hypothesis. |
| 10 | The distribution of Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .600 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 11 | The distribution of When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .886 | Retain the null hypothesis. |
| 12 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .443 | Retain the null hypothesis. |
| 13 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .187 | Retain the null hypothesis. |
| 14 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .212 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 15 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .711 | Retain the null hypothesis. |
| 16 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .562 | Retain the null hypothesis. |
| 17 | The distribution of The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .728 | Retain the null hypothesis. |
| 18 | The distribution of Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .826 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 19 | The distribution of When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .373 | Retain the null hypothesis. |
| 20 | The distribution of When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .134 | Retain the null hypothesis. |
| 21 | The distribution of When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .565 | Retain the null hypothesis. |
| 22 | The distribution of When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .793 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 23 | The distribution of The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .880 | Retain the null hypothesis. |
| 24 | The distribution of Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .529 | Retain the null hypothesis. |
| 25 | The distribution of Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .465 | Retain the null hypothesis. |
| 26 | The distribution of Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .981 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 27 | The distribution of The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .494 | Retain the null hypothesis. |
| 28 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .807 | Retain the null hypothesis. |
| 29 | The distribution of Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .984 | Retain the null hypothesis. |
| 30 | The distribution of Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .365 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 31 | The distribution of Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .958 | Retain the null hypothesis. |
| 32 | The distribution of The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .693 | Retain the null hypothesis. |
| 33 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .688 | Retain the null hypothesis. |
| 34 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .188 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 35 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .224 | Retain the null hypothesis. |
| 36 | The distribution of Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .180 | Retain the null hypothesis. |
| 37 | The distribution of Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .444 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 38 | The distribution of I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .737 | Retain the null hypothesis. |
| 39 | The distribution of I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. is the same across categories of What type of healthcare system practice do you predominantly work in? Please select only one.. | Independent-Samples Kruskal-Wallis Test | .170 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 1 | The distribution of Teamwork among all healthcare professionals is essential in making decisions for patient care. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .257 | Retain the null hypothesis. |
| 2 | The distribution of Teamwork among all healthcare professionals is essential for sharing information with patients and families. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .041 | Reject the null hypothesis. |
| 3 | The distribution of Effective communication among all healthcare professionals is essential for care coordination. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .981 | Retain the null hypothesis. |
| 4 | The distribution of Effective communication among all healthcare professionals impacts the efficiency of the healthcare system. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .919 | Retain the null hypothesis. |
| 5 | The distribution of Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .836 | Retain the null hypothesis. |
| 6 | The distribution of Effective communication among all healthcare professionals improves how well information is shared with patients and their families. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .964 | Retain the null hypothesis. |
| 7 | The distribution of Effective communication among all healthcare professionals improves patient satisfaction. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .233 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 8 | The distribution of Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .743 | Retain the null hypothesis. |
| 9 | The distribution of Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .856 | Retain the null hypothesis. |
| 10 | The distribution of Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .289 | Retain the null hypothesis. |
| 11 | The distribution of When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .737 | Retain the null hypothesis. |
| 12 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .994 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 13 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .614 | Retain the null hypothesis. |
| 14 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .887 | Retain the null hypothesis. |
| 15 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .184 | Retain the null hypothesis. |
| 16 | The distribution of Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .362 | Retain the null hypothesis. |
| 17 | The distribution of The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .553 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 18 | The distribution of Poor care coordination can lead to medical complications, including medical errors and poor health outcomes. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .821 | Retain the null hypothesis. |
| 19 | The distribution of When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .011 | Reject the null hypothesis. |
| 20 | The distribution of When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .062 | Retain the null hypothesis. |
| 21 | The distribution of When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .073 | Retain the null hypothesis. |
| 22 | The distribution of When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .883 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 23 | The distribution of The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .319 | Retain the null hypothesis. |
| 24 | The distribution of Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .879 | Retain the null hypothesis. |
| 25 | The distribution of Difficulties in sharing information between different healthcare professionals and the broader healthcare system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications). is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .574 | Retain the null hypothesis. |
| 26 | The distribution of Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .342 | Retain the null hypothesis. |
| 27 | The distribution of The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .464 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 28 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .127 | Retain the null hypothesis. |
| 29 | The distribution of Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patient is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .781 | Retain the null hypothesis. |
| 30 | The distribution of Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practi is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .554 | Retain the null hypothesis. |
| 31 | The distribution of Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .672 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 32 | The distribution of The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .086 | Retain the null hypothesis. |
| 33 | The distribution of Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .543 | Retain the null hypothesis. |
| 34 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .724 | Retain the null hypothesis. |
| 35 | The distribution of Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .730 | Retain the null hypothesis. |
| 36 | The distribution of Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .236 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

**Hypothesis Test Summary**

| | Null Hypothesis | Test | Sig. | Decision |
|---|---|---|---|---|
| 37 | The distribution of Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .959 | Retain the null hypothesis. |
| 38 | The distribution of I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .079 | Retain the null hypothesis. |
| 39 | The distribution of I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families. is the same across categories of What is your approximate gross annual income?. | Independent-Samples Kruskal-Wallis Test | .070 | Retain the null hypothesis. |

Asymptotic significances are displayed. The significance level is .05.

## Appendix L: Multivariable Linear Regression Test Results

## Results of Regression Analyses for Outcome Variable 10: Teamwork among all healthcare professionals is essential in making decisions for patient care

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .307[a] | .094 | .036 | .722 | .094 | 1.621 | 9 | 140 | .115 |

**ANOVA[a]**

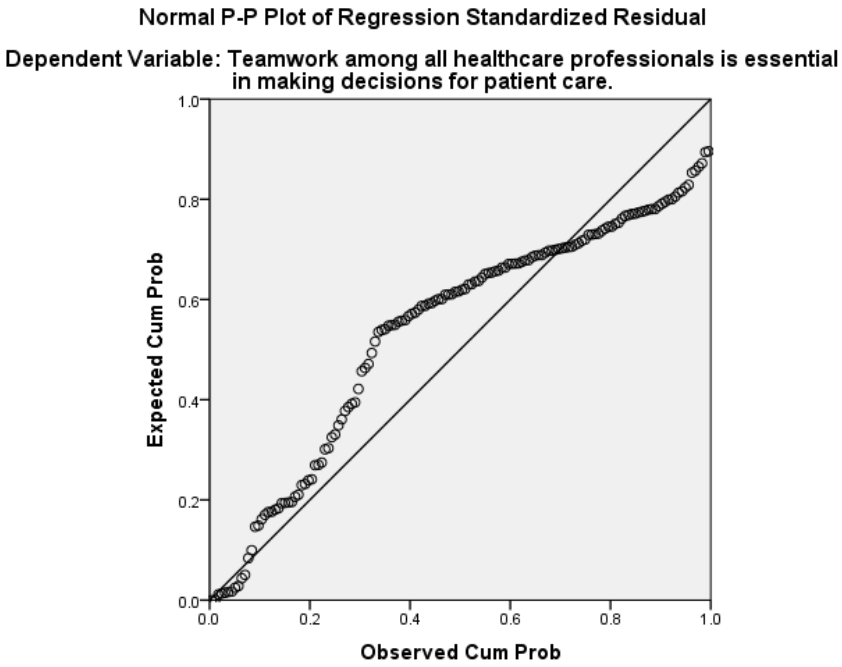
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 7.602 | 9 | .845 | 1.621 | .115[b] |
| | Residual | 72.938 | 140 | .521 | | |
| | Total | 80.540 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.553 | .464 | | 9.803 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.044 | .033 | -.120 | -1.327 | .187 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.160 | .184 | -.081 | -.870 | .386 | .742 | 1.348 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .011 | .006 | .174 | 1.836 | .068 | .722 | 1.384 |
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.047 | .166 | -.024 | -.284 | .777 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .075 | .038 | .163 | 1.996 | .048 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .102 | .156 | .059 | .656 | .513 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.016 | .042 | -.034 | -.370 | .712 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.030 | .049 | -.056 | -.622 | .535 | .787 | 1.270 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | What is your approximate gross annual income? | -.118 | .050 | -.222 | -2.348 | .020 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 11: Teamwork among all healthcare professionals is essential for sharing information with patients and families**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .324[a] | .105 | .047 | .756 | .105 | 1.821 | 9 | 140 | .069 |

**ANOVA[a]**

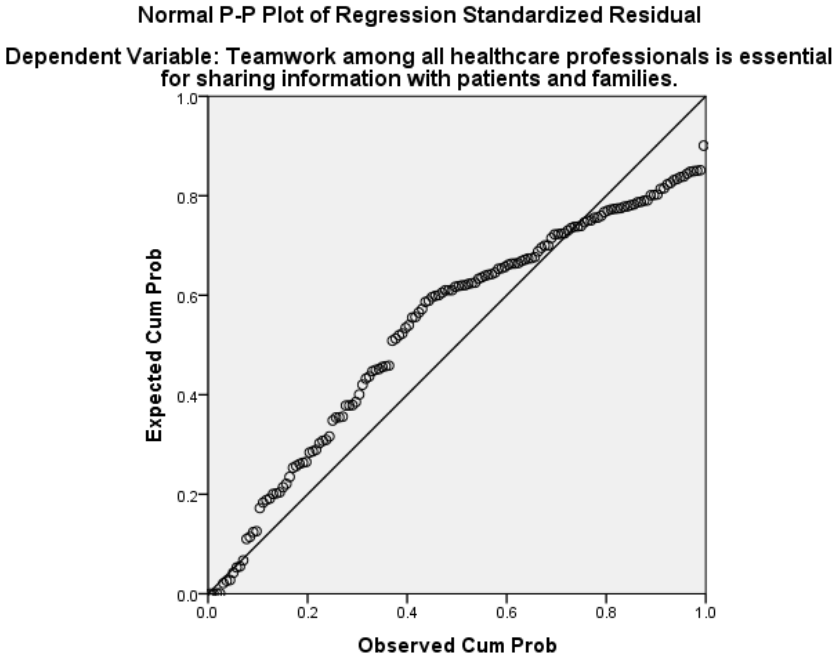
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 9.373 | 9 | 1.041 | 1.821 | .069[b] |
| | Residual | 80.067 | 140 | .572 | | |

| | | | | | |
|---|---|---|---|---|---|
| Total | 89.440 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.649 | .487 | | 9.554 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.094 | .034 | -.244 | -2.716 | .007 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .005 | .192 | .003 | .029 | .977 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .011 | .006 | .153 | 1.627 | .106 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.138 | .174 | -.066 | -.798 | .426 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .070 | .039 | .145 | 1.785 | .076 | .968 | 1.033 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Do you use an electronic health record system in your daily work tasks? | .086 | .163 | .048 | .527 | .599 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.017 | .044 | -.036 | -.393 | .695 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.035 | .051 | -.062 | -.683 | .496 | .787 | 1.270 |
| What is your approximate gross annual income? | -.112 | .053 | -.200 | -2.128 | .035 | .723 | 1.384 |



**Results of Regression Analyses for Outcome Variable 12: Effective communication among all healthcare professionals is essential for care coordination**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .224[a] | .050 | -.011 | .678 | .050 | .822 | 9 | 140 | .597 |

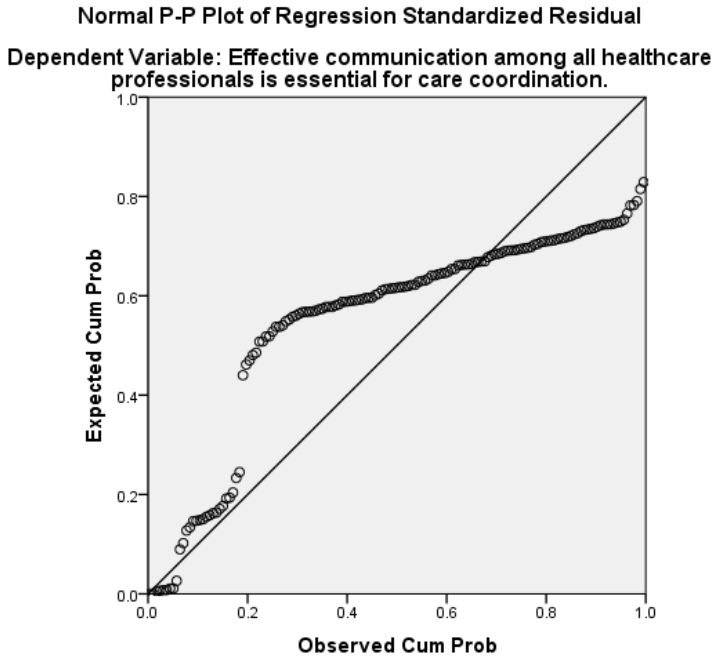
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3.403 | 9 | .378 | .822 | .597[b] |
| | Residual | 64.390 | 140 | .460 | | |
| | Total | 67.793 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.545 | .436 | | 10.417 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.047 | .031 | -.140 | -1.516 | .132 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.070 | .173 | -.039 | -.404 | .687 | .742 | 1.348 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .007 | .006 | .119 | 1.223 | .223 | .722 | 1.384 |
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.026 | .156 | -.014 | -.168 | .867 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .055 | .035 | .131 | 1.559 | .121 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .082 | .146 | .052 | .561 | .575 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.001 | .040 | -.001 | -.016 | .988 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.021 | .046 | -.042 | -.453 | .651 | .787 | 1.270 |
| What is your approximate gross annual income? | -.041 | .047 | -.084 | -.870 | .386 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 13: Effective communication among all healthcare professionals impacts the efficiency of the healthcare system**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .257[a] | .066 | .006 | .665 | .066 | 1.104 | 9 | 140 | .364 |

