# EXPLORING THE INFORMATION PRACTICES OF CANNABIS NURSES

By

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ABSTRACT OF THE DISSERTATION

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As the therapeutic use of cannabis increases, Americans are turning to nurses as sources of information about the safe and effective therapeutic use of cannabis. This study uses qualitative methods to explore how 31 highly educated and experienced American nurses used information practices to connect and interact with sources of cannabis information. By answering the question "What are information practices of cannabis nurses?," the study addresses an unexplored gap in the research conversation among information scientists, nurse educators, and medicinal cannabis researchers. The aim of this study is to better understand cognitive authority and to examine how these nurses used information practices to learn how to be cannabis nurses. The study design used the McKenzie Information Practices Model (MIP) for data collection and analysis. The MIP model helped produce a rich description of the information practices of cannabis nurses. Findings show that cannabis nurses are using their information practices to locate cognitive authorities—that is, sources of secondhand knowledge whose facts and data about cannabis the nurses believed to be true. Findings also indicate that the nurses' information practices create serendipitous social situations where they could reveal themselves as possible cognitive authorities for other cannabis information seekers. The

analysis also produced findings concerning the barriers to learning the nurses encountered and their shared interpretative repertories—especially regarding the continued stigma against cannabis use. In addition, findings indicate, the cannabis nurses are acting as boundary spanners and peripheral specialists in the adoption of cannabis as a radical innovation in mainstream healthcare. This analysis also revealed the absence of cannabis care–specific information technology and decision support systems and the development of a network of practice. The implications are that cannabis nurses may be normalizing cannabis for their colleagues, a dynamic that may be leading to the adoption of cannabis therapeutics in mainstream medicine.

*Keywords:* boundary spanner, cannabis care, cannabis nurses, cognitive authority, firsthand experience, information grounds, information practices, information seeking, information work, network of practice, secondhand knowledge, social practices

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# CHAPTER ONE

# INTRODUCTION

> *I really saw that patients in my area were making use of cannabis but had no idea where to begin. Some of them were interested but didn't have any idea where to start. Some were using and didn't really have any idea if what they were doing was right. They weren't getting any benefits. So, I really just saw the need and I'm a nurse educator, so I started incorporating education in the classes that I taught for oncology and that really sparked a ton of interest.* —Mickey, MSN nurse educator

This dissertation explores the information practices of cannabis nurses in the United States as they learn how to incorporate cannabis therapeutics into the nursing profession. For purposes of this study, "cannabis therapeutics" refers to the emerging field of science and research that deals specifically with the treatment and methods of application involved in using medicinal cannabis products to remediate, cure, and heal human health conditions and disease (American Cannabis Nurses Association [ACNA], 2019). Cannabis is currently a Schedule I restricted drug at the federal level. Since the 1970s, prohibition of cannabis in America, especially for medical purposes, has been repeatedly and successfully challenged. Eleven states have legalized both medical and recreational cannabis; more states are considering this move, while 13 states and scores of cities and municipalities have also decriminalized cannabis. Since the loosening of regulations, a vast number of new cannabis products and methods of application have become available to the public; however, a hodgepodge of different state and local rules regarding its cultivation, production, and consumption exist. Current and potential medical cannabis patients are therefore either overwhelmed by the number of product choices available or restricted in what they can purchase based on where they reside. These people are understandably turning to their healthcare providers for information and

guidance on what products to try and how to incorporate cannabis therapeutics into their lives (de Vries & Green, 2012; Green & de Vries, 2010). Ziemianski et al. (2015) assert that healthcare providers must be involved in the patient's decision to use cannabis and should play a key role in determining which strain, product, or method of ingestion is optimal. Researchers, however, report that healthcare providers lack the knowledge and experience needed to advise their patients about how to use cannabis therapeutics products safely and effectively (Bostwick, 2012; Ziemianski et al., 2015). This conundrum between the public's demand for sources of trusted information about cannabis therapeutics and the healthcare provider's struggle to gain the needed experience and knowledge about cannabis therapeutics is a result of barriers that are impeding the adoption of cannabis therapeutics as an innovation for improving health outcomes.

The following section traces the history of cannabis therapeutics, discusses its historical and current legal status in the United States, and introduces some of the barriers to adoption of its medicinal and therapeutic use. Barriers keeping healthcare providers from learning about cannabis, including social stigma and lack of knowledge, are addressed, and the role of professional nursing associations is elucidated. The section closes with a discussion of the role nurses are playing in the adoption of cannabis therapeutics.

## Cannabis Therapeutics—Part of Human History

The human–cannabis connection can be traced to human pre-history, when the cannabis plant was cultivated primarily to make fabric, fiber, and cordage. Early human cultures also recognized the medicinal properties of cannabis; one such culture was that

of the Chinese, who were the first to include cannabis in their written pharmacopeia (Mack & Joy, 2000). By 700 CE, cannabis had made its way into the Arab world, where Sufi mystics embraced cannabis for ritualistic and meditative purposes. Medieval Arab doctors considered hashish, the Arabic word for cannabis, to be sacred medicine (Rosenthal, 2014). When the French, Dutch, and English arrived in Northern and Central Africa in the 15th century, they found that the use of cannabis for medicinal, ritual, and narcotic purposes was well established among the populations.

Europeans and Americans were not widely aware of the therapeutic qualities of cannabis until 1841, when cannabis was introduced to England by Dr. William O'Shaughnessy (Langdon, 2016). O'Shaughnessy become one of many 19th-century entrepreneurs to create cannabis therapeutics; his popular concoction, called Squire's Extract, was prescribed for all kinds of chronic medical conditions (Langdon, 2016). Cannabis therapeutics were widely available both prescription, in homemade form, and over the counter, as were many plant-based medicines popular during the 19th century (Aldrich, 2016). As the use of cannabis therapeutics spread throughout Europe and the North America, the plant's medicinal qualities become of great interest to scientists (Aldrich & Mathre, 1997; Pisanti & Bifulco, 2017). Indeed, there exists a rich history of scientific research on the therapeutic benefits of cannabis. In fact, between 1839 and 1900, more than 100 articles about the therapeutic benefits of cannabis were published in scientific journals (Grinspoon, 1971). This period has been called the "Golden Age of Cannabis Research" by Pisanti and Bifulco (2017). (For a detailed history of cannabis, please see Appendix A.)

**Cannabis Prohibition Begins**

Toward the end of the 19th century, new drugs such as aspirin and morphine became popular, which essentially halted scientific research into the medicinal qualities of cannabis (Mack & Joy, 2000). It was also at this time that cannabis began to be called "marijuana," and it fell into the crosshairs of the American temperance movement. Cannabis as hemp also drew the ire of corporate interests in the paper, fuel, and fiber industries. What resulted was an all-out campaign to prohibit the cultivation and use of cannabis and cannabis products of all kinds (Warf, 2014). Beginning in the early 1900s and urged on by the temperance movement, corporate titans spearheaded political efforts to ban the cultivation and use of cannabis as marijuana in several U.S. states and localities (Rasmusson, 2014). The collective activism to outlaw cannabis bore fruit when the Marijuana Tax Act was passed in 1937. This legislation, which went against the advice of the American Medical Association, essentially prohibited the cultivation, production, and possession of cannabis and cannabis-based products, including medicines, in the United States (Rasmusson, 2014). In 1942, the prohibition against cannabis was made even stricter when the cultivation, production, or possession of cannabis in any form for any purpose was made a criminal offense.

Cannabis was further targeted for restriction in 1970, when, at the urging of President Richard Nixon, the United States Congress passed the Controlled Substances Act. This legislation listed cannabis in both its hemp and marijuana forms as a Schedule I drug. Schedule I drugs such as heroin, LSD, and Ecstasy are defined as having a high potential for abuse, having no currently accepted medicinal use, and lacking an acceptable level of safety for their use without medical supervision (U.S. Drug

Enforcement Administration, n.d.). Cannabis was placed (and still remains) on the Schedule I list despite the recommendations of the government-sanctioned Shafer Commission who, in 1972, called for the decriminalization of cannabis, saying that cannabis posed negligible risk to the health and well-being of U.S. citizens (Langdon, 2016). The 2018 Farm Bill did remove cannabis as hemp (defined as having less than .03% THC) from the Schedule I list, and hemp is now legal to cultivate, produce, and possess in the United States.

**Cannabis Therapeutics Make a Comeback in America**

States began to loosen restrictions on cannabis in 1973, when Oregon decriminalized the sale of marijuana. The legal use of cannabis therapeutics in the United States was officially re-established in 1996, when California permitted the cultivation and sale of cannabis for medicinal purposes. As of 2020, 33 U.S. states have legalized medical cannabis, and more states are considering the measure. Eleven states (Alaska, California, Colorado, Illinois, Nevada, Maine, Massachusetts, Michigan, Oregon, Vermont, and Washington) and the District of Columbia have legalized both medical and recreational cannabis; states including New York, Maryland, and New Jersey are considering this move, and 13 states and scores of cities and municipalities have already decriminalized cannabis.

The increasing social acceptance, spreading legalization, and growing scientific validation of cannabis therapeutics is changing the negative discourse that has built up around cannabis to a more positive one. The marketing and advertising of medical cannabis products to consumers is also contributing the more positive discourse around medical cannabis while also driving the public to ask their healthcare providers for

information and guidance on how to best use cannabis therapeutics (de Vries & Green, 2012; Green & de Vries, 2010). However, healthcare providers who want to provide cannabis information encounter barriers, as the following section outlines.

***Barriers to Adoption of Cannabis Therapeutics—Stigma and Lack of Knowledge***

Although the legal status of cannabis at the federal level constitutes a barrier in itself, there are two other major barriers keeping healthcare providers from becoming cannabis "literate." The first barrier is the social stigma of being labeled a "cannabis nurse" or "cannabis doc" by colleagues. This stigma is due to the widespread stereotyping suggesting that anyone associated with cannabis is a "stoner" or a "pothead"—stereotypes that sprang from the criminalization and demonization of cannabis as an addictive street drug with no medicinal value. These stigmatizing stereotypes and resulting negative discourse become deeply ingrained within law enforcement and the medical professions (Kondrad & Reid, 2013; Mack & Joy, 2000; Russo, 2007). This negative discourse about cannabis, which continues in health care today, is said to be perpetuated by social conservatives, special interest groups, and lobbyists for the police and prison guard unions and is reinforced by the alcohol, drug testing, pharmaceutical, private prison, and tobacco industries (Cohen, 2014; Mack & Joy, 2000). Adding to the stigma surrounding cannabis is the (mostly unenforced) federal prohibition against healthcare providers discussing cannabis in therapeutic settings. In effect, the social stigma attached to cannabis has created a barrier to learning by making healthcare providers reluctant to develop knowledge about cannabis therapeutics; this reluctance quashes their curiosity and negates their need for trusted sources of information (Vertes & Barbantini, 2012).

The second barrier healthcare providers face is the lack of knowledge they have about the medicinal qualities of cannabis, the human endocannabinoid system, and the cannabis–human connection. Because of the 1937 prohibition of cannabis, healthcare providers lost access to cannabis therapeutics and eventually forgot how it was used therapeutically—knowledge that was common for millennia (Bostwick, 2012). Because of the plant's illegal status, cannabis therapeutics were no longer taught in medical schools or nursing programs (Carter et al., 2011). Even though the properties of cannabis chemistry and its connection to the human endocannabinoid system were discovered within the last 70 years, only a minority of U.S. medical schools are teaching the subject. In a 2014 survey of 157 medical schools in the United States, the human endocannabinoid system was taught in only 21 medical schools surveyed; these numbers mean just 13.3% of the future physicians are currently being trained in cannabis-based medicine (Allen et al., 2014). A 2017 survey of 101 curriculum deans and 258 residents and fellows from 145 American medical schools showed that 67% of the deans reported that their graduates were not prepared to prescribe medical cannabis, while 25% reported their graduates were not prepared to answer questions about medical marijuana (Evanoff et al., 2017; MacCallum & Russo, 2018). Also in this same survey, almost 90% of the residents and fellows disclosed that they did not feel prepared to prescribe medical cannabis, and 35% felt they were not prepared to answer questions, while 85% said they had not received any education or training on medical cannabis. The study also states that the Association for American Medical Colleges reports that only 9% of medical schools have curriculum content on medical cannabis (Evanoff et al., 2017). The number of nursing schools teaching the endocannabinoid system is currently unknown; however,

several independent medical cannabis nursing certifications and training programs have sprung up to fill the void. Currently, most states require little if any training for healthcare providers or people who work at legal medical marijuana dispensaries (Haug et al., 2016).

An additional but related barrier not directly linked to healthcare providers but profoundly affecting their education and development of cannabis knowledge, is the difficulty scientists have researching cannabis therapeutics containing THC because of its status as a Schedule I substance. In addition, the nature of cannabis as a plant makes it difficult to replicate the complex chemical combinations (the entourage effect) found in whole-plant cannabis in the lab; this is said to be hindering the compilation of evidence-based practice (EBP) that healthcare providers need to feel comfortable.

**Patients Demand Medical Cannabis Expertise**

The growing acceptance of cannabis use in the United States and the mounting body of scientific evidence of its efficacy for certain chronic conditions is driving an outpouring of public interest in cannabis therapeutics. Interest in cannabis therapeutics is particularly strong among older Americans seeking relief from chronic pain; parents seeking remedies for their children with seizure disorders; and people seeking safer, nonaddictive alternatives to opioids (Kaskie et al., 2017). For healthcare providers, this interest means more questions to answer and more encounters with patients who are using, want to use, or should consider using cannabis for therapeutic purposes (Bostwick, 2012; Gardiner & Ingleton, 2010).

As noted earlier, the public acceptance and growing legalization of cannabis is lowering stigma and is piquing the interest of healthcare providers, especially those who

are driven by their patients' questions, their own professional inquisitiveness, and possibly their own personal experience using cannabis therapeutically. According to Green and de Vries (2010), American healthcare providers are becoming more curious about the potential for cannabis as a medicine; they report that

> health care providers across the board are expressing a growing need to become aware of the legal, pharmacological, physiological and psychological implications of using cannabis for medicinal purposes and must also be well-informed and understand the implications for care and treatment if cannabis is being used medicinally on a regular basis. (p. 2454)

This quest to understand cannabis is driving some healthcare providers to seek sources of information about the unique nature of cannabis as a medicine, the plant's undeniable chemical connection to the human body, and its efficacy in treating chronic conditions. This seems to be especially true for nurses, as the next section will consider.

### *Cannabis Therapeutics—Gaining Traction With Nurses*

American nurses have been at the vanguard of cannabis therapeutics since its reemergence in the 1990s. Nurses have played a key role in the adoption of cannabis therapeutics that has already occurred, as is evidenced by the spreading legalization of medical cannabis programs across America. As Alice O'Leary-Randall, a retired hospice nurse and the wife of the Robert Randall, the first legal medical marijuana patient in the United States, explained:

> Even in the non-legal states people are using cannabis for medical purposes, and legal or illegal, it works. . . . They come to us nurses; we're the front line. . . . We spend more time with the patients than the doctors do. And they're going to tell us what's going on with their health, and they're going to tell us what happened when they tried medical marijuana. And we need to be aware of drug interactions. We need to be aware of how cannabis affects all our physiological systems. (Stelzer, 2016, para. 18)

Those providing palliative care, and oncology nurses in particular, have come to view cannabis as a means for improving quality of life (QoL) for their patients and have

expressed a growing interest in incorporating cannabis therapeutics into their practices (Carter et al., 2011; Gardiner & Ingleton, 2010; Green & de Vries, 2010). Nurses, however, report struggling with the professional and moral dilemmas that go with recommending a substance that is still illegal at the federal level and socially stigmatizing at the personal level (Green & de Vries, 2010). Philipsen et al. (2014) noted that nurses are forced to balance their obligation to *nonmalfeasance*—the "do no harm" ethical position of nursing—with their commitment to *beneficence*—their professional promise "to do all the good that you can"—when it comes to the debate about using cannabis therapeutically (p. 2).

These ethical and practical dilemmas were and are being addressed by the professional nursing associationsa definite sign that the innovation of cannabis therapeutics is being adopted as some level. In 1994, the Virginia Nurses Association was the first state nursing association chapter to pass a formal resolution calling for patient access to cannabis therapeutics. In 1996, the American Nurses Association (ANA) came out in support of research and education into cannabis-based medicine. In 2003, with overwhelming backing from its members, the ANA passed a resolution supporting patient access to cannabis and advocated that registered nurses become educated in its use based on evidence of the efficacy of cannabis as medicine (ANA, 2004). The ANA reaffirmed its position on cannabis in a 2008 position paper and again in a 2016 position statement. In the 2016 statement, the ANA called for the federal government to reschedule cannabis to facilitate research, explore the plant's potential, and "allow for the establishment of evidence-based standards for the use of marijuana and related cannabinoids" (para 3.). In July of 2018, the National Council of State Boards of Nursing issued recommendations to

guide nurses in their care of patients using medical cannabis. Another such organization is the American Cannabis Nurses Association (ACNA). In 2006, fueled by the increasing demand for information by patients coupled with their professional experience in the therapeutic use of cannabis, a core group of courageous nurses, including Alice O'Leary Randall, formed the American Cannabis Nurses Association. The ACNA's mission is to move cannabis nursing toward recognition as a specialty by the ANA; this recognition will allow nurses to become credentialed as "cannabis nurses" and will be a major stepping-stone toward broader adoption. Now with over 1,200 members, the ACNA (2019) describes the cannabis nurse as follows:

> The cannabis nurse works in a variety of settings with the patient and his or her support systems to facilitate health, healing, and well-being through both the patient's safe and effective use of cannabis and/or cannabinoid medicines and through the upregulation of the endocannabinoid system toward optimal functioning. The cannabis nurse is educated on the use of cannabis as medicine and current cannabis scientific findings, therefore, the cannabis nurse is able to educate and coach the patient, his or her caregivers or support systems, and other healthcare providers about the most effective and safe uses of cannabis for specific health, healing, and illness concerns. The cannabis nurse upholds the highest ethical standards and advocates for patients and populations (p. 22).

In addition to the ANA's endorsement of cannabis use and the emergence of the ACNA, a number of physician-based groups, such as the American Academy of Cannabis Medicine, the American Medical Marijuana Physicians Association, Doctors for Cannabis Regulation, and the Society for Cannabis Clinicians, have emerged as well.

## Definitions and Descriptions Used in This Study

Part of the challenge of studying an emerging field of study is the lack of shared definitions. The following definitions and descriptions, based on the definitions published by the ACNA (2019), have been adapted for use throughout the remainder of this dissertation.

*Cannabis care or cannabis nursing:* The work that cannabis nurses do on a day-to-day basis to provide care for their patients using cannabis therapeutically. This includes guiding, educating, and facilitating the patient's access and use of cannabis-based therapeutics, products, and modalities to improve their health outcomes. Being skilled in cannabis care requires that the nurse be educated in multiple areas above and beyond all registered nurse competencies, including knowledge of holistic nursing practices, health coaching practices, the endocannabinoid system, cannabis therapeutics, cannabinoids, terpenoids, cannabis laboratory testing requirements, potential medication interactions, advocacy, ethics, and the law.

*Cannabis patient:* A person using cannabis therapeutically to treat their chronic and/or acute health conditions.

*Cannabis nurse:* A nurse, defined as a registered nurse or an advanced practice registered nurse (APRN) having the educational background and experience to be licensed by a state or regulatory body to practice the art and science of nursing, who is also an expert in providing patients with cannabis care using their skills in the art and science of cannabis therapeutics and modalities to improve patient outcomes. Carey Clark, past president of the ACNA, described cannabis nurses as "holistic . . . they not only are concerned about providing support, education, and coaching around therapeutic use of cannabis, they also are coaching patients to make lifestyle changes that up regulate the endocannabinoid system" (personal correspondence, July 23, 1919). For purposes of this study, the description of the cannabis nurse centers around their role as both a seeker and a sought-after source of trusted information about the therapeutic use of cannabis.

*Cannabis therapeutics and modalities:* The field of science and research that deals specifically with the treatment and methods of application involved in using medicinal cannabis products to remediate, cure, and heal human health conditions and disease.

*Mainstream medicine:* For purposes of this study, the definition of mainstream medicine offered by the National Cancer Institute is adopted. Mainstream medicine is defined as "a system in which medical doctors and other healthcare professionals (such as nurses, pharmacists, and therapists) treat symptoms and diseases using drugs, radiation, or surgery. Also called allopathic medicine, biomedicine, conventional medicine, orthodox medicine, and Western medicine" (National Institutes of Health – National Cancer Institute, 2020). In comparison,

> Integrated or complementary medicine emphasizes a holistic, patient-focused approach to health care and wellness—often including mental, emotional, functional, spiritual, social, and community aspects—and treating the whole person rather than, for example, one organ system. It aims for well-coordinated care between different providers and institutions. (National Center for Complementary and Integrative Health – National Institutes of Health, 2020)

*Medicinal cannabis:* Products containing cannabinoids, terpenes, and flavonoids derived from plant-based cannabis biomass (not synthetic cannabis or lab-based cannabinoid molecules).

*Therapeutic use of cannabis:* Using medicinal cannabis products and modalities to support overall human health and wellness, including helping to heal chronic conditions, and in the treatment of illness, accidents, and disease.

### *Nurses and the Adoption of Cannabis Therapeutics*

The role of nurses in driving organizational change and innovation in health care and their impact on improving patient health outcomes is well documented (Crabtree et

al., 1998; Hutchison et al., 2001; Naylor & Kurtzman, 2010; Renders et al., 2001; Rothman & Wagner, 2003). Nurses affect both patient outcomes and delivery of services because they operate at the juncture between patients and the healthcare organizations. Their role puts nurses in a unique boundary-spanning and bridging position for both patients and their organization (Bordoloi & Islam, 2012). Results from 54 field studies confirm that nurses are positioned between the patient and the healthcare organization. As boundary spanners, nurses serve as intermediaries for healthcare service delivery by reconciling the requirements of the healthcare organization with those of the patient; they also act as information brokers between different care providers, other providers, and individual patients (Allen, 2007; Zolnierek, 2014). Nurses are also the heart and soul of health care, especially at the primary care level where most people seek help for their chronic conditions (Rothman & Wagner, 2003). For example, research shows that patients tend to seek health information from their nurses before going to their physicians (Bottorff et al., 2013; Carter et al., 2011; de Vries & Green, 2012; Green & de Vries, 2010; Kaskie et al., 2017; Ko et al., 2016; Mathre, 2010; McCue, 2017). Thus, exploring the information practices of nurses as they learn how to be cannabis nurses is a relevant, pressing, and approproiate topic for information science research. The next section will delve into the theoretical foundation and the conceptual models used to study information practices, followed by a detailed review of existing literature on the information practices of healthcare providers.

# CHAPTER TWO

# LITERATURE REVIEW

The purpose of this chapter is to explicate the theoretical and conceptual underpinnings of the concept of information practices as well as review the extant research focusing on the information practices of healthcare providers. Descriptions of information practices, information behavior, and information work, in addition to a brief explanation of their differences, are included. Part One of this chapter is a description of the meta and middle-range theories that form the conceptual foundation of information practices, including a discussion of social constructionism, situativity, situated action, situated learning, practice theory, and community of practice/practitioners. This description is followed by a deep dive into the evolution of a two-dimensional model of information practices as developed by McKenzie (2003b) and tested by Yeoman (2010). Part Two of this chapter summarizes 22 research studies that used different research approaches and methods and that illustrate different aspects of information practices as a phenomenon.

## Part One: Information Practices—An Overview of the Concept and Theories

Savolainen (2007a) categorized "information practices" as one of the two important umbrella concepts found in information science, the other being "information behavior." Information behavior and information practices are conceptual cousins in that both are used to explicate how humans use information to create knowledge and make sense out of their situations. Savolainen asserted that together, the umbrella terms of information behavior and information practices represent a conceptual understanding of the ways in which people cognitively and socially interact with information. Having these

two umbrella concepts provides information science researchers with two different metatheoretical discourses to draw from and "opens up alternative viewpoints on information seeking" (Savolainen, 2007a, p. 110). As Savolainen (2007a) pointed out, the concept of information practices has not been clearly defined, and researchers have found it challenging to distinguish information practices from related concepts such as information behavior and information work (p. 125).

**Origin of the Concept of Information Practices**

Savolainen (2007a) observed, "As with information behavior discussed above, this concept has been simply taken into use without deeper reflection on its ultimate meaning" (p. 123). These concepts are not reducible to each other and have distinct ontological and epistemological perspectives:

> The concepts of information behavior and information practice both seem to refer to the ways in which people "deal with information." The major difference is that within the discourse on information behavior, the "dealing with information" is primarily seen to be triggered by needs and motives, while the discourse on information practices accentuates the continuity and habitualization of activities affected and shaped by social and cultural factors. (Savolainen, 2007, p. 126)

The term "information practices" is reported to have first appeared in information science literature in an article by Harold Wooster titled "The Zoo and the Jungle—A Comparison of the Information Practices of Intelligence Analysts and of Scientists"; however, the concept of information practices itself was not defined within the piece (Savolainen, 2007a). In the oft-cited and highly regarded book *Looking for Information–A Survey of Research on Information Seeking, Needs and Behavior*, Case (2012) described information practices as "a term more popular in Europe and Canada than the United States, and [one that] may be thought of as a synonym for information behavior—although it maintains some differences that will be explored in a later chapter" (p. 5).

Case's exploration of information practices is found in a section on discourse analysis that mentions Savolainen and McKenzie, both of whom have written at length about information practices; but Case did not define the term or detail the differences between information practices and information behavior (pp. 253–254).

In a similar vein, Fisher et al. (2005) included three chapters in their book *Theories of Information Behavior* that reference the term "information practices" but do not define the term explicitly. Those chapters include Gloria Leckie's investigation of a general model to explain information seeking practices of professionals based on Leckie et al. (1996); Sanna Talja's chapter, "Domain Analytical Approach to Scholar's Information Practices," based on the concept of studying professional work and discourse communities as "domains," as put forth by Hjørland and Albrechtsen in 1995; and Tuominen et al.'s (2005) discussion of the social constructionist viewpoint of information practices. Although these chapters offer great insight into information work and provide examples of information practices that define various professions, none of the authors defined information practices as a term; nor did they make clear distinctions between the concepts of information practices and information behavior.

As mentioned earlier, researchers encounter difficulties in drawing clear boundaries between the idea of information practices and related concepts such as information behavior and information work. The problem of delineating a clear boundary between the concepts is made more difficult when the terms "practice" and "behavior" have multiple meanings based on the field of study or philosophical point of view and are used interchangeably in information-seeking studies (Savolainen, 2007a, p. 125). Drawing distinctions between these conceptual cousins is challenging, as they share

common elements, such as an emphasis on praxis, a view that information is socially constructed yet material in nature, and a focus on the action of the individual's use of information as a way to make sense of everyday life situations.

**Information Practices as a Concept**

McKenzie (2003a, 2003b) claimed that the concept of information practices offers an alternative approach to understanding information seeking. Information practices does this by taking into consideration a whole host of the social and cultural factors, such as the workplace, the community of practitioners, the source of information, the person's social standing, the physical (or virtual) setting, and the domain of interest, all of which influence what facts and data the individual considers to be informative. In information practices thinking, it is the individual's social situation that governs information source selection and what facts and data will dispel their uncertainty and lead to sensemaking and decision-making. For example, this focus on the social setting accounts for information that comes into the individual's mind serendipitously through the initiative or actions of other people or from "bumping" into information during a social situation (McKenzie, 2003b). Lloyd (2011) took the idea of information practices one step further by placing information practices in the social setting of the workplace; Lloyd asserted that information practices are integral to knowledge production in social groups. Lloyd described information practices as follows:

> Information practices are an array of information related activities and skills, constituted, justified and organized through the arrangements of a social site, and mediated socially and materially with the aim of producing shared understanding and mutual agreement about ways of knowing and recognizing how performance is enacted, enabled and constrained in collective situated action. (p. 285)

### *Attributes of Information Practices*

The attributes of information practices draw on the principles of sociology and human social interaction and the effect of social and cultural factors on what information the individual needs, and on what facts and data the individual believes to be informative (McKenzie, 2003b; Savolainen, 2007a). Although "happening upon information" and "actively seeking information sources" falls within T. D. Wilson's (1999) model of information behavior, it is the serendipitous encounters in social settings with information sources which sets information practices apart from information behavior. An encounter with an information source without actively seeking either the source or the information is something that happens regularly in social settings, especially the workplace. In fact, a focus on the performance of work in the workplace and the routinization of everyday life information seeking behavior into "practices" also distinguishes information practices from information behavior (Byström & Lloyd, 2012; Lloyd, 2010).

## Information Behavior as a Concept

Information behavior is described as the bundle of cognitive activities an individual performs to satisfy a perceived need for information where information is needed to reduce uncertainty, to build knowledge and to make decisions (Krikelas, 1983; Savolainen, 2007a). This bundle of cognitive activities includes seeking, retrieving, evaluating, and using information to satisfy this information need. T. D. Wilson (2000) more broadly characterized information behavior as "the totality of human behavior in relation to sources and channels of information including both active and passive information seeking, and information use" (p. 49). Roos (2015) described information

behavior as what happens in the mind of the individual as they go about satisfying their need for information.

An early example of a description of information behavior can be found in T. D. Wilson's (1999) model of information behavior (see Figure 1). This model shows that an information user's ongoing need for information triggers information-seeking behavior, with the individual placing demands on both information systems and sources to successfully satisfy this need. Once the information has been found, the information is used, transferred, and exchanged with other people, which often results in the emergence of a new need for more information. Wilson's model, however, neither accounts for the substantial influence of social and cultural practices on the information user's conceptualization of what is informative nor references the information user's motive for seeking the information (Savolainen, 2007a). Wilson's model does include the social element "other people," but his "other people" play a transactional role rather than being part of the social practices shaping the information needs of the user.

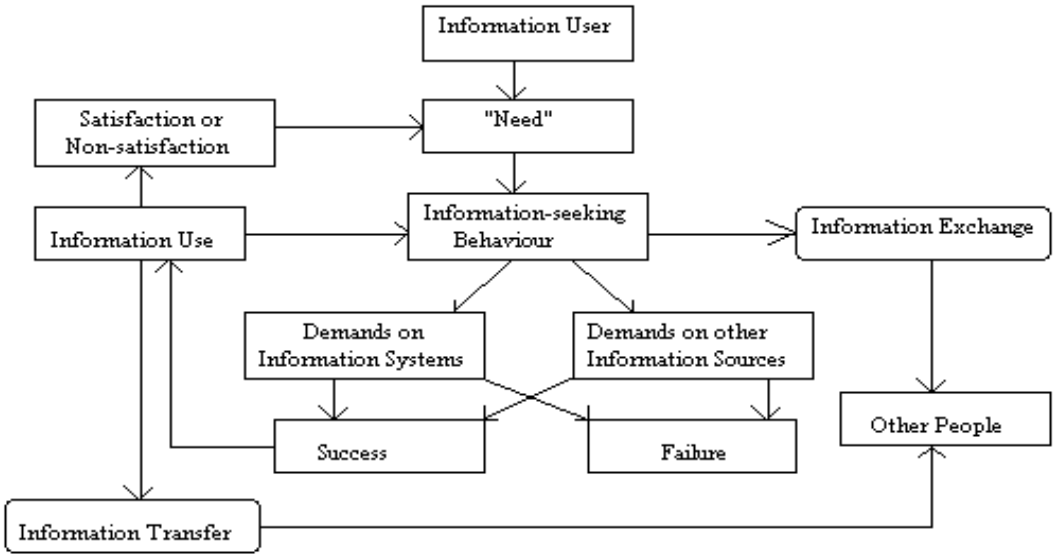
***Attributes of Information Behavior***

Information behavior, on the other hand, can be thought of as more cognitively oriented and based on the traditions of psychology and human-computer interaction. Information behavior focuses on the cognitive view of information seeking where information is bound up in knowledge building, learning, and decision-making activities happening within the mind of the individual (Savolainen, 2007b). Information behavior is focused on the mental activity of the individual in the act of information seeking, which is different from information practices as detailed above. This researcher does intend to use the study findings to develop richer comparisons and develop meaningful examples

to illustrate these concepts better. Following is an in-depth discussion of the meta and middle-range theories that underlie information practices.

**Figure 1**

*Wilson's 1981 Model of Information Behavior (T. D. Wilson, 1999, p. 251)*




## Meta-Theoretical Basis of Information Practices

The meta-theoretical foundation of the concept of information practices springs from two complementary meta-theoretical frameworks: constructionism and situativity theory. Constructionist concepts such as Gidden's structuration theory gives information practices its innately social and discursive nature (McKenzie, 2003b; Roos, 2016; Savolainen, 2008; Tuominen et al., 2005; Yeoman, 2010). Situativity theories, among them situated action and situated learning, explain how knowledge, thinking, and learning comes from experience and cannot be separated from context (Durning & Artino, 2011). As a meta-theoretical foundation, situativity theories provide a basis for studying how

both the setting and changes in the environment influence what the individual perceives as needed information; the setting and changes in the environment also influence information systems (Greeno, 1998; Lave & Wenger, 1991). Greeno (1998) described situativity as follows: “The situative perspective shifts the focus of analysis from individual behavior and cognition to larger systems that include behaving cognitive agents interacting with each other and with other subsystems in the environment” (p. 5). Constructionist and situativity theories form the philosophical foundation of the concept of information practices, as is detailed in the following section.

### *Constructionist Theory in Information Practices*

The constructionist basis of information practices can be traced back to the 1980s and the work of social constructionist Anthony Giddens and structuration theory (Savolainen, 2007a). In structuration theory, Giddens (1984) asserted that human agency and social structure are in a dynamic relationship constructed through the constant repetition of the acts and actions of individuals within the same time and space. This constant repetition of acts and actions by individuals reinforces and reproduces the context and social structures in which the individuals exist. Giddens (1984) considered these structures to be more like practices or performances rather than fixed aspects of a bounded system. Structure and practices do not exist apart from each other. Social structures are a result of the repetition of a pattern of actions (practices), with those actions guided and enabled by the rules and resource constraints of the social group (Giddens, 1984; Tuominen et al., 2002).

Savolainen (2007a) pointed out that Giddens continually emphasizes the idea that people are knowledgeable actors who routinely and reflexively monitor the “ongoing

flow of everyday action in social contexts" (p. 120). Information is used as building blocks that knowledgeable actors use to build these structures. Information and knowledge are both dynamically and dialogically constructed through conversation in the context of a social setting rather than produced entirely in the individual's mind (McKenzie, 2003b). Tuominen et al. (2002) described constructionism as follows:

> Constructionism stresses the dialogic and contextual nature of knowledge production and the dialogical and contextual nature of users, information needs and relevance criteria. The information user makes the same pieces of knowledge or document mean different things depending on what kind of social action he or she is performing with the help of language in a specific interaction and conversational context. (p. 277)

The construction of information and knowledge happens through the individual's own cognitive information seeking behavior (the bundle of cognitive activities referenced earlier) and from connecting and interacting with others in the context of everyday life information seeking (ELIS) (Savolainen, 2008). Thus, ELIS can be thought of as the strategies and tactics for seeking information that individuals develop and routinize in the context of making sense out of their everyday lives (Savolainen, 2008).

In the case of this study, social constructionism helps explains the emergence of organizations such as the ACNA and the advent of the role of the nurse in the cannabis dispensary, which will be discussed later. Both examples provide evidence that structures and rules are emerging from the collective action of cannabis nurses in discourse with each other, their patients, coworkers, colleagues, and the public.

### *Situativity Theory in Information Practices*

If social constructionism can be used to account for the emergence of the domain of cannabis nursing, then the situativity theories of "situated action" and "situated learning" can be used to explain how information practices are part of how cannabis

nurses makes sense of everyday life situations while learning how to be cannabis nurses. Lucy Suchman's (1987) concept of situated action is present in the concept of information practices at the meta-theoretical level. The concept of situated action explains the importance of the situation at hand in determining what an individual considers to be informative. Suchman eloquently argued that human action cannot be planned, as human action always takes place within a situation—something she names "situated action." Suchman described situated action best by stating that "every course of action is highly dependent upon its material and social circumstances, focusing on moment-by-moment interactions between actors, and between actors and the environments of their action" (p. 50). Suchman observed that people use common-sense procedures (e.g., information practices) to analyze and make sense of one another's actions and their local, or situated, circumstances. Information becomes informative only when the person needs new information to satisfy an information need. The need for that specific information, along with the practices and activities that go into seeking the desired information, is shaped by the social systems the person is part of, as well as by the context and situation in which the person exists.

In the case of this study, situated action accounts for the growing demand from nurses for more and better education about the health benefits and risks of cannabis as a medicine (de Vries & Green, 2012; Green & de Vries, 2010). Many nurses now report being asked by their patients and colleagues for advice and guidance on how to use cannabis-based medicine to treat chronic conditions and improve quality of life, especially during end-of-life care (Bostwick, 2012; Carter et al., 2011; McCue, 2017).

The increased demands of patients have created a situation for nurses who are learning about cannabis “in situ” or in the moment—a concept known as situated learning.

Inspired by the concept of situated action as defined by Suchman (1987), social anthropologist Jean Lave and educational theorist Etienne Wenger conceived of the idea of “situated learning” (Lave & Wenger, 1991). Lave and Wenger (1991) suggested that learning ensues as situations arise and are confronted as part of everyday life; that knowledge is dynamically constructed; and that agency, activity, and the world itself are mutually constitutive. The concept of situated learning focuses on the idea that “community” is the product of an active learning practice undertaken in a social setting. For example, for decades, the American healthcare provider had little need to know about the therapeutic value of cannabis. In fact, the average American healthcare provider seemingly preferred not to know about cannabis, as having such knowledge could cause them to lose their license to practice medicine or possibly send them to jail (Kondrad & Reid, 2013). Knowledge of cannabis is no longer a threat, because spreading legalization, increased legal protections, growing public acceptance, and more conclusive evidence of the effectiveness and safety of cannabis have changed the situation for nurses (Bostwick, 2012; Carter et al., 2011; Kondrad & Reid, 2013; McCue, 2017). Nurses in states where cannabis therapeutics are legal are now free to openly learn about it through their day-to-day nursing work or in informal discourse with their colleagues and patients.