**ANOVA[a]**

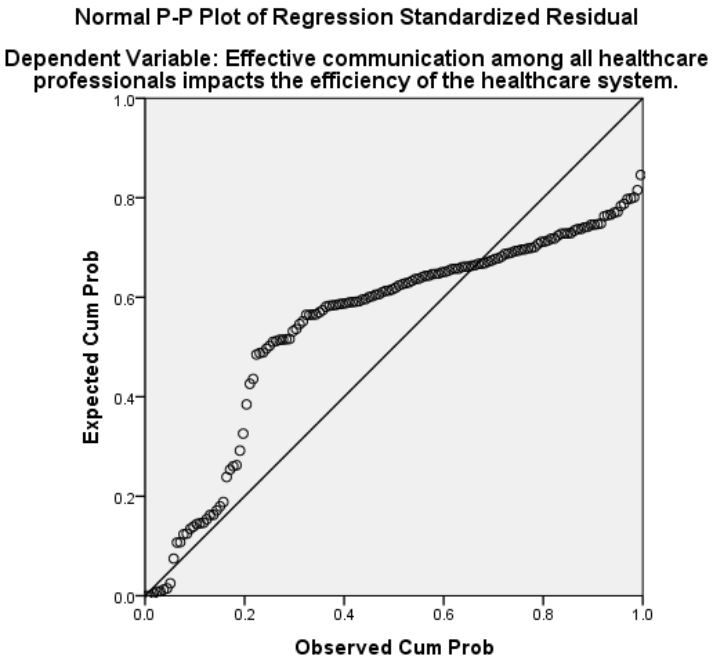
| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.389 | 9 | .488 | 1.104 | .364[b] |
| | Residual | 61.851 | 140 | .442 | | |
| | Total | 66.240 | 149 | | | |

**Coefficients[a]**

| Model | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|
| | B | Std. Error | Beta | | | Tolerance | VIF |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 1 | (Constant) | 4.707 | .428 | | 11.007 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.039 | .030 | -.117 | -1.277 | .204 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .041 | .169 | .023 | .242 | .809 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .008 | .006 | .143 | 1.485 | .140 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.207 | .153 | -.114 | -1.354 | .178 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .033 | .035 | .079 | .951 | .343 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .010 | .143 | .007 | .072 | .943 | .786 | 1.272 |
| | Which one of the following healthcare delivery models best applies to your primary practice setting? | .031 | .039 | .076 | .809 | .420 | .753 | 1.328 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.045 | .045 | -.091 | -.994 | .322 | .787 | 1.270 |
| What is your approximate gross annual income? | -.002 | .046 | -.004 | -.042 | .966 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 14: Effective communication among all healthcare professionals reduces the length of stay of patients in hospitals or the time spent in clinics**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .302[a] | .091 | .032 | .884 | .091 | 1.556 | 9 | 140 | .134 |

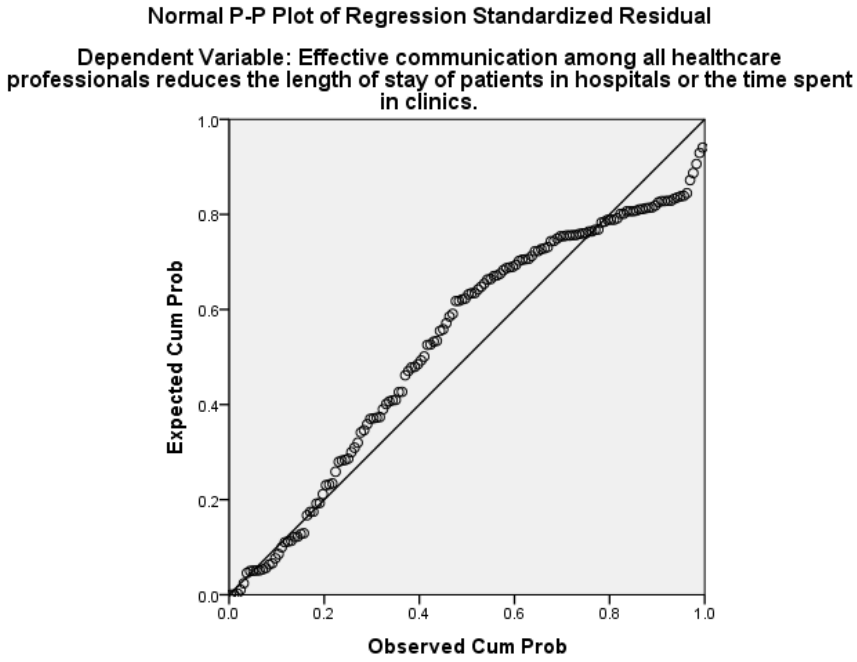
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 10.934 | 9 | 1.215 | 1.556 | .134[b] |
| | Residual | 109.306 | 140 | .781 | | |
| | Total | 120.240 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.922 | .569 | | 8.657 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.074 | .040 | -.168 | -1.848 | .067 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.081 | .225 | -.034 | -.361 | .719 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .002 | .008 | .020 | .207 | .836 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.131 | .203 | -.053 | -.644 | .521 | .941 | 1.063 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .052 | .046 | .092 | 1.123 | .264 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.209 | .190 | -.100 | -1.098 | .274 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .039 | .052 | .070 | .755 | .451 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.109 | .060 | -.165 | -1.817 | .071 | .787 | 1.270 |
| What is your approximate gross annual income? | -.049 | .062 | -.076 | -.800 | .425 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 15: Effective communication among all healthcare professionals improves how well information is shared with patients and their families**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .270[a] | .073 | .013 | .769 | .073 | 1.218 | 9 | 140 | .288 |

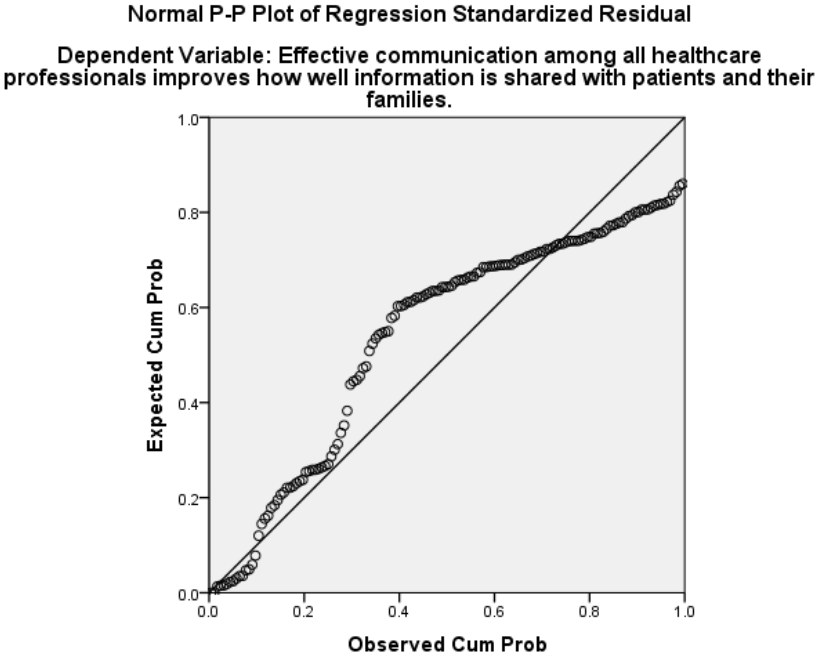
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.483 | 9 | .720 | 1.218 | .288[b] |
| | Residual | 82.777 | 140 | .591 | | |
| | Total | 89.260 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.695 | .495 | | 9.489 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.016 | .035 | -.043 | -.469 | .640 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.081 | .196 | -.039 | -.413 | .680 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .012 | .007 | .169 | 1.768 | .079 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.131 | .177 | -.062 | -.743 | .459 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .043 | .040 | .088 | 1.068 | .287 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .141 | .166 | .078 | .853 | .395 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.040 | .045 | -.083 | -.884 | .378 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.077 | .052 | -.136 | -1.483 | .140 | .787 | 1.270 |
| What is your approximate gross annual income? | -.058 | .054 | -.104 | -1.082 | .281 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 16: Effective communication among all healthcare professionals improves patient satisfaction**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .271[a] | .074 | .014 | .795 | .074 | 1.237 | 9 | 140 | .278 |

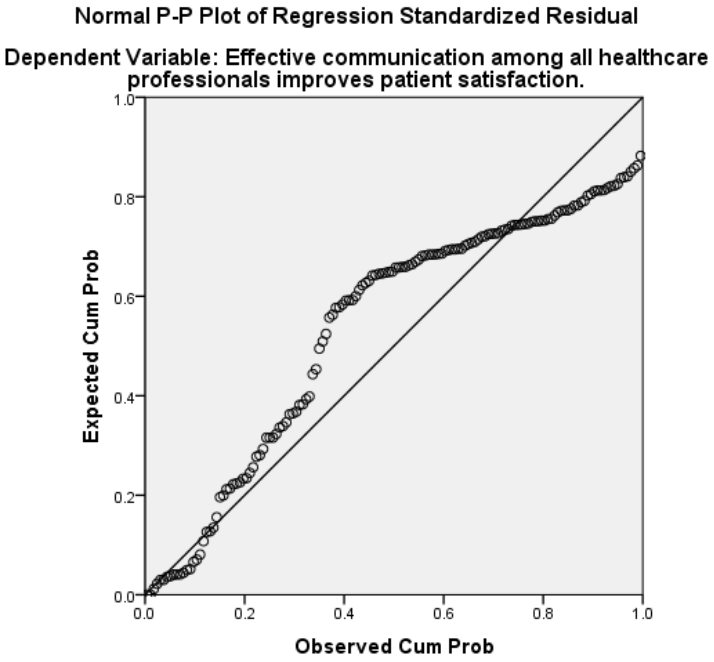
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 7.028 | 9 | .781 | 1.237 | .278[b] |
| | Residual | 88.412 | 140 | .632 | | |
| | Total | 95.440 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 5.056 | .511 | | 9.888 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.056 | .036 | -.141 | -1.536 | .127 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .255 | .202 | .119 | 1.260 | .210 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .009 | .007 | .127 | 1.330 | .186 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.288 | .182 | -.133 | -1.581 | .116 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | -.002 | .041 | -.003 | -.042 | .966 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .022 | .171 | .012 | .129 | .897 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .003 | .046 | .005 | .054 | .957 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.079 | .054 | -.135 | -1.474 | .143 | .787 | 1.270 |
| What is your approximate gross annual income? | -.098 | .055 | -.170 | -1.774 | .078 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 17: Interprofessional collaboration builds trust among all members of the healthcare team, including patients and their families**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .172[a] | .030 | -.033 | .779 | .030 | .475 | 9 | 140 | .890 |

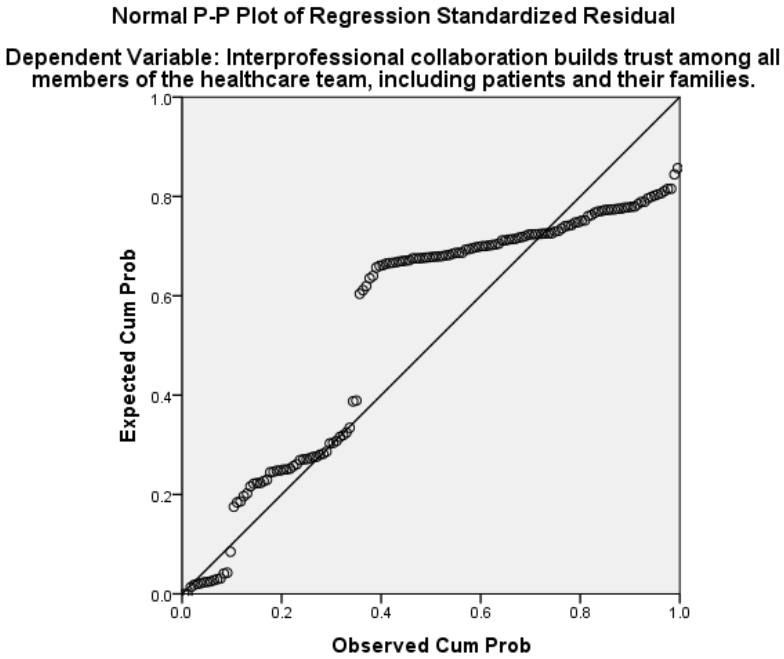
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2.590 | 9 | .288 | .475 | .890[b] |
| | Residual | 84.850 | 140 | .606 | | |
| | Total | 87.440 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.232 | .501 | | 8.449 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.006 | .035 | -.017 | -.180 | .857 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.121 | .198 | -.059 | -.610 | .543 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .002 | .007 | .032 | .331 | .741 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.040 | .179 | -.019 | -.223 | .824 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .055 | .040 | .115 | 1.360 | .176 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .191 | .168 | .107 | 1.135 | .258 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.031 | .045 | -.064 | -.672 | .503 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.036 | .053 | -.064 | -.685 | .495 | .787 | 1.270 |
| What is your approximate gross annual income? | .002 | .054 | .003 | .030 | .976 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 18: Interprofessional collaboration facilitates the coordination of care for patients with complex problems, including multiple chronic conditions and multiple socioeconomic challenges**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .263[a] | .069 | .010 | .726 | .069 | 1.159 | 9 | 140 | .326 |

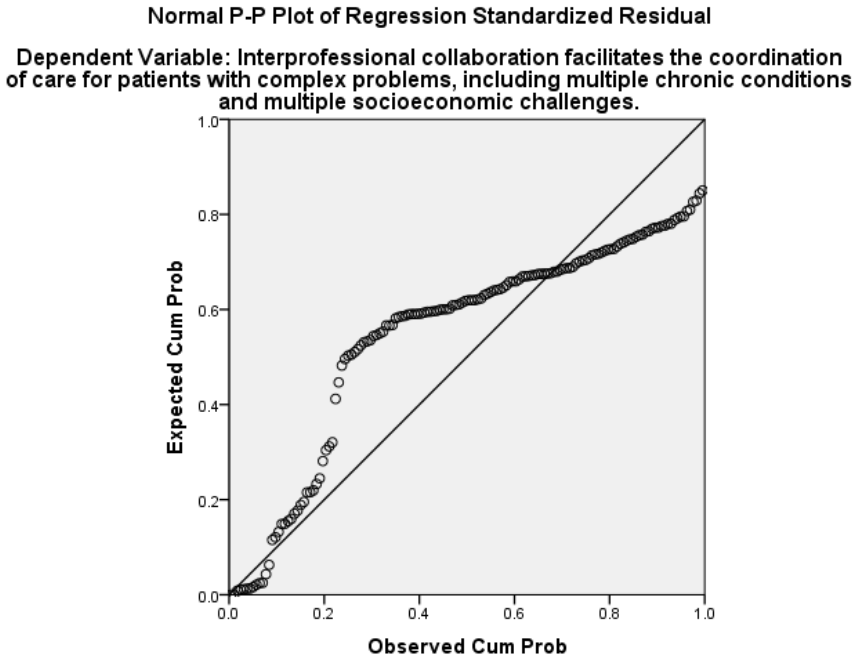
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.501 | 9 | .611 | 1.159 | .326[b] |
| | Residual | 73.832 | 140 | .527 | | |
| | Total | 79.333 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.335 | .467 | | 9.278 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.021 | .033 | -.059 | -.645 | .520 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.030 | .185 | -.015 | -.162 | .872 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .007 | .006 | .103 | 1.072 | .285 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.136 | .167 | -.069 | -.817 | .415 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .057 | .038 | .125 | 1.504 | .135 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .160 | .157 | .094 | 1.021 | .309 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .028 | .042 | .062 | .663 | .508 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.092 | .049 | -.172 | -1.875 | .063 | .787 | 1.270 |
| What is your approximate gross annual income? | .019 | .051 | .037 | .382 | .703 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 19: Interprofessional collaboration facilitates effective decision-making and problem-solving among the healthcare team, including patients and their families**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .190[a] | .036 | -.026 | .749 | .036 | .585 | 9 | 140 | .807 |

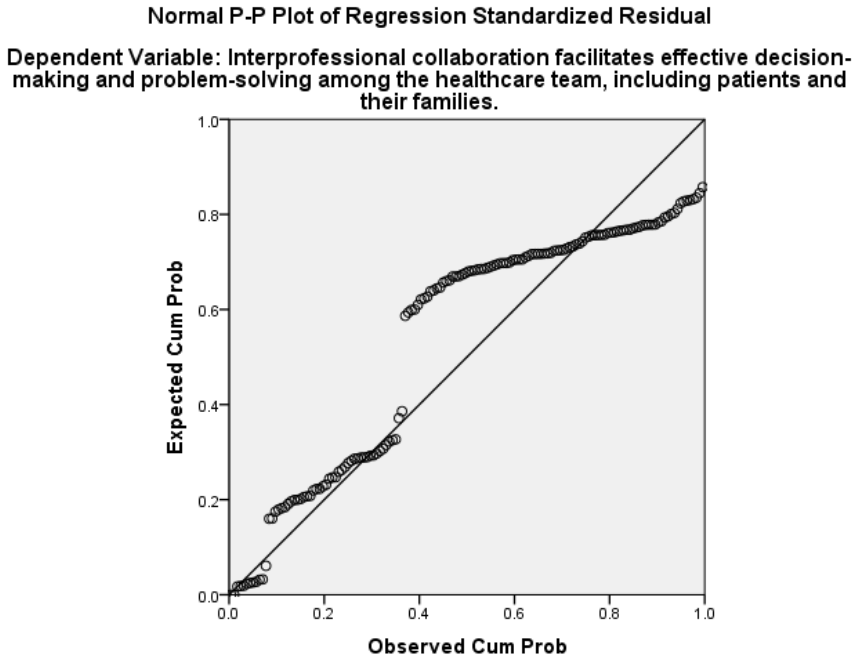
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 2.952 | 9 | .328 | .585 | .807[b] |
| | Residual | 78.442 | 140 | .560 | | |
| | Total | 81.393 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.334 | .482 | | 8.999 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.010 | .034 | -.026 | -.284 | .777 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .026 | .190 | .013 | .136 | .892 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .004 | .006 | .056 | .575 | .566 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.123 | .172 | -.061 | -.714 | .476 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .053 | .039 | .116 | 1.370 | .173 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .078 | .161 | .045 | .485 | .628 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .015 | .044 | .032 | .335 | .738 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.070 | .051 | -.128 | -1.372 | .172 | .787 | 1.270 |
| What is your approximate gross annual income? | -.029 | .052 | -.054 | -.552 | .582 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 20: When all healthcare professionals have an appreciation for all the different specialties and the value they each bring to patient care, it is easier to share information within the healthcare team**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .240[a] | .057 | -.003 | .774 | .057 | .947 | 9 | 140 | .487 |

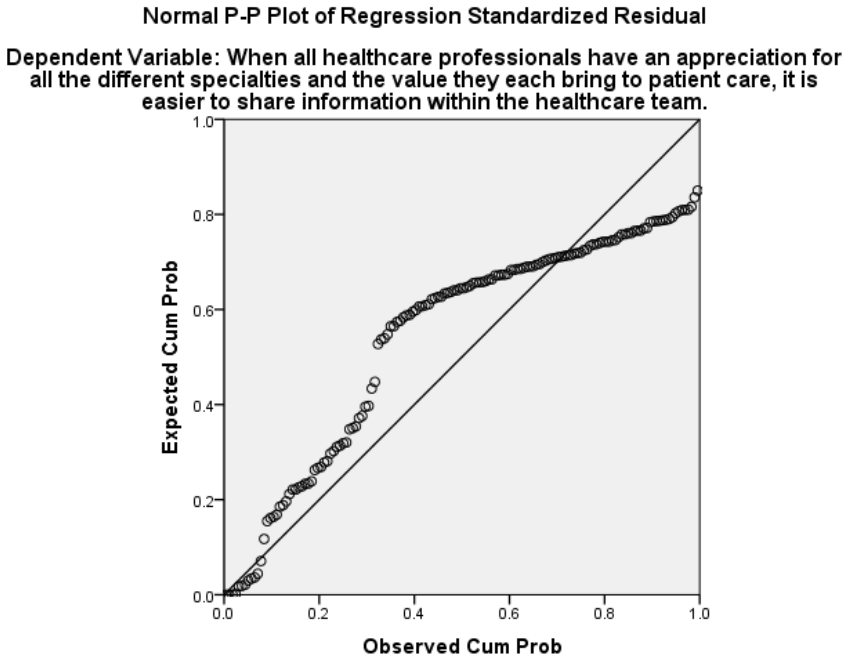
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.106 | 9 | .567 | .947 | .487[b] |
| | Residual | 83.854 | 140 | .599 | | |
| | Total | 88.960 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.645 | .498 | | 9.329 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.030 | .035 | -.079 | -.859 | .392 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.025 | .197 | -.012 | -.129 | .898 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .008 | .007 | .110 | 1.142 | .256 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.233 | .178 | -.111 | -1.312 | .192 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .061 | .040 | .126 | 1.513 | .132 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.115 | .167 | -.064 | -.687 | .493 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .019 | .045 | .040 | .424 | .672 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.015 | .053 | -.026 | -.286 | .775 | .787 | 1.270 |
| What is your approximate gross annual income? | -.052 | .054 | -.092 | -.957 | .340 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 21: Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves how effectively and efficiently decisions are made in healthcare**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .307[a] | .094 | .036 | .726 | .094 | 1.614 | 9 | 140 | .117 |

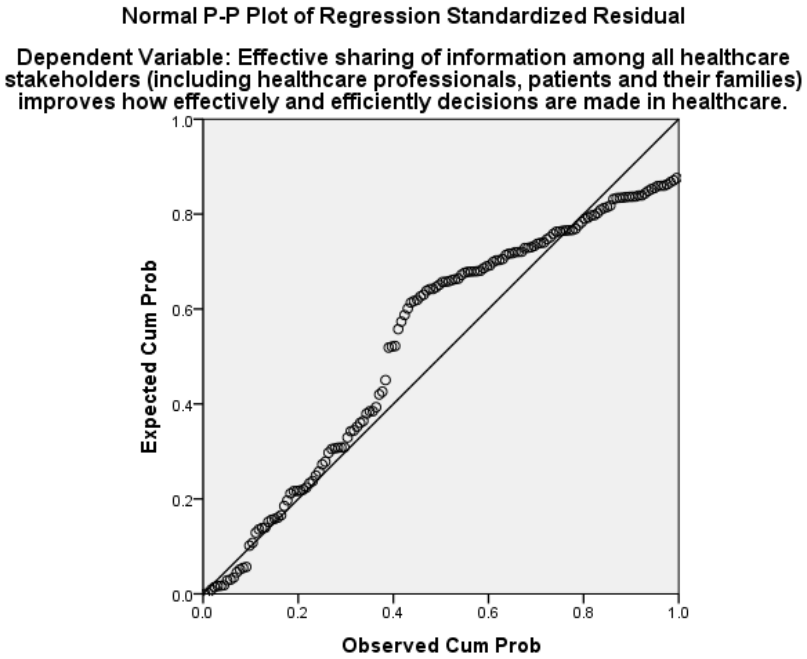
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 7.660 | 9 | .851 | 1.614 | .117[b] |
| | Residual | 73.814 | 140 | .527 | | |
| | Total | 81.473 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.084 | .467 | | 8.741 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.049 | .033 | -.133 | -1.474 | .143 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .085 | .185 | .043 | .460 | .646 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .009 | .006 | .130 | 1.375 | .171 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.098 | .167 | -.049 | -.587 | .558 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .097 | .038 | .211 | 2.577 | .011 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .045 | .157 | .026 | .289 | .773 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.005 | .042 | -.011 | -.117 | .907 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.078 | .049 | -.144 | -1.592 | .114 | .787 | 1.270 |
| What is your approximate gross annual income? | -.039 | .051 | -.073 | -.774 | .440 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 22: Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient satisfaction**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .339[a] | .115 | .058 | .733 | .115 | 2.023 | 9 | 140 | .041 |

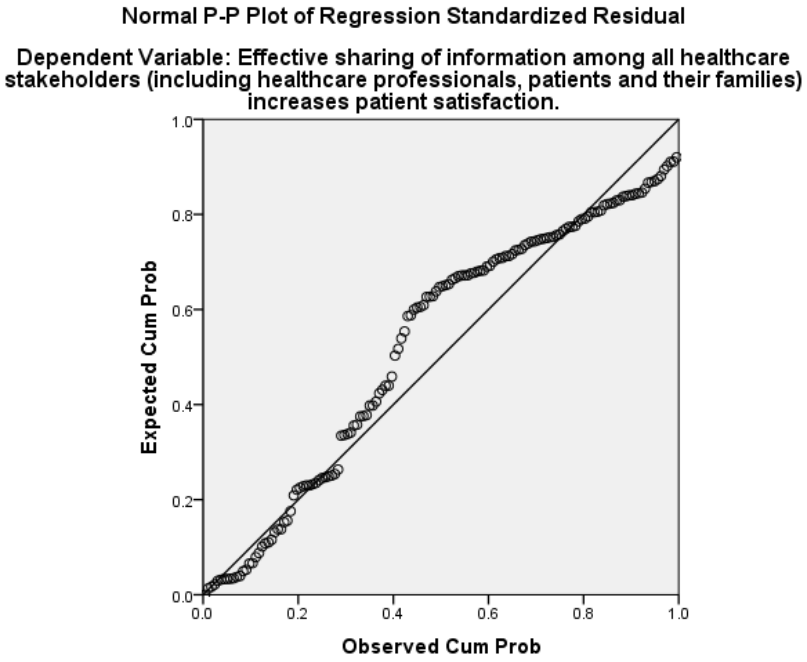
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 9.779 | 9 | 1.087 | 2.023 | .041[b] |
| | Residual | 75.181 | 140 | .537 | | |
| | Total | 84.960 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.160 | .471 | | 8.822 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.045 | .033 | -.120 | -1.346 | .181 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .208 | .186 | .103 | 1.113 | .267 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .006 | .006 | .090 | .960 | .339 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.202 | .168 | -.098 | -1.199 | .233 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .099 | .038 | .210 | 2.595 | .010 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.068 | .158 | -.039 | -.431 | .667 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.032 | .043 | -.068 | -.747 | .456 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.081 | .050 | -.147 | -1.639 | .103 | .787 | 1.270 |
| What is your approximate gross annual income? | .000 | .051 | .000 | -.004 | .997 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 23: Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) reduces patient anxiety**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .292[a] | .085 | .026 | .841 | .085 | 1.445 | 9 | 140 | .175 |

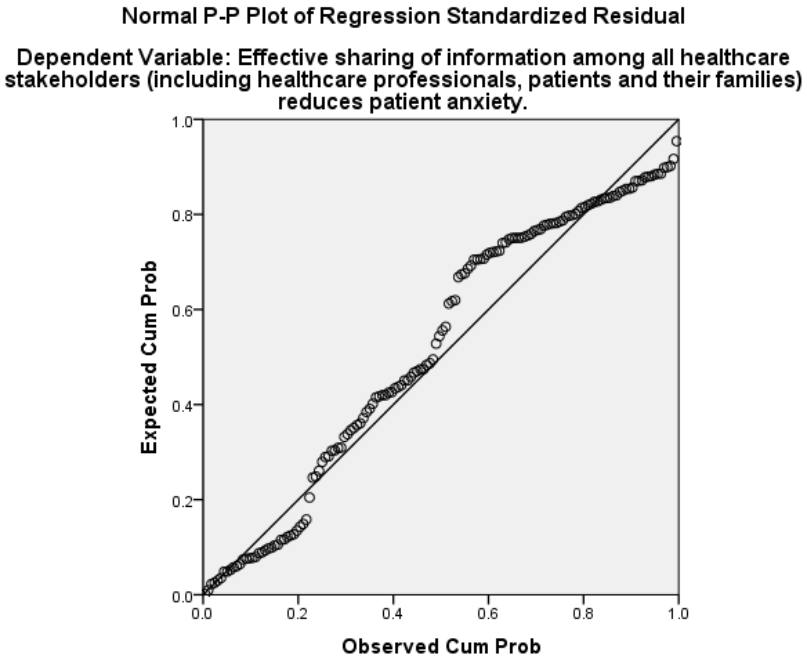
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 9.205 | 9 | 1.023 | 1.445 | .175[b] |
| | Residual | 99.088 | 140 | .708 | | |
| | Total | 108.293 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.665 | .541 | | 6.771 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.059 | .038 | -.139 | -1.526 | .129 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .110 | .214 | .048 | .512 | .609 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .002 | .007 | .029 | .306 | .760 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.163 | .193 | -.070 | -.845 | .399 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .123 | .044 | .231 | 2.815 | .006 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | -.029 | .181 | -.015 | -.161 | .872 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .024 | .049 | .045 | .486 | .627 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.063 | .057 | -.101 | -1.110 | .269 | .787 | 1.270 |
| What is your approximate gross annual income? | -.015 | .059 | -.025 | -.258 | .797 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 24: Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) improves the continuity of care**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .380[a] | .145 | .090 | .658 | .145 | 2.628 | 9 | 140 | .008 |