**The Middle-Range Theoretical Perspectives of Information Practices**

Social constructionism and situativity theories offer a firm metatheoretical foundation for explicating how information practices construct the professional domain as well as facilitate action, learning, and knowledge development. Researching

information practices, however, is best accomplished by applying the middle-range theories present in the concept of information practices, including practice theory and community of practice. Middle-range theoretical perspectives are helpful to researchers because they allow for the integration of theoretical and empirical results and help the researcher to identify, study, and measure aspects of social reality as separate social phenomena (Merton, 1949); the social phenomena being explored in this study are the information practices of cannabis nurses. Middle-range theories such as practice theory and community of practice (CoP) theory form the conceptual bridge between the metatheoretical perspectives and application of what has been learned through research to solve specific problems.

### *Practice Theory*

Practice theory emerged in the 1980s, followed by the "practice turn" in social science happening in the 2000s (Schatzki, 2001, p. 26). Pierre Bourdieu's 1977 concept of "*habitus*" is engrained in the idea of practice theory. Habitus referred to the idea that the "field of practice" a person occupies—such as their occupation, profession, or domain of interest—forms their life experiences and thereby shapes their deeply ingrained habits and skills (Bourdieu, 1977). Building on Bourdieu, Schatzki (2001) described a field as being "a mediated array of human activity centrally organized around shared practical understandings" and a practice as being "a bundle of activities that refers to the set of tasks, e.g. the work that needs to get done, based on the profession or occupation in which the human body is the nexus" (p. 3). As Talja and Nyce (2015) explained:

> In practice theory, knowledgeability and expertise are context embedded, embodied, intuitive, opportunity based, and self-sustained in the sense they are based on acting in situations whose specific characteristics are and become part of the practice as it unfolds. (p. 64)

Practice theory or the practice approach helps to operationalize structuration theory by explaining how social practices and the actions of individuals continuously create and transform the world through the dynamic, ongoing interaction between social structure and human agency (Dougherty, 2004; Giddens, 1984). Talja and Nyce (2015) asserted that practice theory is more a theory family than a middle-range theory, as it incorporates both the metatheoretical perspectives of social constructionist thinking as espoused by Giddens and situativity-based theories such as Suchman's situated action and Lave and Wenger's situated learning (p. 64). The constructionist perspective sees practices as the product of routines, habits, and shared beliefs that eventually develop into structure. The situated action approach views practices as continually emerging to form the structure of work and action (Østerlund & Carlile, 2005; Talja & Nyce, 2015).

Practice theory explains how the workplace operates, including how individuals learn to do the work of the organization, along with how they develop wisdom about the work they are performing through shared experiences (Brown & Duguid, 2001; D. Dougherty, 2004). Practices as they pertain to the workplace reference the sociality of the work setting, communal goals, the growth of expertise, and the habitualization of actions. For example, Dervin (1998) emphasized that the ability to reach consensus, negotiate, interact, and make sense out of events, as well as the development of skills and habits, are the principal aspects of practice. Wenger et al. (2002) described practices as what denotes a set of socially defined ways of doing things in a specific domain—that is, a set of common approaches and shared standards that "create a basis for action, communication, problem-solving, performance, and accountability" (p 38). Bonner and Lloyd (2011), speaking from the nursing perspective, wrote:

> Adopting a practice approach to understanding how nurses in a specific setting develop information practices, enables us to frame our understanding of how information practice is shaped in relation to the dimensions (cultural-discursive, material and historic) of sociality which constitute human co-existence. (p. 1215)

The concept of CoP as put forth by Lave and Wenger (1991) also plays a part in explaining information practices from a middle-range theoretical perspective, as the following section describes.

### *Community of Practice (CoP) Theory*

Lave and Wenger (1991) noted that almost all learning in the workplace takes place in a social setting. This observation formed the basis for the idea of community of practice (CoP), which was adopted as a key concept in the organizational communication and knowledge management fields of study as well as by information practices scholars (Lave & Wenger, 1998). A CoP is described as "a group of persons with particular skills or expertise who interact formally within an organization, or informally—but routinely—in a type of network for shared pragmatic or knowledge-related goals" (Hakkarainen et al., 2004, p. 58). Wenger and Treyner-Wenger (2015) summarized the concept of CoP as follows:

> Communities of practice are formed by people who engage in a process of collective learning in a shared domain of human endeavor: a tribe learning to survive, a band of artists seeking new forms of expression, a group of engineers working on similar problems, a clique of pupils defining their identity in the school, a network of surgeons exploring novel techniques, a gathering of first-time managers helping each other cope. In a nutshell: Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly. (para 2)

A CoP consists of two elements: (a) the domain of interest, such as a profession, occupation, or organization; and (b) the community engaged in the practice of this interest (Wenger et al., 2002). Having a shared domain of interest creates a common field, as in Bourdieu's (1977) concept of "habitus" as discussed earlier. The domain of

interest forms the identity of the individuals who become members of this community; it also informs the establishment of boundaries, guidelines, and rules for its members (Wenger et al., 2002). Wenger et al. (2002) further defined a CoP as a "group of people who interact, learn together, build relationships, and in the process, develop a sense of belonging and mutual commitment" (p. 34). Within the CoP, information is readily shared, meanings are negotiated, and values are reinforced. Over time, members of the community develop a shared collection of information resources, including shared repertoires, narratives, stories, documents, tools, language, and ways of addressing problems—that is, a shared practice (Wenger et al., 2002). Shared standards and common approaches are important for creating "a basis for action, communication, problem-solving, performance, and accountability" (Wenger et al., 2002, p. 38).

The use of shared information practices and collaborative information seeking taking place among the the CoP's members also play a key role in the development and curation of the CoP's knowledge base and information resources, as well as informing the information architecture and design of its sociotechnical systems (Shah, 2012). When functioning within organizations, CoPs must have a common sociotechnical infrastructure and shared language before productive organizational knowledge processes, such as finding, developing, and sharing knowledge, will emerge (Kuhn, 2013; McInerney & Koenig, 2011). Organizational knowledge processes contribute to the development of organizational knowledge, which in turn contributes to the performance and sustainability of the organization (McInerney & Koenig, 2011). The members of the CoP also determine which objectives to pursue, what rules will be negotiated and

formalized, what will be considered informative, and who or what will be an acceptable source of valuable information (Kuhn, 2013; Savolainen, 2007a).

The community's "practice" itself is a set of socially defined processes based on shared technology, repertoires, standards, and common approaches built around the domain of interest. What sets the "community of practice" apart from being just a group of people interested in the same thing is the members of the community actively engage with the domain of interest. Membership, therefore, implies a commitment to the domain of interest and to taking on the identity of the community; membership also implies there is a shared competence that distinguishes members of the community from other people outside the community. Not all CoPs operate the same way, for example in organizations where individuals are required to join the community as part of their jobs. Talja and Hansen (2006) use the term "community of practitioners" to describe the situation in organizations and workplaces where individuals are required to be part of a formal, rule-bound community more precisely. This characterization extends Wenger et al.'s (2002) description of a community of practice as being a self-organizing, informal, and voluntary social organization and places it firmly in the workplace.

For Talja and Hansen (2006), information practices, especially practices of information seeking, retrieval, filtering, and synthesis, are governed by the social practices within a community of practitioners as found in the workplace. Orlikowski (2002) characterized social practices as repeated and regular actions, embedded in context, that members of a workplace community engage in on a recurring basis. In a variation of this idea, Sundin and Johannisson (2005) made the distinction that social practices are an institutionalized activity that sets and enforces the rules of a "community

of justification," the term these authors use to describe a community of practitioners. These rules include what is considered proper information-seeking practices for the community (Savolainen, 2007a). By rooting information practices in the workplace, Talja and Hansen (2006) submit, a CoP creates information practices that are shaped by the sociotechnical infrastructure of the organization and embedded within the organization's language and knowledge structures. Isah and Byström (2017) asserted that people in workplaces are not likely to be fully aware of their practices or knowledge development activities, as these are "embedded, intricately intertwined and tightly bound to the ongoing routines of everyday work activities" (p. 318). The following section will review the scholarly literature on the topic of the information practices of healthcare providers.

## Part Two: The Information Practices Model

Talja (2005) is quoted as saying that information practices "represent a more sociologically and contextually oriented line of research" than studies in information behavior, where research questions are directed at the individual and often decontextualized from the life situation at hand (p. 123). Concentrating on information practices shifts the focus of analysis in research from observations, measurement, and interpretation of cognitive information seeking behavior toward observations, measurement, and interpretations of social interaction and context. Scholars consider information practices to continual and purposeful human activities that place the emphasis on how information sources, context, social settings, and situation shape, mediate, and modify the individual's interpretation of reality and influence what facts and data they find informative, how they make sense of situations, and possibly what actions they take (P. Wilson, 1983; Savolainen 2007a, 2008; Rivera & Cox, 2014; Roos &

Hedlund, 2016). Because information practices can be conceptualized differently, a model is useful in helping operationalize the theory for research purposes.

Savolainen (2007a) asserted that the most prominent proponent of information practices and the originator of the information practices model (MIP) used in this study is Canadian information science scholar Pamela J. McKenzie. (Note—the acronym MIP was applied by this researcher and not by McKenzie). McKenzie (2003b) has written that an information practices approach offers a more comprehensive understanding of information behavior as being a social practice as well as a cognitive activity.

McKenzie's (2003b) model focuses on explaining how information comes into the lives of individuals through active, incidental, and serendipitous information practices the individual employs in social situations and in personal interactions with their human connections and digital sources. Likewise, the MIP model shows how individuals use information practices to respond to changes in their environment or when they encounter facilitators or barriers in their information-seeking processes (McKenzie, 2002, 2003b; Savolainen, 2008). McKenzie (2003b) acknowledged that her model of information practices (MIP) is a synthesis of several seminal information-seeking behavior process models and that she was broadly influenced by Westbrook's (1997) general model of information seeking and by Kuhlthau's (1993) information search process model. Ellis's (1993) stages of information seeking model, T. D. Wilson's (1999) information behavior model and Choo et al.'s (2000) model of information seeking on the web were the concepts that McKenzie noted were most influential in the design of MIP.

McKenzie's (2003b) model (see Figure 2) places the information user in context and then identifies four modes of information practices: active seeking, active scanning,

nondirected monitoring, and by proxy. The model also shows two phases of information practices—connecting and interacting. This two-dimensional structure helped McKenzie (2003b) to focus holistically on the role of information practices in the life of the individual in context, rather than analyzing the specific information practices of the individual (p. 28). Once a researcher is able to pinpoint the moment of connection and interaction with an information source or seeker, it is possible to understand the context in which the encounter occurred. For example, this information practices model reveals that such encounters would have happened in several ways, including through a PubMed search at a medicinal cannabis conference; by overhearing a conversation about cannabis therapeutics; and by being referred to an information source. When combined, these modes and phases explain how information serendipitously enters an individual's life and models an individual's systematic search for information to solve a problem or to acquire new information (Ellis, 1993; Kuhlthau, 1993; McKenzie, 2003b).

Yeoman (2010) applied McKenzie's model of information seeking (see Figure 3) to the study of the everyday life information seeking behavior of perimenopausal and menopausal women and to validate McKenzie's two-dimensional model within another context to gauge whether the model supported the development of information practices theory. Yeoman's experience using McKenzie's information model in a different context yielded interesting insights, especially concerning the applicability of the model given the temporal differences in everyday life situations between pregnant and menopausal women. Yeoman concluded that most of the information practices that emerged in her study could be mapped to McKenzie's model. Yeoman's model offers the following extensions to McKenzie's mode by considering what happens to the information after it

is acquired, i.e., how it is used to make sense, support decisions and be shared with others. Yeoman's model takes account of the dual role of the individual as an information seeker who may someday also become an information source. As Yeoman's model shows, "Active Scanning" leads to sense-making, decision-making, and information referral behaviors that may result in the information seeker becoming the source of information for other people, thus resulting in a new cycle of connecting and interacting.

**Figure 2**

*McKenzie's Model of Information Practices (McKenzie, 2003b, p. 26)*

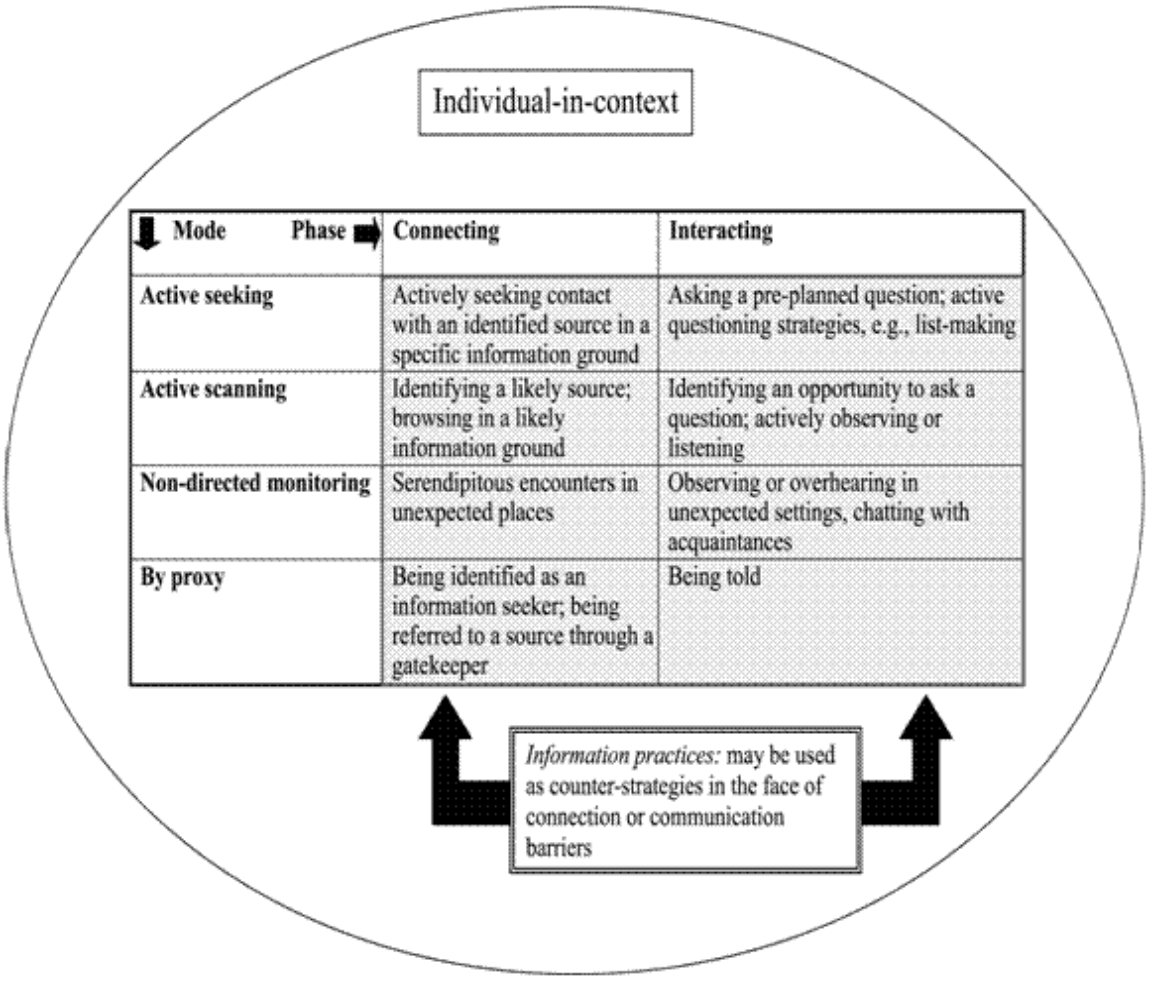
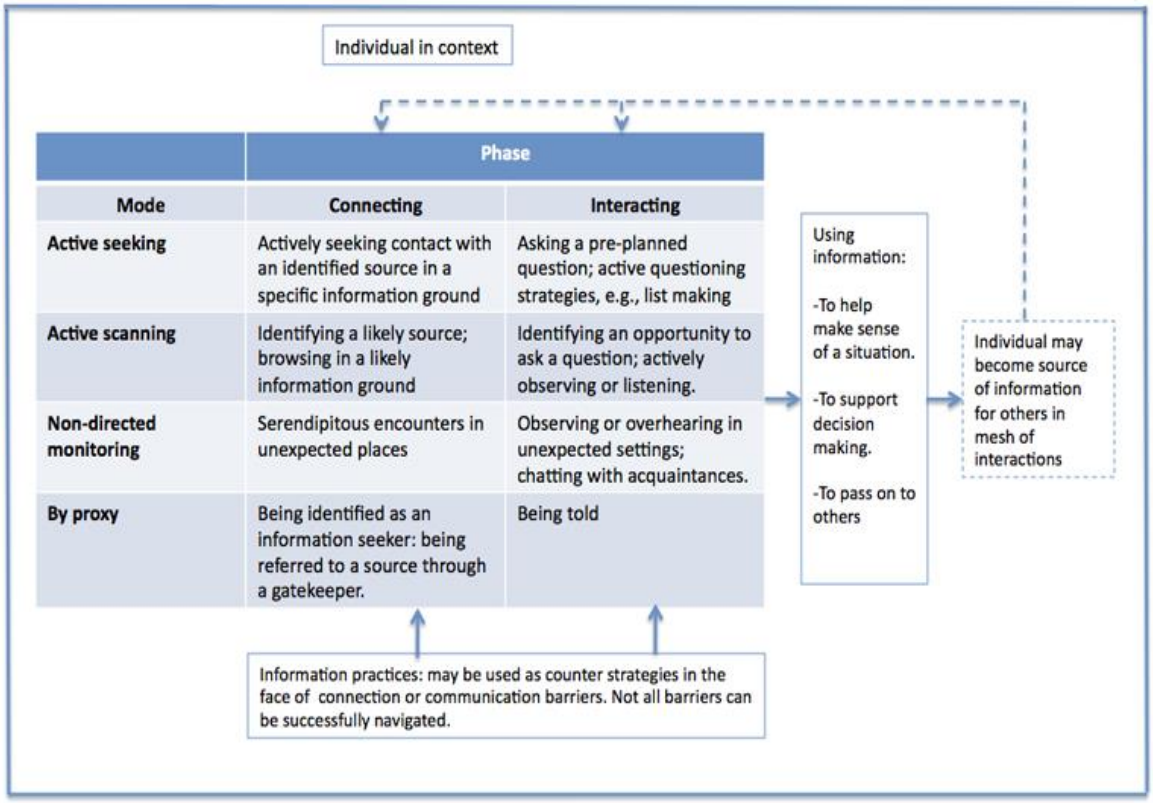


**Figure 3**

*Yeoman's Version of McKenzie's Model of Information Practices (2010, p. 14)*




Yeoman also pointed out in her model that information seekers sometimes use "by proxy" information practices when they encounter barriers to finding the information they seek when the other modes of information practices fail to dispel uncertainty. Yeoman's model also notes that not all barriers can be overcome and that people sometimes cannot find the information they seek.

## Part Three: The Information Practices of Healthcare Providers

A systematic review of the literature on the information practices of healthcare providers was conducted in March 2017 and was updated in 2020. (For full details on how the systematic review was conducted, please see Appendix B.) This search retrieved

15 relevant studies that focused on the information practices of healthcare providers. These 15 studies fell into three broad categories: (a) four studies characterized information practices as information work, such as a protocol or intervention, that healthcare providers implement, or as information work they perform for the benefit of their patients; (b) five studies conceived of information practices as constitutive of nursing identity and domain; and (c) six studies focused on information practices as constitutive of structure within a community of healthcare practitioners.

**Information Practices as Information Work**

Four studies shed light on the use of information practices as information work, often in the form of taking a specific action, such as handing out information or providing specific information to a specific audience to achieve a particular organizational goal, improve health outcomes, or provide transparency. These papers appeared in healthcare-related journals, and as such, did not have an information science perspective. These studies are diverse in their use of the term "information practices." For example, Jamison (2002) referred to the action of chiropractors handing out general health information to their patients as an information practice; however, no definition of the term was offered. In a similar vein, Leboucher et al. (2013) obliquely referred to information practices as the written and verbal instructions, e.g., "information work" French general practitioners developed as part of an effort to better educate new parents about pertussis. Mellblom et al. (2015) saw information practices as information-related activities, skills, and content that could become standardized among pediatric oncologists warning patients of the harmful late effects of cancer treatments.

Although the "information practices as information work" studies all lacked definitions of information practices, all these studies describe information practices as information work that healthcare providers can perform to achieve an outcome or improve a situation. These studies helped to illustrate the concept of information practices as creating structure, becoming embedded in organizational knowledge processes, and being learned as a practice, as was espoused by Giddens, (1984), Bourdieu (1977), and Schatzki (2001).

**Information Practices as Constitutive of Nursing Identity**

The second category of studies revealed five papers that conceived of information practices as information-related activities, skills, and content that define the professional identity of a nurse. In these five papers, information practices manifested as documents or discourses that facilitate nursing practices or become shared interpretative repertoires that create and sustain people's identities as nurses. Hobbs (2009) and McKenzie (2006) both took a textual/document-oriented approach by analyzing how documents and texts act as socially constructed information practices that become integral parts of patient encounters. Taking a broader approach, Johannisson and Sundin (2007) viewed information practices as research objects useful for understanding how the Swedish nurses engaged in discourse with each other using both scientific/evidence-bound language and holistic and healing repertories to account for their attitudes toward the production and use of information that defined them as nurses. Bonner and Lloyd (2011) took a broader perspective showing how the multidimensional (location-based, knowledge-based, situation-based) information practices of renal nurses created their identities as nurses "at the time of practice." Finally, Zolnierek (2014) described certain

information practices that nurses perform as a way of "knowing the patient." All the papers in this category look at information practices as constitutive of the professional identity of a nurse as manifested in texts, practices, or discourse. These researchers concluded that information practices can be used to promote specific or special interests regarding what the profession should be, including who is a cognitive authority and what should or should not be considered information worth knowing.

**Information Practices That Constitute or Reveal Organizational Structure**

Finally, six papers in the literature outline how information practices develop structure as a result of the repetitive performance of information work by a CoP or reveal complex processes that go into the performance of information practices at an organizational level.

Writing in the *Journal of the Association for Information Science and Technology,* Isah and Byström (2016) showed how the information practices of a team of physicians (a CoP) developed into "learning by information seeking" as a specific information practice and part of the physicians' learning experience at an African hospital. Tariq et al. (2013) also noted how collaborative and complex iterative processes developed between various departments concerning the administration of medication at Australian Residential Aged Care Facilities (RACFs). Wibe et al. (2015) investigated the information practices of Norwegian healthcare providers and hospital professionals at the point of patient discharge and observed that: (a) information was being produced in parallel processes across different providers; and (b) healthcare providers faced many challenges when trying to tailor information to different patients.

Roos (2012) used activity theory to examine information practices related to conducting research in molecular medicine, finding that information practices were defined by the researchers as various tasks, routines, and activities (information work) they performed separately and in teams while seeking information in various open-source libraries or by searching databases such as PubMed. Roos (2015) looked at the information practices of biomedical scientists in context to their work as researchers, and Roos (2016) studied the nature of the information practices found in the domain of biomedicine as a way to study the domain of knowledge needed by researchers in molecular medicine.

**Update on Information Practices Literature Since March 2017**

The original literature review for this study was conducted in the month of March in 2017. Since then, the topic of information practices has aroused more scholars' interest. Nordsteien (2019) looked at the information practices of nursing school undergraduates as they moved from being students to being new employees in a healthcare workplace (newcomers). Nordsteien (2019) shared the same definition of information practices as a constructionist concept as Lloyd (2011) and McKenzie (2003b). Nordsteien presented the argument that an evidence-based practice (EBP) perspective is common ground for student nurses and newcomers settling into organizations because information practices related to seeking evidence are diffused across both contexts. The findings from this study reinforce the idea that information practices and the practices' approach illuminate how and why information is used in the healthcare workplace (Lloyd & Somerville, 2006). Olsson and Lloyd (2017) expounded on the embodiment of information practices in the construction of knowledge—especially

regarding how people learn from others—by performing a cross-comparison of the learning experiences of renal nurses, refugees, and archeologists. These authors argued that information practices research has overlooked the role of embodiment, noting that bodies are not passive "but actively create and anchor information, making the embodied experience of practice visible" (Olsson & Lloyd, 2017, p. 7). Central to Olsson and Lloyd's argument is the idea that embodied information practices exist in the same way that social information practices occur and that both types of information practices are products of social construction; embodied information practices are key to how people interpret information and come to make sense of their situations.

Diekema et al. (2019) used the phrase "information practices" but did not define the term; they used it as a phrase to describe general information-seeking actions of students enrolled in professional bachelor's degree nursing programs. The results of their survey of 349 recently graduated nurses revealed the need for more information literacy training to better prepare nurses for the information intense/evidence-based practices they will encounter in the professional world. Gallagher and Olsson (2019) looked at differences in information and identity practices and needs between the "doctor as a clinician" and the "doctor as entrepreneur"(p.1). Gallaher and Olsson did define information practices as sociological and constitutive; they adopted Lloyd's (2011) definition of information practices as an array of socially and materially mediated activities and skills that produce shared understanding and mutual agreement about ways of knowing and collective recognition of how work is performed, enabled, and constrained. Critical discourse analysis of the data collected from in-depth interviews with six early-career Australian surgeons revealed a wide gap in physicians' access to

information about how to be a “good entrepreneur” in addition to an impact on their identity as physicians. The results suggest the existence of a strong relationship between information and identity practices and how they advance each other as complementary theories for explaining how people seek information, learn their profession, and regulate their identities.

**Summary of the Literature Review of Healthcare Providers**

This literature review confirms that the study of information practices shows great promise for understanding how social practices and cultural factors shape information seeking in organizations and professional domains. This literature review reveals that information practices can be defined, theorized about, analyzed, and modeled using a number of methods, including activity theory, communication accommodation theory, content analysis, discourse analysis, document analysis, domain analysis, the practice approach, and the social history of technology. The literature review also shows that the topic of information practices and healthcare providers has received limited attention from scholars thus far. What the literature review does identify are three major areas of healthcare information practices: as information work, as constitutive of identity, and as constitutive of organizational structure. What is missing in the research conversation about information practices and healthcare providers is more studies that focus on the sociological and relational aspects of information practices. Except for McKenzie and Yeoman, researchers have not taken an information practices approach to understand both why and how healthcare providers choose the information sources, that is, the cognitive authorities, on which they base their knowledge. This study aims to contribute to the information practices and healthcare providers canon of literature. The following

chapter is an overview of the research design, methods, theories, data collection tools, and data analysis techniques used to explore the phenomenon of the information practices of cannabis nurses.

# CHAPTER THREE

# RESEARCH DESIGN, PROTOCOL, AND SAMPLE

> *Well, defining "cannabis nurse" is something that I don't think is that popular yet, so, I mean how would we define a cannabis nurse?* —Mason, RN

## Aims, Objectives, and Research Question

In this study, I aim to explore how self-described cannabis nurses connect and interact with information sources as part of their journey in learning how to provide cannabis care to patients. An information practices approach focuses on how the social and cultural aspects of an individual's everyday life shapes the way in which the person seeks sources of information they can trust (Savolainen, 1995, 2007a; Yeoman, 2010). An information practices approach is useful for producing a rich description of how cannabis nurses are finding information sources, using information, and adding to their stock of knowledge (McKenzie, 2002). The rich description that will arise from these data should prove helpful in designing information systems, nursing training programs, health communication content, and government policy related to the therapeutic use of cannabis.

### Research Objectives

This study has two research objectives. The first objective is informatic in nature, as it focuses on the exploration of how cannabis nurses connect and interact with information sources in their search for cognitive authorities on the topic of cannabis therapeutics. This objective includes identifying the type of cognitive authorities on cannabis therapeutics the nurses came to trust, as well as describing how nurses become cognitive authorities.

The second objective is to describe the information practices of cannabis nurses by applying the existing McKenzie Information Practices (MIP) model (McKenzie, 2003b; Yeoman, 2010). A secondary but related objective is to use the MIP model to better understand the related concepts of information work and information grounds.

**Research Question**

To this researcher's knowledge, the information practices of cannabis nurses is a topic that has not been studied before, so an exploratory study is an appropriate first step. As a component of an exploratory study about a topic about which little is known, the research question under consideration is purposefully nonspecific and broadly stated.

Research Question: *What are the information practices of cannabis nurses?*

The information practices of cannabis nurses is a timely topic, as the informatics of cannabis care and cannabinoid science are just now emerging. Information systems are needed before cannabis therapeutics can be fully and safely integrated into mainstream medicine. Specialized decision support tools for the use of cannabis clinicians, researchers, cultivators, processers, retailers, and consumers are still in early stages. McKenzie (2002) noted that findings from a study based on information practices will inform the design of clinical and administrative information systems, decision support tools, and software interfaces. Developing a deep understanding of how cannabis nurses are connecting and interacting with information sources in social settings is a starting place for understanding these nurses' technical and information systems needs. A deeper understanding of the information practices of cannabis nurses, especially concerning their incorporation of the cannabis patient as an information source, will also enlighten the design and implementation of efficient organizational processes in the healthcare

workplace and will influence cannabis nurse education and training programs. Likewise, studying the information practices of cannabis nurses may also reveal how the social stigma of cannabis may be altering the usual and customary ways in which nurses learn.

## Research Design

"Exploring the Information Practice of Cannabis Nurses" is an exploratory study grounded in the traditions of qualitative research. As such, this study does not seek to quantify the practices or behaviors of cannabis nurses; nor is the focus of this study to generalize the results to a larger population. Instead, this study takes a social phenomenological approach to better understanding how self-described cannabis nurses are connecting and interacting with information sources as they learn how to be cannabis nurses. This exploration is accomplished by using the MIP model to explain how and why the nurses are seeking information about cannabis (McKenzie, 2003b). The following section outlines the social phenomenology research approach to designing this study and explains how expert and snowball sampling techniques were used to produce the sample set. This section also describes the research design and protocol using semistructured interviews as the data collection tool and lays out how data analsyis was conducted.

### Research Approach and Perspective

This study takes a social phenomenological approach to research design. Social phenomenology focuses on how the individual develops their stock of knowledge and makes sense of their world using interactive information and communication processes with other people in social settings (Schultz, 1967). Taking a social phenomenology approach supports the theoretical underpinnings of information practices as a concept

(Savolainen, 2007a). In the case of this study, to take a social phenomenological approach meant designing the interview questions to reflect everyday life information-seeking behavior (ELIS) in social situations and settings (Savolainen, 1995).

This study also takes a constructionist perspective toward collecting and analyzing the data by drawing on what Marcia Bates (1999) described as the "red thread of information in the social texture of people's lives" (p. 1048). Pulling on the red thread of "cannabis information" that wove its way through the lives of the nurses made it possible to explore how their information-seeking practices might be turning into discourses, routines, habits, and rules. These structuring effects also enabled the nurses to present different versions of themselves and to create new realities. The constructionist perspective also supports the idea that facts and data are assumed to be "materially, rhetorically, and discursively crafted in institutionalized social practices" (Tuominen et al., 2002, p. 278), making the trustworthiness of the sources of such facts and data preeminent concerns for the nurses.

Taking a constructionist perspective is also in alignment with the MIP model, which is firmly rooted in social constructionism and discourse (McKenzie, 2003b). The MIP model proved especially useful for recognizing language-centric patterns that developed across the sample (McKenzie, 2003b; Yeoman, 2010). A conscious decision was also made to refer to the nurses in the study as "participants" and not "subjects." As participants, the nurses were better able to contribute to meaning making, as they both asked and answered questions, rendering the interview a constructive learning experience for both this researcher and the nurse (DiCicco-Bloom & Crabtree, 2006). The following section outlines the sampling strategy used to form the sample population for this study.

**Sampling Strategy**

A method that combined expert sampling and snowball sampling, both of which are variations of nonprobability purposive sampling techniques, was used to locate and recruit participants for this study (Lincoln & Guba, 1985). Using a nonprobability purposive sampling technique calls for the researcher to nonrandomly recruit participants with specific characteristics and expertise from a designated population—in this case, self-described cannabis nurses. Researchers who study nurses and information including information sources, information practices, and information seeking frequently use this type of purposive sampling technique. For example, for a study on how community nurses accessed and assessed pharmacological information, Hall et al. (2003) used purposive sampling to select 22 community nurse practitioners and five prescribing nurses. McKenzie (2006) used a stratified purposive sampling technique to study the textually mediated relationships and information practices of 31 midwife–client pairs in 11 different midwifery practices. Dawes and Sampson (2003) performed a literature review of 19 research studies concerned with knowledge management in clinical care; they determined that 26% of those studies used purposive sampling. Bonner and Lloyd (2011) also used purposive sampling in their study of the information practices of six renal nurses, as discussed earlier.

A hallmark of purposive sampling is that it does not require the researcher to have a set number of participants in mind before embarking on the study (Etikan et al., 2016). Instead, the researcher discerns the profile of the person who knows what needs to be known and then actively recruits people who fit that profile. In determining who might be a suitable candidate for the study, the researcher considers the candidate's credibility,

knowledge, experience, willingness, availability, and ability to reflect on and articulate and communicate their experiences and opinions (Etikan et al., 2016). This type of purposive sampling is known as expert sampling and, as the name suggests, it draws its participants from a population of experts on the topic—in this case, experts in cannabis nursing. Etikan et al. (2016) recommended using expert sampling as an excellent tool for investigating new areas of research, to understand better what further research needs to happen, or to discern what direction the study should take. Expert sampling is considered the best way to elicit information from participants who have specific expertise (Trochim & Donnelly, 2001). Also, given that this researcher is not a nurse, expert sampling was the logical choice for assembling the sample. Below are listed the criteria for inclusion for the experts in this sample. Participants had to:

- Reside in a state where medical cannabis is legal.
- Have a professional nursing credential or degree (LPN, BSN, RN, APA, PhD-N, or NP).
- Publicly describe themselves as a "cannabis nurse."
- Be currently engaged as a nurse or educator in cannabis-based medicine.
- Belong to the American Cannabis Nurses Association (ACNA). [optional]
- Have earned six Certified Education Units (CEUs) in cannabis-based medicine or attended events, conferences, or meetings where the topic was medical cannabis.
- Be between the ages of 18 and 89 years of age.
- Be fluent in English.

Snowball sampling also proved to be a useful technique for reaching cannabis nurse populations that would normally have been inaccessible to this researcher (Trochim & Donnelly, 2001). For example, once a cannabis nurse had been contacted and/or agreed to take part in the study, the nurse was asked to identify other cannabis nurses who they thought might be interested in participating in this study. The criterion for participants in the snowball sample was the same as for participants in the expert sample. Snowball sampling resulted in the participation of five nurses who had not seen the recruitment email and were not part of this researcher's personal network.

## Recruiting Candidates to Participate

After receiving the approval of Rutgers University's institutional review board (IRB) and with the permission of the ACNA, a website, InformationPracticesResearch.com, was launched to facilitate the recruitment of candidates for the study. Having the website gave the target group of experts, in this case the cannabis nurses, confidence that this was a study sponsored by a reputable university, undertaken by a trained researcher, and overseen by the IRB. The study website provided potential candidates with a description of the study's goals, criteria for participation, what to expect, and the researcher's curriculum vitae. As all interviews for this study took place online, this website proved especially useful in facilitating the informed consent process and provided the recruits with easy access to the researcher's contact information.

In July 2018, the ACNA sent an email to their members inviting them to participate in this study. Candidates who expressed an interest were contacted by phone or email to give them an opportunity to ask any questions they might have. During this

phone call, the researcher determined whether the candidate met the criteria for participating in the study and wanted to move forward. Candidates were also asked for any referrals or recommendations as part of the snowball sampling technique described earlier.

In addition to recruiting candidates from the membership of the ACNA, this researcher also recruited candidates from personal contacts developed from the Cannabis Nurse's Network (CNN) and from attending cannabis nurse education and networking events such as "What Nurses Need to Know about Medicinal Cannabis," presented by Princeton University Hospital in Plainsboro, New Jersey, on February 18, 2017; from attending the Cannabis Nurse Meet-Up in Denver, Colorado, on May 5, 2017; and from being a member of the advocacy group the Coalition for Medical Marijuana in New Jersey.

Although the researcher did recruit candidates from states across America, most of the candidates were from California. To further diversify the sample by location and increase the number of participants, this researcher sent a second recruiting email to the ACNA membership in September 2018. The two recruitment emails launched through the ACNA and other sources produced a total of 75 viable candidates. Eighty-five percent of these candidates responded via email, while 10% texted and 5% telephoned about their interest. Of the 75 candidates who responded to the recruitment campaigns, 32 people either dropped out by not scheduling a screening phone call or were determined to be ineligible after the screening phone call. The two reasons candidates were screened out were: (a) the nurse identified as more of a cannabis nurse enthusiast and had yet to pursue

education; or (b) the nurse did not publicly identify as a cannabis nurse. This left a final sample population of $N = 43$ from the following sources (see Table 1).