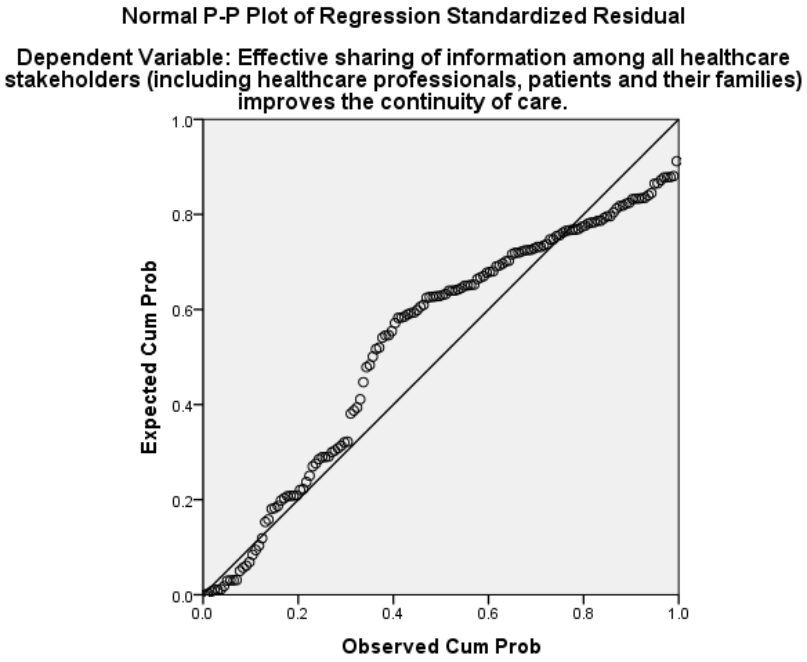
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 10.238 | 9 | 1.138 | 2.628 | .008[b] |
| | Residual | 60.596 | 140 | .433 | | |
| | Total | 70.833 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.657 | .423 | | 8.640 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.058 | .030 | -.171 | -1.945 | .054 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .164 | .167 | .089 | .978 | .330 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .009 | .006 | .140 | 1.522 | .130 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | .008 | .151 | .004 | .056 | .956 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .132 | .034 | .307 | 3.859 | .000 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.143 | .142 | -.089 | -1.005 | .317 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.005 | .038 | -.013 | -.142 | .887 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.012 | .045 | -.024 | -.276 | .783 | .787 | 1.270 |
| What is your approximate gross annual income? | -.002 | .046 | -.003 | -.037 | .971 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 25: Effective sharing of information among all healthcare stakeholders (including healthcare professionals, patients and their families) increases patient adherence with prescribed care plans**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .297[a] | .088 | .030 | .882 | .088 | 1.506 | 9 | 140 | .151 |

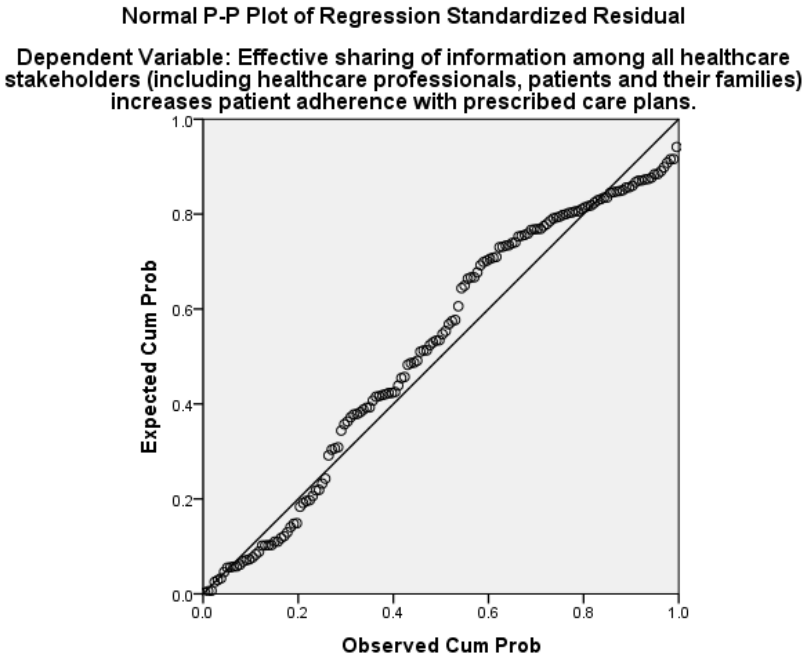
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 10.546 | 9 | 1.172 | 1.506 | .151[b] |
| | Residual | 108.947 | 140 | .778 | | |
| | Total | 119.493 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.765 | .568 | | 6.633 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.061 | .040 | -.138 | -1.526 | .129 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .356 | .224 | .149 | 1.588 | .115 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .003 | .008 | .032 | .342 | .733 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.120 | .203 | -.049 | -.591 | .555 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .113 | .046 | .202 | 2.459 | .015 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | -.149 | .190 | -.071 | -.782 | .435 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.038 | .052 | -.068 | -.729 | .467 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.029 | .060 | -.044 | -.484 | .629 | .787 | 1.270 |
| What is your approximate gross annual income? | -.077 | .061 | -.119 | -1.250 | .213 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 26: The coordination of care (including how information is shared, how problems are solved, how decisions are made, and how care is delivered) ultimately improves the continuity of care**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .337[a] | .113 | .056 | .700 | .113 | 1.990 | 9 | 140 | .045 |

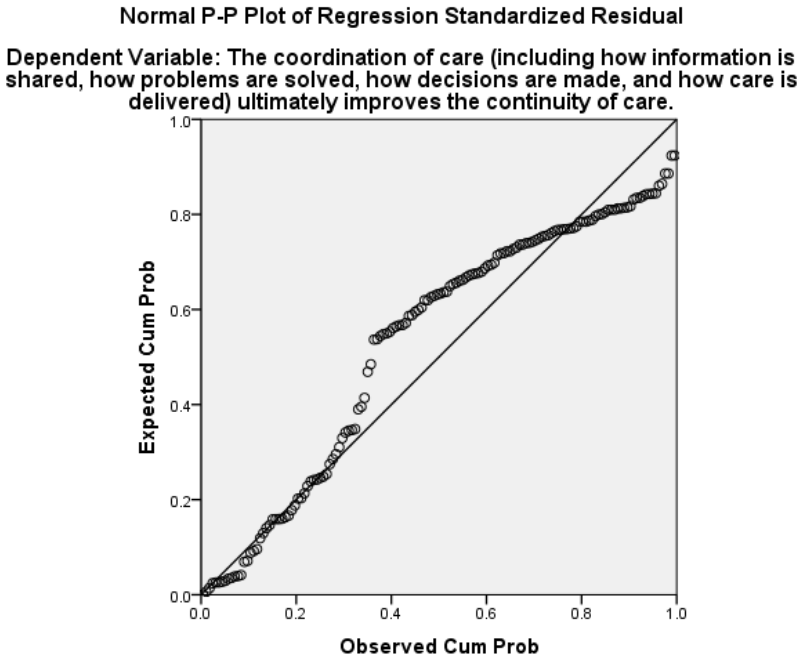
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 8.780 | 9 | .976 | 1.990 | .045[b] |
| | Residual | 68.614 | 140 | .490 | | |
| | Total | 77.393 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.788 | .450 | | 10.630 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.072 | .032 | -.201 | -2.251 | .026 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.060 | .178 | -.031 | -.335 | .738 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .004 | .006 | .063 | .677 | .499 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.288 | .161 | -.147 | -1.793 | .075 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .082 | .036 | .182 | 2.253 | .026 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.068 | .151 | -.040 | -.449 | .654 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.012 | .041 | -.026 | -.288 | .774 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.024 | .047 | -.045 | -.499 | .619 | .787 | 1.270 |
| What is your approximate gross annual income? | -.047 | .049 | -.090 | -.963 | .337 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 27: Poor care coordination can lead to medical complications, including medical errors and poor health outcomes**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .306[a] | .094 | .035 | .695 | .094 | 1.608 | 9 | 140 | .119 |

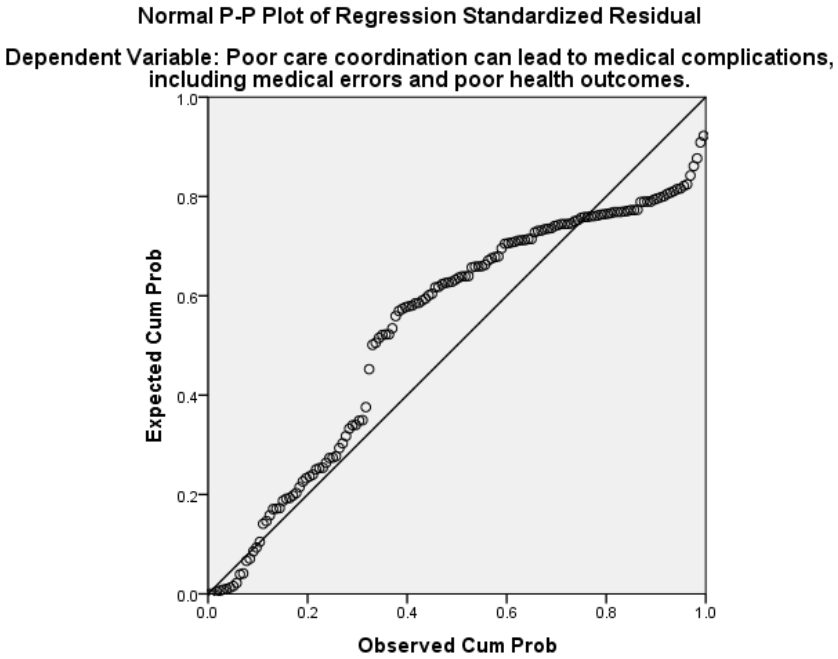
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.982 | 9 | .776 | 1.608 | .119[b] |
| | Residual | 67.558 | 140 | .483 | | |
| | Total | 74.540 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.221 | .447 | | 9.443 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.055 | .032 | -.156 | -1.728 | .086 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.076 | .177 | -.040 | -.432 | .666 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .007 | .006 | .110 | 1.160 | .248 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.086 | .159 | -.045 | -.538 | .591 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .097 | .036 | .219 | 2.678 | .008 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .021 | .150 | .013 | .141 | .888 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.043 | .041 | -.099 | -1.072 | .285 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .016 | .047 | .030 | .334 | .739 | .787 | 1.270 |
| What is your approximate gross annual income? | -.015 | .048 | -.029 | -.305 | .760 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 28: When all healthcare professionals clearly understand and appreciate the roles and responsibilities of other healthcare professionals, the delivery of patient care is improved**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .346[a] | .120 | .063 | .716 | .120 | 2.120 | 9 | 140 | .032 |

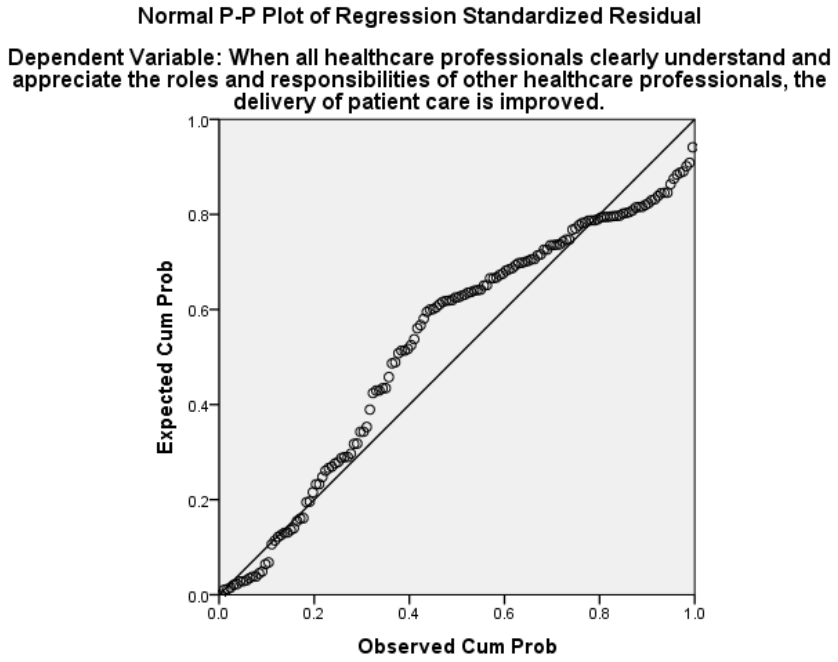
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 9.772 | 9 | 1.086 | 2.120 | .032[b] |
| | Residual | 71.721 | 140 | .512 | | |
| | Total | 81.493 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.482 | .461 | | 9.732 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.067 | .033 | -.184 | -2.058 | .041 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .054 | .182 | .027 | .294 | .769 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .005 | .006 | .082 | .880 | .380 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.256 | .164 | -.127 | -1.558 | .121 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .086 | .037 | .186 | 2.305 | .023 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .114 | .154 | .066 | .737 | .462 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .023 | .042 | .051 | .554 | .581 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.068 | .049 | -.125 | -1.398 | .164 | .787 | 1.270 |
| What is your approximate gross annual income? | -.116 | .050 | -.217 | -2.329 | .021 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 29: When different healthcare professionals, as well as patients and their families, are involved in solving problems and making decisions in healthcare, patients are more likely to adhere to prescribed care plans**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .281[a] | .079 | .020 | .778 | .079 | 1.337 | 9 | 140 | .223 |

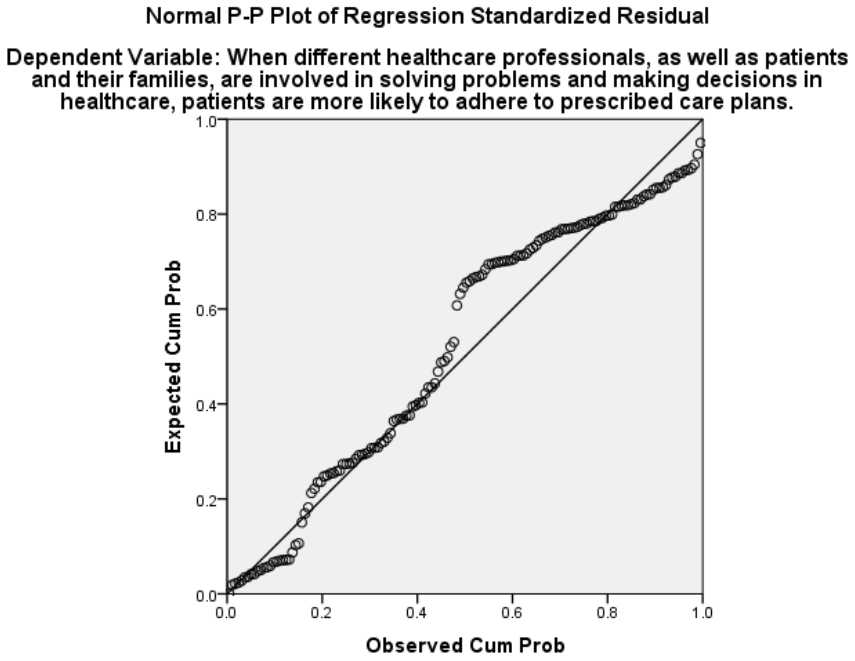
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 7.278 | 9 | .809 | 1.337 | .223[b] |
| | Residual | 84.695 | 140 | .605 | | |
| | Total | 91.973 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.997 | .500 | | 7.986 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.042 | .035 | -.108 | -1.187 | .237 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .007 | .198 | .003 | .033 | .974 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .005 | .007 | .067 | .704 | .482 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.214 | .179 | -.100 | -1.201 | .232 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .103 | .040 | .210 | 2.547 | .012 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .159 | .168 | .087 | .949 | .344 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.024 | .045 | -.049 | -.522 | .603 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.033 | .053 | -.058 | -.633 | .528 | .787 | 1.270 |
| What is your approximate gross annual income? | -.064 | .054 | -.112 | -1.178 | .241 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 30: When the continuity of care is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .299[a] | .089 | .031 | .701 | .089 | 1.527 | 9 | 140 | .144 |

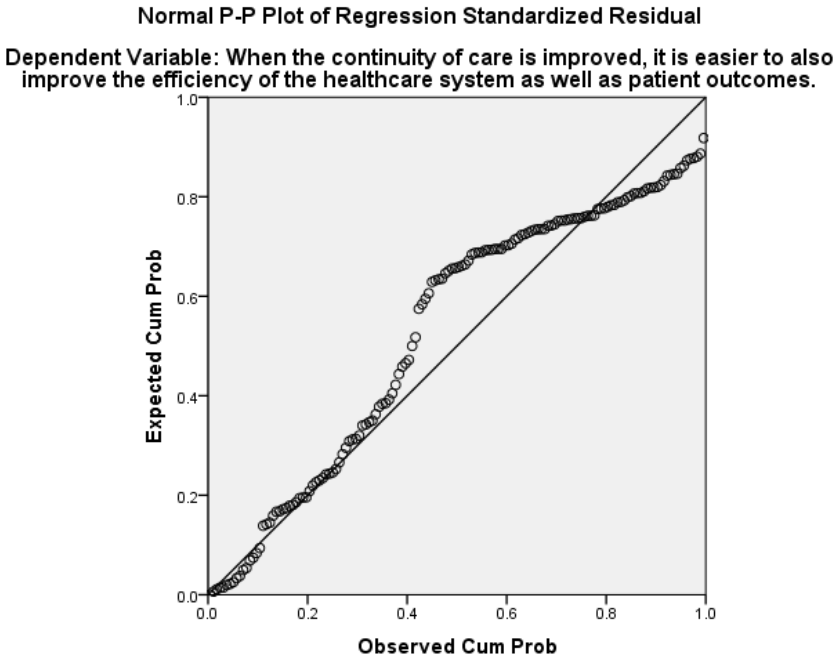
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.742 | 9 | .749 | 1.527 | .144[b] |
| | Residual | 68.698 | 140 | .491 | | |
| | Total | 75.440 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.709 | .451 | | 10.448 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.050 | .032 | -.142 | -1.561 | .121 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.040 | .178 | -.021 | -.226 | .822 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .007 | .006 | .115 | 1.215 | .226 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.051 | .161 | -.027 | -.319 | .750 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .068 | .036 | .154 | 1.876 | .063 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.073 | .151 | -.044 | -.484 | .629 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.038 | .041 | -.087 | -.937 | .350 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.034 | .048 | -.065 | -.717 | .475 | .787 | 1.270 |
| What is your approximate gross annual income? | -.106 | .049 | -.205 | -2.163 | .032 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 31: When patient adherence is improved, it is easier to also improve the efficiency of the healthcare system as well as patient outcomes**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .213[a] | .045 | -.016 | .792 | .045 | .737 | 9 | 140 | .675 |

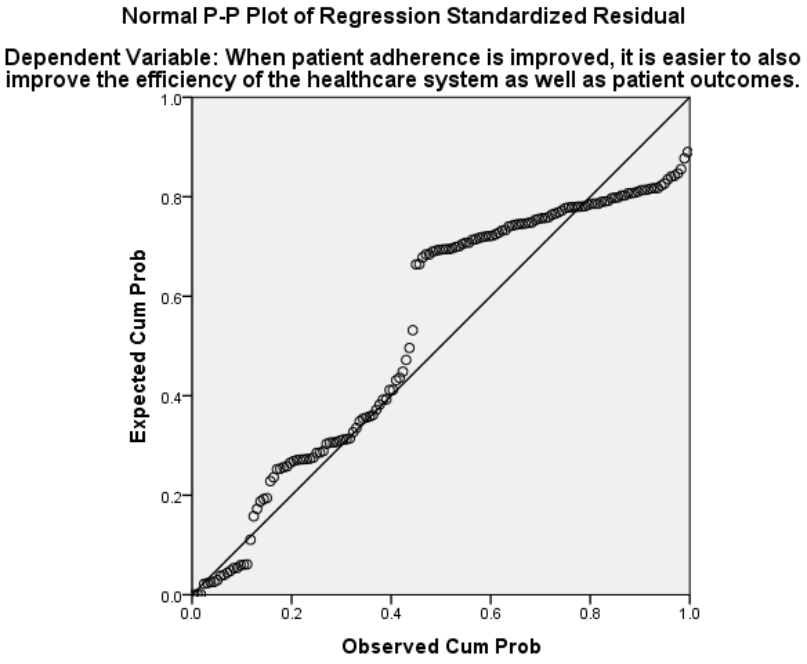
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.159 | 9 | .462 | .737 | .675[b] |
| | Residual | 87.841 | 140 | .627 | | |
| | Total | 92.000 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.462 | .510 | | 8.755 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.025 | .036 | -.064 | -.689 | .492 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.193 | .201 | -.092 | -.957 | .340 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .002 | .007 | .031 | .321 | .749 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.121 | .182 | -.057 | -.664 | .508 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .057 | .041 | .116 | 1.380 | .170 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .104 | .171 | .057 | .608 | .544 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.047 | .046 | -.096 | -1.012 | .313 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.022 | .054 | -.038 | -.408 | .684 | .787 | 1.270 |
| What is your approximate gross annual income? | .001 | .055 | .001 | .014 | .989 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 32: The interprofessional competencies (i.e. teams/teamwork, roles/responsibilities, values/ethics, and communication) are interrelated and act together to influence patient health and system outcomes**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .346[a] | .120 | .063 | .707 | .120 | 2.112 | 9 | 140 | .032 |

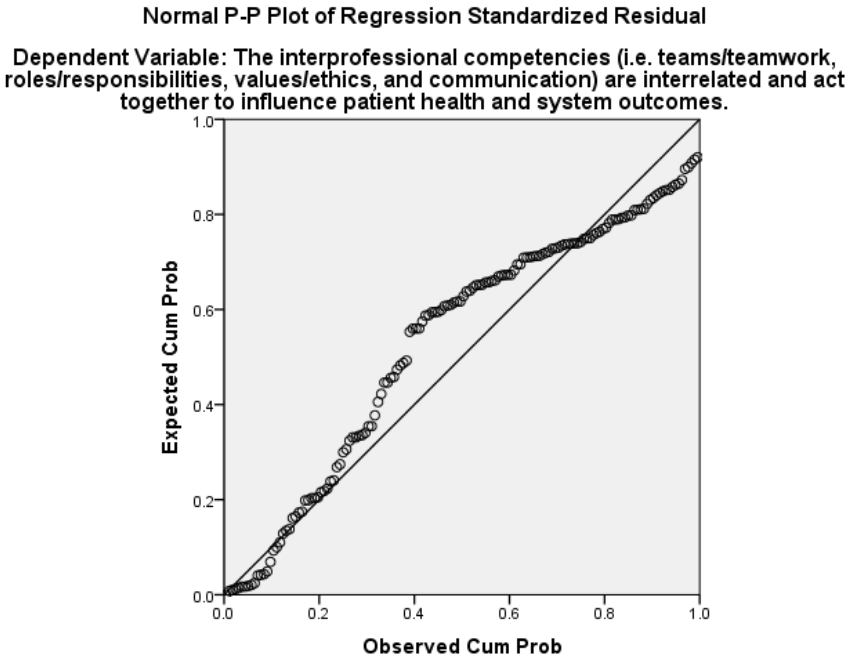
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 9.503 | 9 | 1.056 | 2.112 | .032[b] |
| | Residual | 69.997 | 140 | .500 | | |
| | Total | 79.500 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.190 | .455 | | 9.209 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.030 | .032 | -.084 | -.941 | .348 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.084 | .180 | -.043 | -.465 | .642 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .008 | .006 | .128 | 1.377 | .171 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.271 | .162 | -.137 | -1.671 | .097 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .119 | .037 | .261 | 3.243 | .001 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .076 | .152 | .044 | .496 | .620 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.033 | .041 | -.073 | -.803 | .424 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.003 | .048 | -.005 | -.056 | .956 | .787 | 1.270 |
| What is your approximate gross annual income? | -.077 | .049 | -.146 | -1.565 | .120 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 33: Institutional healthcare policies often influence how well different healthcare professionals can collaborate with each other and with patients and their families**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .217[a] | .047 | -.014 | .890 | .047 | .766 | 9 | 140 | .648 |

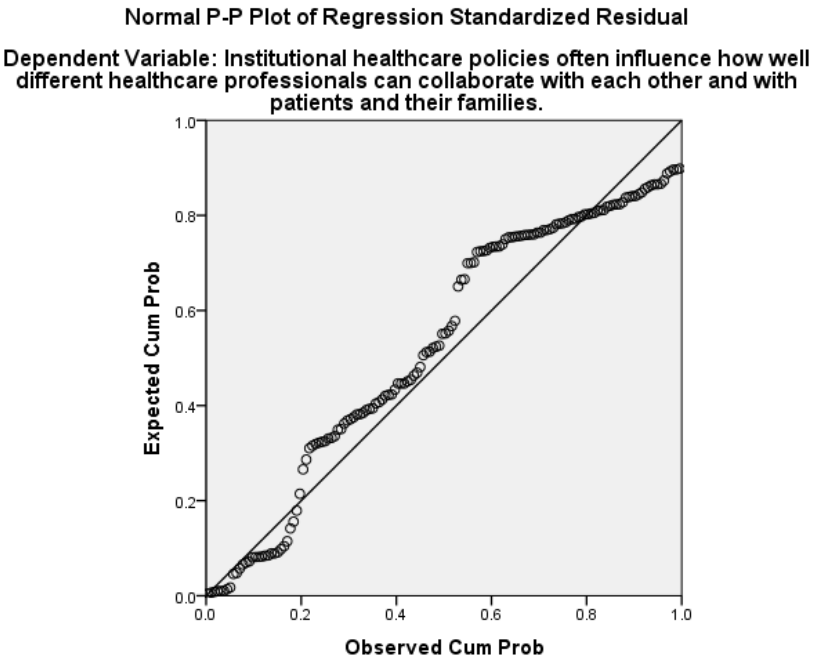
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.456 | 9 | .606 | .766 | .648[b] |
| | Residual | 110.837 | 140 | .792 | | |
| | Total | 116.293 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.512 | .572 | | 7.882 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.050 | .041 | -.115 | -1.239 | .217 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.094 | .226 | -.040 | -.416 | .678 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | -4.093E-6 | .008 | .000 | -.001 | 1.000 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.077 | .204 | -.032 | -.375 | .708 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .065 | .046 | .119 | 1.415 | .159 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | -.064 | .192 | -.031 | -.335 | .738 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.042 | .052 | -.077 | -.815 | .416 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .002 | .060 | .003 | .038 | .970 | .787 | 1.270 |
| What is your approximate gross annual income? | -.090 | .062 | -.140 | -1.446 | .150 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 34: Difficulties in sharing information between different healthcare professionals and the broader healthcare**

**system can make it easy for some patients to cheat the system (ex. shopping around for different doctors to get prescription pain medications)**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .227[a] | .052 | -.009 | .927 | .052 | .848 | 9 | 140 | .574 |