**Table 1**

*Source of Candidates*

| | |
|---|---|
| American Cannabis Nurses Association | 26/43 |
| Cannabis Nurses Network Facebook page | 8/43 |
| Referrals from other people | 4/43 |
| Personal network | 5/43 |

Of the sample population of 43 cannabis nurses, eight cannabis nurses scheduled interviews but eventually left the process through their own volition. In total, 35 participants were interviewed for the study, four of whom were interviewed, but their data were not included in the study data. The data from these four participants were not included for the following reasons: one of these participant's audiotape of the interview was damaged and the interview was not rescheduled; two participants were ineligible because they were still uncomfortable publicly disclosing they were cannabis nurses (both requested they be interviewed for their own experiential purposes); and the fourth participant was a cannabis physician. The two participants who were uncomfortable joining the study but still wanted to be interviewed did provide valuable insight by revealing the sense of the internal struggle nurses go through as they decide to enter the cannabis nursing space or openly advocate for the therapeutic use of cannabis. This is especially true for nurses living in places where being a cannabis nurse means risking their professional license, reputation, and even personal freedom. The interview with the

cannabis physician was thought-provoking in that it shed light on the diagnostic and prescriptive role of the cannabis physician in comparison with the focus on patient education, hands-on caregiving, and rehabilitation that this sample of cannabis nurses exhibited. In the end, the goal to enroll 20–30 participants in the study was exceeded, as the final sample set was $n = 31$. The sample set fell into five strata of cannabis nurses:

- nurses working in their own private cannabis care practices or advocacy efforts
- nurses working for cannabis dispensaries
- nurses working in mainstream medicine where cannabis therapeutics were tolerated and sometimes prescribed
- nurses working in mainstream medicine where cannabis therapeutics were not tolerated or are ignored
- nurses working for dedicated cannabis primary care practices

## The Demographics of the Sample Set

The expert sampling strategy and successful recruitment campaign resulted in a sample of highly educated and experienced experts in cannabis therapeutics, which adds a sense that the medical information is valid and that the participants are trustworthy. Expert sampling also contributed to this researcher's personal knowledge about nursing, nurses, cannabis, cannabis nursing, and the therapeutic use of cannabis (Etikan et al., 2016; Sandelowski, 2002). The strategy of combining the two sampling techniques also helped to increase the size of the sample, which helped to improve the explanatory power of the data (Patton, 1990). The sample provided population-specific data, and the snowball widened the sample range as those participants were referred into the study by

other participants and not contacted by the researcher directly (Foster, 2004; Miles & Huberman, 1994). All in all, nonprobability purposive sampling techniques produced a sample set that allowed this researcher to fulfill the objectives of this study, even though the results are not generalizable, because the sample is not an accurate representation of the overall population of cannabis nurses.

The demographics of the sample showed that the population was, in large part, homogeneous. Because this is a study focusing on nurses, not surprisingly, 87% of the sample set were women, a statistic close to the national level where 91% of the total number of registered nurses (RNs) in the United States are women (Minority Nurse, 2020). More interesting was that 87% of the study's sample set were Caucasian. This statistic is 12% higher than that of the nursing population in the United States, which usually reports that approximately 25% of nurses are people of color (approximately 10% of RNs are Black or African American [non-Hispanic]; 8% are Asian; 5% are Hispanic or Latinx; 2% categorize themselves as two or more races; and less than 1% are American Indian or Alaskan Native), while 75% of RNs are Caucasian (Minority Nurse, 2020). The level of education for the sample set was high, with 84% of the sample holding either degrees as an RN (64%), Nurse Practitioner (10%), or a master's in nursing (10%). The sample set was also made up of experienced nurses, with 77 % of the sample having more than 11 years of experience. In addition, the ages of the nurses in the sample were about equally split, with 52% of the sample being over the age of 50 and 48% of the sample being between the ages of 21 and 50. Finally, over three-quarters of the nurses in the sample set (77%) identified as cannabis nurses and not as nurses who advocate for cannabis.

This last statistic, and other attributes that emerged with this sample, will be discussed in greater detail in following chapters. The overall demographics of the sample set are shown in Table 2. Figure 4 shows that the final sample ($n$ = 31) came from a total of 15 different states. It should be noted that all the nurses in the final sample set claimed they were current members of the ACNA, but their memberships were not officially verified with the ACNA.

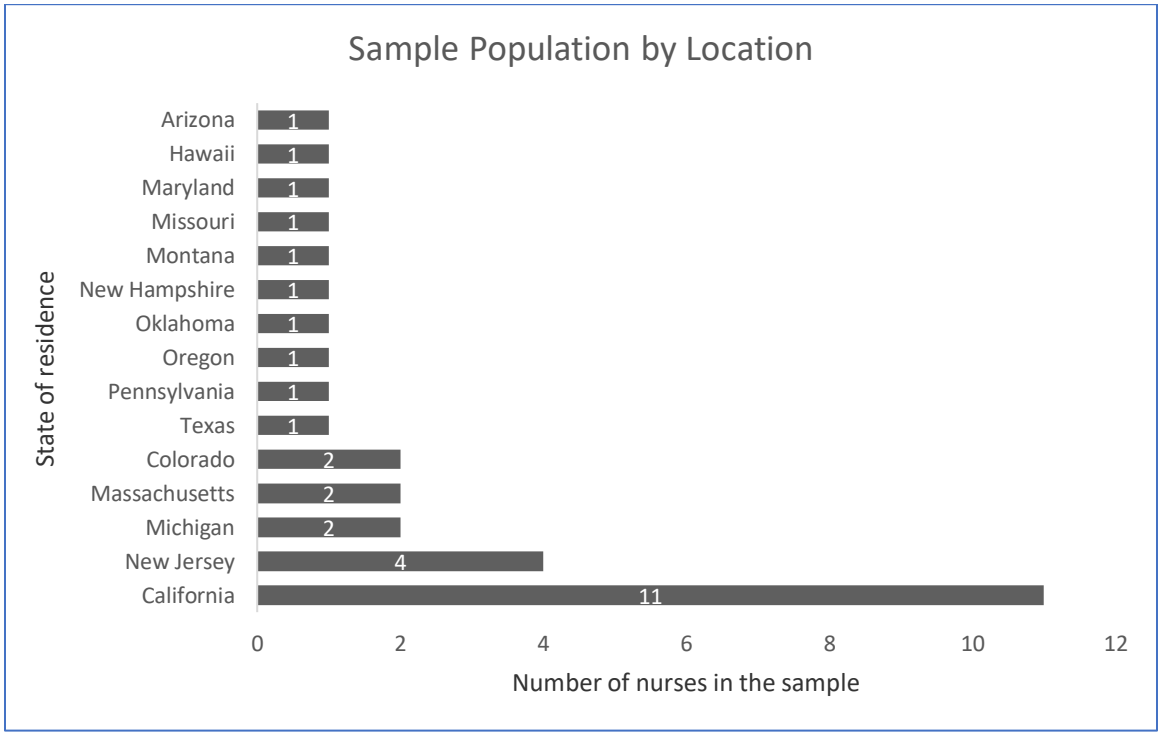
**Table 2**

*Demographics of the Sample Set*

| | |
|---|---|
| Sample population: | $N$ = 43 |
| Sample size: | $n$ = 31 |
| Gender: | Female = 27<br>Male = 4 |
| Race/Ethnicity: | Caucasian = 27<br>Hispanic = 2<br>Mixed race = 1<br>Not disclosed = 1 |
| Education and credentials: | Registered Nurse (RN) = 20<br>Bachelor of Science in Nursing (BSN) = 4<br>Master of Science in Nursing (MSN) = 3<br>Nurse Practitioner (NP) = 3<br>Licensed Practical Nurse (LPN) = 1 |
| Years of experience as a nurse: | More than 25 years = 8<br>21–25 years = 6<br>16–20 years = 6<br>11–15 years = 4<br>6–10 years = 2<br>1–5 years = 5 |
| Age range of the nurses: | 66 years of age and older = 2<br>51–65 years of age = 14<br>36–50 years of age = 9<br>21–35 years of age = 6 |
| Describes self as: | Cannabis nurse = 24<br>Nurse who advocates for cannabis = 7 |

**Figure 4**

*Sample Population by Location of Residence*

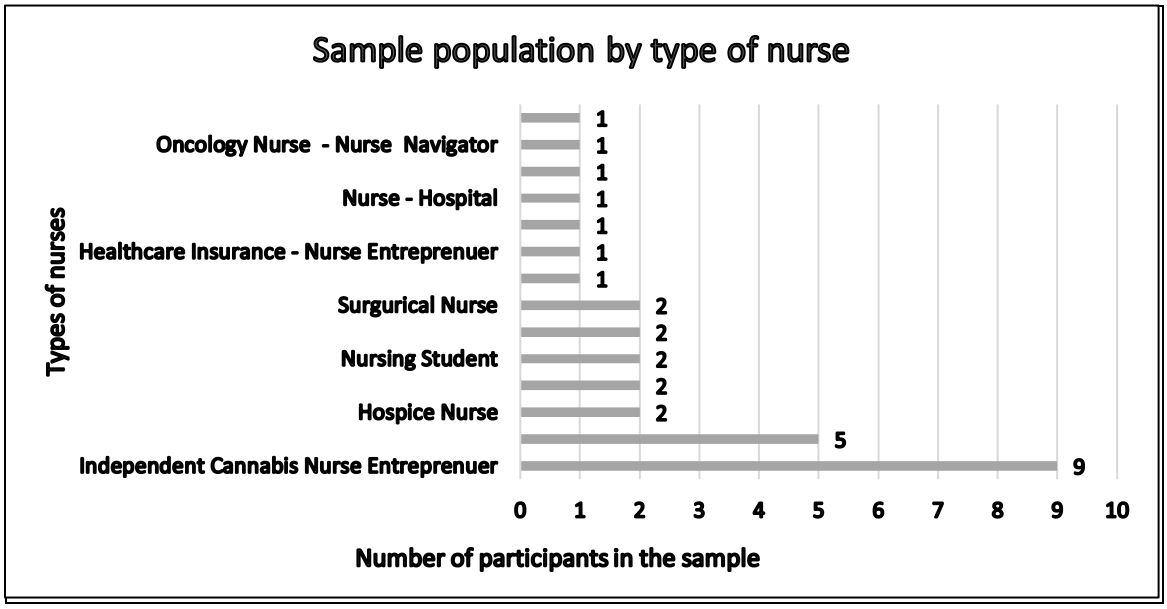



**Analysis of the Sample Population Demographics**

Many of the nurses in this sample set have left their mainstream workplaces and are operating as solo practitioners and starting up organizations of their own. This speculation is borne out by Figure 5, which shows that 29% of the nurses have already started their own independent cannabis nursing practice. In fact, more than two-thirds (68%) of the nurses in the study were classified as entrepreneurs, having either already left mainstream healthcare or being in the process of leaving their current employers to either start or join a cannabis nursing practice or dispensary. This number included the two retired nurses who planned to leave retirement and start or join independent cannabis nursing practices.

**Figure 5**

*Types of Nurses in the Sample*




It is important to note that the nurses operating their own practices were careful to state that they do not diagnose conditions or prescribe cannabis therapeutics. They said their role was to educate patients about how to achieve successful health outcomes using cannabis obtained through legal means. (For a complete list of the participants and their deidentified names, nursing degrees, and level of experience, please see Appendix C.)

## Data Collection Technique—Semistructured Interviews

Semistructured interviews were the primary data collection technique used in this study. Semistructured interviewing entails the use of an interview guide organized using a set of pre-determined open-ended questions, which helps to increase the sense that the data collected come from valid and reliable sources (Gubrium &Holstein, 2002). Although semistructured interviews are commonly used for gathering data when there are

several interviewers in the field (DiCicco-Bloom & Crabtree, 2006), this method was selected for this study both for its fit to the topic and because this researcher has prior professional experience using the method.[1]

Data that were collected from the interviews included opinions, perceptions, attitudes, background information, expert knowledge, facts, and descriptions of the information practices of a specific set of people (Gubrium & Holstein, 2002). Many of the studies cited in the literature review of this paper employed interviews as one of their primary data collection techniques. For example, McKenzie (2003b) used the technique to interview 19 pregnant women about their information practices, and Roos (2016) interviewed 12 biomedical researchers about their research search procedures. Yeoman (2010) conducted 35 in-depth semistructured interviews with menopausal women and then coupled that with data with data from a survey to arrive at her findings. Wibe et al. (2015) interviewed 22 hospital physicians and nurses about the information practices related to discharging patients.

Semistructured interviews are effective because they help to uncover rich descriptive data about the personal lived experiences of participants—data that add depth and nuance to the researcher's understanding of the participant's situation in context. Information gleaned from these data helps move the researcher's thinking from the general to specific and can be used to answer research questions, develop hypotheses,

[1] This researcher was employed as a senior technical specialist and research analyst for Robert Wood Johnson University Hospital Medical School's Division of Family Medicine Research from 2011 through 2013. Semistructured interviewing, field observation, and other mixed methods were used to collect data from clinicians working in New Jersey primary care practices. She recruited patients and collected clinical data for the National Institutes of Health and for the National Institute of Diabetes and Digestive and Kidney Diseases's randomized controlled trials (RCTs). Prior to 2011, this researcher was an entrepreneur and thought leader in human resources and talent management technology, technical recruiting, and vendor management, where she conducted thousands of semistructured interviews.

explain relationships, and create a foundation for future research (Bernard, 2012). Of equal importance is that semistructured interviews allow the participant to share in meaning-making and not just be a conduit from which information is drawn (DiCicco-Bloom & Crabtree, 2006). This approach gives participants more power in the researcher–participant relationship and allows the participant to influence the direction of the conversation through their answers to open-ended questions. Conducting semistructured interviews is also a useful technique for giving the researcher a glimpse into the participant's subjective experience. This glimpse is provided by asking "what" questions as well as "how" and "why" questions (Gubrium & Holstein, 2002). This integrated questioning approach allows the researcher to more fully explore the participant's perceptions, interpretations, and motivations, thereby coming to a better understanding of how the participant is making sense out of their everyday life (Low et al., 2012). Cohen and Crabtree (2006) found that semistructured interviews are the most widely used interviewing technique for qualitative research. The reason is that semistructured interviews are cost effective, collect a great deal of data, and are useful for exploring new or complex topics where little is known—a description that fits perfectly with the topic of the information practices of cannabis nurses.

Given that this researcher is an outsider to the nursing field, semistructured interviews with expert cannabis nurses provided an insider view of the experience of being a cannabis nurse. As Gubrium and Holstein (2002) advised, "The less a researcher knows about a topic, the more appropriate is the use of open-ended and less structured interviewing techniques" (p. 495). The semistructured interviewing technique provided the researcher with the ability to pose essentially the same questions to each participant.

The semistructured interview technique also allows the participants the flexibility to add their own insider information and the researcher to pursue new or interesting topics that emerge (Gubrium & Holstein, 2002).

**Designing the Interview Guide for This Study**

The MIP model was used as a framework for designing the semistructured interview questions. This effort began by deconstructing the concept of information practices into its two meta theoretical components (structuration and situativity theories) and its two middle-range theoretical components (practice theory and community-of-practice) (Lloyd, 2010; McKenzie, 2003b; Savolainen, 2007a; Yeoman, 2010), as discussed earlier in this dissertation. The next step was to design questions about information seeking, needs, and uses that spoke to each of the theories. Structuration questions focused on collecting data about the daily information-seeking routines, habits, and rules of behavior the nurses developed over time as they taught themselves how to be cannabis nurses. Situativity questions were designed to bring out details relevant to how the nurses used information to connect and interact spontaneously with people about cannabis therapeutics in social settings. Practice theory helped guide the development of questions that revealed the differences and similarities between information use in cannabis nursing and "regular" nursing. Of particular note is that using questions based on CoP theory with the nurses produced origin stories and revealed their shared interpretative repertoires. As a topic, the shared interpretative repertoires proved so interesting as to deem it worthy of its own study; as such, share interpretative repertories will be only lightly defined in the remainder of this study.

To help generate a variety of different responses, various questions types were employed in the design of the questions. These questions include sentence frames such as "complete this sentence" questions, which allowed the researcher to compare answers between participants. This interview guide also included free recall questions, such as asking participants to list tasks, which helps the researcher to gather as much data from each participant as possible. Free recall questions are useful in that they require fewer participants to establish a set of relevant items and to achieve saturation in the data (Gubrium & Holstein, 2002, p. 498).

Nineteen interview questions emerged and were mapped back to the four major theoretical foundations of the study (structure, situativity, practices, and community of practice). It should be noted that not every question was asked of every nurse, as the nurse often provided the answer to one question while responding to another question. One of the questions that was developed was intended to solicit documents and forms the nurses had created to help them in their practice of cannabis nursing. This source of data did not materialize and is not represented in this study.

As noted, the questions included in the interview guide were semistructured to allow for new questions, insider observations, and interesting digressions to develop. Also, each question was accompanied by probes aligned with the research questions, theories, and findings to date, which helped facilitate dialogue between the researcher and the participant while allowing opportunity for new questions to emerge (Cohen & Crabtree, 2006). The following section details the protocol that emerged for interviewing the participants. (To review the protocol and instruments, including the interview guide, please see Appendix D.)

**Participant Interview Protocol**

Rigorous adherence protocols contribute to the sense that the data collected are reliable and trustworthy and do not reflect the bias of the researcher (Gubrium & Holstein, 2002). The protocol developed for this study called for the researcher to engage with each participant in a single 60-minute interview using the same semistructured interview guide. The interview guide provided a consistent and repeatable process for questioning and data collection that was followed with each participant. Also, as part of this protocol and as an outsider to nursing, this researcher took on the role of student, with the participants being the experts and the educators. An overview of the research protocol adhered to for this study follows.

Once the nurse indicated they were interested in participating in this study, a screening call was scheduled, during which this researcher and the nurse discussed the study and confirmed the nurse's eligibility. If the nurse met the criteria for inclusion and agreed to be in the study, the researcher then scheduled the 60-minute semistructured interview. All interviews were conducted online using Zoom online meeting software. Zoom allowed the nurses to join the meeting through their own computers or through their phones. The nurses were also asked to review the informed consent process and the informed consent form on the study's website before the interview. After the interview began, this researcher turned the webcam off to help reduce visual input and to better listen to what the participant was saying. When the interview was over, the camera was turned back on to discuss the "participant transcript review process."

**Producing the Transcripts—The Participant Transcript Review Process**

All interviews were recorded and a full transcription of the encounter was produced. Interviews ranged from 40 minutes to 82 minutes in length and resulted in over 45 hours of audio recordings and 800 pages of transcripts, with each transcript averaging 25 pages. Rev.com, an online secure service provider, was used to transcribe the audio files. In total, 31 transcripts were uploaded into NVivo 12 and were analyzed to create the dataset for this study.

Protecting participant confidentiality and privacy was and is of utmost concern for this researcher. This researcher used substitute words and assigned pseudonyms to deidentify and mask all personal participant data and unique identifiers referenced in the resulting transcript by either the researcher or the participant.

To further ensure the trustworthiness of the data, especially the accurate use of medical terms, the researcher carefully reviewed each audio recording and the resulting interview transcript to correct any transcription errors found. Any information or statement that was unclear in meaning or required more explanation from the nurse was highlighted in the transcript. The reviewed transcript was then emailed to each participant, along with their pseudonym and detailed instructions on what actions they could take. Their choices of actions were to:

- Confirm by email, text, or phone that the transcript was correct as is.
- Make changes or corrections to the transcript using MS Word Review functions.
- Discard the transcript and reschedule the interview or withdraw from the study.

- Do nothing and be notified in 2 weeks that the transcript would be included.

Participants who did nothing were offered an additional 3 weeks to return a response and informed that if no response was received, their transcript would be entered into the dataset without further changes.

The transcript review process proved popular with the participants, with 58% of the participants (18 out of 31) entering their transcripts into the dataset with no edits; the remaining 42% (13 out of 31) made edits to their transcripts. Most of the edits involved deidentifying data and corrections in medical terms. Once this researcher had made the requested edits to the nurse's transcript, the corrected transcript was emailed back to the nurse, who was offered the same options given earlier (see above). Of the 13 nurses who made edits, only three asked to review the transcript a second time. Eventually, all 31 transcripts were reviewed and approved, after which the transcripts were uploaded into the qualitative research analysis tool NVivo 12 to be coded and made searchable.

**Improving Trustworthiness, Rigor, and Quality of the Data**

In qualitative research, validity and reliability are conceptualized as trustworthiness, rigor, and quality (Golafshani, 2003, p. 604). Trustworthiness in qualitative research is bound up with the perception that the researcher is adequately aware of their personal biases and is being truthful in representing the reality of the phenomenon being studied (Denzin, 1978). In an ongoing effort to enhance trustworthiness, this researcher continually assessed whether the semistructured interviewing technique being used to collect data aligned with what the nurses were saying in the interviews. To do this, this researcher took a step back from the interviewing to reflect and to ask the following questions:

- Is the technique of semistructured interviewing providing an adequate degree of accuracy and the type of information practices data needed for this study?
- Are the semistructured interviews revealing a full range of the phenomenon of the information practices of cannabis nurses?
- Are the semistructured interviews generating enough detail to find answers to the research question “What are the information practices of cannabis nurses?” and to fulfill the aims and objectives of the study?
- Is the semistructured interviewing technique producing discernible patterns in the data?

To ensure the quality of the data collected, this researcher developed clear goals, defined objectives, and a focus on observing the phenomenon of information practices only as it pertains to the topic of cannabis care. The following techniques were also used:

- To improve the data quality and validity in the main study, four participants were interviewed to test out the interview protocol, interview guide, and data analysis techniques and to make any adjustments needed.
- The interviews for this study were conducted within a 6-month period; thus the data collected roughly reflect the same time span.
- To preserve the accuracy of the data collected, only recordings of interviews with high enough quality to be transcribed accurately were included in the dataset.
- To protect the accuracy of the content of the data, a transcript review process was instituted where only interview transcripts that participants confirmed as accurately representing their words were included in the study dataset (see the

section “Producing the Transcripts—The Participant Transcript Review Process”).

- To better manage study data file naming conventions, study ID number administration and a study style sheet were used throughout the study to create a consistent look and feel for study materials as well as to improve the searchability, management, and tracking of study data.

**Pilot Study and Adjusting the Interview Guide**

A pilot study was conducted with the first four participants (designated in the data with an ID number that begins with the letter “P”) to test out and improve the interviewing process and protocol and to refine the interview guide. This turned out to be an effective strategy, as the interview guide did change based on the interviewing experience with those four participants. After seeking and receiving IRB approval to change the interview guide, the researcher added three new questions. The first question asked the nurses to rank the level of information and influence of a variety of human sources of information; the second question queried the nurses about their experiences as part of a CoP; the third question asked the nurses to reflect on any differences they saw between being a cannabis nurse and “regular” nurse. As a result, the interview guide was adjusted to reflect a better understanding of which questions were relevant and which questions were either not needed or unsuitable for this sample population. If a nurse was particularly loquacious or liked to get off topic, it was necessary to limit the number of questions, which sometimes affected the data collected for that participant. Analysis of the coding revealed that 17 of the 19 interview questions were asked of or coded for 22 of the 31 participants. In other words, 70% of the sample set was asked 90% of the same

questions. The questions that usually were not covered during the interview were the questions that dealt with the nurse's relationship with a patient's family. This question was unsuitable for 11 of the 31 participants, or 35% of the sample, because of three factors: (a) the nurse was focused on cannabis education so didn't have patients; (b) the nurse was just beginning their cannabis nursing practice and hadn't worked with patients' families yet; or (c) the nurse worked in a medical cannabis dispensary and had not yet developed those kinds of relationships. Table 3 shows how many participants were asked each category of questions in the interview guide. (To review the codebook for the study, please see Appendix E.)

## Data Analysis Process

By September of 2018, 27 interviews were transcribed, had been approved by the participants, and were uploaded into the NVivo 12 database and ready to be coded. Choosing the order in which to code the transcripts was one of first decisions the researcher made. Instead of working through the list of transcripts numerically or chronologically, the researcher used a random list tool to generate the order of interviews to be analyzed. When four new interviews were added in October 2018, the remaining list was sorted into a new random order and the remaining transcripts were coded. Randomly selecting interviews for analysis allowed for the researcher's improvement in interviewing skills and the changes in the interview guide to be reflected in the data analysis in the development of the codes. The result of randomly selecting interviews improved the quality and consistency of the coding and helped the researcher to develop new codes.

**Table 3**

*Number of Participants Responding to Each Question*

| Interview Guide Question(s) | Number of Participants Questioned |
|---|---|
| Q01 Identity as a nurse | 29 |
| Q01 Reason for being a cannabis nurse | 29 |
| Q02 Reaction from others | 31 |
| Q02 Routine response in social setting | 30 |
| Q03 Routines around being informed | 30 |
| Q04, Q10, & Q12 Information work | 31 |
| Q05 Serendipitous situations | 22 |
| Q06 Negative or opposing views | 30 |
| Q07 Patient encounter | 28 |
| Q08 Relationship with patient's family | 11 |
| Q11 & Q13 Trusted sources | 25 |
| Q14 Desired software or application | 23 |
| Q15 Hard-to-find information | 27 |
| Q16 Human sources | 31 |
| Q16 Rating as cognitive authority | 27 |
| Q17 Member of CoP | 24 |
| Q18 Difference vs. "regular" nursing | 22 |
| Q19 Attributes of a cannabis nurse | 25 |

As the interviewing process continued, the interviews fell into a rhythm, with the topic of the nurse's personal journey into cannabis nursing often taking up the main part of each conversation. As Table 4 shows, most of the interview dialogue clustered around human sources (311 coding references); the nurses' ratings and conversation around cognitive authority (159 coding references); and discussions about the various kinds of information work they performed, such as finding information, developing their

knowledge base, and sharing their knowledge (125 coding references). Coding for specific information science attributes, such as the modes and phases of the information practices model, emerged from the opening coding experience and will be explained in later sections and is not present in the data in Table 4.

**Table 4**

*Interview Guide Questions by the Number of Coding References*

| **Interview Guide Question(s)** | **Number of Total Coding References** |
|---|---|
| Q16 Human sources | 311 |
| Q16 Rating as cognitive authority | 159 |
| Q04, Q10, & Q12 Information work | 125 |
| Q01 Identity as a nurse | 68 |
| Q01 Reason for being a cannabis nurse | 66 |
| Q11 & Q13 Trusted sources | 61 |
| Q02 Routine response in social setting | 56 |
| Q06 Negative or opposing views | 53 |
| Q07 Patient encounter | 52 |
| Q03 Routines around being informed | 46 |
| Q05 Serendipitous situations | 39 |
| Q02 Reaction from others | 38 |
| Q15 Hard-to-find information | 35 |
| Q18 Difference vs. “regular” nursing | 31 |
| Q17 Member of CoP | 30 |
| Q19 Attributes of a cannabis nurse | 28 |
| Q14 Desired software or application | 25 |
| Q08 Relationship with patient’s family | 20 |

*Note.* Questions are placed in order of most-used codes to least-used codes.

**The Coding Process**

The study design called for the use of deductive qualitative analysis (DQA) to open code the first four interviews (designated with a study ID number beginning with "P") before interviewing the participants for the main study (designated with a study ID number beginning with "M"). Although open coding is usually associated with inductive studies, experts suggest that open coding a few transcripts is a way to ensure that important aspects of the qualitative data are not missed (Gale et al., 2013, p. 4). Coding using DQA begins with the researcher having preliminary codes and themes in mind. Over the course of the study, these codes and themes are meant to be tested for viability, furthered refined to be more useful, or expanded to include new codes and themes as they emerge from the data (Gale et al., 2013; Miles & Huberman, 1994).

The process of open coding the first four interviews was slow, usually taking between 6 and 8 hours, and the individual thematic codes emerged at a rapid pace. As a first step, this researcher open coded each transcript with themes such as information use, information work, information sources, stigma, and attitudes toward research in mind. Each code that emerged from the data was described and eventually assigned to a category during axial coding. To certify that the data had meaning, every attempt was made to warrant that the thematic codes developed during the coding process were unique to each other and not observing the same things. To improve the granularity and searchability of the data in the NVivo database, the transcripts were densely coded, with 190 being the most often used code in one transcript and 105 being the least often used code. An all-time high of 551 references were coded in M30—Lana, who was one of the most knowledgeable and experienced cannabis nurses in the sample set. A low of 230

coding references were made with M05—Logan, who was more of an activist than a practicing cannabis nurse. By the 11th transcript (M16—Peyton), saturation in the data began to appear. As Table 5 shows, axial coding techniques helped merge the codes into a set of 17 categories of questions, along with the number of unique codes in each category.

**Table 5**

*Axial Coding Categories and the Number of Unique Codes in Each Category*

| **Categories of Codes** | **Unique Codes in the Category** |
|---|---|
| 1) Activity Theory | n/a |
| 2) Attitude | 8 |
| 3) Cannabis and Health | 66 |
| 4) Cognitive Authority | 32 |
| 5) Communication Channel | 4 |
| 6) Community of Practice | 26 |
| 7) Entrepreneurial Thinking | 1 |
| 8) Family | 6 |
| 9) Federal Law and Policy | 5 |
| 10) Information Practices | 11 |
| 11) Mainstream Medicine | 8 |
| 12) Practices | 29 |
| 13) Situativity | 12 |
| 14) State Medical Cannabis Program | 4 |
| 15) Stigma and Misinformation | 1 |
| 16) Structure | 5 |
| 17) Technology | 11 |
| Total number of unique codes: | 246 |

The researcher then proceeded with theoretical coding using the MIP model. This proved to be a challenging experience because the differences between the four modes of information practices (active-seeking, active scanning, nondirected monitoring, and by proxy) needed to be defined in context, and the two phases of information practices (connecting and interacting) needed to be determined as well. It proved especially challenging to discern when the "connecting" phase stopped and the "interacting" phase began. (To review the adaptation of the MIP model that emerged for this study, please see Appendix F. To review the codebook for the study, please see Appendix C.)

### *Effectiveness of the Coding Process*

The use of DQA and of thematic, axial, and theoretical coding techniques proved an effective way to explore the data collected from the semistructured interview process (Corbin & Strauss, 2008; Zhou, 2017). As noted, as the number of thematic codes began to rise, axial coding techniques were applied to relate themes to each other and to group the themes into categories (Corbin & Strauss, 2008). Theoretical coding based on the elements of the McKenzie (2003b) and Yeoman (2010) models of information practices added to the explanatory power and the density of the coding of each transcript, making the dataset very searchable (Corbin & Strauss, 2008; Gale et al., 2013). Theoretical coding using the MIP model proved to be especially useful in exposing unique patterns in the information-seeking practices of the cannabis nurses in this sample.

### *Unexpected Findings, Approaches, and Revelations in the Coding*

There were no unexpected findings, and participant responses did not differ greatly from each other. It was also during the coding process that it became apparent that the data used to determine precise kinds of information work happening within each of

the information practices, as both McKenzie and Yeoman had been able to show, were not emerging. The data for this study are more narrative than dialogic in nature. As such, there are no direct observations or recordings of the nurses enacting information practices in social settings. These data are based on the participant's recall and interpretation of situations.

**How Evidence Is Presented in This Study**

The evidence about to be presented was developed in two ways. The first was to use the elements of the MIP model as theoretical codes to explain how and why the cannabis nurses were connecting and interacting with information sources or information seekers. The second way was to work with the four meta and middle-range theories that underpin the information practice model to frame the design of the data collection tools and the analysis of the data in the study. Taking this multifaceted theoretical approach to the research design helped interpret the data and arrive at findings and suggest implications. By combining multiple theories, it was possible to explain not only how the nurses are using information practices to become cannabis nurses but also why they are walking down this socially risky and potentially dangerous professional pathway. Looking for the presence of multiple theories in their discourse also made it possible to also see how the information practices of these nurses are heralding the acceptance and therapeutic use of cannabis in mainstream medicine. It should be noted that findings that are the result of this theorizing cannot be generalized to the broader population of cannabis nurses but are representative only of this unique sample population of cannabis nurses.

The following chapters will offer a brief discussion of how these theories appeared in the data, which will be followed by various forms of quotations drawn from the transcripts. In the following chapters, the quotations are presented largely verbatim and often contain this researcher's questions as well as the participant's response. This technique is used to reveal how the "red thread" of information about cannabis is embedded in the fabric of the lives of the nurses in this sample set. In the interest of protecting the identity of the participants, all identifying data have been redacted or changed, and all identities, but not gender, have been masked. (For a complete list of the participants, including their nursing credential and level of experience in nursing and as cannabis nurses, see Appendix C.)

In the interest of readability, the quotations have been lightly edited by the researcher during the transcription and review phases to remove "ums" and "ahs" and other utterances that are part of verbal discourse. The participants approved this editing of their transcripts. In the case of some quotations, the researcher has added a note to help the reader make sense of the verbatim quote. In accordance with the study design, each participant went through the transcript review process, in which they reviewed and approved their edited transcripts before the transcript was analyzed.

### *The Use of Verbatim Quotations*

Presenting the quotations verbatim shows the discursive approach to inquiry being taken in this study. Verbatim quotations also reinforce the idea that the semistructured interviews are a joint production of meaning between the researcher and the participant (Corden & Sainsbury, 2006). As Corden and Sainsbury (2006) also noted, verbatim quotations help readers better understand how participants positioned themselves within

their own social context. These types of quotations often give a glimpse of the participants' underlying assumptions, ambivalences, and uncertainties by including the entire chunk of dialogue—not just the exact answer. Verbatim quotations from the transcripts also give voice to the nurses by revealing their exact choice of words, which is appropriate with an expert sample such as this one. Reading the verbatim quotations also makes it possible for readers to "make their own judgements about the fairness and accuracy of the analysis" and gives the participants further voice and agency in the joint production of knowledge (Corden & Sainsbury, p. 12).

Verbatim quotations also provide evidence of the constructionist nature of discourse, as the nurses quoted routinely used their repertoires of nursing terms or stories about their own experiences with cannabis therapeutics to explain what kind of information sources about cannabis they were seeking. Using verbatim quotations as evidence also provides needed context in the effort to identify what barriers are impeding or promoting the nurses' ability to find the information they seek (McKenzie, 2002). The quotations in the following chapters are both evidence and examples of the participants' use of information in becoming and being cannabis nurses.

## Summary of Research Design, Protocol, and Sample

The research question "What are the information practices of cannabis nurses?" is unique and explores an object of analysis that is new to research—that is, the cannabis nurse. This study takes a social phenomenological and constructionist approach to the design of data collection and data analysis strategies framed by the MIP model to explain how information about cannabis therapeutics is entering the lives of the nurses through their information-seeking activities and social interactions.

The research design of this study called for a combination of expert sampling and snowball sampling, techniques used to nonrandomly recruit participants with the specific characteristics and expertise of the self-described cannabis nurse. Participants were mainly recruited (with permission) from the membership of the ACNA, using an email recruiting campaign and the research website InformationPracticesResearch.com. Recruiting took place over the course of 6 months (April–October) of 2018. A sample population of 43 candidates emerged, of which a total of 31 ($n$ = 31) completed the interview process.

The demographics of the sample showed the population was largely made up of Caucasian women, with 84% holding RN, nurse practitioner, or master's in nursing degrees and having an average of 11 years of nursing experience. The demographics of the sample also revealed that that over two-thirds of the nurses in the study had already left their jobs in mainstream healthcare organizations to start careers as cannabis nurse entrepreneurs or were in the process of leaving their current employers to either start or join a cannabis nursing practice or dispensary.

The primary data collection technique used in this study was semistructured interviewing. The interviewing process was organized and managed using an interview guide that contained semistructured and open-ended questions. This method was selected for its efficacy in exploring new topics about which little is known and for its ability to include the participant in knowledge development. All 31 participants in the study sample engaged in a single 60-minute recorded online interview that followed the interview guide. To improve the trustworthiness of the data, the interviews were recorded and transcribed, and then each went through the transcript review process. In this process,

each of the participant's transcripts was returned to the participant for their review and for permission to be analyzed. Over 45 hours of audio recordings and more than 800 pages of transcripts were collected, and no nurses declined to have their transcript included in the study's dataset.

For data analysis, the study design called for the use of DQA for the pilot study and for thematic and theoretical coding to explore the data using the framework of the MIP model. This coding process resulted in a densely coded, highly searchable database of evidence revealing how and why the cannabis nurses were connecting and interacting with information sources or information seekers.

# CHAPTER FOUR

# FINDINGS—COGNITIVE AUTHORITIES

*We really have a hard time getting good information.* —Mickey, RN
*I have since become a cannabis nurse.* —Kelsey, RN

## The Concept of Cognitive Authority

McKenzie (2003a, 2003b) noted that an important aspect of the MIP model is that it illuminates how individuals locate, connect, and interact with potential "cognitive authorities." Patrick Wilson (1983) conceived of the concept of cognitive authority to explain that people developed knowledge in two ways: through firsthand experience by learning from their experiences in the real world; and from sources of knowledge developed by other people and acquired through interaction with people, organizations, or textual sources—something Wilson termed "second-hand knowledge." Individuals seek these sources of secondhand knowledge to expand their narrow range of firsthand personal experience and increase their own knowledge about a topic. Individuals come to view some people, textual sources, or organizations as cognitive authorities, believing that those particular people, textual sources, or organizations "know what they are talking about" or that the person, textual source, or organization is a "proper source" and can be trusted (P. Wilson, 1983; McKenzie, 2003b). When this trust or belief in a source of secondhand knowledge is present, the individual allows the source to have authority or influence over the individual's thoughts; this influence shapes the individual's sensemaking and may impact their decision-making and their actions (Dervin, 1998; McKenzie, 2003a, 2003b; P. Wilson, 1983).