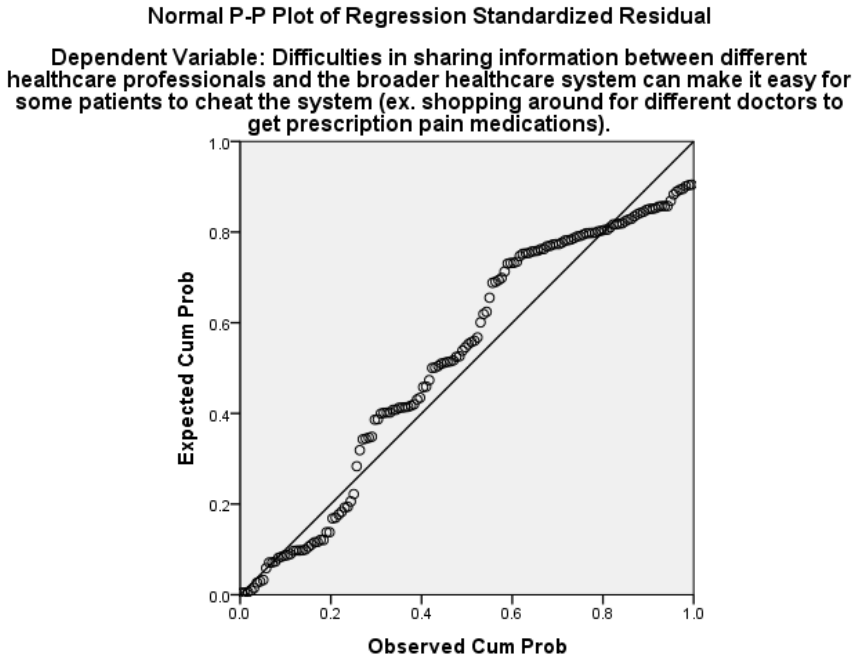
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.551 | 9 | .728 | .848 | .574[b] |
| | Residual | 120.223 | 140 | .859 | | |
| | Total | 126.773 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.134 | .596 | | 6.933 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.079 | .042 | -.173 | -1.864 | .064 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .046 | .236 | .019 | .195 | .845 | .742 | 1.348 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .007 | .008 | .081 | .839 | .403 | .722 | 1.384 |
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | .132 | .213 | .053 | .621 | .536 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .040 | .048 | .069 | .823 | .412 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.059 | .200 | -.027 | -.294 | .770 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.023 | .054 | -.041 | -.428 | .669 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.041 | .063 | -.061 | -.658 | .511 | .787 | 1.270 |
| What is your approximate gross annual income? | -.018 | .065 | -.027 | -.276 | .783 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 35: Inequalities in reimbursement and other institutional healthcare policies and laws can influence how well patient care is delivered**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .248[a] | .062 | .001 | .872 | .062 | 1.023 | 9 | 140 | .425 |

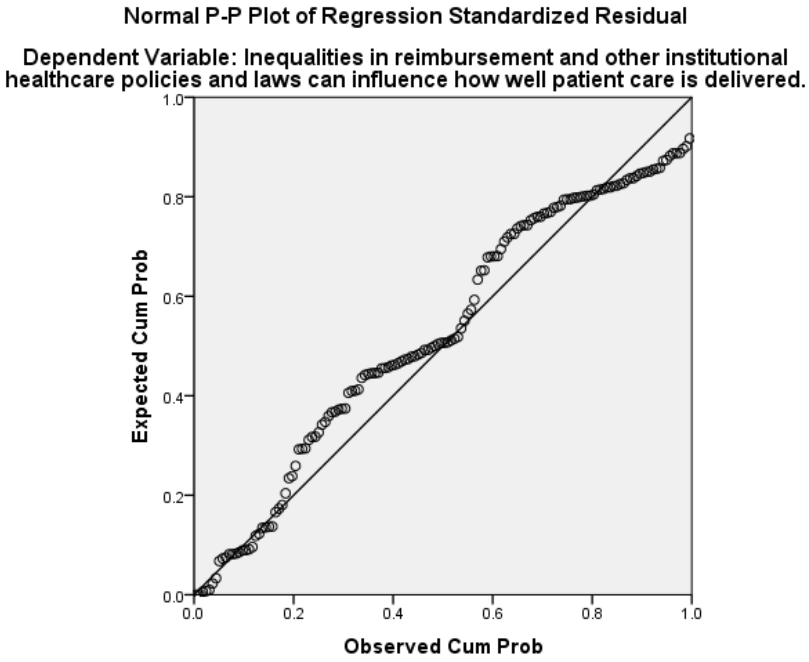
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.997 | 9 | .777 | 1.023 | .425[b] |
| | Residual | 106.397 | 140 | .760 | | |
| | Total | 113.393 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.750 | .561 | | 6.686 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.074 | .040 | -.172 | -1.868 | .064 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | -.052 | .222 | -.022 | -.233 | .816 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .008 | .007 | .109 | 1.129 | .261 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | .085 | .200 | .036 | .423 | .673 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .069 | .045 | .127 | 1.523 | .130 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | -.083 | .188 | -.041 | -.441 | .660 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .027 | .051 | .050 | .529 | .598 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .028 | .059 | .044 | .480 | .632 | .787 | 1.270 |
| What is your approximate gross annual income? | -.020 | .061 | -.032 | -.330 | .742 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 36: The lack of a supportive information technology/electronic health record system can often make it difficult to share information effectively with other healthcare professionals**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .282[a] | .080 | .021 | .831 | .080 | 1.347 | 9 | 140 | .218 |

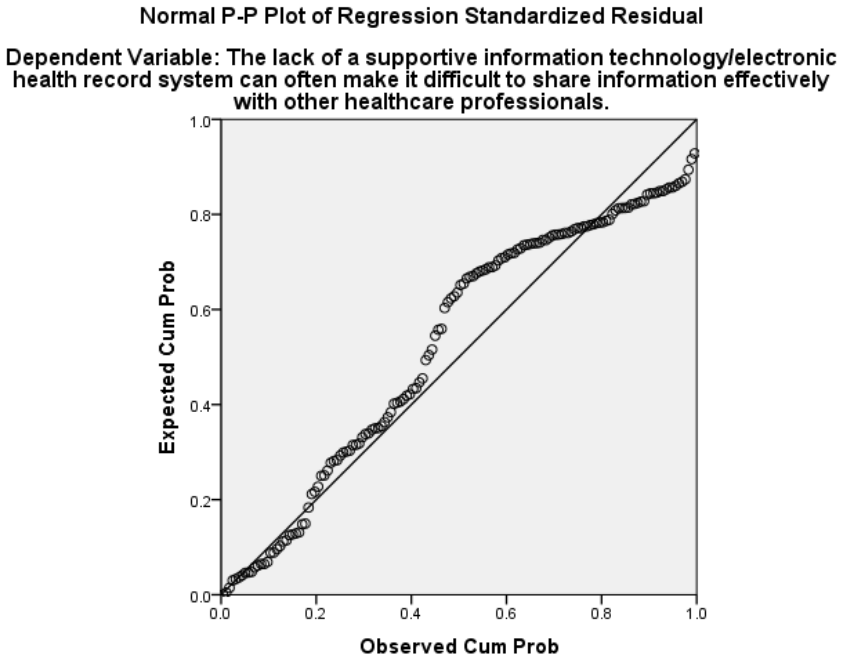
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 8.365 | 9 | .929 | 1.347 | .218[b] |
| | Residual | 96.629 | 140 | .690 | | |
| | Total | 104.993 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.200 | .535 | | 7.857 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.065 | .038 | -.157 | -1.725 | .087 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .235 | .211 | .105 | 1.112 | .268 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .005 | .007 | .065 | .684 | .495 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.214 | .191 | -.094 | -1.124 | .263 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .069 | .043 | .131 | 1.589 | .114 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.084 | .179 | -.043 | -.470 | .639 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .008 | .049 | .016 | .169 | .866 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.079 | .056 | -.128 | -1.404 | .162 | .787 | 1.270 |
| What is your approximate gross annual income? | .013 | .058 | .022 | .226 | .821 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 37: Disadvantaged patient populations face a lot of socioeconomic challenges (ex. low health literacy), which can limit how well they share information relevant to their care**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .242[a] | .059 | -.002 | .809 | .059 | .969 | 9 | 140 | .469 |

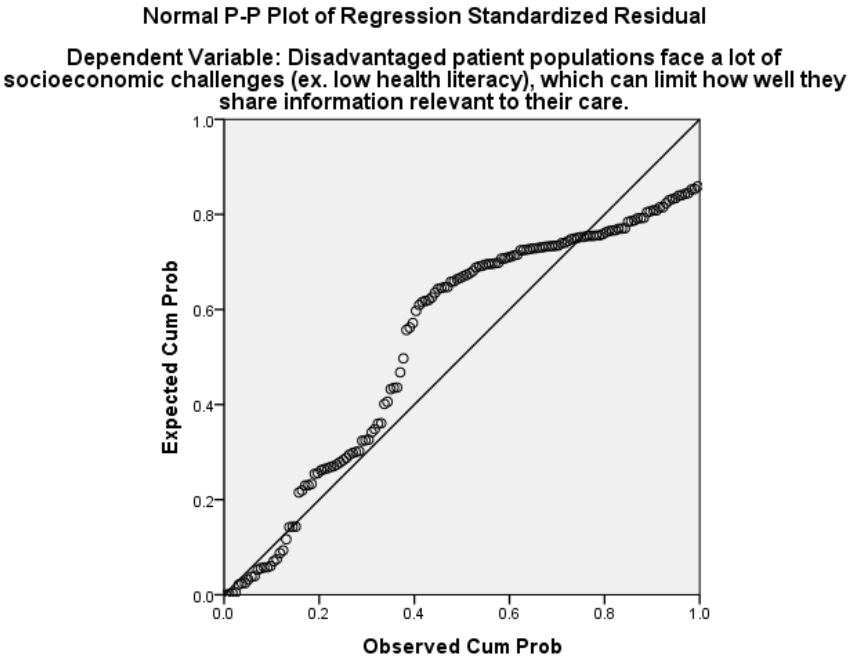
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 5.706 | 9 | .634 | .969 | .469[b] |
| | Residual | 91.628 | 140 | .654 | | |
| | Total | 97.333 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.223 | .521 | | 8.113 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.072 | .037 | -.181 | -1.962 | .052 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .105 | .206 | .048 | .508 | .612 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .007 | .007 | .095 | .988 | .325 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.096 | .186 | -.044 | -.517 | .606 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .015 | .042 | .030 | .364 | .716 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .357 | .174 | .189 | 2.048 | .042 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.019 | .047 | -.038 | -.398 | .692 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.013 | .055 | -.022 | -.242 | .809 | .787 | 1.270 |
| What is your approximate gross annual income? | -.024 | .056 | -.041 | -.424 | .672 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 38: Lack of resources within some healthcare facilities (ex. absence of language translation services, absence of healthcare professionals such as social workers, or long wait times due to large patient caseload volume) can create barriers to care for patients**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .319[a] | .102 | .044 | .623 | .102 | 1.768 | 9 | 140 | .079 |

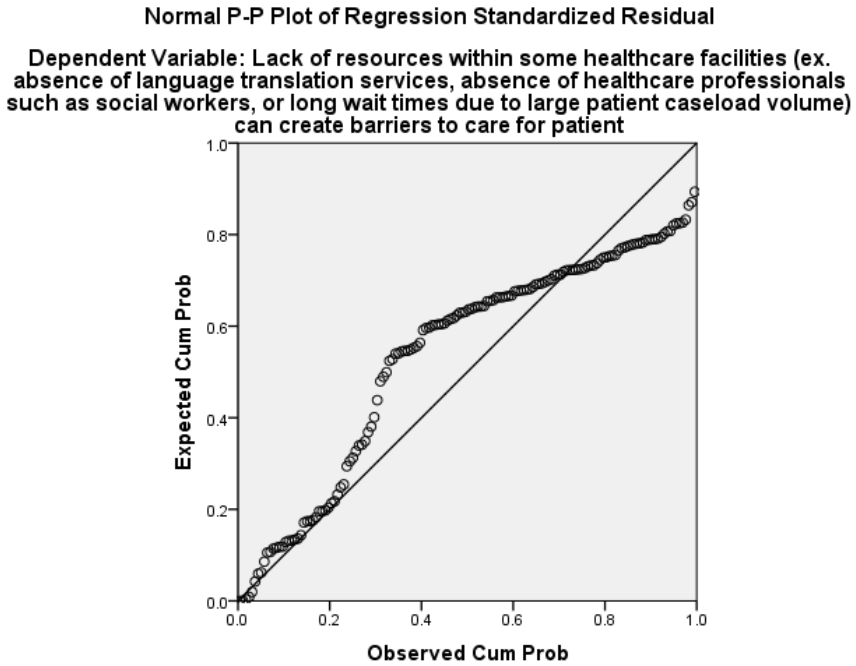
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.181 | 9 | .687 | 1.768 | .079[b] |
| | Residual | 54.379 | 140 | .388 | | |
| | Total | 60.560 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.749 | .401 | | 11.842 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.062 | .028 | -.198 | -2.194 | .030 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .040 | .159 | .023 | .249 | .803 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .009 | .005 | .162 | 1.716 | .088 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.337 | .143 | -.194 | -2.353 | .020 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .030 | .032 | .075 | .920 | .359 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .189 | .134 | .127 | 1.405 | .162 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.007 | .036 | -.017 | -.188 | .851 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .006 | .042 | .012 | .131 | .896 | .787 | 1.270 |
| What is your approximate gross annual income? | -.047 | .043 | -.102 | -1.088 | .279 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 39: Disparities in healthcare laws and policies can lead to poor care delivery (ex. Medicaid does not reimburse two primary care providers who see the same patient on the same day, even if they are from different healthcare professions, such as nursing practice...**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .238[a] | .057 | -.004 | .722 | .057 | .938 | 9 | 140 | .494 |

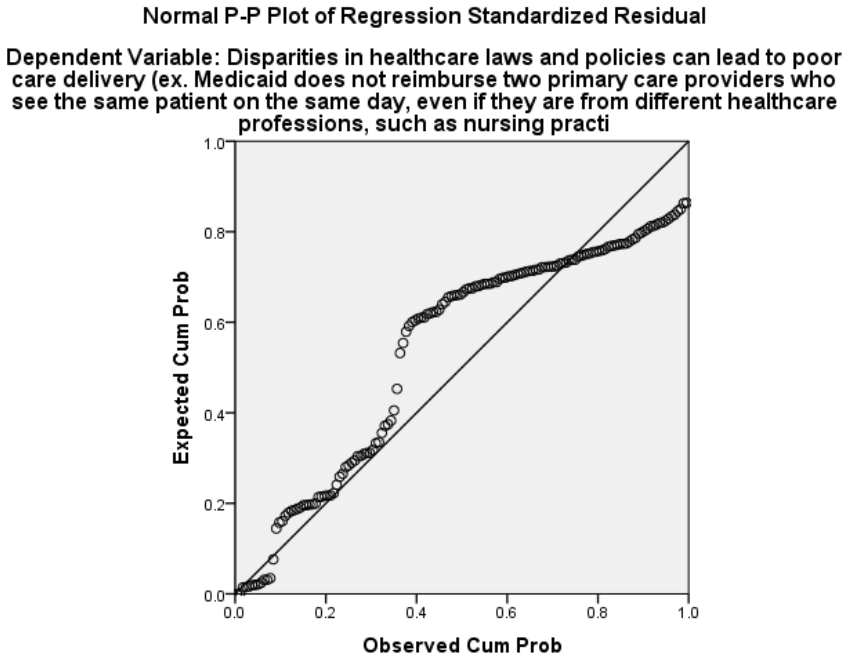
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.398 | 9 | .489 | .938 | .494[b] |
| | Residual | 72.936 | 140 | .521 | | |
| | Total | 77.333 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.482 | .464 | | 9.651 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.007 | .033 | -.019 | -.207 | .836 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .006 | .184 | .003 | .033 | .974 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .008 | .006 | .117 | 1.213 | .227 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.183 | .166 | -.094 | -1.107 | .270 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .041 | .038 | .092 | 1.101 | .273 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .072 | .156 | .043 | .465 | .643 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.005 | .042 | -.011 | -.114 | .910 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.077 | .049 | -.146 | -1.575 | .117 | .787 | 1.270 |
| What is your approximate gross annual income? | .007 | .050 | .013 | .135 | .893 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 40: Disparities in healthcare laws and policies can lead to the fragmentation of care (ex. the law requires emergency care for all patient, but does not require preventive or chronic care for all patients, leading to fragmentation of care from one setting to...**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .231[a] | .053 | -.008 | .742 | .053 | .873 | 9 | 140 | .551 |

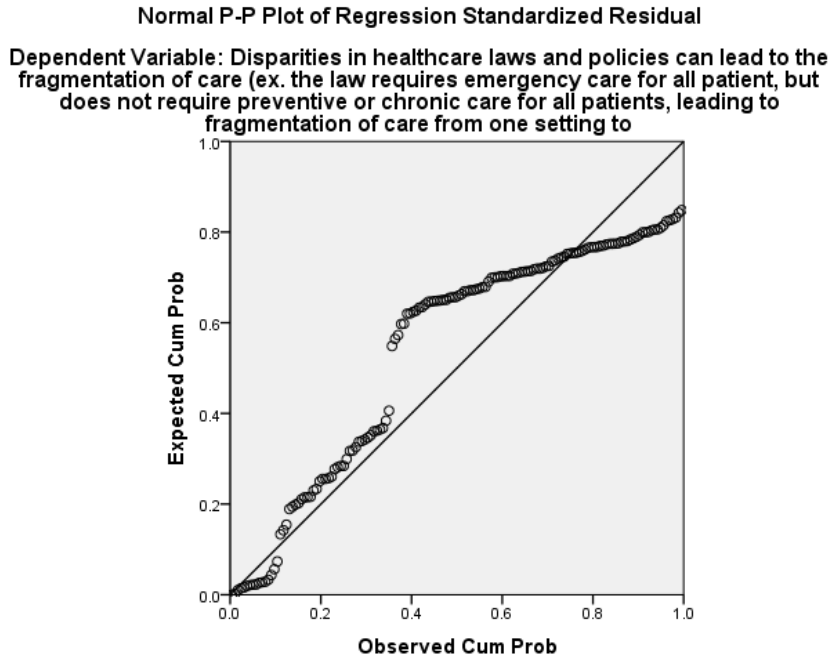
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 4.326 | 9 | .481 | .873 | .551[b] |
| | Residual | 77.067 | 140 | .550 | | |
| | Total | 81.393 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.317 | .477 | | 9.042 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.042 | .034 | -.116 | -1.255 | .212 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .205 | .189 | .104 | 1.085 | .280 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .008 | .006 | .125 | 1.296 | .197 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.183 | .170 | -.091 | -1.072 | .286 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .049 | .039 | .107 | 1.278 | .204 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .091 | .160 | .053 | .569 | .571 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.053 | .043 | -.115 | -1.217 | .226 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .000 | .050 | -.001 | -.008 | .994 | .787 | 1.270 |
| What is your approximate gross annual income? | -.037 | .052 | -.070 | -.724 | .470 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 41: The lack of empathy towards disadvantaged patient populations (ex. the stigma of poverty) can be a barrier to how well information is shared with patients and their families during the coordination of care**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .356[a] | .127 | .071 | .936 | .127 | 2.257 | 9 | 140 | .022 |

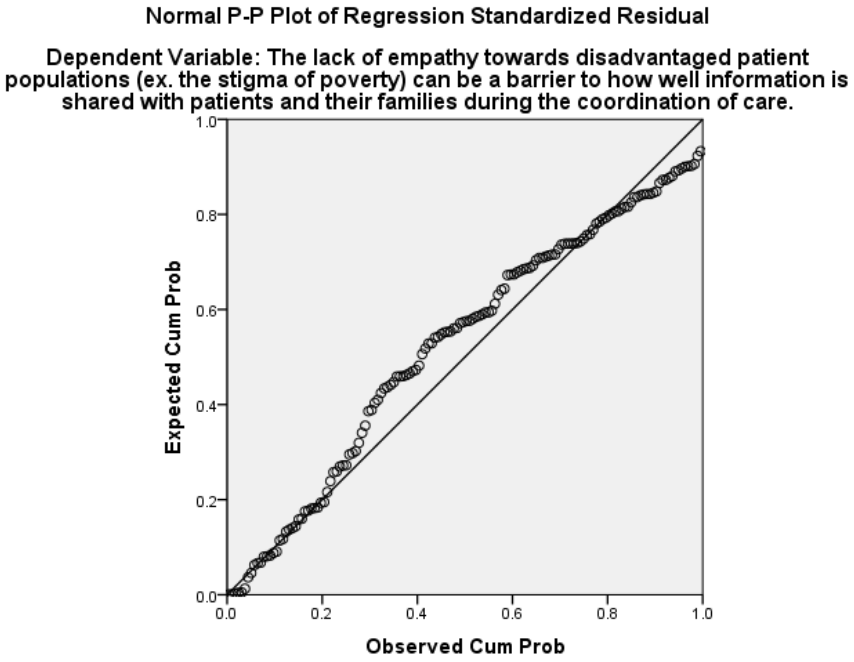
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 17.813 | 9 | 1.979 | 2.257 | .022[b] |
| | Residual | 122.780 | 140 | .877 | | |
| | Total | 140.593 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.675 | .603 | | 6.099 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.117 | .043 | -.244 | -2.752 | .007 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .474 | .238 | .182 | 1.988 | .049 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .002 | .008 | .022 | .241 | .810 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.414 | .215 | -.157 | -1.925 | .056 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .080 | .049 | .132 | 1.639 | .103 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .178 | .202 | .078 | .880 | .380 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .043 | .055 | .072 | .795 | .428 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .033 | .064 | .046 | .519 | .605 | .787 | 1.270 |
| What is your approximate gross annual income? | -.102 | .065 | -.145 | -1.559 | .121 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 42: Disadvantaged patient populations face a lot of socioeconomic challenges (ex. inability to purchase medications, lack of transportation), which can limit their adherence to prescribed care plans**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .202[a] | .041 | -.021 | .762 | .041 | .662 | 9 | 140 | .742 |

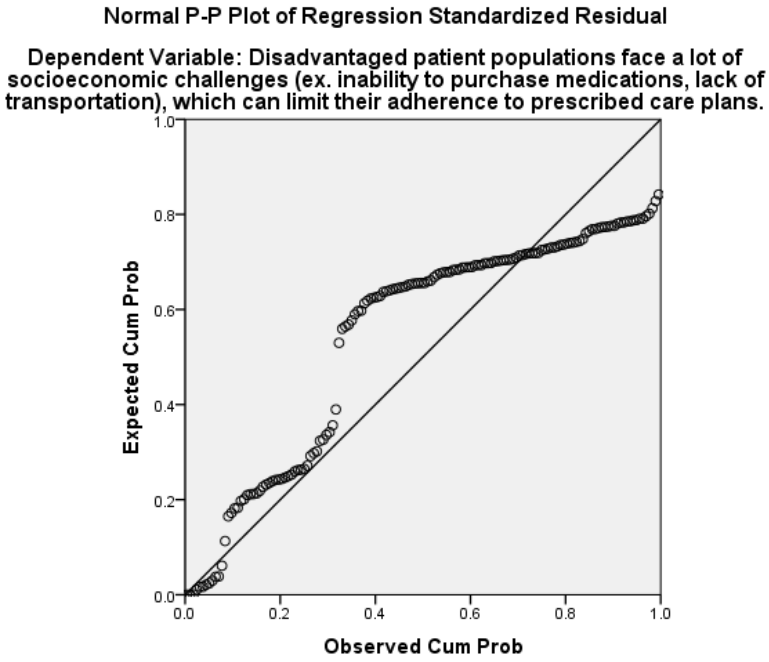
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 3.464 | 9 | .385 | .662 | .742[b] |
| | Residual | 81.369 | 140 | .581 | | |
| | Total | 84.833 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.118 | .491 | | 8.396 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.025 | .035 | -.068 | -.729 | .467 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .109 | .194 | .054 | .561 | .576 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .005 | .007 | .079 | .813 | .418 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.158 | .175 | -.077 | -.902 | .369 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .044 | .040 | .094 | 1.112 | .268 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .207 | .164 | .117 | 1.259 | .210 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.005 | .045 | -.011 | -.119 | .906 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.039 | .052 | -.070 | -.753 | .453 | .787 | 1.270 |
| What is your approximate gross annual income? | .023 | .053 | .041 | .426 | .671 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 43: Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit their adherence to prescribed care plans**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .304[a] | .093 | .034 | .982 | .093 | 1.587 | 9 | 140 | .125 |

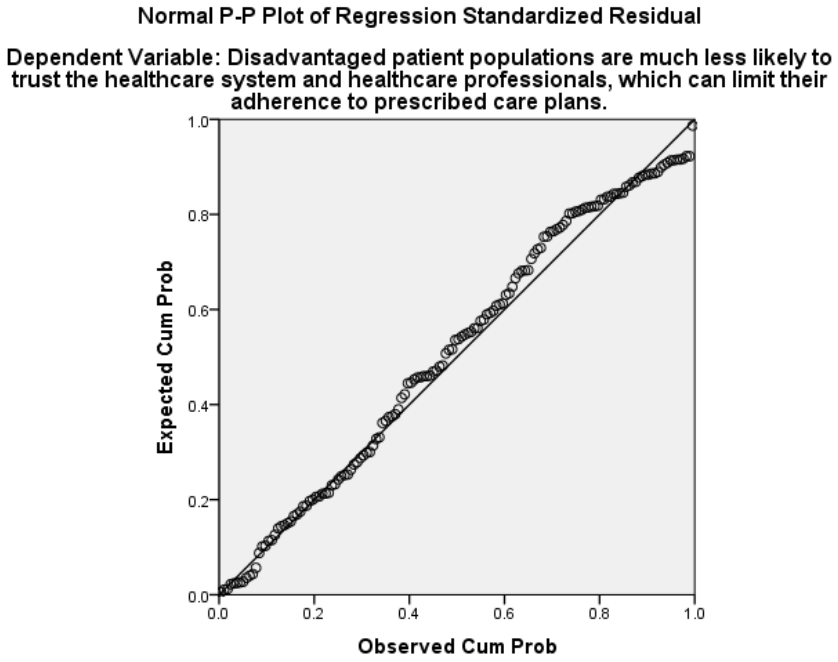
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 13.764 | 9 | 1.529 | 1.587 | .125[b] |
| | Residual | 134.929 | 140 | .964 | | |
| | Total | 148.693 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.082 | .632 | | 4.879 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.078 | .045 | -.157 | -1.735 | .085 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .097 | .250 | .036 | .387 | .700 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | -.008 | .008 | -.093 | -.983 | .328 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.126 | .225 | -.046 | -.560 | .576 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .113 | .051 | .182 | 2.220 | .028 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .289 | .212 | .124 | 1.364 | .175 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .033 | .057 | .054 | .584 | .560 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.011 | .067 | -.014 | -.158 | .875 | .787 | 1.270 |
| What is your approximate gross annual income? | -.048 | .068 | -.067 | -.707 | .481 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 44: Disadvantaged patient populations are much less likely to trust the healthcare system and healthcare professionals, which can limit how much they share information relevant to their care**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .396[a] | .157 | .103 | .981 | .157 | 2.897 | 9 | 140 | .004 |