Cognitive authorities are different from experts in that the cognitive authority implies there is a relationship between the individual and the authority. A person can be an expert in something with or without the recognition of that expertise by someone else, whereas “no one can be an authority all by himself; there has to be someone else for whom he is an authority” (P. Wilson, 1983, p. 13). Cognitive authority is also different from administrative authority, which involves the recognized right to command an individual’s actions. As trusted sources, cognitive authorities influence what facts and data the individual finds informative and provides the individual with guidance on how to frame and categorize knowledge, as Patrick Wilson (1983) described:

> The cognitive authority is one we turn to not only for information but for advice even (or particularly) in cases where it is clear that there is no knowledge to be had at all. Cognitive authorities are valued not just for their stocks of knowledge (answers to closed questions) but for their opinions (answers to open questions) and for their advice on the proper attitude or stance on questions and their proposed answers. (p. 19)

### Nurses Becoming Cognitive Authorities on Cannabis Care and Therapeutics

A finding of this study provides evidence that the nurses had become or were becoming cognitive authorities on cannabis care and therapeutics. The source of their cognitive authority came from their personal firsthand experience combined with information gleaned through sources of secondhand knowledge acquired through social practices. McKenzie (2003a, 2003b) claimed that an information practices approach offers a more encompassing understanding of information seeking as a social practice and as an information behavior. This proved to be true when the code “nurse actively acts as a cognitive authority” emerged from the dataset to represent a socially based information practice where the nurse reported they were actively engaging with people about cannabis therapeutics in serendipitous situations. This code surfaced during the connection phase

of the nondirected monitoring mode and exposed a difference in how the cannabis nurses connected with people in social settings as opposed to how people in social setting connected with the participants in the McKenzie (2003b) and Yeoman (2010) studies. As with the McKenzie and Yeoman participants, the amount of connection and interaction between the nurses and the information seekers ranged from passive to active based on their individual personalities and social situations. As with the McKenzie and Yeoman participants, the nurses reported a range of activity, from sometimes simply listening in on nearby conversations to actively interjecting themselves into the private conversations of strangers in public places such as neighborhood barbeques, church events, restaurants, and stores. It was, however, during the connection phase of these serendipitous situations that the code "nurse actively acts as a cognitive authority" captured the moment where the nurses told of presenting themselves as cognitive authorities by relaying their personal firsthand experience and using information learned from secondhand knowledge sources to prove their credibility. Sage's response is representative of this pattern—note that she referenced her personal experience but also alluded to speaking about cannabis therapeutics as part of a community health fair:

> I've done one "health" fair in my community, and there was a person who lived in the neighborhood who was just that way. She must have been in her 50s, and it was like, "Oh, I never would want to smoke that," all of that stuff. It's really when you listen and then you are specific or hone [*sic*] in on their objections without being threatened by it. I call it leaning into them and say, "Yeah. I've got that," and then I'll ask, like, "What does that mean to you? Did you have any experience?" Usually, they'll describe something anecdotally, and then I would come back with, "Well, you know, it's interesting because I'm seeing one of the neighbors here," and Parkinson's is an issue in an elderly community. . . .
>
> I start talking about the benefits, or I get to segue in with "You know, what brought me to this is my son has seizures, and taking this CBD, he will . . . taking it has stopped his seizures," or I'll talk about my husband with the Parkinson's. All of a sudden, they put it into a different context.

**Turning Serendipitous Situations Into Auditions for Cognitive Authority**

The pattern that emerged from the data for this code proved interesting, as it sheds light on when an expert puts themselves into a position where they could be seen as a cognitive authority. The pattern of nurses turning serendipitous situations into opportunities to share information about cannabis from a position of cognitive authority was widespread and was shared by over 90% of the cannabis nurses. The pattern was associated with the nondirected monitoring mode and started with the nurse being alerted to the presence of people interested in cannabis care. Once alerted, the nurse would do a quick assessment to gauge several facets of the situation, including (a) the appropriateness of the setting; (b) the information literacy of the potential information seeker; (c) the person's attitude toward cannabis; and (d) the person's openness to connecting and interacting with the nurse. As Sage noted, the nurse would often share personal narratives or stories about their experience of how cannabis had helped them, their family members, and their patients to connect and interact with other people. The nurses reported mentioning their nursing degrees and demonstrating their knowledge of cannabis therapeutics, the endocannabinoid system, cannabis law and policy, and cannabis products during these conversations as ways of proving their expertise. Nurses also reported trying to extend the interactions they had with people by offering to email them additional information; many of the nurses actively gave out their business cards/contact information and actively pursued future interactions. Sam's and Mason's explanations below are representative of this pattern. Note that both were eager to show they had expertise and empathy for patients seeking information about cannabis.

> *Sam:* I'll first pay attention to see if they're even open to receiving my information, because not everyone wants to be enlightened on something. So if I

> can tell that they are receptive to learning more or are interested in learning more, then I'll interject and be like, "Hey, I'm a nursing student and I advocate for cannabis; I notice you were talking about such and such, I just thought if you'd like to know . . . " and then I'd give them whatever information that they need and then provide my card and say, "Hey, this is my card, I have a cannabis education consulting company; if you have any questions about cannabis . . . basically I do home health visits for this . . . so if you don't have your card, I can come to your house and explain how cannabis works. I can do consultations over the phone—basically resolve any questions you have concerning what is medical cannabis."

Mason's quotation echoes Sam's experience in that both nurses fell into the role of expert when they serendipitously encountered a cannabis information seeker. As Mason noted:

> The other day I was in a Home Depot store, trying to make a purchase, and I spent a little time in there and before you knew it, this lady who was in her 50s started telling me that she's in all this pain. Because, I don't know, people know you're a nurse. She didn't know I was a nurse, she just started opening up, and she's on all these pharmaceuticals that are causing a lot of side effects she wished that they didn't. And I said, "Well have you explored cannabis therapy?" That's how it starts. I ask people, "Have you?" . . . .
>
> "Well I've heard about it. I don't know that my doctor would do it but I've thought about it. But I don't know where to get started." I have a little card I made, and said, "Well you can call me—I'll help you." And I do it for free, I don't charge. If she had any questions she wanted to get started and that's usually—and nobody's saying, "Oh no, that's a gateway drug, we can't do that." Nobody's doing that anymore.

Several of the nurses reported that some of the strangers they interacted with did reach out and start a relationship with them. Nurses also reported that strangers they had met had given the nurse's business card to an active information seeker and had identified the nurse as a source of cannabis information (an example of a by proxy information practice in action). Over time, this connecting and interacting process in the nondirected monitoring mode appears to have become a routine discursive response for the nurses in this sample set. This is evidence that the nurses were considered cannabis care experts, if not full-fledged cognitive authorities, by some of the people they encountered, as Chris illustrated.

> *Researcher*: How did they find out that information about you, that you were a cannabis nurse?
>
> *Chris:* I've had a transition. I was more reticent to actually divulge for a long time, and now, not at all reticent. And I do tell them if they ask me what I do.
>
> *Researcher:* Okay. Are you ever referred to people?
>
> *Chris:* I am . . . both for public speaking and conversations.
>
> *Researcher:* Okay, so people refer to you as an expert.
>
> *Chris:* Yes.

**Who Are Cognitive Authorities for Cannabis Nurses?**

Who a person considers a cognitive authority is specific to each individual and is based on the paradigm of the individual information seeker (P. Wilson, 1983). In the paradigm of the cannabis nurse, the legal restrictions and social stigma associated with cannabis have forced physicians, other clinicians, and medical associations out of their typical roles as cognitive authorities. Of the 22 nurses who were queried about their feelings about the influence of physicians on their thinking about cannabis, 13 (60%) of the nurses rated physicians as having zero to very little influence on their thinking about cannabis; the other nine (40%) said it was dependent on the individual doctor. The nurses did say that if the physician identified as a cannabis physician, that physician's rating as a cognitive authority was a 5. Noel's quotation shows this sentiment:

> *Researcher:* So, information that would come from a primary care doc, would that inform or influence you, that scale of 1–5?
>
> *Noel:* It completely depends on who they are and how they're functioning inside of medicine right now. You can't put every single MD, primary care physician into a box . . . My primary care physician right now is a naturopath and she's very open to all of it. She's an herbalist, although she doesn't specifically work with cannabis—she just hasn't chosen to educate herself, but she's got the most amazing apothecary of herbs she'll mix together and give you a tincture of something, so it really depends upon where they sit and where they straddle the line of being a medical doctor and how they actually practice medicine. If they're

> practicing holistic medicine, they might influence me. If they're not, then they'll actually deter me.

The cannabis nurses did not highly rank other nurses and clinicians as cognitive authorities on cannabis, with a majority of the nurses commenting that they almost always knew more about cannabis then other nurses and clinicians. These cannabis nurses also soundly rejected mainstream medical associations as cognitive authorities on the topic of cannabis therapeutics and medicine. When asked how they would rate organizations like the American Medical Association as their cognitive authority on cannabis nurses on a scale of 0–5 with zero having no influence and five being highly influential, only one nurse rated mainstream medical associations a 5. Seventeen nurses (77%) had no opinion, while seven other nurses (32%) rated mainstream medical associations as having zero influence on their thinking about cannabis. The remaining four nurses gave mainstream medical associations rating ranging from 1 to 2.5. The nurses would often add that they rated cannabis-specific nursing associations, particularly the ACNA, as highly influential (which is to be expected given that the sample set was largely drawn from the membership of the ACNA). They also mentioned organizations such as the American Nursing Association (ANA), the American Holistic Nurses Association (AHNA), the National Council of State Boards of Nursing Boards (NCSBN), the Cannabis Nurses Network (CNN), and professional nursing associations focused on oncology and Alzheimer's as sources they trusted—that is cognitive authorities— from whom they could find information about cannabis they deemed to be accurate, complete, timely, and true.

Similarly, the legal restrictions on cannabis have blocked the pharmaceutical industry from its customary role as a cognitive authority to nurses. The legal restrictions

on product development and marketing have prevented Big Pharma from developing and promoting cannabis products in the same way as for pharmaceutical-grade opioids or other recently introduced medical modalities, such as genomic medicine and joint replacement surgery.

Based on a scale of 1 to 5, with 1 being *no influence* and 5 being *great influence*, all 22 (100%) nurses who responded rated the ability of pharmaceutical firms to influence or inform them on cannabis therapeutics as either 0 or 1. Many of the nurses openly scoffed at the idea of Big Pharma being (or becoming) a source of information about cannabis they could trust, saying they mistrusted the information and doubted the motives and agenda of Big Pharma.

This study also revealed that nurses do not consider "budtenders"—that is, people who work in legal medical marijuana dispensaries—as cognitive authorities; nor do they look to cannabis product vendors or online cannabis communities or social media groups as cognitive authorities, as these sources lack the competency in nursing that nurses value over other expertise.

The nurses in this study did not consider farmers and cannabis product vendors to be credible sources of information about the therapeutic use of cannabis. The nurses did say they liked knowing about cultivation, pesticide, and harvesting practices and rated farmers as trusted sources of information about cannabis in general. Cannabis product producers were valued as sources of general information but were not particularly influential as cognitive authorities as the nurses were generally skeptical about the health claims they made. The nurses also criticized the lack of safety standards and commented

that poor labeling practices by cannabis product vendors made product choice and dosing needlessly difficult.

The results of this study confirm that for these cannabis nurses, patients were their most highly valued cognitive authorities, as Dana explained:

> I've learned more from my patients than I ever did in nursing school on cannabis. They don't teach you hardly anything. I got lucky my nursing school taught me a little bit.

Twenty-six of the nurses were asked some version of the question "Based on a 1 to 5 scale, with 5 being *heavily influenced* and 1 being *no influence*, how would you rank patients on how much your patients influence your thoughts or beliefs and are a source of information about cannabis care for you?" Of those 26 nurses, 20 (77%) ranked patients as heavily influencing their thoughts and beliefs about cannabis therapeutics, and when directly asked, ranked patients as a 5 for information sources. Of the remaining six nurses in the sample, four (15%) ranked patients as 4s, and two (8%) gave patients a ranking of 2, noting that patients didn't really inform them about cannabis but were better sources of information about how cannabis was working in their bodies given that they had had little to no exposure to cannabis education in nursing school, as Dana described earlier.

**Limitations of the Data on Cognitive Authority**

The attributes of cognitive authority such as firsthand experience, secondhand knowledge, and the importance of credibility all came out in this study, as the quotations in the following chapters will show. It is important to understand that the data collected and analyzed for this study shed a weak light on how the nurses chose what sources they would accept as their cognitive authorities. This circumstance occurred because the data collected were based on the nurses' self-reports and not on the actual discourse that happened at the time between the nurse and the potential source or seeker of information.

The data in this study were based on the nurses' recollections and responses to mostly planned interview questions about how they were seeking sources of information they could trust. Lacking video recordings of the actual conversations, the data were limited to the nurses' ranking a source of information as having some level of cognitive authority in their beliefs about cannabis therapeutics. The data collected do allow a glimpse into what sources the nurses considered to be cognitive authorities at the highest level of societal group (patients, farmers, pharmaceutical companies, etc.) but do not show how they selected their cognitive authorities.

### Summary of Cognitive Authority and Cannabis Nurses

Findings from this study show that cannabis nurses are on a pathway to becoming cognitive authorities in cannabis care. Individuals seek cognitive authorities as sources of all-important secondhand knowledge they depend on to expand their narrow range of firsthand personal experience and increase their knowledge about a topic. A large majority of the nurses in this study reported they frequently engaged with people in serendipitous situations about the topic of cannabis therapeutics. The mode of information practice most associated with the nurses' actions was the nondirected monitoring mode. The nurses reported that during the connection phase of the nondirected monitoring mode, they often introduced themselves to strangers as cannabis nurses and then used their firsthand experience coupled with information they had acquired from secondhand knowledge sources to demonstrate their expertise and establish their credentials. Over time, the nurses also reported developing routine responses and established their own rules about when and where to interject themselves into these serendipitous conversations. It is in this way that the nurses are being viewed

as cannabis care experts, if not full-fledged cognitive authorities, by some of the people they encounter.

The results of this study also confirm that cannabis nurses have largely rejected their customary medical information cognitive authorities concerning the topic of cannabis in favor of their own experience and research. The nurses in this study also reported that patients using cannabis therapeutically were their most highly valued cognitive authorities.

# CHAPTER FIVE

# FINDINGS—ACTIVE SEEKING INFORMATION PRACTICES

> *I needed to see the research, so I started digging around and it was really hard to find at first.* —Quinn, RN

## Active Seeking Information Practices Described

Active seeking is the most conscious and directed mode of the information practices. The practice of actively seeking sources of information is concerned with finding answers to specific questions in places where cognitive authorities on their topic of interest are known to be found (McKenzie, 2002, 2003b; Yeoman, 2010). Once the source is located, the information seeker then queries the source in hopes of acquiring the facts and data they need to answer their questions and explain their own firsthand experiences in scientific terms (McKenzie, 2002; P.Wilson, 1983).

The "activeness" of active seeking in social settings exists on a spectrum based on the level of connection and interaction the nurse has with the targeted information source. For example, the nurse attends a social event such as a conference on medical cannabis, where the nurse identifies a specific thought leader as a likely source for the information who could answer their questions about how cannabis works to control pain. The nurse attending this conference (social setting) could connect and interact with a thought leader indirectly by simply listening and noting down the information, or the nurse could overtly connect and interact by introducing themselves to the thought leader to see if this person could answer their specific questions or had the right information to satisfy their information need.

Active seeking takes place online with textual sources[2] and in social settings with other individuals. From a textual perspective, the active seeking mode is recognizable as online information seeking. An example of textual active seeking for the cannabis nurses would include running and refining a PubMed search query about a specific cannabis research topic until the nurse found the information that satisfied their needs (Choo et al., 2000). According to this sample population, they actively sought information about four types of information: (a) how and why cannabis therapeutics works in the body; (b) what cannabis strain and terpene profile works best for which health conditions; (c) dosing, safety, and side effects of cannabis therapeutics; and (d) legal restrictions and state policies governing cannabis therapeutics. The nurses reported that actively seeking more information about cannabis began to take up more time in their lives when they found out about the existence of the human endogenous endocannabinoid system (ECS) and its connection to the cannabis plant through phytocannabinoids such as cannabidiol (CBD), cannabigerol (CBG), and delta 9 tetrahydrocannabinol (THC).

**Communication Phases in the Active Seeking Mode**

The connection and interaction phases of the active seeking mode could not be precisely determined using these data because exactly how the nurses connected or interacted with textual or human information sources was not fully explored. The pattern of actively seeking out a known source, either textual or human, and then asking a planned question or questions was fully established with these data.

[2] For purposes of this study, textual sources refer to sources of information accessed through nondiscursive means such as reading, listening, or viewing. Examples of textual sources are books, articles, blogs, research papers, magazines, digital publications, websites, podcasts, research databases, journals, textbooks, television, cable, radio, internet news outlets, and podcasts.

## Active Seeking Information Practices and Cannabis Nurses

The data in this study suggest that actively seeking out textual sources was often the first action the nurses took to help dispel their increasing uncertainty about what they thought they knew about cannabis. It was when their need to know and their innate curiosity about cannabis became greater than their concern about damaging their professional reputation that they actively began to seek information. The data showed the nurses using active seeking information practices as a strategy to find scientific and evidence-based facts and data to explain what they were experiencing with cannabis in their everyday lives. This finding is keeping with Marchionini's (2006) conjecture that internet searching supports learning by helping the seeker to acquire knowledge, comprehend concepts, aggregate data, and interpret and compare ideas and form concepts into a coherent understanding (p. 43). In the quotations that follow, the nurses told of using several types of sources to learn different things; they also told of using different types of sources to accomplish different tasks. The nurses engaged in fact retrieval or "lookup" searches, a process that offers a different capacity for learning than does exploratory searching for particular answers (Knight et al., 2017). Dana's response is typical in that the nurses alluded to seeking sources of information about cannabis beyond the world of peer-reviewed medical journals. The nurses often cited search engines, cannabis-specific websites, and advocacy groups as sources where they could find information about cannabis that they could trust was valid—something they could not find in mainstream medical sources.

> *Researcher:* Think of a time when you needed information about cannabis-based medicine to either answer your question of your own or to come up with a solution. Who did you turn to first, or what source did you turn to first when you had that question?

> *Dana:* Hmm, so. Google Scholar's been wonderful because I tend to look up a lot of overseas, namely Israeli, studies; but I also go to, as I said before, there's Leafly, which is strain specific . . . just for different genetics to see what are their predominantly reported effects so that I could use them therapeutically with patients. There's the Coalition **********. I seek them out for a lot of the legalities. There's the American Cannabis Nurses Association. Parents for Pot. CannaKids. The Cannabis Nurses Network. It's literally—it's a free-for-all. There's just a lot of information out there and I use my phone. I use the internet most of the time, yeah.

As Dana explained, the nurses turned first to search engines to gain access to research not readily available through their customary medical research sources. The nurses would also actively seek specific information about cannabis from cannabis-specific advocacy organizations and websites they deemed to be aligned with their values, interests, and information needs.

Dana also alluded to the tendency to take a "bricolage approach" to information seeking by incorporating information from diverse sources to help their patients. To take a bricolage approach to constructing or problem solving is to "make do with what is at hand" (Levi-Strauss, 1966, p. 17). The nurses took a bricolage approach to researching the topic by consulting multiple sources that were available to them so they could develop their understanding of medical cannabis over time. It is important to note that these nurses did not completely abandon their customary textual sources of information, such as CINNAL, PubMed, and the Cochrane Studies, as Quinn's comment below reflects. It is also true that these customary textual sources did not produce the information the nurses needed. Consequently, the nurses were forced to seek information outside their customary sources and to rely on information coming from patients, as Quinn described.

> *Researcher:* Think of a time when you needed information about cannabis-based medicine to answer a question or to come up with a solution or recommendation. Who or what source did you turn to first for help?

> *Quinn:* Usually, if I had a question about a disease someone is asking me about, I would usually go with the Cannabis Health Index, and then from there I'll maybe do the Google Scholar search or do a CINAHL search or do a . . . Go to the Cochran Library and do a search for any kind of systematic reviews.
>
> *Researcher:* Nurses are generally trained on evidence-based medicine. So, as a nurse, what is the role again of evidence-based medicine, which is the classic double-blind randomized control trial model? What do you think that role is in cannabis nursing?
>
> *Quinn:* That's the gold standard. That's what I always go looking for—meta-analysis using the Cochran Libraries. I don't find too many studies on that, and some of it always concludes with we need more research. We do try to use evidence-based and mostly what we're hanging our hat on . . . This is my opinion . . . that we're hanging our hat on what people tell us. In the end, they're telling us something. It's either working, not working, and that's the challenge. Everybody's just a little bit different, requires different dosing and then different routes.

The nurses did turn to social media sites as sources for patient stories and narrative experiences, as Lee explained about her use of Reddit as an information source. Lee also described not trusting the medical validity of information she found through social media sites—thinking Lee shared with the other nurses in the sample.

> *Researcher:* Think about a time when you need information about cannabis based medicine to answer a question. Who or what, who being a human or what being a source, did you turn to first for help? Where did you go?
>
> *Lee:* I will usually go to PubMed or UpToDate.
>
> *Researcher:* Okay. Do you ever go to social media?
>
> *Lee:* I do. Have you heard of reddit?
>
> *Researcher:* Yeah.
>
> *Lee:* Yeah. There is a cannabis subreddit and there's a subreddit just called "trees" and I will occasionally go just to see what people who are more experienced in terms of using, and you'll see medical patients on there from time to time, just to see what their actual experience is. I will occasionally, but I will not use that as far as anything that I'm going to give patients. It just guides me in terms of like what I might be able to let them know what they can expect, but a lot of these people are very experienced users who primarily smoke, who smoke a lot and have very high tolerance.

As Noel indicated, the nurses did actively seek answers about specific questions from other cannabis nurses; however, most nurses in this sample set said that they didn't have close ties to other cannabis nurses, so their ability to consult other cannabis nurses was limited.

> *Researcher:* Think of a time when you needed information about cannabis-based medicine to answer a question or come up with a solution or diagnosis. Who or what source did you turn to first?
>
> *Noel:* If it's a general question, I'll Google it. If someone asks me or says something like "What do you think about cannabis for migraine headaches?" I just scan the literature and pick pieces out and kind of get back to and make a little bit of a conclusion myself around "Yes, people are using it. Yes, there is research going on. Yes, people are talking about the efficacy of this." If it's something that is more specific and a recent question came up that I thought really needed an expert opinion, I asked one of the nurses who I look to as an expert, and she's one of the founders of the [organization], and I just asked her direct questions about specific patient questions. Like really specific patient questions.

Again, note that Noel described taking a bricolage approach to finding the information she needed to answer specific questions. Chris, in turn, described how active seeking information could also be an embodied practice where she was actively seeking information by touching and "knowing" the cannabis plant, as well as by consulting with experts in the production of cannabis therapeutics. Chris also alluded to assimilating this plant-based information to create her daily "research piece" where she figured out how to apply what she learned to delivering cannabis care to her patients:

> *Researcher:* So how does cannabis-based medicine express itself in your daily life? So start in the morning and walk me through your day with information about cannabis.
>
> *Chris:* Okay . . . most of my day from the beginning of the day until the end of the day is focused on research, learning, information, visuals—I'm a kinesthetic learner, like most adults are. I have the opportunity to go in, look, feel the plants, touch the plants, ooh and ahh at the plants, go back and assimilate all that information, interact with people who are producers, growers. And the final research piece of every day is: How can we better position patients to achieve their optimum level of health?

That the nurses took these various approaches to seeking answers is a direct result of the barriers they encountered when they began their quest for answers about the therapeutic use of cannabis and how cannabis works in the human body.

**Barriers Encountered by the Nurses in Active Seeking Mode**

Whether textual or social in nature, barriers to actively connecting and interacting with sources of information exist. The main barrier experienced by the participants in this study is the status of cannabis as a Schedule I Controlled Substance. Participants used active seeking information practices to circumnavigate this impediment and increase their stock of knowledge at the same time. This designation has resulted in American healthcare providers losing access to cannabis, cannabis research, and information on cannabis (Carter et al., 2011). As noted earlier, the effort to criminalize cannabis culminated in 1970 when the US government added cannabis to the list of Schedule I Controlled Substances, which includes drugs such as heroin, PCP, and Ecstasy. For this reason, American researchers have been stymied from conducting the kind of extensive evidence-based research into how and why cannabis works in the human body that clinicians need to help patients. It should be noted that cannabis being listed as a Schedule I drug has also prevented pharmaceutical firms from developing cannabinoid-based formulations. This designation is also depriving us of a voluminous amount of research into the products, dosage, side effects, contraindications, labelling, and the outcomes of clinical trials. Finally, the stigma and the risk to personal liberty that cannabis users and clinicians face is also a barrier to actively seeking out information about cannabis and cannabis nursing.

Nikita's response below was indicative of the sample set's strongly held opinion that the U.S. federal government should remove cannabis from the Schedule I Controlled Substance list because that designation was inhibiting research into a whole range of issues, including dosing, side effects, and health outcomes. Note also that Nikita referred to her own firsthand experience as having given her the information she needed to care for patients: "I know it works because I see it daily. I'm going with my own practice and what's helped in my life." This is an example of where the nurse is gaining confidence in their own stock of knowledge and expertise and, in effect, becomes their own cognitive authority.

> *Researcher:* What kind of information about cannabis-based medicine has been hard for you to find?
>
> *Nikita:* Some studies. You want certain studies. There's a lot of people out there who want evidence-based research and it's not there; but I know it works because I see it on a daily basis. I'm going with my own practice and what's helped me in my life, and understanding the science behind it makes sense to me, but there are people out there who want evidence-based. What I would like is have the government declassify it and we study it because there's so many applications to it we don't even know yet, that are nonlethal, that won't kill anybody.

Logan too pointed out that the federal restrictions on cannabis have held back research on cannabis therapeutics for decades.

> The federal government really is, has been, stultifying the kind of research that needs to be done on marijuana therapy. You know, marijuana's a Schedule I drug, it is nearly impossible to get. It's impossible to get large-scale trials done, you just, it just cannot . . . these large-scale clinical trials, the double-blind placebo controlled trials, cannot be done. The National Institute of Drug Abuse, which controls the only supply of marijuana for research . . . you know that they have as their mission to only find harms associated with marijuana, not to find benefits associated with marijuana. So the research has really been frustrated for decades.
>
> I mean for people to be saying, you know, "we need more study on this" . . . I've been hearing that since the 1960s, you know, we gotta study marijuana more, and then they won't allow the studies to get done.

The nurses were united in wanting cannabis to be removed from the Schedule I list but divided on whether it would be best to reschedule, deschedule, or legalize cannabis entirely. Peyton's reply to the question of what she felt should happen with the legal status of cannabis encapsulates all three positions.

> *Researcher:* As a nurse, are you more inclined to be in favor of descheduling it, legalizing it completely, or rescheduling it as its own separate drug category?
>
> *Peyton:* Again, you know, it's less toxic than alcohol honestly in the long run, and it's a much better medication than anybody wants to be clear on, because—talk about propaganda that has been thrown at people from the federal government stage. . . .
>
> I was encouraged by seeing the law that they have ... The bill that they've been trying to get put into law since 2014 and it still hasn't moved hardly a dime. It's still just trying to get moved through the Care Bill. . . .
>
> It's so frustrating when you read those kind of things that people have been trying to get changed. I don't know. It would be way better if they put it into its own schedule of a Schedule VI, instead of even a Schedule II, but having it as a Schedule I is just pathetic and all about [the] Nixon-era and the whole. . . .
>
> Again, all of it is about a propaganda on making sure that the American public really doesn't know the truth or want to know the truth. I would prefer it be in its own schedule as a Schedule VI, which is a lot less of a problem. . . .
>
> If I had real choice, I'd just take it out of the whole [Controlled Substance Act list] and just make it legal and quit picking on people.

Of peripheral interest to active seeking, Peyton's statement reflects a tendency for some of the nurses to say they wanted cannabis therapeutics to be rescheduled, which would likely result in cannabis therapeutics becoming pharmaceutical drugs using synthesized and manufactured cannabinoids for ingredients. Other nurses, such as Chris, align with the idea that cannabis therapeutics should be more like a supplement, using only plant-based ingredients and cannabinoids derived from the whole plant.

All the nurses were unified in believing that the federal government of the United States is interfering with their ability to learn about and do research into cannabis. Noel

pointed out that she turned to research sources from other countries for information. She also noted that cannabis being a Schedule I controlled substance was preventing American clinicians from using a treatment modality that has been proving effective in other countries and in places where cannabis is legal at the state level, explaining:

> The only thing to me right now that's restricting cannabis on a larger scale as being acknowledged as a therapeutic medication is its legal status. I really believe that there's . . . You can look to Israel. You can look to Europe. You can look to Canada. You can look to other countries where . . . You can even look to the states themselves that have legal marijuana and see dramatic drops in opioid usage, opioid-related deaths, that I believe the only thing that's going to be holding back is going to be the legality. The deregulation of this plant is going to . . . Not even rescheduling, but a descheduling of this plant, taking it off of the Schedule I drugs.

Lee voiced the shared conclusion that anecdotal evidence about the efficacy of cannabis for certain conditions was valid and reliable but that the lack of evidence-based research on the therapeutic use of cannabis was limiting progress. As Lee noted, opening up cannabis therapeutics to evidence-based research would prove that cannabis has medicinal value and that whole-plant medicine is important to its efficacy.

> *Researcher:* What information about cannabis-based medicine is it that you think will tip the skeptical nurse over to a supporter?
>
> *Lee:* I think—acknowledge that the majority of our evidence is anecdotal, but we can't deny what we've seen works for, like what we've actually seen work ourselves. The only reason why it's anecdotal is because we cannot move into like full-scale human trials just because of the issues with federal legislation. I think acknowledging that and saying like, "We can do this safely and sanely, but it's something that shouldn't be just written off."
>
> *Researcher:* What is your thought or feeling or opinion about the role of evidence-based medicine and the gold standard double-blind randomized control trial in cannabis based medicine?
>
> *Lee:* I think that would open so many doors if it would be possible that we can actually do anything with that. If the federal legislation was dropped and if we could test more strains than what is grown in Mississippi—and they're not even actively growing right now. I think that would be huge. It would be what

> everybody is suspecting if not believing all along—is that it's the whole plant . . . as far as nutraceuticals or pharmaceuticals would go. There's something there.

In searching for information sources and cognitive authorities, Peyton's experience detailed the barrier that being on the Schedule I Controlled Substance list has on cannabis therapeutic researchers, including a widely respected oncologist who has been blocked from doing research with cannabis—resulting in an absence of important knowledge about how cannabis may interact with other drugs—something Peyton feared could be endangering patients who used cannabis along with other pharmaceuticals.

> *Peyton:* I broach the subject with our lead oncologist at the [medical foundation] that I work at, Dr. XXXX is his name.
>
> He's an extremely knowledgeable oncologist. Writes a lot of national papers on oncology and different ways to help patients with tumor burdens and whatever new immuno therapy is out there . . . .
>
> But because there's not a whole bunch of research because it's completely federally discouraged, therefore he said, "I can't really even cite any studies." Any studies that have been done are very minimal amounts." He said, "I can't really condone yet anything because there's no discussion of real studies to put out there that this is working." For any type of a tumor burden, it's only for side effects.
>
> *Researcher:* What did he mean by real studies? What do you think he was referencing? What did he mean by real?
>
> *Peyton:* Like they have to have X, Y, and Z, and so many study groups out there and so a huge participation of it.
>
> *Researcher:* Double-blind randomized controlled trial?
>
> *Peyton:* Exactly. Exactly.
>
> *Researcher:* What do you think?
>
> *Peyton:* GW Manufacturing has been doing a lot, and they actually got through Phase Three studies here for the seizure activity. I would love the feds to just lift out all of this for study participants, but that's obviously not going to happen in the United States until the federal government stops interfering into this. I wish they would do a lot more studies because it would be much better for patients in the long run. Side effects from cytotoxic drugs are severe and end patients' lives.

Logan described what information is difficult for the nurses to find and gave a glimpse into the kind of precise questions for which the nurses were seeking answers. He explained that we know so little about dosing, mode of delivery, and other practical matters of prescribing cannabis. He also expressed deep frustration with the U.S. federal government for interfering in research into the therapeutic value of cannabis, because this restriction deprived him and others of informational evidence that he could apply to patient care.

> *Researcher:* What kind of information about cannabis-based medicine has been hard for you to find, or do you think is hard to find?
>
> *Logan:* Yeah, well I'd say people still don't know a lot . . . I think there's an awful lot of research that still needs to be done about . . . like a woman who came up to me and said she had breast cancer, and she didn't want to go the traditional route, she didn't want to go with radiation and surgery and chemotherapy, and so she wanted to try a nontraditional route, or perhaps blend, maybe do a lumpectomy, and instead of doing radiation and chemo, she wanted to try cannabis therapy, but what kind of information, you know, what kind of cannabis? What strain, what form, is it a topical, is it . . . an oral dose that you take, and how many milligrams do you take a day for this . . . what's the ideal kind of way to use the therapeutic potential of cannabis to help with breast cancer?
>
> So it's been shown in a laboratory that cannabinoids can interrupt cancer, the progress, in various ways. It can cause cell apoptosis, or cell death; it can interrupt with tumor formation by interrupting the blood supply, the angiogenesis; and it can also interrupt various . . . processes of metastasis in various ways. But how exactly, and what exactly to recommend about this, that's something I don't know, and I don't know that that information is even available really.
>
> That's one example of the kind of studies, the kind of information that really needs to be out there. Yes, CBD products can help people, but how you take them, how often you take them, what strength do you use to take them? This is information that really needs to be researched and to be somehow codified in a more consistent way.
>
> *Researcher:* Do you see any attempts or any movements towards that?
>
> *Logan:* And then for the government to say that they can't reschedule marijuana because there's not enough research to be done, when they are the ones that are frustrating and stopping this research, it's just Kafkaesque, it's an absurd—it's an insult to science, to researchers, to patients everywhere. We are allowing federal police, the DEA, to determine what scientific and medical studies can be done on

> marijuana, and this is an outrage. We need to resolve, as a community, as a nation, to stop this, and to never again allow police to determine the limits of our science and our medicine. So I mean it's a terribly frustrating situation that we live with.

### Use of Technology by Cannabis Nurses in Active Seeking Mode

The ability of the nurses in this sample set to use information and communication technology (ICT) ranged widely, with no discernible patterns or preferences emerging according to the size of the sample set. All the nurses in the study made use of personal ICTs such as laptops, tablets, smartphones, and desktop computers to manage their information and connect to the internet. An interesting observation is that the nurses who came from rural states such as Oklahoma, New Mexico, Michigan, and Arizona cited access to broadband as a limiting factor in their ability to source information. The nurses each developed a mishmash of different strategies for managing their own digital resources, including setting up RSS feeds and alerts, creating lists of resources in MS Word documents, using bibliographic and web tools such as EndNote and Evernote, and making use of web browser–based tools such as Pocket and Google Bookmarks to tag digital sources.

### The Effect of Active Seeking on Cannabis Nurses

The data in this study point to there being two main and ongoing effects of active seeking information practices. For these nurses, the data show there is a learning effect from active seeking information practices similar to the learning effect experienced by active seeking information practices of teams in the workplace (Isah & Byström, 2017). The idea that information seeking, especially actively seeking through textual sources, results in learning was supported by Isah and Byström (2016) in their study of a team of physicians collaboratively learning at work through their everyday access to medical

information. Isah and Byström noted that learning is "enacted by, embedded in, and sustained as a part of the work activity itself" (p. 318). There is, however, a major difference between the active seeking information practices of the physicians in Isah and Byström's (2016) study and the cannabis nurses in this study. Isah and Byström (2016) were able to confirm that the physicians were part of a CoP. This CoP both formally and informally sanctioned and legitimized various information sources and search strategies as being "proper and correct" for the hospital as its own institution and for their medical community in general. In the case of the nurses in this study, actively seeking information about cannabis or learning how to be a cannabis nurse was not something they did collaboratively, but individually—no such CoP as the physicians experienced existed for any of the nurses in this sample set. The nurses in this sample each actively sought and curated their own collection of trusted sources of secondhand knowledge. The nurses combined information from these trusted sources with their firsthand experiences with the therapeutic use of cannabis; each nurse developed an individualized stock of knowledge about cannabis care. What the data also show is that the stock of knowledge each cannabis nurse developed individually on their own was like the others across the sample set. This similarity in experience and knowledge about cannabis care is evident in the origin stories the nurses shared and in the shared interpretative repertories the nurses used to explain how they came to identify as cannabis nurses and what it means to know how to deliver cannabis care to patients.

Active seeking information practices can be seen to be having a structuring effect on the everyday lives of the cannabis nurses in this study. The data show that actively seeking information about cannabis is influencing the daily routines of the nurses in this

study. This structuring effect is resulting in the development of habits and rituals related to cannabis information seeking and is possibly reinforcing their identities as cannabis nurses (Bourdieu, 1977; Giddens, 1984). As posited by Giddens (1984), structuation theory recognizes that individuals act and take actions within specific contexts and are in dynamic relationships with social structures. These social structures are formed through the constant repetition of these acts and actions by individuals operating within the same time and space. The result of this constant repetition of acts and actions by individuals then reinforces and reproduces the context and social structures in which the individuals exist (Tuominen et al., 2002). Giddens termed this dynamic the "duality of structure." As duality of structure explains, habits and rules are the products created through the constant reproduction and daily repetition of actions such as actively seeking sources of trusted information.

However, the nurse participants in this study quickly found that social structures such as nursing education programs and clinical guidelines did not exist; nor were there sanctioned cannabis information sources they could access for guidance. In the case of most established professions and professional domains, sanctioned sources of information and what is "correct" knowledge are well established. For existing professions and professional domains, there are social groups that guide, enable, and enforce the rules and resource constraints of the group (Giddens, 1984). For the cannabis nurses in this study, social groups such as the ACNA and the CNN were mentioned as beginning to serve their needs for guidance, rules, and resources. Due to the newness of the learning situation, the nurses in this study constituted their own individualized method of being a cannabis nurse by establishing their own rules of behavior and set their own standards

regarding what constituted trusted sources of cannabis information or who was considered their cognitive authority. Each of the nurses decided on their own terms what cannabis information was important to them; each nurse settled on their own professional rules and guidelines for what they could do and tell their patients. The data reveal that the structuration of the nurses' everyday lives was manifested by the amount of information work the nurses performed to support their active seeking information practices.

## Information Work and Cannabis Nurses

Information work, as noted earlier, is a close cousin to information practices—it also deals with the role of information in everyday life and as part of routine life in the much the same way information practices do (Hogan & Palmer, 2005; Savolainen, 2007a) but differs in its emphasis on resources and not social interaction. For purposes of this study, information work is conceived of as a situated activity and a shared strategy that encompasses both information practices and information behavior and governs how members in a group (e.g., a workplace or CoP) engage with information and sources as well as employ information skills that are sanctioned and endorsed by the employer or community as being proper and appropriate (Lloyd, 2011). Information work is operationally focused, and the performance of information work puts the emphasis on the time, money, and personal connections—that is, the resources—that individuals employ in actively and purposively satisfying their needs for both routine and unique information (Reddy & Dourish, 2002).

As noted, information work has been defined by scholars using various terms to mean the cognitive actions and social activities involved in locating, probing, sorting, interpreting, assimilating, and sharing information (Corbin & Strauss, 1988; Savolainen,

2007b). This definition also includes the cognitive and physical work the seeker engages in with technology to capture, manage, curate, and archive information (Hogan & Palmer, 2005). All types of work involve production, construction, consumption, or use of information (Hogan & Palmer, 2005; Wiener et al., (1997). Corbin and Straus (1988) explained that without successful information work, other kinds of work cannot be completed (p. 4). Reddy and Dourish (2002) made the point that information work requires the expenditure of resources such as time, money, or personal connections. Lloyd (2010) described information work as a situated activity and a shared strategy that requires resources (time, money, materials, relationships, etc.) to satisfy both unique and routine information needs; information work includes both social information practices and cognitive information behavior.

The concept of information work was first discussed in Corbin and Strauss's (1988) study on the effect of chronic illness on people's lives. In this study, the authors set out to document the amount of information work involved in caring for someone with a chronic condition. In doing so, they identified three broad categories of information work: activities that involved gathering, finding, and probing for information (Corbin & Strauss, 1988, p. 10; Savolainen, 2007a). Hogan and Palmer (2005) added to the definition by describing information work as locating, gathering, sorting, interpreting, assimilating, giving, and sharing information. Adherents to the concept of information work also look at the actions the seeker takes once the information has been retrieved to see whether the information has been assimilated, shared, or digitally stored (Hogan & Palmer, 2005).

As a structuring mechanism, information work is the easiest to identify as work performances, work processes, and work products that can be observed and measured in real life. The data in this study do not support knowing the exact nature of the information performances, work processes, or work products that the nurses undertake, but it does show the nurses going through various phases of information work, such as the information management phase and the information sharing phase, depending on their unique life situations, as Miranda and Tarapanoff (2008) theorized. For the nurses in this study, the data show that their personal situations, individual levels of information literacy, access to broadband internet connections, and personal information preferences governed how they conducted their information work and expended their resources.

**Information Management Work and Cannabis Nurses**

For purposes of this study, information management is defined as the skills, processes, actions, and tasks an individual undertakes to see that information is stored and retrievable, including identifying information needs, acquiring, organizing, sharing, and using information (Bouthillier & Shearer, 2002; Choo, 1998; McInerney, 2002; T. D. Wilson, 1989). Based on these data, time was found to be the main resource the nurses expended in doing information management work. This information work centered on both answering questions and finding evidence to support their own firsthand experience with cannabis therapeutics. What the nurses reported took the most time was locating sources of secondhand knowledge they felt they could trust—time that included vetting the source as a possible cognitive authority (P. Wilson, 1983).

**Information-Sharing Work and Cannabis Nurses**

The nurses' lives were also structured by the information work they performed to actualize their inclinations to educate and advocate for cannabis therapeutics whenever they could. The nurses reported spending a considerable amount of time and effort each day in sharing both digital and physical forms of cannabis information with their social groups and even with strangers, as Bobbi noted.

> *Researcher:* Complete this sentence for me . . . When I come upon an interesting bit of information about cannabis, I . . . do what?
>
> *Bobbi:* Want to share it with everyone.
>
> *Researcher:* And how do you share that?
>
> *Bobbi:* I'll post it, I'll print it out, I'll make copies of it, I'll leave it in conspicuous places for people to read, I'll pass it on in an email.

As Quinn's quotation demonstrates, a common trait this sample set shared was their high degree of information literacy and their willingness to take on the task of vetting information sources before sharing the information with their social groups. This is an example of the nurse acting in the role of expert and, by doing so, possibly becoming a cognitive authority on cannabis care for individuals within their social groups (Rieh, 2005).

> *Researcher:* Complete this sentence for me: When I come upon an interesting bit of information about cannabis-based medicine, I—do what?
>
> *Quinn:* I double-check the facts on it. I try to find the primary source, where it came from. Who wrote it.
>
> *Researcher:* Do you capture it, share it?
>
> *Quinn:* Yes—both; if it looks like good research, I'll share with friends. Post it on Facebook.
>
> *Researcher:* How do you keep that research organized for yourself? Do you have a list that you keep in a Word document? Do you have bookmarks?

> *Quinn:* Yes. I have a list I keep in a Word document and I usually format it through Perrla. It helps you write, research, and organize your references in an APA format. I have two lists, one in Perrla and then I keep a Word doc, too.
>
> *Researcher:* When you need information, do you go search that document? How do you retrieve it?
>
> *Quinn:* I categorize them with diseases.
>
> *Researcher:* May I ask, what are the categories?
>
> *Quinn:* I use the list of diseases here in our state. It's quite extensive, so I'll have . . . A lot of the diseases I've also found in the *Cannabis Health Index* resource. There's a book and a website and so they're pretty good at finding the most recently searched, so a couple of their studies that I've seen pop up lately are 2017 studies. That site only pulls pieces of research that show positive results from what summarization. It's always positive. There's no negative to it, but there's plenty of negative out there. You just gotta sift through it and keep an open mind. I always like to see how they conducted the research. What they did. What was the dosing? Who was in the study? What disease did they have? Is it self-reporting? Most of it is. It's pretty anecdotal and subjective.

The results of this study show that the nurses were engaged in information work concerning cannabis nursing on a frequent and continuous basis and that once they were engaged, their information work around cannabis became a structuring factor in their lives.

**Lack of Technology to Support Cannabis Nurses**

Information systems, databases, and software applications tailored to the needs of the cannabis nurses and patients have yet to fully emerge in the cannabis market. This deficiency has resulted in the need for each nurse in the study to spend time developing their own ad hoc information management "systems" and work processes to support the delivery of cannabis care to patients. Sandy's description of her experience is representative of that of the nurses in the sample, including Sandy's struggle to figure out a system of organization that worked for her individual learning style.

*Researcher:* When you find that information, that interesting bit of info that you didn't know before and you want to add to your knowledge base, how do you manage that? Do you tag it and drop it into a document?

*Sandy:* I ended up buying this industrial printer. I know this is horrible, but I do like dual-sided printing, but I also have a lot of things stored on my hard drive. I have a special folder. It's all broken down into disease process, or what the main point of the article is. I also have a huge filing cabinet full of stuff.

*Researcher:* How do you categorize that stuff? How do you go about deciding and putting it into categories?

*Sandy:* I do healthcare related, as far as nurses in the profession. Like, how it affects the nurse's part of it in particular. The pharmacy part of it, like if there's any information about it working with other meds, or like inhibiting other medications. I do case studies. There's some more. The legal part of it.

*Researcher:* Symptom relief?

*Sandy:* Symptom relief. Yeah. There's, I want to say like six different categories I do. States, I do separate states too. I try to, if there's information that comes out of a state from something, I try to keep that in its own, for reference.

*Researcher:* How much time do you think you're spending just [on] information management on a daily basis?

*Sandy:* On a daily basis?

*Researcher:* Or weekly.

*Sandy:* Maybe a couple hours. Weekly, it's probably I would say a good 12 to 16 hours. It's probably more than that. I would say that would just be on my own. For school, if I'm doing a paper, I will be on that for 12 hours a day, if I have to.

Most of the nurses categorized their information collections according to specific diseases, conditions, and symptoms. Something that is indicative of the unique nature of cannabis in healthcare was the need for the nurses to include categories of information concerning legal and political issues that surround cannabis.

**What These Data Explain About Active Seeking Information Practices**

There are two major implications of these data on our understanding of the active seeking mode of information practices. First, the actual active seeking practices of the

cannabis nurses differ little from what either McKenzie (2003b) or Yeoman (2010) observed. Both McKenzie and Yeoman framed active seeking as the most conscious mode of information practices. Also, in this study, as with McKenzie's and Yeoman's, the study participants engaged in the same kind of information work and took the same kind of actions. These actions included conducting a systematic search for a specific answer to a question and asking a known source a pre-planned question.

What these data help us understand about active seeking is that although the actual actions of active seeking information are similar across all three study populations, the everyday life-structuring effect of active seeking information practices is dependent on the individual's continued interest in the topic over time. The active seeking information practices for both the McKenzie and the Yeoman sample populations presumably stopped as the pregnant women gave birth and the menopausal women found the information they needed. This was not the case for the cannabis nurses, who spoke of actively seeking information about cannabis on a constant basis over the course of years (78% of the study sample had 2 or more years of cannabis nursing experience).

The second thing that this study teaches us about active seeking information practices is its importance in providing individuals with an alternative pathway to new cognitive authorities. Active seeking information practice became important when the nurses realized the impact that cannabis' being considered a Schedule I Controlled Substance had on their access to evidence-based information about cannabis therapeutics. The nurses used their active seeking information practices to break down this barrier and find new and diverse sources of information about cannabis they could trust. This action also reinforced their belief in the patient as a source of valuable information and

cognitive authority, as noted earlier, and in their own firsthand experience with cannabis as a source of valid, reliable knowledge.

### The Consequences of Active Seeking for the Nurses in This Study

A consequence of the nurses' active seeking information practices was their loss of trust in their customary cognitive authorities. At the heart of their trust issue was the discrepancy they professed to see between their own firsthand knowledge of the efficacy of cannabis therapeutics and mainstream medicine's assertion that cannabis has no medicinal value. This assertion no longer made sense to these nurses, whose own experience and research was proving the assertion false. As noted earlier, at the time of the study these nurses did not view physicians, medical associations, and especially Big Pharma as cognitive authorities when it came to information about cannabis. This perception may change if pharmaceutical firms can develop drugs made from cannabis and American researchers are allowed to freely pursue research into its medicinal qualities. Also, although medical schools, nursing programs, and medical institutions still instruct their students about cannabis' potential for harm over and above its medicinal use, accredited medical cannabis education programs are beginning to emerge even in the face of the federal restrictions.

### Summary of Active Seeking Information Practices

Overall, the effect of active seeking information practices helped to dispel the uncomfortable level of uncertainty the nurse had with their level of knowledge about the therapeutic value of cannabis. Actively seeking out sources of secondhand knowledge about cannabis therapeutics they could trust became one of their first and highest priorities—often proceeding with their decision to pursue cannabis nursing

professionally. Actively seeking information allowed the nurses to acquire the specialized expertise, language, and knowledge they needed to come across as “knowing what they are talking about” when they engage with people about the therapeutic value of cannabis in social situations. Active seeking information practices were increasing their stock of knowledge as cannabis nurses by structuring their everyday lives around cannabis information. Having this stock of knowledge meant that the cannabis nurses themselves could come to be viewed by other information seekers as cognitive authorities on cannabis therapeutics.

# CHAPTER SIX

# FINDINGS—ACTIVE SCANNING INFORMATION PRACTICES

> *If there's something that I don't know I just start looking into it, and I try to get as much information as possible, and then something else comes up, and it just kind of snowballs.* —Sandy, BSN

## Active Scanning Information Practices Described

Active scanning is the most mindful and curious mode of the information practices. The practice of active scanning involves information seekers mindfully browsing textual environments or scanning physical environments where they are likely to find "proper" sources capable of providing them with facts and data about their topic of interest that they believe to be true (Fisher et al., 2004; McKenzie, 2003b; Pettigrew, 1999; Yeoman, 2010). To determine if the potential source is indeed "proper" and therefore a potential cognitive authority on the topic at hand, the information seeker actively vets the source as they connect and interact with the source. The information seeker does this by asking spontaneous questions or performing iterative searches until they are satisfied the potential source is indeed "proper" and the source's facts and data are true (McKenzie, 2003c; P. Wilson, 1983).

Like the active seeking information practices mode, active scanning takes place online with textual sources such as a research database or peer-reviewed journal. An example of active scanning of textual sources would be subscribing to a cannabis nursing newsletter and scanning the headlines for articles of interest. Active scanning also takes place in social settings—for instance, a nurse frequents a health food store selling CBD products or attends a cannabis-themed conference in the hope of learning about cannabis therapeutics in general. From a textual perspective, active scanning in online sources is

most recognizable as exploratory search as defined by Marchionni (2006) and discussed in the previous chapter.

**Communication Phases in the Active Scanning Mode**

As with active seeking, the "activeness" of active scanning in the social realm exists on a spectrum based on the level of connection and interaction the seeker has with the likely information source. At the low end of the active scanning, the active scanner is connecting and interacting with likely information sources through observation and listening—choosing not to interrogate the source's credibility directly. On the other end of the activeness spectrum in the social realm, the seeker connects and interacts with the likely information sources directly by joining an ongoing conversation that the likely source was having with another person, or by introducing themselves to the likely source to ask a spontaneous question about the topic.

In social settings, during the connection phase of the active scanning mode, the nurses described putting themselves in situations where they expected to connect and interact with people they could learn from. In these situations, the nurse would connect and sometimes overtly interact with likely sources by listening in on conversations taking place between other people attending the conference and would then engage with these people on whatever was the topic of their conversation. Based on a reading of McKenzie's (2003c) work, it is supposed that during this discursive process of connecting and interacting the nurses would be asking spontaneous questions to probe the other person's knowledge to discern whether the source seemed "to know what they were talking about." If the nurse determined the source was a potential cognitive authority, the nurse would create relational ties with the source; it is unknown whether the nurses

would come to see the source as a cognitive authority (Granovetter, 1983; P. Wilson, 1983). This study lacks sufficient data to support these suppositions, but the actions and patterns of the cannabis nurses in active scanning are in keeping with how McKenzie (2003b) and Yeoman (2010) described the active scanning information practices of the women in their studies.

To engage in active scanning for textual sources, the nurses relied on RSS feeds, notifications, alerts, and bookmarking to connect with sources. Monitoring and browsing these sources often became part of their daily lives. Once they had integrated these practices into daily life, the nurses would then routinely interact with these sources through semidirected browsing sessions. They reported looking for both brand new information (answers to questions they didn't know they needed to ask) and for more information to help answer their questions about specific topics. The decision-making process by which the nurse chose a particular textual source was not addressed in this study.

Overall, the active scanning information practice of the cannabis nurses was similar to the active scanning information practices of the women in the McKenzie and the Yeoman studies. An area of difference between the three study groups can be found in the development of information grounds, which is described later in this chapter.

### Active Scanning Information Practices and Cannabis Nurses

According to the data in this study, the nurses actively scanned textual and physical environments almost daily to both find new sources on cannabis therapeutics and monitor their existing sources for new information. The nurses developed this

information practice as part of their express desire to learn as much as they could about the cannabis plant, cannabis therapeutics, and the plant's connection to human health.

The nurses used active scanning practices both to seek out new information and to deepen their stock of knowledge in an attempt to keep up with a fast-moving and rapidly expanding topic, as Sandy described. Sandy explained her effort to find out more information about a generalized topic in an effort to help one of her patients and related how searching for information on the topic of cannabis "snowballs." Sandy also applied her existing knowledge about the side effects of cannabis to help discern which cannabis therapeutic would be most helpful for her young patient.

> *Researcher:* Does cannabis-based medicine infiltrate your whole life, or do you compartmentalize it pretty well?
>
> *Sandy:* I don't know.
>
> *Researcher:* I mean, if you're not researching it, you're thinking about it.
>
> *Sandy:* I do. I really do, because I'm learning right now about the terpenes and the flavonoids, and all the different strains, and what they do when they're used synergistically, and just how that affects people because of the whole rapid heart rate, and things like that when they first take it. That's the point where I'm at with that young girl with the heart issues, because it's very important to make sure she doesn't have that sativa type of one that makes her anxious, because that's what she's nervous about. I just—if there's something that I don't know I just start looking into it, and I try to get as much information as possible, and then something else comes up, and it just kind of snowballs.

Both Nikita and Mickey described having set routines around actively scanning for information about cannabis. Both nurses said they scanned for information about particular topics all the time; for Nikita, the main interest was the legality of cannabis, and for Mickey, it was to learn more about cannabis chemistry. Their quotations also reveal the structuring aspect of active scanning, which, as inactive seeking for information, often becomes a daily ritual or habit.

> *Nikita:* I read the news every day and I'm always looking for articles on cannabis and what's happening in our government as far as changing legalization, declassifying it. That's something that's really important to me right now because that affects my medicine for my patients.
>
> *Mickey:* I do my reading in the morning. I'm up late today, but I'm usually up between 5:00 a.m. and 5:30 a.m., and my morning routine includes half an hour or an hour of reading. So that may be literature where I'm reading articles, anything that I can find on cannabis, and the biggest thing I've learned is that you have to be really careful. There's a ton of information out there, and not all of it is reliable, and it gets old really fast. When I look at even some of the online tutorials, even the basics will be changing very, very rapidly as we learn more about cannabis, as we learn more about cannabinoids and terpenes and how they interact with things. That's my morning, is reading.

As Nikita and Mickey indicated, active scanning was seen as part of their professional duty to their patients and as key to their role as nurses. Feeling a professional duty toward learning about cannabis therapeutics was common—a feeling that Terri also shared and was what prompted her to "dive into this" to help her patient.

> *Terri:* Right around that time also there was a lot more press about the new advances in cannabis science. I had really heard very little about CBD or anything prior, so I got kind of excited about what was happening in just cannabis in general and the recognition it was getting medically. I basically dove in, and almost—I think for me too, it's healing for me, I think, to help educate other people about the therapeutic potential. I thought a lot of motivating factors that really led me to dive into this.
>
> *Researcher:* Do you get up in the morning, and go to your computer and check your email?
>
> *Terri:* I generally, yes, check emails. There's some local providers of kind of . . . that keep tabs on the local cannabis theme right now in my state.
>
> Just keeping up on that, so that I can be a better advocate for the people in my state. A lot of them don't even know how to go about getting a medical card. That can be really a lot of what I do, is just explain how they can go about actually becoming a legal patient in my state.

Some nurses actively scanned social media sites such as Facebook and Instagram for sources of information, as is noted in Mason's quote below. Mason also told of vetting the social media groups for information sources that could be trusted to be a

source of valid and reliable facts. Note also that the "stoner" label and attached stigma is deeply embedded in the discourse about cannabis—even among advocates of cannabis. As Lee described in the previous chapter, some of the nurses turn to social media sites such as Reddit, Facebook, and Instagram to better understand patients and the patient experience. The nurses also share a certain skepticism toward the validity and reliability of facts and data coming from patients posting in social media groups or from sources outside the medical realm, or, as Mason referred to them, "groups that I think are not just a bunch of stoners."

> *Mason:* Yeah, I try to look at everything as best I can. I use Facebook a lot and Instagram.
>
> *Researcher:* Okay. How do you use those sites for information?
>
> *Mason:* I join all the groups that I think are not just a bunch of stoners, and I try to—whatever I can learn. I like to get scientific; I want more science.
>
> *Researcher:* Do you ever go to social media to get your questions answered?
>
> *Mason:* I don't use it, no, because it's just people's opinions. I need it backed up.

Active scanning in social settings was a common action for some of the nurses. Nico described putting herself in a likely physical environment where she scanned for information about cannabis that might interest her. Nico's quote also shows that not all the nurses had a daily practice of actively seeking information but that actively seeking information was a routine action and part of their strategy for becoming and staying informed.

> *Researcher:* Walk me through a day in your life, starting in the morning, and this is just about your experience with cannabis-based information or -based medicine. What kind of routines do you have about keeping yourself informed about the latest in cannabis-based medicine on a daily basis?
>
> *Nico:* I will . . . well, not on a daily basis, but usually every other month or so I'll go to the Society for Cannabis Clinicians meeting and just try to catch up with

> what's going on locally. That's not really education based, but more policy based, and what problems are arising in the community, and that kind of ongoing exchange.

One thing active scanning information practices helped the nurses do was explain how cannabis was working in the human body. This was true for nurses, like Loren, who did not have experience or training with the therapeutic use of cannabis but were suddenly exposed to patients who used cannabis and whose health outcomes improved significantly. As the administrator of an assisted living facility, Loren was given a bottle of legal cannabis tincture by the daughter of a patient and told of finding herself challenged to figure out how to handle the situation because she lacked the information to explain why the patient improved so dramatically. Throughout her retelling of her experience, Loren described using active scanning information practices—in this case, conversations with pharmacists to find information about dosing, with the patient's daughter, with the patient herself, and with her staff—to gain information about how cannabis was helping to improve the patient's quality of life. It is interesting to note that 6 weeks into this experience, Loren's curiosity and active scanning information practices regarding cannabis prompted her to go to a cannabis conference and join the ACNA. This is an excellent example of how firsthand experience leads to the quest for second-hand knowledge and the identification of cognitive authorities. This quotation is also representative of the experience many of the nurses had and gives a detailed glimpse into the daily life of a nurse working in mainstream medicine and their encounters with cannabis therapeutics.

> *Loren:* I really didn't know how much to give [the patient]. I didn't know about dosing. I knew it could cause dizziness and sleepiness. But like I said, all the drugs she was on can cause death. So I thought, "Well, okay." I called our pharmacy, the guy at the pharmacy I knew real well, and I asked him, I said, "How many drops are in 3/4 of a teaspoon?" He kind of approximately told me

and I think we were . . . I told the daughter, “Don’t give her the full amount.” The resident said, “Give me a whole bottle. I’ll drink the whole damn thing.” That’s how bad she was, you know? And I told her daughter—she was visiting all that week—I said, “Take it home. I don’t feel comfortable giving it. I don’t feel comfortable having my staff, my nurses give it. I don’t know anything about it yet. It’s your right to use it, [Patient]. It’s your right, [daughter], to give it. But give her half. Low and slow.”

That’s what I learned as a nurse anyway, especially in geriatrics. And so that’s what we did. The daughter gave her—half the dose at like 10:00 in the morning. And I was sweating bullets ’cause I didn’t know the results. I’m waiting in my office and I called her in about an hour, after her first dose.

And I said, “[Patient], how are you doing?” Now she was on a medication for appetite, but she still wasn’t eating. She goes, “Well I’m hungry.” And I said . . . she sounded a little chipper and I said, “How’s your pain?” And she says, “What pain?”

I said . . . no??!! I was in my office. I go, “I’ll be right down.” So, as I’m going downstairs to our department, I’m thinking, “Gotta be quick, people.” Can’t work this fast. We didn’t even give her that much. So I go in there and I look at her and I say, “[Patient], what do you mean you don’t have any pain?” And she says, “Loren, I can tell you. It’s still there, but the edge is off. So much better than those damn pain pills.”

*Researcher:* Wow.

*Loren:* I went, “Really?” “Yeah.” And I’m still thinking placebo. I didn’t know how it worked. I didn’t know the science. I had no clue. So it took about 5 weeks. We did what we were doing in the morning, half and half to equal the 3/4 of a teaspoon. The daughter was there all that week. And before this woman was as mean as nails—I would have to go there . . . really. She’d throw books at me. ’Cause she was miserable. Yeah, she hurt. She’d throw . . . and the staff are trained, but they were afraid to answer her call bell when she’d turn it on because—yeah.

*Researcher:* They are gonna get abused . . .

*Loren:* Yeah, exactly. So, come the fourth day of her being on this, the daughter was still there visiting, she was there from Monday through Friday. She was giving it. My staff on the p.m. shift, before I was leaving said, “We need to let you know, [Patient] she got out of bed, she jumped right out of bed. And she walked to the shower singing.”

I said, “Were you in the right room?” “Loren, we can’t believe it.” I know, I swear to God—I was just . . . I was going, “Really?” So I went down to see her with her daughter there, ’cause her daughter was leaving on Friday, the next day and I said, “Do you . . . are you feeling better?”

> She goes, "When you're in a lot of pain you don't notice when you're doing better." But she's moving better, and her daughter said, "Mom, you're getting out of bed a lot easier. You're moving around." She wasn't moaning and complaining all the time, but she was getting out of bed and going over to the other chair. She was getting up, she was happier. She was happier, not high—happier. Euphoric.
>
> So she was doing so well for 6 weeks, but I still didn't know the science, I'm still on the line going, "What the hell. I need help out here." I'm trying to find . . . it just happened. I reached out and found Dr. [xxx]. She said, "Loren, there's a conference coming up in Portland. Patients Out of Time." This was 2014. I went right away. I joined American Cannabis Nurses . . . who knew there was American Cannabis Nurses. I think I was the [xxx] member.
>
> Yeah, and I went to that conference and I was like, "Oh my God. This is how [Patient] got off of six drugs." She got off her sleeping pill, her antidepressant, her antiemetic, her hypnotic. I mean she got off her all . . . she got off her Atavin, her narcotic. She was using the tincture three times a day. She was so happy, wonderful.

The data in this study suggest that the nurses responded to the complexity of learning how to be a cannabis nurse by taking advantage of every chance they had to acquire knowledge, once again taking a bricolage approach. The nurses were able to turn active scanning into moments when they could increase their nursing knowledge and knowing (Warne & McAndrew, 2009, p. 856). Taking a bricolage approach to learning how to be a cannabis nurse is highly situated and improvisational and involves a routine of actively scanning for information (Brown & Duguid, 1991), which Sandy's quotation demonstrates:

> *Researcher:* Do you have a practice? A private practice?
>
> *Sandy:* I don't. I'm working my way towards that, as being more of a consultant person for people that are starting up, because once I kind of got out there, I realized that there's a lot of information people just were unaware of, and I tend to, when I get stuck on like a topic, I go in deep. I look at anything I can find, but I definitely am skeptical with the way the research is done. I try to stay very Cochrane-type deal, but it's hard to, because there's really not a lot. Because we haven't been able to actually study it as well as we should have been.
>
> *Researcher:* For you, anecdotal evidence, case study evidence, how do you choose what to look at?

> *Sandy:* Trials. I look at a lot of trials. I have a lot of resources. I'm a part of the Patients Out of Time, American Cannabis Nurse Association, the Medical Cannabis Institute. I do the *Cannabis Nurse Magazine*. There's Green Flower. I have too many. I have to have them all written down too, because I have a lot of resources, and I take bits and pieces from all of them, and I just constantly rotate.

Active scanning for information about cannabis from a wide variety of sources also appears to have influenced how the nurses thought about the need for double-blind randomly controlled trials (RCTs) with cannabis medicine. Terri's description is characteristic of how the nurses in this sample came to champion information-based experiential, historical, and qualitative means (case studies, narratives, etc.) as being as valid and credible as the information gained from evidence-based medicine (EBM) where empirical, positivist research methods, such as randomized controlled trials are prized, but still fail to protect patients.

> *Researcher:* Think about the role of evidence-based medicine, meaning the double-blind randomized controlled trial. What is your thought about that kind of evidence in this space?
>
> *Terri:* I just think it's hard to do, number one, because cannabis is a plant. It's not a synthetic medication. I think in my opinion you can't put it in that box with other types of drugs that they do these double-blind studies on. The other part of that is being in medicine for 20 years, how many times have I seen a drug that had passed all the double-blind studies, and was safe, and prescribed, then 10 years later, whoops, maybe not so safe. "Did you have these side effects? Because now we're suing, and now this drug's off the market."

Patients were an important source of information for the nurses. Terri indicated that the kind of information the nurse learns from actively scanning for information from patients is information that is more experiential and observational in nature and different from the kind of information they could learn in a classroom or from a book.

> *Researcher:* How about patients. Do they inform and influence you?
>
> *Terri:* They do. . . . I learn from each one, and it helps me to better serve my next patient. You're able to kind of see little bits of commonalities, and patterns, and

> you get a little excited. You want to keep going, because you want to continue to accumulate all the information you can.

Stacey and Devon's responses also both show the high value the nurses placed on information they learned from actively seeking and scanning for information about how cannabis is working for their patients. Stacey echoed what many of the nurses expressed: Information they acquired from cannabis patients was valid, and in Stacey's case, better than what she had been able to acquire so far through "science and research."

> *Stacey:* They may not be a source of information about the details of the endocannabinoid system, but when they say, "My Parkinson's tremors ceased immediately after two puffs," that's the information. That's more valuable than science and research.

Devon's quotation also indicates that she recognized that cannabis is not a one-size-fits-all medication. This is an example of how active scanning for information with a likely source, in this case an experienced cannabis patient, leads to experiential knowledge development. In this example, Devon shows high regard for the information she learned from patients, most importantly the diverse ways in which cannabis works in different bodies.

> *Researcher:* How about patients? Same question. How would you rank them as a source of information for you? What do you learn from them?
>
> *Devon:* I would say five [on a scale of 1–5 with 5 being best]. I learn so much from them about what they use it for, how they use it, their various tips. I learn that everything . . . It works differently on everybody. A patient the other day with interstitial cystitis. Are you familiar with that at all?
>
> *Researcher:* Mm-hmm (affirmative).
>
> *Devon:* Horrible, horrible condition. Told me that she uses vaginal suppositories and how well it works for her. She makes all of her own products.

### Barriers Encountered by the Nurses in Active Scanning Mode

As with active seeking, the biggest barrier the nurses encountered in their quest to find trusted sources of cannabis information had to do with the lack of research on cannabis because of its being classified as a Schedule I controlled substance. Another barrier faced by some nurses was their geographic locations; legal and social environments prevented them from socializing with other cannabis nurses and clinicians. The nurses' comfort in and willingness to engage with cannabis information seeking and sources depended in large part on where they lived and where they worked. Their location also affected their opportunities for these serendipitous situations to arise. For example, nurses from rural states such as Oklahoma, New Mexico, Michigan, and Arizona reported a lack of access to broadband as impeding their ability to do research. Nurses also described not being able to go to cannabis conferences because of the time, expense, or distance involved. Likewise, many of the cannabis nurses described themselves as being the only cannabis clinician in their area, making it unlikely they would find themselves in places where there were viable cannabis information sources.

### Use of Technology by Cannabis Nurses in Active Scanning Mode

When actively scanning, the nurses made use of the same sorts of personal information and communication technology to scan for information online and through specialized databases as they did when actively seeking. The nurses frequently mentioned that they longed for better databases and search tools for finding cannabis-specific information. Quinn's reference to having to "go looking in all kinds of corners" demonstrates the nurses' propensity for taking a bricolage approach to research and their

high degree of information literacy in discerning whether a source is credible and the data reliable.

> *Researcher:* The software tool or app that I need to better do my job as a cannabis nurse is . . . ?
>
> *Quinn:* Hmm . . . that's a good one. I'm drawing a blank there.
>
> *Researcher:* That's okay.
>
> *Quinn:* If it was easier to find the information, that would be nice. It's all over. It's hard to sometimes find it when people mention something. I have to go looking in all kinds of corners to see what they're talking about and dig a little deeper. Usually they only read the headline and they don't really dig deep to see how many people benefited. What exactly were the results for this research? They just see a headline and they're all excited.
>
> *Researcher:* So you could use—some sort of tool that would aggregate quality information from various sources would be good, would be something that you'd use?
>
> *Quinn:* Yeah. So we could rank it.

**The Effect of Active Scanning on Cannabis Nurses**

Active scanning had much the same learning and structuring effects on the nurses in this study as did active seeking. Both information practices served to widen and deepen the stock of cannabis knowledge the nurses developed, and they contributed to the development of the nurses' personal routines, habits, and rules concerning information seeking. In addition, both information practices create the same kind of information work, as discussed in the prior chapter on active seeking.

Active scanning is a form of situated learning that has the effect of rendering the nurse an expert and a potential cognitive authority on cannabis therapeutics. Situated learning falls under the umbrella of situativity theory—a term used to describe several models and frameworks that stress "the social nature of cognition, meaning, and learning,

with emphasis on the importance of the participants and the environment, as well as the evolving interaction between the participants and the environment within which thinking and learning occur" (Durning & Artino, 2011, p. 188). Situated learning accounts for how the nurses develop their knowledge on the content of cannabis care—that is, what cannabis care means and why cannabis works therapeutically. Situated learning, however, is not about knowing the content as much as it explains how the nurses learn how and when to apply their knowledge about cannabis therapeutics to specific patients and their unique health conditions (Durning & Artino, 2011). Situated learning also explains how the nurses dynamically construct knowledge about how to be cannabis nurses through their active participation in everyday social situations, in which they report they often both learn new information about cannabis and share their knowledge about cannabis during the same social encounter (Lave, 1991; Lave & Wenger, 1991). For example, situated learning is what happens for both the nurse and the patient during a patient encounter as they discuss and mutually confront the patient's problems and how to use cannabis therapeutically. The active scanning information practice facilitates situated learning by providing a discursive technique for use in social situations to surface information through conscious and mindful inquiry.

Active scanning information practices contributed greatly to the bricolage approach to learning the cannabis nurses in this study favored. The nurses in this study consistently reported turning active scanning in social situations into moments when they were able to increase their cannabis nursing knowledge and knowing (Warne & McAndrew, 2009, p. 856).

Active scanning information practices had the effect of building the nurses' confidence in the reliability of evidence gathered from other types of empirical and qualitative research such as exploratory, descriptive, and case studies, i.e., what Terri calls 'anecdotal evidence'.

> When you look at cannabis, and 10,000 years of anecdotal evidence personally to me speaks much higher than a double-blind study, I definitely—I have a hard time with people saying that there's not enough evidence. I think that we need more research, absolutely, so that we can know better how to utilize this plant in the most efficient way possible. I don't think that there's any question that it's safe, or that it has medical properties that people have benefited from.
>
> Yeah, I think that the research that needs to be done is really just more about you figuring how what more potential this plant has . . . We don't even know the potential of some of these other cannabinoids, that it's exciting to me to think about the future of cannabis medicine.

One of the main products of active scanning is the spontaneous formation of information grounds resulting from more than one person being in the same spot at the same time and interested in the same topic. As noted earlier, there was a difference between the experience the participants in the McKenzie (2003b) and the Yeoman (2010) studies had regarding information grounds and the cannabis nurses. The formation of information grounds as an effect of information practices bears further discussion and definition.

## Information Grounds and Cannabis Nurses

Pettigrew (now Fisher, 1999) described information grounds as information-rich places where information seekers were aware that a knowledge source might be located; these places would include coffee shops, bookstores, and libraries. Information grounds can also be defined as "an environment temporarily created by the behaviour of people who have come together to perform a given task, but from which emerges a social atmosphere that fosters the spontaneous and serendipitous sharing of information"

(Pettigrew, 1999, p. 811). Fisher et al. (2004) characterized an information ground as being rich in context in a temporal setting where people who represent various social types engage in social interaction with each other to share knowledge, information, and experience about a specific topic within the confines of this temporal setting. This interaction results in both formal and informal information sharing, as well as alternative forms of information use (Fisher et al., 2004, p. 98).

Information grounds often spring up in locations where particular information is likely to be found. The women in the McKenzie and Yeoman studies reported that information grounds about pregnancy and menopause often formed in waiting rooms and other places where women gathered. For example, an information ground emerges when the active scanning information practices of people in proximity to one another pick up on each other's interest in the same subject and then strike up a conversation. Other people in the vicinity will join into the conversation or acquire information by listening and observing. This type of spontaneously forming information ground is what often arises in the workplace between co-workers; it may be a precursor to the development of CoPs at work (Hoadley, 2012; Lave & Wenger, 1991; McKenzie, 2003a).

Another location where information grounds about healthcare-related topics spontaneously form is in the waiting rooms of medical organizations. Pettigrew (1999) first noted this phenomenon in her study of the information sharing happening between attendees at community health clinics. Costello (2013), though not using the phrase "information ground," depicted how information grounds formed in the waiting rooms of dialysis clinics and healthcare facilities where dialysis patients came into serendipitous contact with other dialysis patients (p. 16). The dialysis patients created an information

ground by sharing information and advice for coping with kidney disease with each other; this information and advice proved to be valuable to both the patients and their family members who accompanied them to appointments (Costello, 2013).

What the nurses in this study reported, however, was that outside of cannabis-specific conference and events, they were not experiencing the spontaneous formation of information grounds, as Sage acknowledged:

> *Researcher:* When these serendipitous conversations start happening, do you ever see other people drawn into the conversation until there's a group of people around you?
>
> *Sage:* That has not happened yet. But it certainly could happen when I go to one of these networking things [cannabis nurses meetup].

Cannabis therapeutics are not widely accepted or openly discussed in waiting rooms except for in the oncology world, as Lana disclosed. Lana also declared that although she herself had not experienced a cannabis-related information ground, she heard about it happening from her patients who go to appointments in oncology offices:

> *Researcher:* Have you ever been in a waiting room where a conversation has happened?
>
> *Lana:* No.
>
> *Researcher:* But you're hearing about serendipitous conversations in waiting rooms when you are not present?
>
> *Lana:* Yeah. Because they are sitting there, and they have something similar and someone complains about their side effects of chemo, and someone sitting there says, "Oh, you need to talk to Lana. She can help you figure out if medicinal cannabis could help."

It is possible that physical information grounds connected to cannabis fail to form because the stigma still attached to cannabis restrains active scanning activity by stifling spontaneous conversations between people in waiting rooms, libraries, and clinics. It is further speculated that information grounds are forming in the waiting rooms of cannabis

dispensaries and cannabis clinical practices across the nation, but that was not the experience of the nurses in this sample. Nurses in this study also reported not being near other cannabis experts or enthusiasts in their local areas, which also contributed to their lack of experience with information grounds.