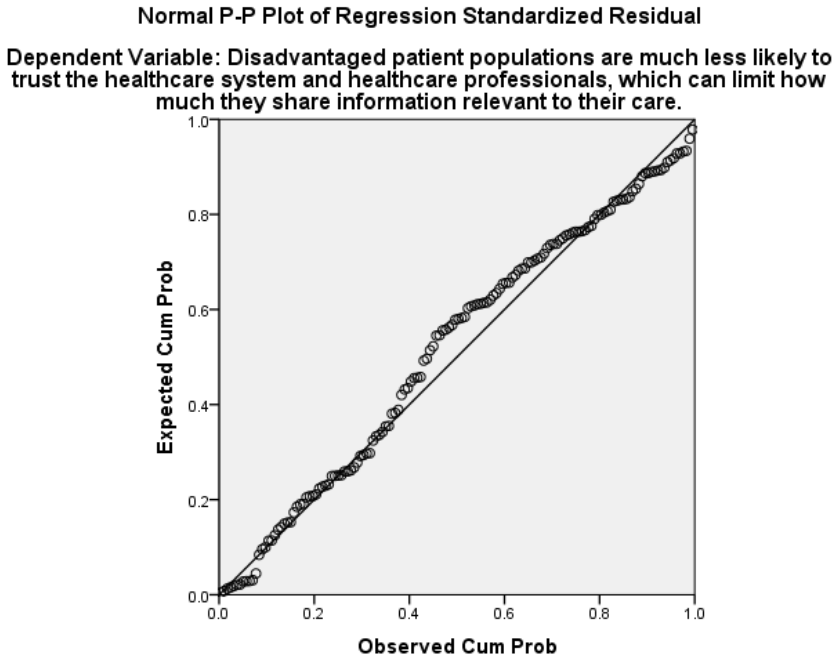
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 25.112 | 9 | 2.790 | 2.897 | .004[b] |
| | Residual | 134.861 | 140 | .963 | | |
| | Total | 159.973 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 2.808 | .631 | | 4.447 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.129 | .045 | -.252 | -2.888 | .004 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .436 | .250 | .157 | 1.747 | .083 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | -.004 | .008 | -.046 | -.506 | .614 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.399 | .225 | -.142 | -1.770 | .079 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .127 | .051 | .196 | 2.489 | .014 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .366 | .212 | .151 | 1.729 | .086 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .043 | .057 | .067 | .755 | .452 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .029 | .067 | .037 | .429 | .669 | .787 | 1.270 |
| What is your approximate gross annual income? | -.025 | .068 | -.033 | -.363 | .717 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 45: Disadvantaged patient populations often do not have the expectation that it is normal for different healthcare professionals to be collaborating with each other and with them and their families**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .286[a] | .082 | .023 | 1.097 | .082 | 1.386 | 9 | 140 | .200 |

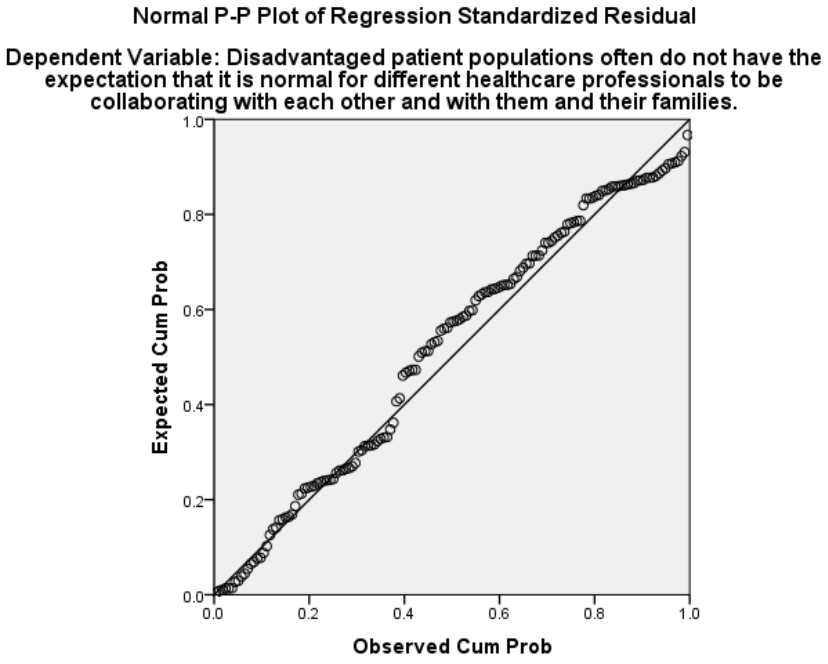
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 14.998 | 9 | 1.666 | 1.386 | .200[b] |
| | Residual | 168.336 | 140 | 1.202 | | |
| | Total | 183.333 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 3.192 | .706 | | 4.525 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.027 | .050 | -.050 | -.549 | .584 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .247 | .279 | .083 | .884 | .378 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .003 | .009 | .028 | .293 | .770 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.168 | .252 | -.056 | -.666 | .506 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .103 | .057 | .149 | 1.816 | .071 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .169 | .236 | .065 | .713 | .477 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.087 | .064 | -.127 | -1.361 | .176 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | .031 | .074 | .038 | .419 | .676 | .787 | 1.270 |
| What is your approximate gross annual income? | -.158 | .076 | -.197 | -2.066 | .041 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 46: Disadvantaged patient populations often present with complex problems (ex. numerous social issues, advanced stages of disease), which can make it difficult to achieve optimal health outcomes for them**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .327[a] | .107 | .050 | .869 | .107 | 1.865 | 9 | 140 | .062 |

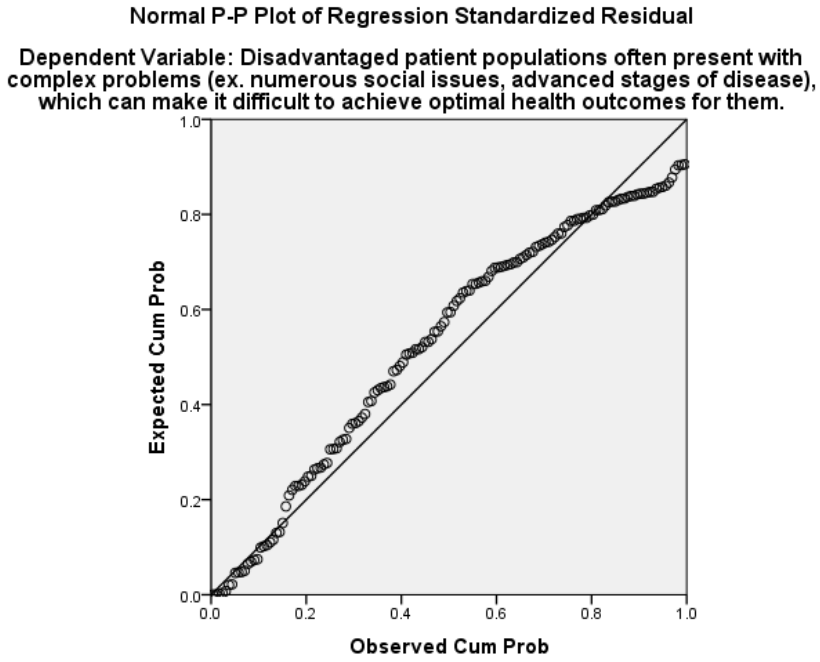
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 12.663 | 9 | 1.407 | 1.865 | .062[b] |
| | Residual | 105.610 | 140 | .754 | | |
| | Total | 118.273 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.674 | .559 | | 8.365 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.112 | .040 | -.255 | -2.839 | .005 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .071 | .221 | .030 | .323 | .747 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .013 | .007 | .162 | 1.727 | .086 | .722 | 1.384 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.320 | .199 | -.132 | -1.607 | .110 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .051 | .045 | .092 | 1.128 | .261 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | .086 | .187 | .041 | .459 | .647 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .016 | .051 | .030 | .325 | .745 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.057 | .059 | -.087 | -.968 | .335 | .787 | 1.270 |
| What is your approximate gross annual income? | -.094 | .060 | -.146 | -1.549 | .124 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 47: I believe that interprofessional collaboration should be used as a tool to tackle disparities in health and healthcare**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .281[a] | .079 | .020 | .722 | .079 | 1.330 | 9 | 140 | .227 |

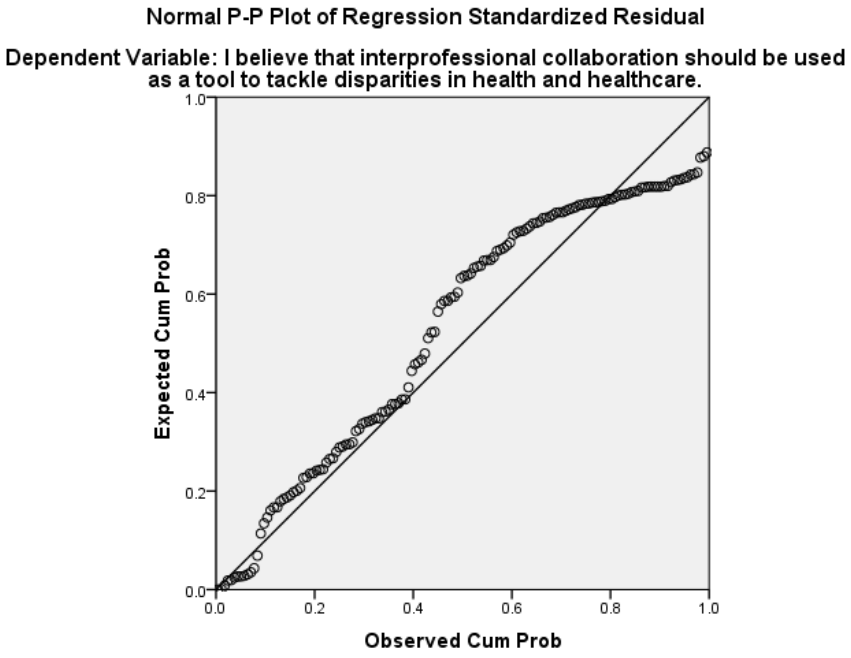
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 6.236 | 9 | .693 | 1.330 | .227[b] |
| | Residual | 72.938 | 140 | .521 | | |
| | Total | 79.173 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.248 | .464 | | 9.147 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.031 | .033 | -.086 | -.942 | .348 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .014 | .184 | .007 | .074 | .941 | .742 | 1.348 |
| | How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .015 | .006 | .231 | 2.425 | .017 | .722 | 1.384 |
| | Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.109 | .166 | -.055 | -.658 | .512 | .941 | 1.063 |
| | One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .039 | .038 | .085 | 1.034 | .303 | .968 | 1.033 |
| | Do you use an electronic health record system in your daily work tasks? | .170 | .156 | .100 | 1.094 | .276 | .786 | 1.272 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Which one of the following healthcare delivery models best applies to your primary practice setting? | .024 | .042 | .054 | .573 | .568 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.033 | .049 | -.062 | -.683 | .496 | .787 | 1.270 |
| What is your approximate gross annual income? | -.100 | .050 | -.191 | -1.999 | .048 | .723 | 1.384 |




**Results of Regression Analyses for Outcome Variable 48: I believe that improvements in patient outcomes and system efficiency will further motivate**

**healthcare professionals to work more collaboratively with patients and their families**

**Model Summary[b]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate | Change Statistics | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | R Square Change | F Change | df1 | df2 | Sig. F Change |
| 1 | .310[a] | .096 | .038 | .734 | .096 | 1.648 | 9 | 140 | .107 |

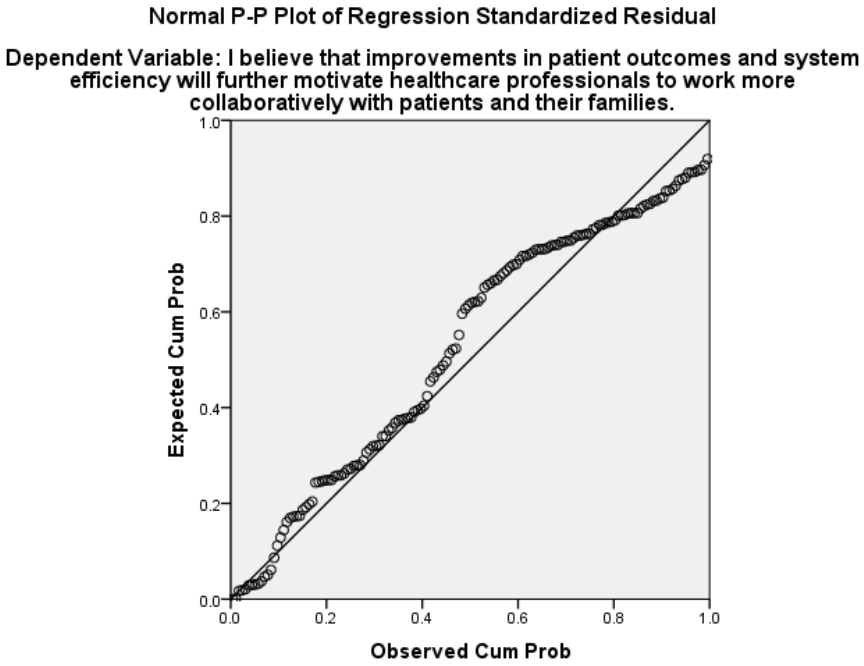
**ANOVA[a]**

| Model | | Sum of Squares | df | Mean Square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 7.984 | 9 | .887 | 1.648 | .107[b] |
| | Residual | 75.356 | 140 | .538 | | |
| | Total | 83.340 | 149 | | | |

**Coefficients[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Tolerance | VIF |
| 1 | (Constant) | 4.743 | .472 | | 10.049 | .000 | | |
| | Which of the following best describes your healthcare profession? | -.025 | .033 | -.067 | -.737 | .462 | .790 | 1.265 |
| | Have you been actively involved in patient care for at least 6 months since completing your healt... | .135 | .187 | .068 | .725 | .470 | .742 | 1.348 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| How many years have you worked as a healthcare professional serving urban, socioeconomically disa... | .010 | .006 | .146 | 1.542 | .125 | .722 | 1.384 |
| Have you ever attended or participated in an interprofessional education, practice, session, lect... | -.318 | .168 | -.156 | -1.886 | .061 | .941 | 1.063 |
| One a scale of 1-10, 10 being the highest level of satisfaction and 1 being the lowest, what is y... | .046 | .038 | .098 | 1.205 | .230 | .968 | 1.033 |
| Do you use an electronic health record system in your daily work tasks? | -.008 | .158 | -.005 | -.050 | .960 | .786 | 1.272 |
| Which one of the following healthcare delivery models best applies to your primary practice setting? | -.007 | .043 | -.016 | -.171 | .864 | .753 | 1.328 |
| What type of healthcare system practice do you predominantly work in? Please select only one. | -.070 | .050 | -.127 | -1.405 | .162 | .787 | 1.270 |
| What is your approximate gross annual income? | -.124 | .051 | -.230 | -2.433 | .016 | .723 | 1.384 |


Normal P-P Plot of Regression Standardized Residual
Dependent Variable: I believe that improvements in patient outcomes and system efficiency will further motivate healthcare professionals to work more collaboratively with patients and their families.
Expected Cum Prob
Observed Cum Prob
0.0
0.2
0.4
0.6
0.8
1.0