### What These Data Explain About Active Scanning Information Practices

As with active seeking, these data teach us that the temporal aspect of information practices is constitutive of knowledge development. In theory, the more time the individual spends actively scanning for information, the more knowledgeable the individual becomes. These data also reinforce something that came to light in Yeoman's (2010) study—that at some point in time, active seekers of information become information sources for other people. The menopausal women in Yeoman's study (2010) reported that they eventually became information sources about menopause to other women, but the pregnant women in McKenzie's study (2003b) remained mostly information seekers. Yeoman speculated that the length of time that women are menopausal versus the length of time women are pregnant turned the menopausal women into information sources, as they had more time and experience with the condition.

### The Consequences of Active Scanning for the Nurses in This Study

As a consequence of these cannabis nurses' active scanning information practices, their customary cognitive authorities were replaced by new cognitive authorities and trusted information sources. What the nurses in this study also came to know is that learning how to be a cannabis nurse was not like their previous professional learning experiences. The nurses in this study saw being knowledgeable about cannabis therapeutics as a professional responsibility, and they were driven to find a way to make

this happen—even if that meant leaving their jobs in mainstream medicine to pursue what they saw as the truth about cannabis therapeutics.

### Summary of Active Scanning Information Practices

Active scanning information practices produced new experiences and encounters with new people and new information that the nurses employed to learn how to be cannabis nurses in the absence of formal training programs and customary cognitive authorities. As the quotations show, this situation has arisen because of multiple factors, including the unique nature of the cannabis plant, the stigma attached to cannabis, the legal restrictions around its cultivation and use, the perceived lack of rigorous scientific evidence proving its efficacy, and the shortage of accredited cannabis nursing curriculums and programs. The complexity and growing pains surrounding the market for cannabis products also contributed to the uniqueness of the nurses' learning experiences. From a textual perspective, that meant the nurses had to develop an ever-expanding set of curated sources and had to scan those sources on a routine basis. From a social perspective, active scanning information practices took the form of attending conferences, going to meetings, and caring for patients. As with active seeking, active scanning for information about cannabis ultimately contributed to the nurses developing a greater stock of knowledge about cannabis.

# CHAPTER SEVEN

# FINDINGS—NONDIRECTED MONITORING INFORMATION PRACTICES

> *They were talking about dispensaries and stuff. I was sitting close enough to them where I heard it and I turned and looked, and they acknowledged and laughed. And I was like, "Actually I'm a cannabis nurse" and then was able to expand on the conversation from there about the medical benefits.* —Kelly, RN

## Nondirected Monitoring Information Practices Described

Nondirected monitoring mode is the most reflexive and sensory mode of the information practices. Without consciously thinking about it, seekers in nondirected monitoring mode use their five senses to scan their everyday textual and social environments for likely sources of information about their topic of interest. When the seeker is alerted by their senses to the presence of a potential source of information, their reflex is to connect, and often interact, with that source (Choo & Auster, 1993; McKenzie, 2003a, 2003b; Savolainen, 1995; T. D. Wilson, 1999). Once a possible source is located, the information seeker ascertains whether the source has the information they need and "knows what they are talking about" in much the same way as seekers vet information sources with the other information practices (McKenzie, 2003b; Yeoman, 2010). As discussed in the sections on both active seeking and scanning, this vetting process presents a progression toward the supposed moment when the information seeker decides to accept an information source as a cognitive authority and accepts the source's facts and data as true.

Just as active seeking and active scanning take place in both textual and social settings, nondirect monitoring happens in both environments, whether the seeker is immersed in media (reading, watching, browsing, and listening) or physically present in

social settings. Nondirected monitoring can be thought of as "monitoring the context," or the practice of routinely monitoring an information source for a hint or glimpse of the topic of interest (McKenzie, 2003b; Savolainen, 1995).

**Communication Phases of Information Practices in Nondirected Monitoring**

In textual settings, the degree of the connection with sources ranges from simply noticing the topic mentioned in an unexpected media source to actually reading and then citing evidence from said source to support the information seeker's position on the topic. In social settings, the practice of nondirected monitoring ranges from simply observing to openly conversing.

For these nurses, connecting in nondirected monitoring mode started as a sensory reaction to either seeing or hearing the word "cannabis" or some related term, such as "pot," "weed," or "marijuana." The nurses would physically react to the stimulus, whether by purchasing the issue of *Forbes* magazine with the cannabis leaf on the cover, as one nurse described doing, or engaging in conversation about cannabis with the strangers at the next table at the café (as will be illustrated in the next section). The nurses were aware that they were engaging in nondirected monitoring information practices as they were doing so, and they learned to adjust how much they connected and interacted with the information source or seeker. The nurses determined the amount of interaction based on their assessment of the appropriateness of the situation and their own level of comfort in making the connection.

The nurses also regularly revealed their role as a nurse to make a first connection with strangers about cannabis in social settings. The nurses used this technique to create situations in social settings where they could impart knowledge or offer advice to people

who the nurses deemed interested and amenable to hearing more. Nico's story is indicative of this practice. Notice also that Nico mentioned that conversations about cannabis among strangers "just happens," and that it was a common experience for other people as well. When such serendipitous conversations occurred in public, the nurses reported, they occasionally became the center of attention—allowing them to connect and potentially interact with more people who were drawn into the situation to ask their own questions about cannabis. These situations did not evolve into information grounds because the nurse was often the only person with knowledge of cannabis therapeutics; but nurses made the most of them.

> *Researcher:* When you're in a public place and people start talking about cannabis, what do you do?
>
> *Nico:* I guess my ears perk up a little bit, and occasionally there's been times when I've said, "Yeah . . . and I'm a hospice nurse and it really is helpful with patients" and that kind of thing. I'm not usually shy about it.
>
> I think I was at a juice shop one time and somebody said something, and I was like, "Yeah. That would be great if we could get our juicing and have them throw in some cannabis leaves and get some THCA," and that brought on a whole conversation.
>
> *Researcher:* Really? Did other people around you join into that, and it was just a serendipitous conversation among strangers?
>
> *Nico:* Yeah. Somebody else actually said it, so it happened.
>
> *Researcher:* Does it happen a lot?
>
> *Nico:* You know, it just happens where people will . . . Even not necessarily to me. I had a girlfriend telling me about she was at the post office the other day, and somebody was like, "Oh, my elbow's hurting." Another lady reached out: "Here, I've got some cannabis salve. Rub that on your elbow." It is becoming more accepted like that.

## Nondirected Monitoring Information Practices and Cannabis Nurses

Confirming what McKenzie (2003b) found, nondirected monitoring accounts for how the nurses were "bumping" into information sources in unexpected textual settings and for how they were identifying potential cannabis information sources and seekers in unexpected social settings (Erdelez, 1999; McKenzie, 2003a, 2003b). Of the nurses in this sample set, 97% said that when they were out in public, their attention was inexorably drawn toward any person or thing they saw or heard referencing cannabis or cannabis-related topics. Of this number, 87% said they would probably interpose themselves into other people's conversations by introducing themselves as cannabis nurses. Likewise, the nurses reported that their attention was inevitably drawn to any textual source that mentioned the word "cannabis" or one of its derivatives in its headline or images.

One of the ways the nurses used nondirected monitoring with textual sources was to locate sources of cannabis information being broadcast by mainstream media sources. The nurses felt that such mentions coming from a mainstream media source gave the therapeutic use of cannabis an air of legitimacy and a sense that cannabis care was a valid thing for a nurse to know about. The nurses also described being relieved to hear or see a mainstream media source presenting information that confirmed that the nurse's own knowledge and firsthand experience with cannabis was valid and that they were not outliers. The best example given of an unexpected mainstream media source was that of CNN correspondent and physician Dr. Sanjay Gupta. On August 8, 2013, Gupta endorsed the therapeutic use of cannabis, an event that was mentioned by four of the nurses as being the reason they became interested in studying cannabis therapeutics (Gupta, 2013).

Because of Dr. Gupta's reputation as a cognitive authority on medical issues, the nurses reported that his endorsement of cannabis gave them the green light to openly begin doing their own research on the therapeutic use of cannabis.

In social settings such cafés, stores, or events where the nurses were physically present, they described nondirectly monitoring their environments both for potential information sources and for other seekers of information about cannabis. As Jordan's quote reflects, sometimes the nurses would covertly connect with these acquaintances or strangers by listening in on their conversations, hoping to hear new information; at other times the nurses would physically connect and interact with the speakers by introducing themselves as cannabis nurses and then engaging them in conversation about cannabis. In both versions of nondirected monitoring, the nurses would ascertain the other person's attitude about cannabis and assess the person's potential to be either a source or a seeker of cannabis information before proceeding with an interaction.

> *Researcher:* So when you're in a public place and people start talking about cannabis, what do you do?
>
> *Jordan:* My ear perks up. I don't always interject myself, you know, I—sometimes I just that listen to an entire conversation go by, and just gather all that information for myself. It's not something that I share with everybody or anything—I just gather the information.
>
> If I'm just out and about and people are . . . well, I'll give you a for instance. So, I've been in a restaurant where the people next to me started talking about the tissue culture stuff with cannabis. And you can tell that they were very new at it . . . but they were smart at the tissue culture stuff, but they were like dabbling into the cannabis thing. So I can tell when they would, you know, talk kinda quietly when would say "marijuana" and stuff like that or different things . . . they would get more quiet. So I would hear that, but I didn't interject there . . . I didn't have to say "hey, I'm a cannabis nurse" . . . it has nothing to do with me—I just gathered the information, right? Where at another time I was at a flower store and the people in front of me were talking about CBD oil and how he had just got this bottle of CBD oil and how he didn't know what in the heck he was doing . . . and it was this whole conversation they were having with [the] clerk about the CBD oil . . . and I'm standing there realizing they don't have a clue what the heck they

> are talking about and I said, "I do happen to have a little bit of knowledge about this—I'm a registered nurse and . . . you know, can I help you guys with what kind of oil?" So I kind of interjected myself there because it was appropriate.

The pattern of nondirected monitoring that formed across the sample set was striking in how similarly the cannabis nurses enacted it. The pattern started with the nurse being alerted to the presence of a cannabis conversation taking place nearby through sensory stimulus—usually they heard or saw something that caught their attention. Once alerted, the nurse would actively listen in on the conversation to discern whether this serendipitous situation was an appropriate situation where they would be welcome. If the nurse decided it was an appropriate situation, they would make the connection. The nurses often entered the conversation by citing scientific evidence or relating their own professional and personal experience as nurses and with cannabis care as proof that they were experts in the therapeutic use of cannabis. Wibe et al. (2015) noted that people use medical terms, facts, and data to communicate in a more precise fashion and to assure listeners that the person has specialized knowledge. Sandy's answer is representative of how the nurses interacted with strangers by purposefully using medical terms, scientific facts, and nursing lingo to describe cannabis care and of how sometimes these conversations evolved into teachable moments. Sandy's description of the conversations she had with strangers during serendipitous situations is also typical of this sample set in showing how the nurses used their emotional intelligence, information literacy, and social acumen to size up the attitudes of others and then adjusted their actions and the level of information they provided according to the situation at hand.

> *Researcher:* When you're in a public place and people around you just spontaneously or for whatever reason start talking about cannabis, you're not necessarily involved in the conversation, but you kind of serendipitously hear about, what do you do?

> *Sandy:* It depends on what they're saying. If it's completely wrong information, I just try to listen a little bit. I definitely don't just jump in the conversation. But I also don't want them to feel like they're inadequate, I guess. I don't want to embarrass them. But I'll say, "You know, if you did this," or, you know, like, "Edibles really have two peaks. Once it gets past your liver, and then once it is digested, or broken down from the liver, that's another peak, and that one's like really strong, and lasts a long time. Edibles are really, they're not as predictable . . ."

Lee's answer is a representative example of how the nurses used information about cannabis while in nondirected monitoring mode in the hope that providing people with "science"—that is, information the nurses had sourced from active seeking, active scanning, and their own personal experience—would make them receptive to the information. Lee's quotation also shows a pattern in how the nurses used nondirected monitoring in the moment to educate the public about cannabis. This type of situated action helped the nurses to break down stigma and correct misinformation about cannabis and gave them an opportunity to publicly present themselves as cannabis nurses.

> *Researcher:* You jump in?
>
> *Lee:* I aspire to be a resource if not eventually primarily a cannabis nurse. It is something that I love talking about it. I love informing lay people about it and I like to see what people think about it, just having like an open dialogue and just getting that stigma like—the stigma needs to go.

Chris reinforced what Lee expressed; in addition, Chris illustrated the sense of duty these nurses had to change the image of cannabis by changing the language used to refer to the plant. Insisting that the substance be called cannabis or hemp instead of marijuana was also a pattern that was observed with these nurses.

> *Researcher:* Say you're at a fancy restaurant and at the next table you hear people saying things that you knew are inaccurate. Do you feel personal agency to go over there and correct that?
>
> *Chris:* I have to chuckle, funny, because something that my husband always says, "How do you hear every conversation in the entire room and you can't hear me?" It would depend. That situation would depend. If there was a way that I could do

> it . . . I was brought up in a military family. I am never rude to anybody, and I'm never impolite, just because I was raised that way. If there was a way I could get information to the person without obviously having eavesdropped on their conversation, I would be compelled to. If I directly interacted with somebody who has the wrong information, I have absolutely no issue whatsoever with gently correcting them. And my other personal agency is I don't use the word "marijuana," or "weed," or "pot."

Mickey's description is an example of how the nurses often used nondirected monitoring to turn serendipitous situations into ad hoc education sessions for strangers who were curious about cannabis. As Mickey reported, the nurses were aware of how the stigma about cannabis hindered people from finding answers to their cannabis questions. Mickey exemplified how the nurses in this sample set were able to create communication environments where people felt safe enough to verbalize their cannabis questions even though they might have been scared to search for an answer to their cannabis question on the internet.

> *Researcher:* Let's move on to you in social situations as a cannabis nurse. So, when you're in a public place and people around you, strangers, start talking about cannabis, what do you do?
>
> *Mickey:* Around me, like I'm overhearing them?
>
> *Researcher:* Yep.
>
> *Mickey:* Or we're having a conversation?
>
> *Researcher:* No, you're overhearing them. You're sitting next to a couple on public transportation, you're in line at the supermarket, you're at a party where you don't know people . . .
>
> *Mickey:* Right. Depending on the situation, I mean, if I'm in line at the supermarket I might talk to somebody. I might jump in. If I hear something that's right or wrong or whatever, if I hear somebody wondering about things I might jump in and offer some information, or I may just not insinuate myself in other people's social conversations.
>
> *Researcher:* If you do interject and you start talking to someone, do you ever draw a crowd? Do other people join the conversation?

> *Mickey:* Oh, immediately. Immediately I find that invariably everything else stops and people start to get really excited and what I notice is that there's still a lot of mystery and interest. So even though in my state we have widespread legalization for people who are curious, it's a huge deal for them to even approach a dispensary, and so people have a lot of questions or just a lot of open curiosity and they'll say, "I have no clue of any of this." I'll talk to them.
>
> They may start with one question—and as you can tell, I tend to just go on and on—and then the conversation goes from there and people have more questions. It just really opens things up when you're open to conversation and you're open to things. Just puts people at ease and it really helps communication, because there's still a lot of anxiety, I think—or people are nervous. The whole topic is titillating and that makes people a little nervous, a little embarrassed about all of this.

Evan's description of her behavior in public echoes Mickey's and also encapsulates another common experience for the nurses in this study: As the nurse's level of expertise in cannabis care grew, so did their willingness to intervene and "jump in" in social situations where they deemed it appropriate. The nurses in this study were both consciously and subconsciously looking for situations where they could answer questions and offer further assistance as both an information source and a cannabis care giver.

> *Researcher:* All right, moving on. When you're in a public place and people start talking about cannabis, what do you do?
>
> *Evan:* If I'm part of the conversation I like to join it; if I'm not, I like to listen in more, listen to their stand, and chime in if it's the right opportunity in time.
>
> *Researcher:* You're at dinner and at the table next to you, two couples you don't know are chatting with each other . . . you overhear them talking about cannabis-based medicine . . . would you interject yourself into their conversation?
>
> *Evan:* That's a difficult situation. If I do hear it, I do like to discuss it, but if I'm with my family then I like to just stay with my family.
>
> *Researcher:* Ah, okay. That's kind of like a ground rule that you have for yourself?
>
> *Evan:* It really just depends on the situation.
>
> *Researcher:* What if you're in a line at the grocery store and you heard the people in front of you talking about cannabis-based medicine, and they were getting the facts all wrong?

*Evan:* I would definitely interject.

*Researcher:* You would?

*Evan:* Yeah.

*Researcher:* At that point in time would you identify yourself as a nurse?

*Evan:* Yeah, I would.

*Researcher:* Okay. How do they react?

*Evan:* Well, as I said, usually they're shocked to hear that there's such a thing, and then now they're usually intrigued.

*Researcher:* Do you ever collect their names and contact information and send people information?

*Evan:* If they ask for mine, yes.

*Researcher:* Do you give them a card, or how do you do that?

*Evan:* I'm working on cards. I just give them my email and phone number.

**Barriers Encountered by the Nurses in Nondirected Monitoring Mode**

The nurses in this study faced few barriers to their practice of nondirectly monitoring their textual or social environments for references to cannabis. The barriers they did mention were self-imposed and based on the nurse's assessment of the appropriateness of having a conversation about cannabis in a particular social setting. As with active scanning, the nurse's ability to discover cannabis information in unexpected places through nondirected monitoring was affected by their geographic location. Nurses from states where cannabis is legal for adult use reported having more opportunities to "bump" into information sources than nurses from states where cannabis is more restricted. It should be noted, however, that nurses from across the country reported using nondirected monitoring to locate information seekers, regardless of the location or the restrictions on cannabis.

### Use of Technology by Cannabis Nurses in Nondirected Monitoring Model

The topic or use of technology was not brought up by the nurses during any discussions about nondirected monitoring. In the physical world, nondirected monitoring is governed by the five senses and is not activated by technology (yet). In the textual world, it is possible that search engine technology, alerts, and notifications could be considered using technology; however, the essence of nondirected monitoring lies in sensory perceptions and alerts—not in technology.

### The Effect of Nondirected Monitoring Information Practices on the Nurses

The data in this study reveal that each time the nurse connected with strangers the nurses reinforced their role as cannabis care experts. They did this by often revealing three aspects of themselves: (a) they were trained nurses with backgrounds in mainstream medicine; (b) they had specialized knowledge and information about cannabis therapeutics; and (c) they "knew what they are talking about" when it came to the therapeutic use of cannabis.

Nondirected monitoring information practices also facilitated situated action and situated learning experiences for the nurses. This situativity had the added effect of further structuring the nurses' everyday lives, as every interpersonal connection they made affected their actions in certain situations and social settings. Over time, the nurses reported developing routine responses and rules of behavior to use in certain situations. This situativity also had the effect of causing the nurses to become publicly known as sources of cannabis information. By raising the participants' profiles as cannabis nurses, nondirected monitoring mode also made it more likely that the nurse would meet people who would refer them to their friends and family—thereby making the nurse the target of

another person's by proxy information practice. For some nurses, nondirected monitoring is also wrapped up with their entrepreneurial and leadership aspirations, as these nurses report using these serendipitous situations to present themselves as experts and, in a sense, to audition to be the information seeker's cognitive authority on the topic of cannabis therapeutics.

### What These Data Explain About Nondirected Monitoring Information Practices

The data from this study teach us that the sensory input for nondirected monitoring can vary with each sample set. The sense that triggers the alert may be dependent on both the topic of interest and the manifestations of the person's visible physical condition. This supposition is based on the variations observed between the nondirected monitoring practices of the pregnant women in McKenzie's study, the menopausal women in Yeoman's study, and the cannabis nurses in this study. Of greater interest is that these data show that nondirected monitoring is used to find information seekers as well as information sources. In the case of this study, the nurses used nondirected monitoring almost exclusively to locate, connect with, and interact with seekers of cannabis information. Once they had connected with the information seeker, they used these conversations to break down barriers, remove stigma, correct misinformation, and answer questions. For some, nondirected monitoring was also used to market their services as a cannabis nurse.

## The Effect of Nondirected Monitoring on Cannabis Nurses

Overall, the way in which the cannabis nurses used nondirected monitoring was significantly different from the way in which it was used by participants in the McKenzie and Yeoman studies and bears a deeper discussion than the other information practices.

In McKenzie's study (2003b), the women pregnant with twins reported that they frequently found information sources by noticing the visible signs of pregnancy or seeing the presence of twin infants or twin-related baby equipment such as a double stroller. In comparison, Yeoman (2010) reported that the menopausal women in the sample gave very few examples of using nondirected monitoring or of having unexpected encounters with information sources. Yeoman attributed this to the menopausal condition being less visible than pregnancy and thus harder to observe. Likewise, Yeoman noted that the menopausal women in the study reported being discreet about their condition in public; this discretion likely cut down on their chances of overhearing conversations about menopause happening in unexpected places. It is understandable that the women in Yeoman's study reported locating so few sources using nondirected monitoring, given that there were so few sensory alerts to their condition or to possible knowledge of the topic of menopause.

The significant difference between the McKenzie and Yeoman study samples and the cannabis nurses in this study was that seeking cannabis information sources was not the nurses' primary application of nondirected monitoring. For this sample set, the primary use of nondirected monitoring was to make connections with cannabis information seekers. The differences are twofold.

First, the primary sensory trigger for the cannabis nurses was overhearing conversations about cannabis taking place in unexpected locations, not visible signs suggesting that the people they were overhearing were cannabis users. Although it is possible that displaying a cannabis leaf on an item of clothing or as a tattoo, sticker, or jewelry design could trigger a sensory alert, that is not discussed in this study.

Second, the cannabis nurses were open in revealing their expertise about cannabis; they were not shy about engaging in these types of conversations with strangers in public places. It is interesting to note that the cannabis nurses enacted this practice of connecting and interacting with strangers about cannabis topics in public, even though cannabis use still carries with it a level of social stigma that could damage their reputations as nurses. This is perhaps the greatest difference, as the consequences of this information practice on the lives of the cannabis nurses was quite different from the experiences of the women in the McKenzie and Yeoman studies.

### The Consequences of Nondirected Monitoring for the Nurses in This Study

As a consequence of nondirected monitoring, the nurses in this study achieved one of their primary goals—to educate and inform the public about the therapeutic benefits of cannabis. Although it not possible to generalize the findings of this study because of the small sample size and qualitative methods, the findings about nondirected monitoring do point to the public's need for experts with specialized knowledge of cannabis.

The other major consequence of nondirected monitoring is that the nurses reported developing set routines and learning how to answer common questions in certain ways that were remarkably the same across the sample set. This finding suggests that nondirected monitoring not only reinforces their identities as cannabis nurses but also contributes to the ontological foundation of what might evolve into the domain of cannabis nursing.

### Summary of Nondirected Monitoring Information Practices

Nondirected monitoring information practices expanded and increased the number of new information sources and seekers the nurses encountered. These connections and interactions helped to establish and widen the cannabis nurses' influence. The data show that it was the express intent of these nurses to share their knowledge about cannabis therapeutics whenever the context of the situation seemed right, and that they used nondirected monitoring to accomplish this objective. The nurses also spoke of educating the public about cannabis as being their professional duty and of feeling that they needed to be knowledgeable about cannabis so they would be a reliable resource (source) for patients who needed their help. These goals were also accomplished using nondirected monitoring. Like active seeking and active scanning, nondirected monitoring bolstered the nurse's confidence as care givers and increased their stock of knowledge about cannabis. The nurses reported that they rarely encountered other people who knew more about cannabis therapeutics than they did. As the experience of being the most knowledgeable person in the room was common across the participants, this report is a good indication of the veracity of their status as early adopters and emerging experts in cannabis care.

# CHAPTER EIGHT

# FINDINGS—BY PROXY INFORMATION PRACTICES

> *Friends in health care may call me and say, "I need some help; they want to try some type of cannabis."* —Bobbi, RN

## By Proxy Information Practices Described

The "by proxy" mode is the most collaborative and mediated mode of the information practices. In the by proxy mode, seekers locate sources of information about their topic of interest though the active agency of third parties—other people such as gatekeepers, intermediaries, and recommenders, known going forward as "proxy agents." In the by proxy mode, the proxy agent makes the connection between the seeker and the recommended source of information. This connection happens when the proxy agent identifies the seeker as needing or being interested in a specific topic of information; the connection also happens when the proxy agent locates sources of information on behalf of the seeker (Gross & Saxton, 2001; McKenzie, 2003b; Yeoman, 2010). In either case, by proxy information practices entail how people use proxies and third parties to find sources of information, rather than how people find information for themselves; this was the case in this study as well.

As observed by both McKenzie (2003b) and Yeoman (2010), the proxy agent often locates the information source or seeker by using one of the other information practices. Also, like the other information practices, the by proxy mode is conducted and enacted in interpersonal, digital, and virtual forms (Levin & Cross, 2004; McKenzie, 2010).

By proxy information practices differ from the other information practices in how they are manifested. Whereas active seeking, active scanning, and nondirected monitoring all take place in both textual and social settings, by proxy information practices are enacted within the relationships between people and/or the relationship between people and search algorithms; this relationship can take place face-to-face in a physical location, or online in virtual space. Although it takes two people to create cognitive authority—one to be the authority and one to trust in that authority (P. Wilson, 1983)—it takes at least three entities to enact by proxy information practices: one to be the information seeker and make the inquiry, one to be the proxy agent to find and make the recommendation, and one to be the information source being referred.

The level of trust the inquirer/information seeker has in the recommendation from the referring agent is an essential element of the by proxy information practice (Borgatti & Cross, 2003). Trust is something that permeates by proxy information practices via relational ties (Levin & Cross, 2004). By proxy information practices are connected to relational ties by way of social network theory and Granovetter's concept that information is diffused through social networks via relational ties (Granovetter, 1983; Pettigrew, 1999). "Relational ties" refers to the strength of the connection between individuals, ranging from weak ties (an acquaintance) to strong ties (a family member); the relative strength of the tie is a function of the closeness and interaction frequency of a relationship between the two individuals (Granovetter, 1983; Levin & Cross, 2004).

By proxy information practices also are tied to Savolainen's idea of everyday life information seeking (ELIS), which offers theories about how people seek and use

information sources on an everyday basis to meet their information needs concerning areas such as health, consumption, and leisure (Savolainen, 1995).

### Communication Phases of Information Practices in the By Proxy Mode

As McKenzie (2003b) and Yeoman (2010) found in their studies, the connection phase in the by proxy mode is different from that in the other information practices. In the by proxy mode, the proxy agent is the person (or an algorithm) connecting the information seeker to an information source from which they are likely to find answers to their questions or satisfy their information needs. As noted earlier, the proxy agent uses the other information practices to locate the information or the information source by actively seeking and scanning for information or by using nondirected monitoring to locate a potential source in a crowd. In the connection phase, the proxy agent works in two ways: (a) The proxy agent connects (refers) the information seeker to a source of information the proxy agent has vetted, and the information seeker makes the connection directly to the source (e.g., an interested third party such as a physician refers a patient to a specialist, or the specialist refers the information seeker to a research study that provides answers to the information seeker's questions); or (b) the proxy agent makes the connection to the source on behalf of the information seeker, who cannot make the connection for themselves for whatever reason (e.g., a son, acting as a stand-in for his mother, contacts a clinician to find answers to his mother's questions about treating her cancer).

## By Proxy Mode Information Practices and Cannabis Nurses

McKenzie (2003b) mentioned that, contrary to the active seeking, active scanning, and nondirected monitoring information practices, the by proxy mode has not

been routinely described by scholars as an information practice. It is clear, however, that for the cannabis nurses, the by proxy mode accounted for how cannabis information seekers and sources came into their lives via the efforts of proxy agents. These proxy agents mediated the flow of information between the cannabis nurses and the cannabis information seekers or sources; this mediation had the effect of putting the nurses in the path of information sources or seekers they would probably not have encountered without the proxy agents' facilitating the connection.

As described above, two variations of by proxy mode existed for the nurses. The variations were shaped by whether the nurse was asking the question (an imposed query) or being asked the question (information seeking by proxy) (Erdelez & Rioux, 2000; Gross & Saxton, 2001; McKenzie, 2003a). In both variations, proxy agents become a local bridge linking the information seeker to a trusted information source. For example, a family member becomes a proxy agent by taking on the role of information seeker themselves regardless of the proxy's own interest in the topic. This situation is often the case for family members or close friends who are seeking information about cannabis therapeutics on behalf of their loved ones, who are either too ill, too old, too young, too fearful, or otherwise incapable of seeking the information about cannabis therapeutics themselves (McKenzie, 2003b).

In the second variation, a proxy agent such as a physician refers their patient to a cannabis nurse for education about how to use cannabis therapeutically. It is this relationship between the three people (the cannabis nurse, the physician, and the cannabis information seeker) that brings the information seeker and the source of information they need together (Pettigrew, 1999).

The nurses in this study did not regularly use the by proxy mode to answer their own questions or to find their own sources about cannabis therapeutics. Conversely, the cannabis nurses were usually the targets of the by proxy information practices of other people. The data in this study indicate that the people who eventually become the cannabis nurses' patients found them largely through proxy agents. That people thinking about using cannabis therapeutically would turn to proxy agents such as their primary care nurses and physicians to help them find information sources makes sense given that finding information about cannabis is difficult and confusing. As noted earlier, the difficulty in finding cannabis information sources is due to the murky legal status of cannabis, the stigma still attached to its consumption, and the widespread lack of knowledge among mainstream healthcare providers and clinicians about the therapeutic value and use of medicinal cannabis.

Lana's description of how cannabis patients found her is a good summary of how the by proxy information practice played out for nurses in this sample set. In this way, by proxy information practices help nurses like Lana to present themselves as experts and to position themselves as possible cognitive authorities.

> *Researcher:* How would people have found out that you were a cannabis nurse?
>
> *Lana:* Through my reputation. I don't advertise. It's all word of mouth now.
>
> *Researcher:* It's all word of mouth. So, they would have spoken to some patient of yours or a physician?
>
> *Lana:* Yes. Or a fellow collaborating nurse or another practitioner or a medicine maker, some advocate or support group member.
>
> *Researcher:* Would patients have heard it at their doctor's office?
>
> *Lana:* It's beginning to happen, but much less likely to be coming from a primary doctor's office—more from chemo infusion centers, online support groups.

*Researcher:* Okay. Social networks?

*Lana:* Yeah. Social networks and waiting rooms for oncology infusions.

*Researcher:* Well, take me further. So then that person does what?

*Lana:* They will reach out to me. I ask people . . . Well, first of all, I'm available through email. That's my favorite. Oftentimes they'll give out my phone number. But usually, I had to establish myself with some easy identifiable nickname. So, I grabbed the domain name so people could remember to just say, "Look for Nurse Lana."

In Noel's case, information seekers located her through different communication channels, such as social media, and through her relationships with other people. Note also that, like Lana, Noel was being sought out as a trusted source of cannabis information based on her reputation and role as a nurse educator.

*Researcher:* How would they have found out that you were a cannabis nurse or that you worked in this field?

*Noel:* They might find out because of a post that I might have put on Instagram or Facebook. They might find out because they know somebody who knows me, and I tend to get referrals just as an nurse educator from people who know me and know that I might have an idea of what someone could do or look into to help them with whatever might ail them.

I have had many conversations with other parents at school who are very interested, who know that I'm a nurse and have asked me about it and are surprised that I actually have done all this education in cannabis medicine.

*Researcher:* They seek you out?

*Noel:* There have been several people who have said, "Hey, I heard you might have some information about CBD." Yeah. That's happened a few times on the playground.

In fact, a friend of mine came to me and said . . . we actually share a naturopathic practitioner, and she said, "I asked so and so about CBD and she told me I should come talk to you," because as a practitioner, that's just not something that she's educated herself on, but she said, "Noel will know everything she needs to know about it, so go ahead and talk to her about it," which I thought was really funny.

The nurses also described using their knowledge about cannabis research to augment and support the information they were conveying verbally. As was often the

case, upon first meeting someone seeking information about cannabis therapeutics, the nurse would refer the information seeker to the nurses' own vetted textual sources of information about the therapeutic value of cannabis and then offer to follow up in person, as Chris's description illustrates.

> *Researcher:* Do you ever refer them to other people or other sources?
>
> *Chris:* I do refer them to other sources. I use Project CBD a lot. If they want to do their own research, I always give them a name for the people that they should put their stock in, like Ethan Russo, Dustin Sulak, Gary Clark, those people. I try and refer them to people that I feel are really reputable.
>
> And more recently we're being able to refer to doctors too, or people that I know that are certifying. So I've begun to have a bigger referral base, because it's become much more prevalent.

The second variation of the by proxy mode that surfaced was when a family member of a current or potential cannabis patient acted as the proxy agent for the cannabis patient by seeking information on the patient's behalf, as Leslie illustrated.

> *Researcher:* How would they find out that you are a cannabis nurse? Would you have told them? Would they have been referred to you?
>
> *Leslie:* Usually people ask about it for their parents that are in my nursing home. Or that someone they know if having a situation that they've read about would help. And since I'm pretty much an expert with elder care, they ask me that and then we go from there.

It is common for physicians to act as proxy agents in referring nurses to cannabis information seekers. Mickey clearly laid out how her strong relational ties with physicians resulted in her connecting and interacting with patients who needed her help. By referring nurses such as Mickey, the physicians give a tacit stamp of approval to cannabis therapeutics, which in turn contributes to the normalization of cannabis therapeutics in mainstream medicine. These physician-instigated connections and subsequent patient interactions led some of the nurses, like Lana and Mickey, to pursue cannabis nursing as a profession.

> *Mickey:* What I've been doing for the last year within the academic center is actually just very informally communicating with patients, well, semiformally, I'll say. I would get a referral from the physician, contact the patient, and then first do my intake interview with them and give them advice based on their health goals, their previous experience, their specific goals with cannabis, [and] their other medications and comorbidities, which are hugely important.
>
> *Researcher:* So would you have access to their medical record, the patient's medical record?
>
> *Mickey:* I would. I have access to their medical record and what I would usually do is work with patients by phone and so, I would work with them by phone, talk with them, make notes, and then follow that up by sending them an email summarizing our conversation and then copying the physician or forwarding that information to the physician so that they have a record of that communication.
>
> *Researcher:* So the docs that you were working with when you were at the academic institution, how did that relationship with those doctors happen—did they seek you out or was it just social relationship?
>
> *Mickey:* I think it kind of developed organically. Some 7 or 8 years ago, when the center for integrative medicine was put together, I think it's been 7 or 8 years now that was put together. For myself, as a holistic nurse at the institution, I also founded a committee on holistic and integrative health care, a nursing committee, because we have shared governance, nursing shared governance there. So as the Integrative Health and Wellness Center was being initiated, I was in contact with them on the basis of that, and so we had this years-long relationship where I was their nursing liaison.
>
> So as I made it known that I'm interested and my intention was to serve as a cannabis nurse navigator for patients, they just naturally started connecting patients to me. First they had asked, would I be willing to give patients information and to help them out once they expressed interest, because the institution itself does not allow for the physicians there to even write recommendations.

**Barriers to the By Proxy Information Practices Mode**

As with nondirected monitoring, there were few barriers to the nurses' practice of by proxy information seeking. The same self-imposed barriers about the appropriateness of a conversation about cannabis existed in by proxy mode as in the other three information practices. Also kindred to the other three information practices was the dependence on geography. The likelihood that the nurse would encounter a cannabis

information seeker or be sought after as a source of cannabis information was largely a function of their physical location. The nurses from the states where cannabis was fully legal and who operated their own cannabis nursing practices relied heavily on by proxy information practices and referrals to identify possible patients. Relying on by proxy information practices was not common for nurses who were still working in mainstream medicine or lived in states where cannabis use was more restricted; their connections and interactions with information sources were more likely to be the result of active seeking or scanning for information. Regardless of their geographic situations, nurses from across the country reported being either the target or the instigator of by proxy information practices.

**Use of Technology by Cannabis Nurses in By Proxy Mode**

As with nondirected monitoring, the nurses did not mention technology use in by proxy mode other than social media or email being used to share specific articles or contact information with information seekers. Technology plays a secondary role because the by proxy mode is largely an informal communication process moderated by the seeker's social network—in other words, who the seeker knows is what ultimately impacts the by proxy information practice, not what technology is used to communicate. Studies on scholarly information seeking have long since established that information seekers prefer informal information sources and channels over formal searches, as the use of informal sources saves time and energy, and this appears to be true for cannabis information seekers as well (Talja, 2002).

**The Effect of By Proxy Information Practices on Cannabis Nurses**

As the above quotations show, the effect of by proxy information practices was to further structure the everyday lives of the cannabis nurses by increasing the number of opportunities they had to connect and interact with cannabis information seekers and sources as experts in cannabis care. Being seen as an expert is important; as Stehr and Grundmann (2011) contend, "Based on their routine contact with specific topics, experts have accumulated experience in contexts relevant for taking action, and thus enjoy both trust and social respect" (p. x). The data demonstrate that the nurses developed routines, habits, and work practices that allowed them to perform as effective nurses. This meant quickly assessing situations and then taking appropriate actions based on the needs of the cannabis information seekers and patients they encountered as a result of by proxy information practices. Examples of appropriate actions that evolved into routines and habits for the nurses were referring information seekers to the same cannabis research articles or trusted sources; developing the habit of first gauging a new connection's level of information literacy and interests before referring information sources; getting into the routine of responding to specific questions by answering with facts and data based on evidence about cannabis gleaned from their own research and experiences; and recognizing situations where the information seeker was unaware of what information about cannabis therapeutics and the endocannabinoid system they needed to know, and then providing the seeker with this unsought information without the seeker's prompting.

For these nurses, the repetition of these actions over the course of time resulted in the establishment of routines, habits, and work practices that were directly related to the cannabis nursing. It was in doing this work that the nurses first took on the role of being

cannabis nurses; it was also in doing this work that the participants learned both what they needed to know to be a cannabis nurse and how to deliver cannabis care. The overall effect of by proxy information practices was for the nurse to develop their "field of practice"—that is, the set of habits and tasks specific to cannabis care that only they could perform because of their knowledge and experience (Schatzki, 2001). What was striking in these data was how similar the routine responses and stocks of knowledge were; yet the sources mentioned by the nurses varied widely.

As in nondirected monitoring, by proxy information practices increased the number of potential patients the nurses in this study encountered; it also served as a mechanism for disseminating vetted information about the therapeutic value of cannabis into the public realm. The data regarding by proxy information practices reveal that there is a core of support for cannabis therapeutics among some mainstream medical practitioners. These data also reinforce the vital role that family and friends play in connecting potential cannabis patients to cannabis nurses. As was the case with all the other information practices, by proxy information practices strengthened the nurse's knowledge of cannabis and structured their performance as nurses, allowing them to form their own fields of workplace practice.

Given that the nurses in this study were largely the cannabis information sources other people were seeking, the connection phase was different than in the other information practices. A majority of the nurses in this study reported that proxy agents or interested third parties, such as physicians or other nurses, were the source of most of their cannabis patients. As part of a broader discussion on information practices, Noel described how this type of by proxy information practice resulted in her physician

referring her as an expert in CBD to her own friend. Note also the reference to Noel's practice of gauging the information literacy of the information seeker: ("Then I would make sure that I wasn't sending something that wouldn't be from a resource that he would not be able to be respectful of"). Notice also that Noel was taking on the role of a cannabis care expert and was signaling her willingness to be a trusted source—that is, a cognitive authority for the information seeker—when asked about the endocannabinoid system ("because I start using science words and then they realize I know what I'm talking about, and if I throw a few words at them like that and that they know and can probably trust that I've done my research").

> *Noel:* What I'm saying, like if I heard, just the other day, someone said to me, and this is a person that I know fairly well, said to me something about cannabis or getting high or something like that, and I was like, "That's a pretty misinformed statement that you're making. Why are you saying it that way?" I'll usually try to ask, try to get their viewpoint, and this person is, is just very resistant to progressive wellness, I guess, progressive health and wellness approaches. He's very straight, kind of traditional Western medicine I guess.
>
> *Researcher:* Do you try narratives or stories with this person?
>
> *Noel:* Yeah, definitely, and I do send that. He would be someone who I would send information to. I would send them some, and usually, because he's fairly well-educated, then I would make sure that I wasn't sending something that wouldn't be from a resource that he would not be able to be respectful of.
>
> *Researcher:* So you gauge his information literacy as well as education level and interests and then send information accordingly?
>
> *Noel:* I do. Yeah.
>
> *Researcher:* Do you ever get into the endocannabinoid system with people?
>
> *Noel:* Yeah. Their eyes usually glaze over because I start using science words and then they realize I know what I'm talking about, and if I throw a few words at them like that and that they know and can probably trust that I've done my research.

Most of the cannabis nurses also reported acting as proxy agents by referring information seekers to their own vetted trusted human and textual sources of cannabis information, as Nikita described:

> As far as when I meet with them, I give them websites for them to check out if they want more information, but they could always call me. They can always call me or email me or text message me and say, "Hey, I'm looking for this." I can point them towards resources. I do that too, because it's also about them figuring out. Yeah, it's kind of like, we call it "homework." I don't like to call it homework. I like to just say, "Here's some website if you'd like to check out, these are pretty reputable," and that's how we go from there.

### What These Data Explain About By Proxy Mode Information Practices

The data from this study suggest that by proxy information practices are mediated by the relationships between the nurse, proxy agents, and the cannabis information seeker. According to the data, it was both weak and strong relational ties that resulted in the nurses, proxy agents, and cannabis information seekers or patients connecting and interacting at some level. The data show that people with strong relational ties to the nurse, such as their friends, families, and co-workers, became proxy agents by referring people they met who needed information about cannabis to the nurse. The data also show that people with whom the nurses had weak relational ties, such as casual acquaintances, neighbors, or the families and friends of their patients, also acted as proxy agents for cannabis information seekers. What this observation about the importance of relationships reinforces is the significance of trust in these interactions (Levin & Cross, 2004; Pascal, 2008). The nurses in this study became the target of the by proxy information practices of other people because they were seen and identified as experts who were credible, trusted sources of information (Rieh, 2010).

**The Consequences of By Proxy Information Practices for the Nurses in This Study**

As a consequence of by proxy information practices, the nurses in this study began to see themselves as experts in cannabis therapeutics, as, over time, they evolved from information seeker to sought-after information source (McKenzie, 2003b). By becoming the experts and sought-after sources of information, the nurses attained the position of being able to break down stigma, combat misinformation, and educate patients and proxy agents about the therapeutic use of cannabis. By proxy information practices operate as a form of social networking and as a relationship-building mechanism that helped the nurse develop relational ties with patients, family members of patients, and other like-minded people. As a consequence, by proxy information practices were found to help cannabis nurses find and build relationships with each other.

The findings about by proxy information practices point to the emergence of a "network of practice" of cannabis nurses, linked together not by their shared workplace experiences but by their similar information practices, shared personal experiences, and collective information needs (Lave, 1991; Wenger, 1998). Networks of practice are vital to innovation because they facilitate the flow of information and emerging knowledge from one group to other people within the broader environment (Brown & Duguid, 2001; Swan et al., 2002). Brown and Duguid (2001) described networks of practice as groups of people who form knowledge networks where relational ties between group members are looser than in a CoP, but where doing the work—that is, the *practice*—forms the basis of a common identity and creates a foundation of common information that is considered to be true by the members of the network (p. 205). In this view, the common identity of the cannabis nurse exists to help nurses become mediators between the stigma-laden status

quo of cannabis care in mainstream medicine and their deeply personal choices to become cannabis nurses and create new professional pathways for themselves (Swan et al., 2002).

Tuominen et al. (2005) and Savolainen (1997) posited that it is social interaction that creates information, but that language and discourse are what makes information visible in the world. Over time and with repetition, cannabis nurses are using language and discourse not only to make the therapeutic use of cannabis visible in the world but also to connect and interact with each other and the public in weak tie relationships and through personal social networks. When performed in public, all the information practices of cannabis nurses became nonverbal and explicit signals to their social groups and coworkers about how much the nurse identifies with cannabis care and supports the therapeutic use of cannabis. The emergence of a network of practice, including hints of a specialized ontology, epistemology, and taxonomy of cannabis care, lends credence to the argument that cannabis nursing is a unique specialty or even a new field of medicine (cannabinoid medicine).

### Shared Interpretative Repertoires and Cannabis Nurses

The existence of a network of practice is supported in these data by evidence that shows different nurses from across the United States are sharing relatively the same interpretive repertoires to describe their situations and encounters with people who are interested in cannabis therapeutics. An interpretative repertoire, as developed by social psychologists including Potter and Wetherell, is a theoretical and analytical concept for understanding how people use language to account for their actions—the “why” they did something or choose a profession, for example (Potter, 1997; Wetherell & Potter, 1988).

McKenzie (2005) posited that when studying information, interpretative repertoires are beneficial in understanding how information seeking and information use become "discursive actions" and are employed by nurses to account for why they became a cannabis nurse. Analysis showed that the nurses in this sample set shared four interpretative repertoires they used both to educate the information seeker and to account for why they had taken on the role of a cannabis nurse.

The shared interpretative repertoires the nurses used to explain their everyday life situations fell into four broad themes, with nurses often invoking all four themes during the interview with the researcher. The themes were: (a) the ethical professional: the nurse's belief that it was their ethical and professional duty to learn about cannabis for the sake of their patients; (b) the safer alternative: the nurse's certitude and evidence that cannabis is a safer alternative to other medications and should be a first choice drug, not a medication of last resort; (c) the embodied experience: the nurse's personal knowledge and experience as evidence of the beneficial and therapeutic uses of cannabis; and (d) being true to self: the nurse's assertion that cannabis nursing is a legitimate career path for people who love being a healer and who are repelled by the way mainstream medical practice forces them to care for their patients.

The presence of these shared interpretative repertoires among the sample set shows the outline of a network of practice forming based on the similar origin stories, narratives, and experiences, in addition to the need and use of the same kind of information. This network of practice is a necessary precursor to CoPs around cannabis care that have yet to form in mainstream medicine. It is possible that this cannabis nurses' network of practice is providing mainstream medicine with the expertise and specialized

skills needed to propel the next level of adoption of cannabis care. The effect of the network of practice of cannabis nurses can be seen in the growing interest in cannabis nursing as evidenced by the rapidly increasing number of educational programs and certifications that are currently being offered outside of mainstream medicine.

### Summary of By Proxy Information Practices

By proxy information practices among cannabis nurses can be explained using the meta and middle-range theories of structuration, situativity, practice theory, and community of practice, which define information practices lending credence to the idea that by proxy practices are information practices. Also, like nondirected monitoring, by proxy information practices increased the number of potential patients the nurses in this study encountered; it also served as a mechanism for disseminating vetted information about the therapeutic value of cannabis into the public realm. The data regarding by proxy information practices reveal that there is a core of support for cannabis therapeutics among mainstream medical practitioners. These data also reinforce the vital role that family and friends play as proxy agents in connecting potential cannabis patients with cannabis nurses. More than with the other information practices, by proxy information practices structured the lives of the cannabis nurses in ways that changed their professional trajectory. By proxy information practices are helping to build the domain of cannabis nursing by laying the groundwork for the emergence of a network of practice and possibly a new nursing specialization.

# CHAPTER NINE

# DISCUSSION AND IMPLICATIONS FOR PRACTICE

> *Cannabis medicine is about to empower conventional medicine to change its dependency on the robber barons of patient health and big pharma*.
> —O'Hara, BSN

The data from this study support the importance of delving into future research and explorations of implications of both information practices as a phenomenon and the topics of cannabis nurses, cannabis care, adult learning, organizational knowledge development, and information systems research.

The purpose of conducting this study was to explicate the information practices of cannabis nurses and to characterize how cognitive authority operates in the realm of cannabis nursing. Information practices allowed the nurses in this study to augment their firsthand experience with cannabis with secondhand knowledge such that they acquired the specialized expertise, language, and knowledge needed to come across as "knowing what they are talking about." A key attribute of this sample set is their widespread rejection of customary cognitive authorities such as physicians, medical associations, and pharmaceutical firms as sources of information about cannabis they deemed to be credible. The nurses depended heavily on their information practices to find sources of information about cannabis—that is, cognitive authorities they could trust.

The nurses in this study engaged in active seeking, active scanning, nondirected monitoring, and by proxy information practices regularly to augment their own firsthand experience with cannabis therapeutics. Nurses used active information seeking to help dispel uncertainty about cannabis, particularly at the beginning of their process of becoming cannabis nurses. The nurses engaged in active scanning for information about

cannabis because of their curiosity and desire to increase their stock of knowledge. The nurses reported being on almost constant sensory alert for information sources or seekers of cannabis information and were often the information source on cannabis being sought by others using by proxy information practices.

Overall, the information practices of cannabis nurses allowed them to take a bricolage approach to information interaction and curation by using information from a variety of sources and cognitive authorities for distinct aspects of cannabis care. The nurses in this study found patients using cannabis to be especially valuable sources of nonclinical information about cannabis. In aggregate, the information practices and related information work produced by said information practices served to restructure and change the lives of the nurses in this study. Their information practices put most of them on a path to being or becoming a cognitive authority on cannabis nursing. Not only did their information practices produce the facts and data they needed to move their knowledge forward, but because of the social nature of information practices, the nurses were also able to reveal their expertise in social settings, which placed them in positions and in relationships where they might be seen as cognitive authorities—that is, as people with both firsthand experience and secondhand knowledge about the therapeutic use of cannabis.

The information practices of cannabis nurses have implications for entrepreneurialism, professional pathways, and the adoption of innovations where nurses are concerned. The following links should be explored to uncover the implications for the development of practices related to cannabis nurses, cannabis care, and the adoption of cannabis use into mainstream medicine.

**Links Between Information Practices, Identity Building, and Entrepreneurialism**

The data in this study suggest that what Johannisson and Sundin (2007) saw in their research is true for the cannabis nurses in this study: Like the Swedish nurses, the cannabis nurse participants can be seen using information practices to mold their identities, to make sense out of their situations, and to constantly increase their stock of knowledge about cannabis. An area of further exploration for the cannabis nurses is gaining a better understanding of how their identities as cannabis nurses helped them carve out a new professional role for themselves at the periphery of mainstream medicine: that of the independent cannabis nurse/entrepreneur. Statistically for this sample, a full 82% of the nurses disclosed some degree of entrepreneurial thinking, with over half of the 82% having already begun business ventures of their own. Of interest are the roughly 18% who did not disclose entrepreneurial thinking during their interviews but instead were actively working to integrate cannabis-based medicine into mainstream medicine. The data show that all the nurse were using information practices to seek out reliable sources, facts, and data, and that they then used those sources, facts, and data in discourse with people seeking more information about cannabis; but the link between information practices, identity, entrepreneurialism, and the development of a new professional domain for cannabis nursing was not made. It would be interesting to investigate whether cannabis nursing presents different opportunities for nurses or is a specialty within nursing using an information practices approach.

## Links Between the Normalization of Cannabis Care, Its Adoption Into Mainstream Medicine, and Radical Innovation

"Exploring the Information Practices of Cannabis Nurses" also revealed that an ugly stigma still surrounds cannabis therapeutics; its therapeutic usefulness is still being neglected by providers in mainstream medicine. It is clear from this study that these nurses are using information practices to tell the public about their own firsthand experiences and to impart evidence-based research. The result seems to be that these nurses are breaking down stigma and countering the false narratives surrounding cannabis—false narratives the nurses believe are holding mainstream clinicians back from embracing cannabis therapeutics. What was surprising was the extent to which the nurses reported that stigmatization and lack of knowledge about cannabis are the norm and that the use of cannabis was still seen by the mainstream as being radical. The nurses in this study constantly spoke of encountering stigma toward cannabis users and misinformation about its therapeutic uses. This was especially true for the nurses in the sample still working in mainstream medicine. Cannabis nurses working in mainstream medicine reported feeling compelled to keep their cannabis nursing expertise and interests to themselves; they did this out of fear of being labeled a deviant, being fired, being drug tested, or being made unemployable after becoming legal medical cannabis patients. According to the data, the view that cannabis has no medicinal value is still in place, even in California, Washington, Oregon, and Colorado—places where medical cannabis programs have been in place for decades.

The data support the idea that the information practices of cannabis nurses are breaking down this stigma by normalizing the discourse about cannabis in social settings.

Through their information practices and social interactions and exchanges, the nurses are presenting evidence that cannabis has therapeutic value. Through their information practices, the nurses also can express their values and their patient-centered approach to nursing. What is not known is whether breaking down the stigma hovering over cannabis therapeutics is prompting mainstream medicine to adopt cannabis care into their workplaces, even if it is viewed as a radical innovation. The data showed that CoPs around cannabis care had formed in the participants' workplaces. As Swan et al. (2002) noted, radical innovations fundamentally alter work practices because they require "embedding new knowledge and work practice and, at the same time, the disembedding of old ones" (p. 481). The drive to embed new knowledge about cannabis therapeutics into mainstream medicine and to alter work practices (and clinical guidelines) was a particularly strong attribute of the nurses in this study. The clearest evidence of early adoption in mainstream medicine was the nurses' accounts of physicians referring patients to them for education, supervision, and care planning. That there are cannabis-friendly physicians willing to refer their patients to a cannabis nurse attests to an unmet need for expertise in cannabis care in mainstream healthcare. As radical innovators, cannabis nurses are meeting these physicians' needs by bringing specialized knowledge and cannabis care practices into view in mainstream medicine by helping patients improve their health outcomes. Bringing cannabis nurses into view is helping to break down barriers and dislodge old ways and patterns of thinking about cannabis as beneficial to human health instead of destructive (Swan et al., 2002). From an individual level, however, how radical an innovation cannabis care represents depends on the views of the individual cannabis nurses. Many of the nurses in this study saw cannabis care not as

radical innovation but as incremental progression toward more patient-centered care (Popadiuk & Choo, 2006).

## Links Between Information Practices, Boundary Spanners/Peripheral Specialists, and the Adoption of Innovations

The exploration of the data through the MIP model shows cannabis nurses enacting change and theoretically speeding the adoption of cannabis therapeutics by becoming boundary spanners. "Boundary spanners," in a term borrowed from social network analysis, are people who practice a form of information and knowledge brokering where they use information to mediate personal and digital interactions and cross-organizational and -cultural boundaries to share that information (Long et al., 2013). Boundary spanners bridge the information gap between patients who want to use cannabis therapeutically and clinicians and healthcare providers who are reluctant to embrace cannabis therapeutics out of fear, stigma, and lack of knowledge. Over the course of their evolution from information seekers to information sources, the cannabis nurses became experts on the therapeutic use of cannabis for both patients and their colleagues in mainstream medicine, thereby putting themselves in the position to become boundary spanners.

As boundary spanners, cannabis nurses link their healthcare colleagues, personal providers, and patients to the cannabis nurses' own trusted sources of information about cannabis therapeutics, thereby impacting what facts and data their colleagues and patients believe to be true (Allen, 2007; Bordoloi & Islam, 2012; Zolnierek, 2014). The cannabis nurses created these relationship links by becoming peripheral specialists—that is, experts who operate on the periphery of networks and play the vital role of authorities

because they “possess specific kinds of information or technical knowledge—for instance, research data, or software skills, or customer preferences—that they pass on to the other members of the group whenever it is needed” (Cross & Prusak, 2002, p. 11). As boundary spanners and peripheral specialists, the nurses in this study were providing their colleagues in mainstream medicine with vetted information, informed discourse, and insight into cannabis care best practices they were developing that were based on their own experiences and on working with patients. The nurses in this sample fit the description of peripheral specialist, as the quotations show; however, the stigma and misinformation present in mainstream medicine are formidable barriers for the nurses to overcome. Consequently, workplace practices and organizational knowledge about how to provide cannabis care are just beginning to develop and bear further research.

# CHAPTER TEN

## KEY FINDINGS, STRENGTHS, LIMITATIONS, AND FUTURE RESEARCH

> *I think the healthcare system all understand that it [cannabis] works; I think everybody's just scared of the federal government as far as repercussions in that regard. So I think everybody has an understanding that they know that it works to some degree. Otherwise there wouldn't be . . . what is it now, 29 states that have some type of medical cannabis program?* —Sam, RN

By design, this study generated a rich and densely coded dataset that produced important findings that not only proved the MIP model was effective at identifying information practices in context but also shed a bright light on how information practices affected the lives of the nurses who participated in this study. Highlights and descriptions of the key findings as they pertain to the cannabis nurses follow.

- These nurses no longer view their customary sources of scientific and medical information sources, such as physicians and pharmaceutical firms, as cognitive authorities on cannabis information and they no longer lost trust the facts and data about cannabis that these sources produce (p. 84).
- For the nurses in this study, patients are highly prized as cognitive authorities when it comes to information about how cannabis therapeutics work in the body (p. 86).
- After losing trust in their typical cognitive authorities, the cannabis nurses used active seeking (p. 111) and active scanning (p. 131) information practices to open new information pathways. Their active information practices led them to different cognitive authorities whose facts and data about cannabis information they did trust; this self-learning helped the nurses build

their stock of knowledge and increased their confidence in their research and critical thinking skills.

- Once the nurses developed a stock of knowledge about cannabis therapeutics, they used nondirected monitoring to locate cannabis information seekers in an effort to be seen as a source of information about cannabis that could be trusted (p. 147).
- Despite the desire of these nurses to exchange information about cannabis in social settings and in the workplace, no CoPs have developed (p. 161), and information grounds were uncommon (p. 133)
- There are suggestions that a network of practice of cannabis nurses is being formed, mainly via by proxy information practices (p. 159). This development signals the possibility that a specialized ontology, epistemology, and taxonomy of cannabis care is emerging.
- Cannabis nurses are boundary spanners and peripheral specialists (p. 168). Through this role, cannabis nurses are sharing information, thereby modeling best practices in cannabis care. The nurses reinforce their own authority and credibility by establishing their nursing credentials and by discussing their specialized knowledge in cannabis nursing.

As a research study, *Exploring the Information Practices of Cannabis Nurses* has several strengths and limitations and provides researchers, educators, and designers with ideas and inspiration for deepening and broadening this topic of study. Following is an overview of those strengths, limitations, and directions for future research.

## Strengths of This Study

One of the primary strengths of this study is that the research topic, research methodology, researcher, and research participants were all well-suited to each other, and the research question was clear. A second strength of the study was the research design and interview protocol. The design and protocol called for the use of semistructured interviews combined with the transcript review process to verify the data, which increased the trustworthiness of the results and the data. This protocol allowed the participants to co-create the interview experience with the researcher yet was flexible enough to allow each interview to be individualized to the participant's situation. The result was the collection of a wide spectrum of data and the opportunity for candid and personal conversations to occur. This interview protocol produced a richly detailed dataset that was verified for accuracy by the participants, which added to the study's reliability.

Another strength of this study is the use of the McKenzie Information Practices (MIP) model to frame both the thematic and theoretical codes to collect, organize, analyze, and visualize the semistructured data (using NVivo 12). This method of data collection and analysis provided the flexibility necessary for this exploratory study.

Given the relatively small canon of literature on information practices, another strength of this research was that it explored a topic that is new to investigation in the nursing, information science, communication, and knowledge management fields. This exploratory study provides a platform from which to begin to examine how nurses are learning how to be cannabis nurses in the current environment and the specifics of cannabis nursing education. It also demonstrates a method for using the MIP model to

study information as discursive actions—the results of which may provide insight for developers of machine learning and artificial intelligence applications, as well as user interface designers.

Another strength of this study is the composition of the sample population and how closely its members fit the criteria for being in the study. The sample comprised highly educated, accomplished nurses from diverse geographic and social settings who were eager to share their stories and were deeply engaged in the research process. Almost all the participants possessed advanced knowledge of the topic, and all displayed a willingness to discuss complex and personal details of their journeys into cannabis nursing. This configuration produced a densely coded, highly searchable dataset that can be used by other researchers for studies in several areas, including community of practice, discourse analysis, information work, adult learning, stigma, and patient centered care.

## Limitations of This Study

Having conducted qualitative research, it was never the aim of the researcher to present objective truths or to generalize the results—this makes the findings of this study limited in its external and internal validity. Because this is a qualitative study, the findings cannot be generalized to the other groups or populations of cannabis nurses because the findings represent only the words and reported deeds of this study's participants. Instead, the aim in conducting this research was to achieve transferability; future research that applies these findings to other, similar contexts is necessary to assess whether that aim has been met. Likewise, the findings are applicable only to the participants in this study. Therefore, future research, as already discussed, is needed to

confirm the initial findings regarding information practices and the efficacy of the MIP model as a framing device and information practices as units of observation.

Another limitation of the study was the sample size. Although 31 participants provided enough rich description for saturated qualitative analysis to be conducted, some of the quantitative results presented would be strengthened with a larger sample.

A further limitation of the study is that the self-reporting method of data collection, which is based on the participant's memory, can influence the accuracy of their reported experience. It is also possible that the participants were acting the role of the cannabis nurse and providing answers they thought the researcher wanted to hear to portray themselves as a "good cannabis nurse."

A limitation of this study is that cannabinoid medicine and cannabis care are fields of endeavor that are evolving rapidly, which may have impacted the findings of this study. This is especially true given the increase in cannabis nursing education that is now obtainable in comparison to when the data for this study were collected. In addition, research in cannabinoid medicine, farming, and applications is increasing dramatically across the world. In fact, when this study was first started, the term "cannabinoid medicine" had yet to evolve. Also, as the legal use of medical cannabis has spread across the United States, the medical cannabis industry has become more professional and focused on the health aspect of cannabis. Given the increased acceptance of and professionalism attributed to cannabis therapeutics, cannabis nurses are no longer such an anomaly in the nursing profession and therefore specialized research may not be needed to see how they are learning and adapting.

Both a limitation and a strength of this study is this researcher's bias as a scholar advocate in favor of the legalization of cannabis. This researcher also acknowledges a propensity for viewing the participants as cognitive authorities and seeing them as trailblazers taking on mainstream medicine for the betterment of patients. Although these biases do slant this researcher's ability to be objective about the participants' actions, they are also a strength in that the participants were comfortable enough to share deeply personal details—details that enriched and deepened the data. All these limitations are factors for consideration in the design of future research.

## Calls for Future Research

The results of this exploratory study are a springboard for future research in information science research methods, information systems design, communication, knowledge management, and cannabis nursing education. As new areas of interest and potentially new fields of study, cannabis, cannabinoid science, and cannabis informatics are underresearched; myriad topics and directions within this realm could be explored.

### Delve Into Cognitive Authority and Trust

The existence of information practices as discursive actions used to connect and interact with information sources or seekers is supported in this study; yet the ways in which the nurses used information practices to "position" themselves discursively was not examined (McKenzie, 2003a). Knowing how the nurses were using discourse to position themselves as experts and potential cognitive authorities would clarify how they get people to trust them. Also, the data in this study point to a much larger question—how do people choose their cognitive authorities? The topic of cognitive authority could be studied by using the MIP model as a data collection design framework and a data

analysis tool to look at the relationship between information literacy and social information seeking, knowledge development, and trust. In this sense, trust is not something that permeates a system but exists within relationships, “with specific others and over specific matters”; trust, then, is understood as a behavior that can be explained (Farrell, 2009, p. 27). It would be interesting to further explore the relational and institutional conditions that help establish trust (Pascal, 2008). Understanding how people choose to trust the facts and data of one source over another is particularly important at this time given the state of political polarization in the United States where, to paraphrase P. Wilson (19893), “knowledge is in danger of becoming a matter of opinion” (p. 17).

**Refine and Expand the MIP Model**

Another area for future research is to apply the MIP model in new contexts with different sample populations to identify variations on information practices and what those variations explain about the sample population. Of particular interest would be to use the MIP model to study the information practices of employees of an organization to better understand how organizational knowledge processes, including CoPs, develop. Further adoption of the MIP model would allow the research community to refine its usage as a data collection and data analysis tool for studying information phenomena. The MIP model may be especially helpful to researchers who want to isolate information practices from information work and information behavior—something that can be difficult to do without clear definitions and models. In this study, information work was defined from a resource expenditure perspective (time, money, human resources) whereas information behavior was viewed as psychological and information practices as sociological.

The findings of this study also point to the possibility of expanding the MIP model beyond the two dimensions of connection and interaction to include time and physicality. This revelation came from comparing the information practices of the different sample populations of the McKenzie (2003b) and Yeoman (2010) studies to the information practices of the cannabis nurses. This comparison showed that both the amount of time the information seeker was engaged in information seeking for a particular topic and the information seeker's physical appearance factored in to how information was entering their lives in social settings. Understanding of how time with the topic and physical appearance could affect social information seeking, source identification, and knowledge development may be useful to theorists, designers, and developers.

**Investigate the "Information Seeking as Learning" Information Practice**

This study suggests that an area of theoretical information in science research that has urgent implications is continued research into the social and cognitive processes that individuals experience as they learn about a topic through their own information-seeking practices and processes. In particular, further research on "information seeking as learning," which has been identified as a type of information practice by Isah and Byström (2016), is merited. Further analysis of the existing coded data using Shah's (2012) theories of collaborative information seeking may reveal patterns of action related to the information seeking as learning information practice. Better comprehension of how information seeking as learning is happening could contribute greatly to the theoretical basis and explanatory power of information practices research, thereby facilitating understanding of why and how an individual chooses their cognitive authorities—i.e.,

who or what source they allow to influence their thinking, their sensemaking, and possibly their actions.

**Apply Information Practices Research to the Design of Cannabis Care Systems and Applications**

Equally as important as working on more conceptual information science topics is the need to conduct applied and formative research on the design, development, and implementation of purpose-built information systems for providing cannabis care. A rich area of future research exists in the opportunity to develop technologies, tools, and interfaces that allow nurses to connect with one another and to exchange information.

As a radical innovation, cannabis care—and the field of cannabinoid medicine—is in the process of developing its own informatics, which has important implications for information architects, information system designers, and application developers. The therapeutic use of cannabis is a difficult topic to study given the complexity of how cannabis interacts with the human body, making the development of cannabis informatics essential for the design of information systems and decision support tools. All types of information science research are needed, including the following (but this list is only the beginning):

- Understanding and development of data structures and standards to support easy integration, visualization, and aggregation of data to develop prescriptive and predictive analytics for using cannabis therapeutics; easy integration of cannabis data for farmers producers, dispensaries, retailers, etc.; easy integration of cannabis data for compliance reporting and for financial and business systems;

- Field research to better understand the cannabis nurse's user needs and problems, to design effective user interfaces and experiences;
- Personalized cannabis therapeutics and corresponding informatics to guide the development of cannabis genetics tailored to treat specific health conditions;
- Development of open-access databases and search tools to help cannabis nurses find and share evidence-based best practices and vetted information of all kinds;
- Integrating cannabis informatics and information into existing electronic medical records (EMRs) systems; and
- Effect of technical innovations such as block chain, cloud computing, Internet of things, artificial intelligence, nanotechnology, and genomics on cultivating, producing, and using cannabis therapeutics.

**Understand How Communication Is Constitutive of Cannabis Nursing**

As is true of information science, research into communication topics and cannabis is just beginning. Because information practices are social and discursive by nature, research into the communicative properties will increase the explanatory power of information practices theory and the MIP model. A deeper understanding of information practices as discursive actions and of how this results in the collective construction of a network of practice would help shed light on how relational ties and the multiplexity of relationships impact cognitive authority.

Another avenue of exploration in the communication field would be to develop a clearer sense and definition of discursive actions, including the relationships among discourse, information practices, sensemaking, agency, and action (Jones & Norris,

2005). Again, this step could help shed light on how nurses (or any sample population) chose their cognitive authorities and on how those actions impacted their stock of knowledge. This information would be helpful in facilitating understanding of social issues and in developing better training and education programs.

It would also be useful to apply communication theories to better understand how the connection and interaction phases of the MIP model operate. It is possible that discourse analysis as theorized by Potter and Wetherell (1988) could be used to explain how the nurses and the people they are interacting and connecting with use various discursive responses in different situations. The findings from such a study could shed light on how to map an individual's cognitive pathway toward deciding whose facts and data they find informative and choose to believe. There is some kind of vetting process that happens during these connections and interactions, and it would be useful to get a handle on this. Communication-based research into how and why the nurses are accomplishing boundary spanning would shed light on how cannabis care is being adopted and would be helpful for organizational communication.

**Use Knowledge Management to Study Adoption of Innovations and Outcomes**

The evidence in this study points toward the likelihood of cannabis care becoming a specialty in nursing focused on improving patient outcomes using cannabis therapeutics. With that in mind, knowledge management research can provide a clear view into how the vital organizational processes of finding, developing, and sharing knowledge impact organizational outcomes (Orzano et al., 2008). This view is important, as the desired organizational outcome of a primary care practice, hospital, or healthcare provider is improved health outcomes for its patients and increased workforce

satisfaction for its staff. Proof of the effect cannabis therapeutics is having on overall public health in America is needed, which means it is necessary to study how healthcare organizations are enabling the knowledge processes needed to deliver cannabis care. The Knowledge Enablers, Processes, and Outcomes (KEPO) model developed by Orzano et al. (2008, p. 492) will be useful in guiding such studies. (Note: The acronym KEPO is this author's title and does not appear in the original source.) Using the KEPO model to develop a survey of nurses, nursing directors, human resources managers, and hospital system administrators would provide insight into whether cannabis therapeutics are being used enough to improve overall public health. Of equal importance is research into how cognitive authority plays into knowledge development, sensemaking, and decision support.

**Research Instructional Design and Content for Nursing Educators**

For researchers and instructional designers of cannabis nursing education curriculums, the findings of this study show that the nurses ranked patients highly as cognitive authorities, saying they learned the most about cannabis care from patients. Patients using cannabis medicinally often "know what they are talking about" more than their healthcare providers do (Ostrowski, 2014; Stelzer, 2016). With cannabis care, nurse educators have the unique opportunity to create and incorporate the patient-centered, plant-based, holistic approach the nurses in this study favored. Educational programs that reflect this patient-centered cannabis care curriculum will not just appear but will be the result of research and of more experience delivering cannabis care. With that in mind, design-based research methods, which are based on problem-solving and experiential learning, may be a way forward. It is also imperative that nurse educators engage in

research on how best to incorporate evidence-based practice theory into cannabis care, a field in which much of the evidence is anecdotal and experiential. A study that looked at the differences between cannabis nursing and nursing in general to discern whether the innovation of cannabis nursing really is radical or whether the differences are mainly philosophical would also be of great interest.

**Develop a Cannabis Nurses Skills Continuum**

Findings from this study show that for a certain population of nurses, becoming a cannabis nurse is a viable and desirable career path, or at least a focus of professional interest. This study does not provide the data necessary to understand how long it takes a nurse to become an expert in cannabis care. An area of future research for cannabis nurses is the establishment of a cannabis nursing skills continuum from novice to expert based on Benner's (2001, 2004) adaptation of the Dreyfus model of skills acquisition (Dreyfus & Dreyfus, 1986) for use in clinical nursing. Such a skills continuum will also make cannabis nursing more visible and "knowable" for mainstream nurse educators and should speed up the adoption of cannabis care into mainstream medicine. Something this study does establish is that cannabis nursing appeals to a wide range of nurses coming from disparate backgrounds but sharing similar information practices and interpretative repertoires. Because of this diversity, each nurse entering the domain of cannabis nursing will begin with a different level of nursing expertise and cannabis knowledge. Research is needed to underpin the design and development of a skills acquisition model to help the nurses pinpoint at what stage on the continuum (novice, advanced beginner, competent, proficient, expert) they are entering the cannabis care field (Lyon, 2015). Likewise, a

skills acquisition model based on this continuum would provide cannabis nurses with a pathway for growing their expertise.

### Better Understand the Impact of Legalization on Information Practices

Another area of future research is to better understand the impact that the legalization of cannabis will have on the information practices of cannabis nurses and on their choices of cognitive authorities. The cannabis nurses in this study clearly rejected their customary cognitive authorities as not being credible sources of information. Will this perception change when the nurses' customary cognitive authorities embrace the therapeutic use of cannabis? Will this shift change how they get information or alter their view of their own cognitive authorities?

## Closing Remarks

This study does provide an answer to the research question "What are the information practices of cannabis nurses?" The nurses are using information practices to become cannabis nurses. By using the McKenzie Information Practices model (MIP) as both a unit of observation and a theoretical framing device, this researcher has shown how the cannabis nurses participating in this study used the four information practices discussed (active seeking, active scanning, nondirected monitoring, and by proxy) to connect and interact with information sources in their search for cognitive authorities on the topic of cannabis therapeutics. The data also identified the type of cognitive authorities on cannabis therapeutics these nurses trusted and explained how information practices were structuring their lives through information work. This study also applied the existing MIP model to a new context with a different research design and demonstrated how to take an information practices approach to researching an

information phenomenon (McKenzie, 2003b; Yeoman, 2010). This study also contributed to the effort to understand the distinctions among the related concepts of information practices, information behavior, and information work; however, this study barely pulled on the "red thread of information" about information practices in general and cannabis nurses in particular.

This study is important because it brings cannabis nursing into view in the information science world. It is hoped that knowing there is a new set of users and organizations with problems to solve will contribute to the development of software tools, technology, and educational programs tailored toward this unique audience.

This study is also important in that it brings cannabis nurses into view in the world of mainstream medicine—nurses who have earned this notice through their words and deeds. The participants in this study were willing to risk their own financial, relational, professional, and emotional interests to learn how to be cannabis nurses. These nurses have become cognitive authorities by making their expertise in cannabis care known through their information practices and the expertise they developed through their own research and personal experience, even offering up their own bodies as evidence of the healing capacity of cannabis. Although this sample set came from across the United States, the nurses used similar words to talk about their experiences, voiced the same kinds of hopes and concerns about the use of cannabis, and in general expressed themselves in comparable fashion. This observation supports the idea that their information practices lend an important note to the national discourse that is "talking" cannabis care into existence. For these nurses, the way to break down these barriers was to leave mainstream medicine and form their own cannabis nursing practices, share

information about cannabis with others in social settings to reduce stigma, reinforce their identity as cannabis nurses, and provide evidence about the therapeutic use of cannabis from a position of cognitive authority. Given the pace of change influencing the therapeutic use of cannabis, soon cannabis nurses will no longer be labeled as outsiders or peripheral but as leaders in a new nursing specialization.

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# APPENDIX A: HISTORY OF CANNABIS

## Introduction

Cannabis *(cannabis sativa* and *cannabis sativa l)* is one of the oldest known cultivated plants, grown across the millennia for its use as a resinous intoxicating substance referred to as "marijuana" and for its use as an agricultural commodity known as "hemp" (Small, 2015). The terms are based on Small's (2015) classification system of cannabis sativa as single plant with two subspecies, one psychoactive and one nonpsychoactive. Cannabis as marijuana is grown and used for its ritualistic, medicinal, and narcotic properties and contains the chemical element tetrahydrocannabinol (THC). Cannabis as hemp is grown and used as a food source, as a source of raw material for a vast array of products, and for its therapeutic value as a medicine. Cannabis has a long and storied connection to humanity, as Warf (2014) points out:

> Cannabis use, including hemp and its psychoactive cousin, has a long and often colorful history that reflects the contingent conjunction of numerous forces, including religion, migration, colonialism, and shifting moral environments. From China to India, the Middle East to Africa, Latin America to North America, various strains of cannabis have been widely intertwined with constellations of power, at times held to be sacred and at others denounced as immoral. While it has been accepted and tolerated more often than not, cannabis has also been repeatedly demonized in different historical contexts; attempts to restrict its usage have invariably reflected political and moral agendas rather than established science. (p. 433)

## The Cannabis–Human Connection

Cannabis was a part of the human landscape from early in human prehistory. In 1997, a hemp rope dating back to 26,900 BC was found in Czechoslovakia, making it the oldest known object to be associated with cannabis (Hill, 2018). An 8000-year-old piece of hemp fabric found in Turkey is thought to be evidence that making hemp fabric was

one of the first human industries to emerge in civilization (Garraty & Gay, 1972). On the island of Taiwan, archeologists found 10,000-year-old pottery shards decorated with cannabis cord motifs and rod-shaped tools similar to what is still used today to separate the hemp fiber from its woody stem (Abel, 1943/2013). As Warf (2014) noted, over time, most societies have been tolerant of the use of marijuana, and some societies embraced it as a sacred herb. At some point in the histories of these societies, however, the cultivation and/or use of marijuana was restricted and often criminalized—not for scientific reasons, but out of political motives. The rest of this appendix traces the path of the cannabis-human connection over time; this herbaceous member of the Cannabaceae family went from being perceived as a common weed to being considered one of the world's most familiar, notorious, and provocative plants.

## Cannabis and Early Human Use

Although the cannabis plant itself is a native of the marshy warm parts of Central Asia, it has long been thought that the widespread human use of cannabis originated in Eastern Asia. This thinking changed when a 2016 study by ethnobotanists at the German Archaeological Institute concluded that cannabis sprang into human use about 5,000 years ago, in two distinct geographic areas: Eastern Europe/Central Asia and Far East Asia and Southern Mongolia (Long et al., 2016). These researchers compiled a detailed database of the archaeobotanical and palynological records of cannabis fibers, pollen, achenes (seeds), and imprints of achenes found at 92 archaeological sites stretching from Eastern Europe to Far East Asia. They performed a systematic review that reveals an even more complex history of its use (Long et al., 2016).

## Cannabis in Eurasia

Based on the biological record, Long et al. (2016) saw a link between cannabis pollen and the migratory and trading routes of the Yamnaya people, a Bronze Age hunter-gatherer tribe from Eurasia. The Yamnaya are thought to be the Proto-Indo European ancestor that has influenced Europe linguistically and genetically (Haak et al., 2015; Long et al., 2016). Cannabis seems to have been one of the Yamnaya's key trading goods as they traversed back and forth along the rivers and Steppe Plains of Eastern Europe and Central Asia. The Yamnaya were thought to smoke marijuana for ritualistic purposes and are likely to have spread this practice into eastern Europe, where cannabis as hemp had been used primarily for food, fuel, and fabric.

## Archeological Evidence in Eurasia

Some of the oldest archeological evidence of the cultural importance of cannabis was found in the late 1980s in the Yanghai Tomb evacuation near Turpan, Xinjiang-Uighur in the Gobi Desert of Central Asia. The burial traditions of the Yanghai people and climatic conditions of Gobi Desert combined to superbly preserve samples of several Western Asian crops, including capers, wheat, barley, grapevines, and cannabis (Russo et al., 2008). It was in the grave of a 2,700-year-old Yanghai shaman that some of the clearest evidence of the connection between cannabis and humans was found. The archeologists found a leather basket and a wooden bowl placed at the head and the foot of the shaman's body. In the basket and the bowl were found 789 grams of almost perfectly preserved cannabis. Precise phytochemical and genetic analysis of the cannabis found in the shaman's tomb showed clear evidence that the cannabis plant had been cultivated, possessed THC, and, by the placement next to the body, was interpreted as meaning the

items were being used for ritualistic and perhaps medicinal purposes (Jiang et al., 2006; Long et al., 2016; Russo et al., 2008).

## Cannabis in East Asia

At about the same time the Yamnaya were spreading the use of cannabis around Central Asia and Eastern Europe, people in Far East Asia began to find hemp indispensable. In fact, hemp became so linked to Chinese culture that China was referred to at the time as the "land of mulberry and hemp" in reference to the importance of the silk and the hemp textile trades (Abel, 1943/2013; Jiang et al., 2006). Hemp became such a part of life for the Neolithic Yangshao people of the Yellow River valley that their entire economy became hemp based for over 2,000 years (Long et al., 2016). Archaeological evidence shows the Yangshao wore hemp clothing, wove hemp textiles, and produced hemp pottery.

According to Abel (1943/2013), the ancient Chinese also used a mixture of hemp fibers and mulberry bark to create one of the greatest inventions of early human history—paper. The Chinese jealously guarded the secret of papermaking for centuries until the ninth century ACE, when the Arabs discovered the technique and began making their own paper using the ancient Chinese recipe of hemp and mulberry. The ancient Chinese learned how to press the seeds for oil (a technique still used today) and developed uses for every part of the plant, including the root for medicine, the stem for textiles and rope, the seeds for food and oil, and the leaves and flowers for medicine and narcotics. Eventually, however, Taoist and Confucian value systems concerning intoxicants changed the Chinese view of cannabis, and use of cannabis fell from favor and became prohibited, thus establishing a pattern of the human cannabis relationship that repeated

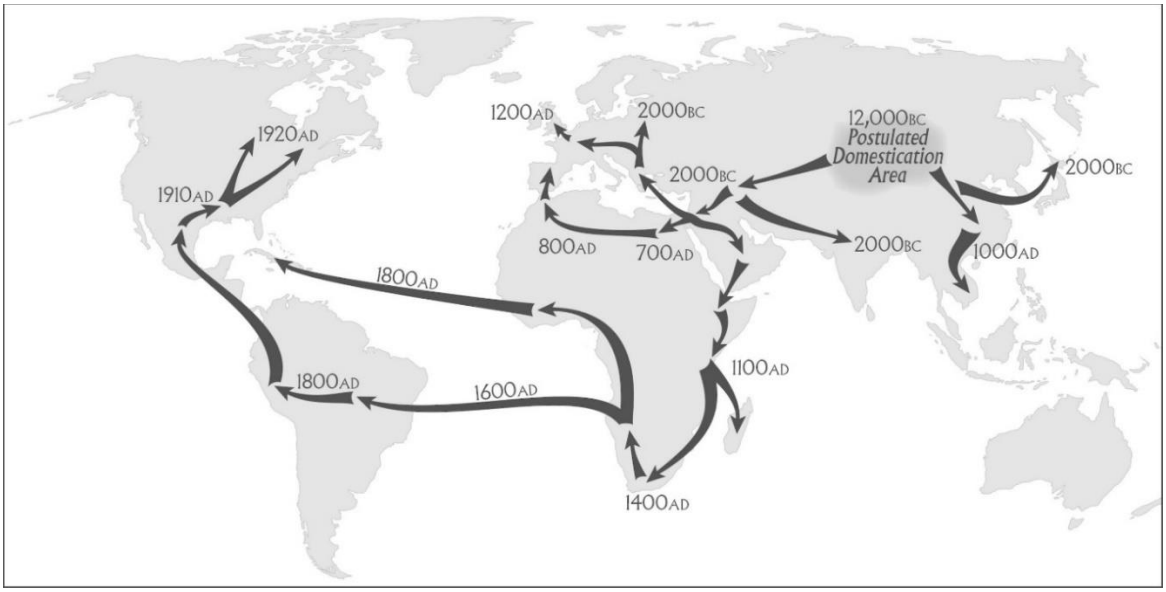
itself across cultures and time. Currently, marijuana is illegal in China, but hemp fabrics, food, medicine, fibers, and oils are still common. Marijuana is either illegal or decriminalized in Japan, South Korea, and most of Southeast Asia; however, cannabis appears to be legal in North Korea, or at least there are no laws prohibiting it from being cultivated or consumed, as reported by defectors from the regime (Stuart, 2013).

## Cannabis Spreads Globally

From its birthplace in Eurasia and Eastern China, cannabis spread throughout the rest of the European and Asian continent around 2000 BCE (see Figure A1). Diffused by wandering tribes following ancient trading routes, archeological and palynological records show hemp fabric, cordage, medicine, and food had been incorporated into a wide range of cultures throughout the millennia, while marijuana in all its many forms and names was also openly embraced in many cultures, only to later be banned, demonized, and criminalized.

**Figure A1**

*Historical Diffusion of Cannabis (Warf, 2014, p. 419)*



Though certainly not the first humans to recognize and exploit the medicinal nature of cannabis, the Chinese were the first to include it in their written pharmacopeia (Mack & Joy, 2000). The Chinese did not use cannabis as marijuana, either as a narcotic or as medicine, but relied on cannabis in the form of hemp for food, fiber, oil, and medicine (Russo, 2007). The (probably mythical) Chinese Emperor Shen Nang and the father of Traditional Chinese Medicine is said to have discovered the healing properties of the cannabis plant (along with those of ginseng and ephedra) around 2700 BCE (Mack & Joy, 2000).

Russo (2007) noted that it was the ancient Egyptians who embraced cannabis as marijuana as a medicine as early as 2650 BCE. The oldest written prescription for cannabis was found in Egypt and has been dated to 1700 BCE; translated, it reads, "a treatment for the eyes: celery; hemp; is ground and left in the dew overnight. Both eyes of the patient are to be washed with it early in the morning" (Russo, 2007, p. 1622). This prescription seems to correspond to present-day use of cannabis as marijuana to treat glaucoma and for its anti-inflammatory effects.

In 1933, an archaeological dig in the Altai Republic on the border of Southern Siberia and Mongolia turned up evidence of the medicinal use of cannabis with the discovery of the kurgan (burial mound) of a woman who came to be known as Princess Ukok, the "Siberian Ice Maiden" (Russo, 2007). The mummified remains of this 2500-year-old woman showed she suffered from osteomyelitis—an infection of the bone marrow—and died from breast cancer in her mid-20s. Her ailments would have caused her great pain, and along with her exquisitely preserved wardrobe, researchers found a

small container containing cannabis leaves, flowers, and seeds, as did several similar containers found in other tombs nearby.

## Cannabis in India

Cannabis is thought to have been brought to India between 2000 BCE and 1000 BCE by the Aryans, who called cannabis "bhang," the name still used for cannabis in India today (along with "ganja" and "charas"). Cannabis was almost immediately recognized for its medicinal value and was widely used in Ayurvedic medicine (Russo, 2007). Ayurvedic doctors prescribed cannabis for depression, grief, and anxiety. The Vedic Hindu text the *Atharveda* proclaims cannabis to be one of five sacred plants given to humans by the Queen of Gods, Indra, to help alleviate man's suffering (the others were barley, rice, fig trees, and the mysterious soma plant) (Abel, 1943/2013). The belief that a guardian angel lives in the leaves of the cannabis plant is still held in modern-day India. Cannabis in both forms is widely used in India today and is an important ingredient in the Ayurvedic pharmacopeia.

## Cannabis in the Mideast

Cannabis in both its hemp and marijuana forms was introduced to the Middle East between 2000 B.C. and 1400, probably brought by Scythians. These Indo-European nomads used cannabis and other herbal drugs for religious, medicinal, and narcotic purposes and influenced broad swaths of peoples from the Ukraine to Turkey. Archaeological evacuations in the Caucasus mountains turned up evidence of burned marijuana seeds and opium residue in gold vessels found in Scythian burial mounds dating back to 2400 BCE (Warf, 2014). Hemp fabric was used for priest's robes in the temple of Solomon, and marijuana is mentioned in the Jewish holy book, the Talmud.

Cannabis pollen was found in the tomb of the Egyptian Pharaoh Ramses II, and the Zoroastrians of Ancient Persia used hemp oil as a bridge between the physical and metaphysical worlds (Russo, 2007; Warf, 2014).

By 700 CE, cannabis had made its way into the Arab world, where Sufi mystics embraced cannabis as marijuana for ritualistic and meditative purposes. Medieval Arab doctors considered hashish, the Arabic word for cannabis, to be "sacred medicine." It has been speculated that the Islamic world embraced hashish for its intoxicating effect and pain-relieving qualities, especially as the religious prohibitions against drugs and alcohol were less strict for drugs that relieved pain (Rosenthal, 2014; Warf, 2014). Arab traders also spread cannabis as marijuana/hashish to Egypt and East Africa, where its use as a drug had spread throughout the entire length of East and Central Africa by the time the Portuguese and Dutch arrived in the 1500s (Rosenthal, 2014; Warf, 2014).

Cannabis as marijuana is currently illegal across the Mideast, including in Israel, Saudi Arabia, Jordan, and Egypt, but is widely cultivated, especially in Afghanistan and Lebanon, and is consumed throughout the Mideast. Iran is decriminalizing marijuana in response to its large and troubling public health problem with addiction to both marijuana and opium, both of which are plants semi native to the region. The hemp industry has never taken hold in the Mideast.

## Cannabis in the Greco Roman World

From the Middle East, cannabis spread to the Greco Roman world, whose inhabitants already had encountered cannabis thanks to its proximity to Eastern Europe and Central Asia and from the invading Aryans. It was in about 2000 BCE that cannabis began appearing in the historical, cultural, and linguistic record of the Greeks and

Persians. In fact, the word “cannabis” is taken directly from the Greek, which in turn is taken from *canna*, an early Sanskrit term. In Ancient Greece, cannabis was used for fiber and medicine, and Romans used it for sails and ropes as well as medicinally, including to alleviate the labor pains of elite Roman women (Abel, 1943/2013; Warf, 2014), but it was not known to be used as an intoxicant. As of 2020, cannabis is illegal in this area, including in Greece, Italy, Macedonia, Albania, and Turkey. As in the Mideast, the hemp industry has never established a strong foothold in this region.

## Cannabis in Europe

From Eastern Europe, cannabis spread to Central and Northern Europe and to Russia by way of the Teutonic tribes following the great river systems of Europe. Neolithic sites dating as early as 3000 BCE with burned cannabis seeds have been discovered in places ranging from Finland to Bulgaria. Cannabis is often mentioned in Norse and Nordic cultural documents, and seeds have been found on Viking ships (Warf, 2014).

Hemp was introduced to England in the fifth century CE during the Anglo-Saxon invasions and quickly became an important crop for food, fabric, and cordage but was not consumed as marijuana. The British learned about smoking cannabis as a narcotic during British rule of India in the colonial era. Cannabis also reached Europe from across the Mediterranean when it was spread to Spain in the 8th Century CE by the Moorish invasion.

By the end of the medieval era in Europe, hemp had become a mainstay of human industry and hemp guilds had formed in many cities across the continent. By the 15th century, the European hemp industry had gained a firm hold in society. Hemp was used

primarily for sailcloth and rope for the naval industry and by herbalists as medicine, particularly for toothaches, rheumatism, and childbirth (Small, 2015). However, by the Elizabethan era, cannabis as marijuana was banned from use and linked to witchcraft by Pope Vincent VIII in 1484 (History, 2013). Currently, the hemp industry is alive and well and thriving across most of the European continent, including in Finland, Russia, and the Ukraine. Likewise, 17 European countries have legalized medical marijuana and/or decriminalized recreational marijuana, with more countries posed to pass legalization to do so (Carpentier et al., 2012).

## Cannabis Arrives in South America

It was the colonial powers' voracious appetite for sailcloth, rigging, and ropes, in addition to the need to reduce Russia's monopoly on hemp, that brought the cannabis plant to the Americas early in the 15th century (Abel, 1943/2013). There is no established documentation of the plant existing in the Americas before this time (Russo, 2007). Cannabis was introduced to South America by the Portuguese, who brought it to Brazil along with the slave trade (Russo, 2007; Warf, 2014). Slaves coming from Angola in western Africa taught the Indigenous people how to grow and use cannabis as marijuana, but the hemp industry never became established. While Portugal was trying to establish cannabis in Brazil, Spain was trying to do the same thing in Colombia. Other than in Chile, the Spanish efforts to start a South American hemp industry were not successful. Slaves also brought cannabis as marijuana to the Caribbean Islands, especially Jamaica, where its use and cultivation crossed over into Central America and Mexico. As of 2020, cannabis has been decriminalized in Brazil, Colombia, Venezuela, and Argentina and remains illegal in Ecuador, Bolivia, Paraguay, Chile, French Guiana, Suriname, and

Guyana. However, in 2014, Uruguay became the first country in the world to completely legalize marijuana. Mexico legalized medical marijuana in 2017 and is considering full legalization in 2020. The hemp market in Mexico is also just beginning to develop.

## Cannabis Comes to North America

Britain, like Spain and Portugal, wanted to control its own supply of hemp (Abel, 1943/2013). In 1533, King Henry VIII decreed that landowners across the British Empire with 60 or more acres had to grow at least a quarter acre of hemp. In 1563, when Queen Elizabeth I wanted to expand her navy, she increased the amount of hemp that had to be grown and added a fine for any landowner not complying. This greatly increased the demand for hemp, causing it to become an important British industry and part of the realm's rapid expansion and success as a colonial power (Deitch, 2003). It also greatly increased the need of the British for more land to grow hemp, and thus the importance of North American colonies increased as well.

## Cannabis in Canada

Cannabis in the form of hemp was first cultivated in North America in Nova Scotia. The cultivation of hemp spread throughout Canada over the course of the next two centuries with most provinces growing the crop, especially the prairie states of Alberta, Manitoba, and Saskatchewan. Canada banned the cultivation of all forms of cannabis in 1923, even though the use of cannabis as marijuana was extremely low. Marijuana was not popular in Canada until the 1960s, when college students both in the United States and in Canada started using marijuana recreationally. However, in 1998 Canada legalized the cultivation of hemp, spawning a new hemp industry in Canada; it was the first country to fully legalize cannabis in all forms, which it did in 2018.

## Cannabis in the United States

Cannabis was brought by British settlers to the Jamestown Colony in Virginia in 1607, where it grew beside another popular plant that people like to smoke: tobacco. The cultivation of hemp spread throughout the United States over the course of the next two centuries, with most states growing the crop. Hemp became so important to the United States in the Colonial era that every farmer was required to grow hemp. It was an important food and oil crop as well as the raw material for paper and fabric. Cannabis as marijuana reached the United States at the beginning of the 20th century, arriving in the southwest from Mexico as immigrants fled the country during the Mexican Revolution of 1910–1911. In a move brought on by the temperance movement, beginning in the early 1900s, several state and local laws in the United States began prohibiting the use of cannabis marijuana. The cultivation of cannabis in all forms, both hemp and marijuana, was outlawed in the United States in 1937 with the Marijuana Tax Act. But things are beginning to change. In the late 20th century, restrictions on medical cannabis began to fall across the world and especially in the United States. As of 2020, 36 U.S. states and four territories have legalized medical cannabis, and more states are considering the measure. Fifteen states (Alaska, Arizona, California, Colorado, Illinois, Nevada, Maine, Massachusetts, Montana, Michigan, New Jersey, Oregon, South Dakota, Vermont, and Washington) and the District of Columbia have legalized both medical and recreational cannabis; states including New York, Pennsylvania, and Maryland are close to legalizing cannabis. Also, on December 4, 2020, the U.S. House of Representatives voted to decriminalize marijuana at the federal level and to remove it from the Controlled Substances Act, and municipalities have already decriminalized cannabis.

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# APPENDIX B: LITERATURE REVIEW SEARCH STRATEGY

The strategy for reviewing the existing scholarly literature on the information practices of healthcare providers was to actively seek and scan databases and trusted sources where this type of information would likely be found. Over time and with iteration, the following search query evolved and produced the best results.

*Search Query:* Search for "information practices" AND "physician" OR "nurses" OR "clinician" in either the title or the abstract.

This search was performed in PubMed, PubMed Central, Google Scholar, Rutgers University Libraries, CINHAL, and PsychInfo databases during March 2017 and was followed by a similar search on same terms in May 2020. In addition to performing the actual searches, alerts with the same search terms were set up in Google Scholar and PubMed. Over time, these alerts did yield studies on information practices and health care providers but nothing that was relevant to this study. Results of these search queries were further limited to those in peer-reviewed journals in the nursing, communication, health communication, medical professional, and information science fields of study.

The result of these searches revealed a total of 47 studies that matched the search criteria and conditions described above. The searches revealed 34 studies loosely related to information practices and healthcare, leaving just 19 studies relevant to this study, i.e., about the exploration of the information practices of health care providers. Those 19 studies fell into three broad categories, as described in Chapter Two: "Part Three: The Information Practices of Healthcare Providers." Table B1 provides an overview of the literature review and its contents.

**Table B1**

*Literature Review of the Information Practices of Healthcare Providers*

| Description of Literature | Result of Search | Responses | List of Articles Reviewed |
|---|---|---|---|
| Federal Trade Commission's Fair Information Practices Principles (FIPP) | Matched the search query but not the right information | 20 | Not included in this review |
| Patient information practices | Matched the search query but not the right information | 6 | Not included in this review |
| Patient information practices testing information practices models and study design | Focused on patient information practices but relevant to this study for study design and explanatory purposes | 2 | McKenzie, 2003c; Yeoman, 2010 |
| Healthcare provider focused and relevant to this study | Category 1: Information practices as a protocol, intervention, or information work | 5 | Jamison (2002); Leboucher et al. (2013); Mellblom et al. (2015); Olsson and Lloyd (2017); Steelfisher et al. (2015) |
| | Category 2: Information practices as constitutive of nursing identity and domain | 8 | Bonner and Lloyd (2011); Diekema et al. (2019); Gallaher and Olsson (2019); Hobbs (2009); Johannisson and Sundin (2007); McKenzie (2006); Nordsteien (2019); Zolnierek (2014) |
| | Category 3: Information practices from a task-based point of view | 6 | Isah and Byström (2016); Tariq et al. (2013); Roos (2012, 2015, 2016); Wibe et al. (2015) |
| Total number of responses from searches | | 47 | |

# APPENDIX C: LIST OF STUDY PARTICIPANTS

| Cannabis Nurse | Nursing Degree | Years in Nursing | Years in Cannabis Nursing |
|---|---|---|---|
| Alex | NP | 16–20 years | more than 10 years |
| Bobbi | RN | 21–25 years | 6 years |
| Chris | RN | over 26 years | 8 years |
| Cory | RN | 11–15 years | 2 years |
| Dana | RN | 1–5 years | 4 years |
| Devon | NP | 1–5 years | 1 year |
| Evan | RN | 1–5 years | 2 years |
| Francis | RN | 16–20 years | 4 years |
| Jordan | RN | 11–15 years | 8 years |
| Kelly | RN | 6–10 years | 4 years |
| Kelsey | RN | 16–20 years | 2 years |
| Kim | LPN | over 26 years | 4 years |
| Lana | RN | 16–20 years | 2 years |
| Lee | BSN | 1–5 years | 2 years |
| Leslie | RN | over 26 years | more than 10 years |
| Logan | RN | over 26 years | more than 10 years |
| Loren | RN | 21–25 years | 5 years |
| Mason | RN | 21–25 years | 2 years |
| Maureen | MSN | over 26 years | less than 1 year |
| Mickey | MSN | 21–25 years | 2 years |
| Nico | RN | 16–20 years | 6 years |
| Nikita | RN | 6–10 years | 1 year |
| Noel | RN | 21–25 years | 3 years |
| O’Hara | BSN | 11–15 years | 2 years |
| Peyton | RN | over 26 years | Unassigned |
| Quinn | MSN | 21–25 years | 8 years |
| Sage | NP | over 26 years | less than 1 year |
| Sam | BSN | 1–5 years | 1 year |
| Sandy | BSN | 11–15 years | 2 years |
| Stacey | RN | over 26 years | less than 1 year |
| Terri | RN | 21–25 years | 2 years |

# APPENDIX D: STUDY PROTOCOL AND INSTRUMENTS

The following study protocol and instruments are presented to provide readers with a detailed view of how the research for *Exploring the Information Practices of Cannabis Nurses* was conducted. This includes an example of the recruiting emails that were developed, a link to the study's website, the interview script, and the interview guide.

## I. Participant Recruitment Message

Dear ACNA member,

My name is Connie Pascal, and I am a candidate for a PhD in Information Science at the School of Information & Communication at Rutgers, the State University of New Jersey. The executive committee of the ACNA has given me permission to invite you to participate in my dissertation research study, *Exploring the Information Practices of Cannabis Nurses*.

**About the *Exploring the Information Practices of Cannabis Nurses* research study**

This is a qualitative study that seeks to understand how cannabis nurses conceptualize, seek, and share information about cannabis and cannabis-based medicine with their patients, each other, and the public. To do that, I am looking for the participation of 20–30 cannabis nurses from across the country who working in diverse settings and in different ways and are willing to sit down for a 60-minute interview (phone, video, or in person when possible). Following are links to the study's website for more detailed information about the study itself, my methods, and what you can expect.

To be in this study
What to expect if you are chosen to participate
Protecting your identity and privacy

**How will this research be used?**

Findings from this study will be used by software developers, systems analysts, and nurse educators to design and develop new decision support tools, information systems, applications, and educational programs.

**Getting started**

If you'd like to participate or have any questions about the study, please email me at the following: cpascal-research@comminfo.rutgers.edu or contact me at via phone/text at 609–865–7925. Thank you very much for your time and support!

Sincerely,

*Connie J Pascal*

Connie Pascal
PhD Candidate/Instructor & Program Assistant, Information Technology & Informatics Program
School of Communication & Information at Rutgers University

## II. Interview Script

Thank you for taking the time to offer your data, information, knowledge, and accumulated wisdom on how you have learned to incorporate cannabis-based medicine into your practice of medicine. Before we get started with the interview and before I turn on the recorder, I'd like to confirm that you meet the criteria for being a participant in the study.

- Reside in a state where medical cannabis is legal
- Have a professional nursing credential/degree (LPN, BSN, RN, APA, PhD-N, or NP)
- Describe yourself as a "cannabis nurse"
- Be currently using cannabis-based medicine in practice with patients or clients
- Belong to the American Cannabis Nurses Association (ACNA) – optional
- Have earned at least six Certified Education Units (CEUs) in cannabis-based medicine from a reputable provider of such education such as the ACNA or Patients Out of Time
- Be between the ages of 18 and 89 years

I'd also like to review the informed consent document and answer any questions you might have. Have you had a chance to read through the document? Do you have any questions? Do you give your informed consent to be recorded? Do you give your informed consent to participate in this study?

Also, documents and artifacts that you create and use regarding your practice of cannabis-based medicine are of great interest in this study. Should you elect to share any documents under your personal control, please be sure they do not contain patient data. An example of the type of document might be a blank version of a form you developed to track which strain of cannabis is working for a specific patient or a list of websites or contacts you use to source information.

As noted, the interview itself covers 16 questions and will take about 60 minutes, depending on how much you would like to share. I will transcribe your interview and within 2 weeks after your interview, I will email you a full written transcript of this interview (MS Word format) or mail it if you prefer. You will have 2 weeks (3 weeks if by mail) to respond in one of the following four ways:

- Confirm transcript is correct as is and let me know by email, phone, text, or mail.
- Make changes or corrections to the existing interview using MS Word Review functions and return to researcher.
- Discard the existing transcript and reschedule the interview with the researcher.
- Do nothing–If I do not hear back from you within 2 weeks of the transcript being sent to the listed email address (or 3 weeks if mailed), the transcript will be

> included in the study data set as is. I will send you an email/message letting you know when this occurs.

Once I turn on the recorder, I will begin our interview session by giving the time/date and your Study ID number. I am also going to ask you to confirm on the record that you have given your consent to be recorded and to be included in the study. I will also read you a disclaimer about protecting patient data during conversation and then we will begin. Are you ready?

**Start Zoom Recording**

Thank you for being part of this research study, *Exploring the Information Practices of Cannabis Nurses*. The date is _____ and this is participant _____.

Will you please confirm that you have given your verbal consent to be recorded and to be a part of this study? Thank you.

Next, I am going to read you a statement about protecting patient data and ask you to keep this these instructions in mind during our conversation. Please be assured if you do include a reference to something or someone identifiable, this data will be anonymized in the transcript and this audio file destroyed, but we'd like to do everything possible at this stage of data collection to protect patient privacy.

> During this interview, we will be talking about your experience communicating and treating patients with cannabis-based medicine. In fact, one question asks you to "tell me about your patients." To protect your patients' health information and identity, only divulge information about patients from whom you have gained their consent and then please further de-identify your patient's data by referring to the patient using a false name, initials, or by a number, e.g., Jane, J. K., or Patient 1. Also, if you decide you would like to share documents, forms, templates, lists, tables, or any other kind of documentation or artifact with me for purposes of including it in the study, please provide me with blank versions, as no patient data will be accepted into the study.

Lastly, I'd like to remind you that your participation is of course voluntary, and you have the right to withdraw at any time or not answer any questions that make you uncomfortable or infringe on your privacy.

Are you ready to get started? Great . . . let's go.

**After the interview . . .**

Thank you for your time—I'll send you out the transcript as soon as it's ready. How would you like to receive the transcript? Can I confirm your email address? Thanks again, I'll be in touch very soon.

**Interview Protocol Checklist**

- ☐ Confirm participant interest
- ☐ Confirm participant interview time/date/preferred method of interview
- ☐ Create participant folder
- ☐ Add participant to Master Study ID List/Assign Study ID Number
- ☐ Conduct interview
- ☐ Complete study guide
- ☐ Complete transcript
- ☐ Send transcript to participant for review
- ☐ Follow up with participant
- ☐ Add transcript to NVivo

## III. Interview Guide

### Exploring the Information Practices of Cannabis Nurses – Interview Guide

**Date:** **Participant Identification Number:**
**Participant Name:** **Meets Study Criteria:**

**Demographic Information (asked at the end of the interview)**

| | |
|---|---|
| Age | |
| Gender | |
| Race/Ethnicity (self-described) | |
| Location (state) | |
| Cannabis Med Education | |
| Nursing Credential | |
| School/University | |
| Years in Nursing | |
| Years in Cannabis Nursing | |

**Employer/organization: _____**
(if applicable and deidentified)

**Current title/role: _____**

**Type of practice/employer: (check one)**

- ☐ Private independent nursing practice
- ☐ Employee/contractor to a cannabis dispensary
- ☐ Employee in a cannabis-based primary care practice
- ☐ Employee in traditional healthcare organization
  - Primary care practice
  - Hospital

- Specialist clinic
- Public health facility

 Other _____

**Interview Questions**

**I. Background**

1) Can you give me an idea of your background . . . what has been your journey into cannabis nursing?
   - Probe on whether the person sees themselves as a cannabis nurse or a nurse who advocates for cannabis . . . find out what the differences are.
   - Probe to see if becoming a cannabis nurse has been a journey or if there was some triggering event that led the person down this path.
   - Find out the role other people had in their decision to embrace cannabis medicine publicly.
   - Any one piece of information that changed your mind or tipped you into the cannabis space? What was the source of that information?

2) Complete this sentence:
   When people find out that I am a cannabis nurse they _____.
   - Probe for proxy information practices
   - Probe for how people find out that information about her
   - Probe for routine responses from the nurse
   - Referring them to other people

**II. Structure**

3) How does cannabis-based medicine express itself in your daily life? Start in the morning and walk me through your day.
   i) Do you have any kind of routines around keeping yourself informed about the latest in cannabis-based medicine?
   ii) Do you have any kind of routines around sharing information?
   iii) What kind of information do you find informative?
      - Probe for use of software—what kind, how acquired, etc.
      - Probe for development of tools/lack of tools
      - Probe for how information tools are working for the nurse

4) Complete this sentence:
   When I come upon an interesting bit of information, I _____.
   i) What information makes something interesting to you?
      - Probe for why
      - Probe for how captured and if shared
      - Probe for tools and technology

**III. Situativity/Social Situations**

5) When you are in a public place and people start talking about cannabis, what do you do?
   - Probe for serendipitous situations and information sharing
   - Probe for information grounds
   - Probe for unwritten rules of behavior, personal agency, actions

6) When you encounter someone with negative or opposing views about cannabis, how do you handle it? What do you say to them?
   - Probe for information work (sending them information, talking to them, using a specific argument, etc).

7) Walk me through a typical patient encounter or interaction. How do you use information? Do you use information differently depending on the patient?
   i) What kind of documents do you use during this conversation?
   ii) Where did those documents come from?
   iii) What do you do with the data that you collect during this encounter?
      - Probe for use of software tools
      - Probe for collaboration/adoption of documents obtained from other sources
      - Probe for information management and information work

8) How does your relationship with the patient/patient's family evolve over time?
   i) What is the role of information in this relationship?
      - Probe for patient cognitive authority/actions around this kind of information
      - Probe for information management and information work

**IV. Practices**

9) How do you practice cannabis-based medicine?
   i) Do you work with/collaborate with other people?
   ii) Do you develop documents together? How did you go about the process of developing documents or forms? Do you use any documents to communicate with each other? (Activity theory)
      - Probe for role of nurses in cannabis-based medicine
      - Probe for division of labor—who makes decisions on what goes into the document
      - Probe for rules—organizational norms, forms, authorship of forms in cannabis-based nursing
      - Probe for domain of cannabis-based medicine

10) When a patient shares you something they know about cannabis, what do you do?
   - Probe for information management
   - Probe for cognitive authority

11) Think of a time when you needed information about cannabis-based medicine to answer a question or come up with a solution (diagnosis or prescriptive). Who/what did you turn to first for help?
    - If online: probe about search and information-seeking behaviors and sources; probe for online literacy skills; listen for routines and patterns and use of tools such as alerts, notifications, and RSS feeds or actions such as following, joining, posting, setting up
    - If social media: probe about the network, level of interaction, and role in daily life
    - If social contact: probe for who and the depth of relationship, level of cognitive authority, and channel of communication
12) Once you found the information about cannabis that you needed, how did you capture that information for future reference?
    - Probe for information sharing behavior with others
    - Probe for information work
    - Probe for creating documents/naming conventions in files
13) List the major sources of information about cannabis-based medicine that you rely on in your practice.
    - Probe for why
    - Probe for how they use the source/how they found the source
    - Probe for how they share information and with whom
14) Complete this sentence: The software tool or app that I need to better do my job as a cannabis nurse is _____.
    - Probe for why
    - Probe for features, affordances, and benefits they are looking for
    - Probe for platform (desktop, table, mobile, etc.)
15) What kind of information about cannabis-based medicine has been hard for you to find?
    - Has this changed?
    - Probe for gaps in technology, subject matter challenges, educational challenges

## V. Community of Practice

16) Rank each of following human sources on how much they inform and influence you and what you learn from them about cannabis-based medicine. By inform, I mean provide you with new or deeper information about the topic. By influence, I mean does this source have the ability to change your mind or inspire your actions? This is on a scale of 1–5 with 1 being *no influence* and 5 being *great influence*; then tell me if the source primarily informs or influences you.

| **Information Source** | **Informs** | **How influences – what do you learn?** | **Comments** |
|---|---|---|---|
| Cannabis farmers/cultivators | | | |
| Family members of patients | | | |
| Nurses (noncannabis) | | | |
| • Addiction | | | |
| • Primary care | | | |
| • Psychiatric | | | |
| • Palliative care | | | |
| • Pain | | | |
| • Oncology | | | |
| • Rehab | | | |
| • Other | | | |
| Patients | | | |
| Physicians (type of physician?) | | | |
| Pharmaceutical Sales Reps | | | |
| Professional Medical Assoc. | | | |
| Cannabis Product Vendors | | | |
| Dispensary/Budtenders | | | |
| Other | | | |

17) Do you consider yourself part of a "community of practice" with other cannabis nurses or healthcare providers? Think of a "community of practice" as group of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly.
   i) What is the name/type of community?
   ii) How do you communicate with the other members?
   iii) What is the purpose of the group?
   iv) Is it formal or informal? If formal, are there rules, administrators, guidelines, scheduled meetings?
      - Probe for use of technology
      - Probe for knowledge management
      - Probe for communal resources

18) What is different about being a cannabis nurse versus a "regular nurse"?
    i) How do you use information differently as a cannabis nurse?
    ii) Do you depend on different sources of information for cannabis nursing?
        - Probe for use of technology
        - Probe for differences/similarities

19) What are two to three 1–2-word phrases that are characteristic of cannabis nurses?

**VI. Other**

20) Are there any questions I should have asked? Is there anything you would like me to know that I haven't asked?

# APPENDIX E: STUDY CODEBOOK

**Study: Exploring the Information Practices of Cannabis Nurses**

## Categories of Themes

1. General Themes
2. Cannabis and Health
3. Cognitive Authority
4. Community of Practice
5. Dissertation Elements
6. Information
7. Practice
8. Situativity
9. Structure

## 1. General Themes

Key: CBM = Cannabis-based medicine; MMJ = Medical marijuana program
Indented are subcategories of the entry they follow.

| 1. General Themes Codes | Description | Files | References |
|---|---|---|---|
| Attitude | Change in attitude and experience toward various cannabis-related issues including evidence-based medicine, original attitude about legal policy on descheduling/ rescheduling. Also used to code instances where personal experience changed the attitude of a person the nurse knows (family member, patient, law enforcement, etc.) | 31 | 111 |
| Nurse's original attitude | What attitude did the nurse have about cannabis prior to becoming a "cannabis nurse" | 21 | 28 |
| Changed | Nurse's attitude changed from original stance | 5 | 7 |
| Negative | Nurse had a negative attitude in the past | 1 | 1 |
| Neutral | Nurse was neutral toward cannabis in the past | 5 | 6 |
| Positive | Nurse had a positive attitude in the past | 6 | 6 |

| 1. General Themes Codes | Description | Files | References |
|---|---|---|---|
| Toward evidence-based research | Attitude either positive or negative toward research based on probability and quantitative methods where data comes from clinical trials, secondary data analysis, experiments, etc. The code is associated with secondhand information and development of cognitive authority | 25 | 44 |
| Toward practice-based research | Attitude either positive or negative toward research based on naturalistic inquiry and qualitative methods where data comes from observation, anecdotes, personal experience, case histories, interviews, etc. The code is associated with firsthand information and development of cognitive authority | 25 | 39 |
| Communication Channel | Various channels of communication the nurses use while conducting their information work in support of their various information practices | 12 | 18 |
| Email | Examples of the use of email as a preferred communication channel | 9 | 11 |
| Face-to-Face | Examples of face-to-face communication as a preferred channel | 2 | 3 |
| Phone | Examples of the use of a telephone as a preferred channel | 0 | 0 |
| Entrepreneurial Thinking | Umbrella code to account for the nurse's desire to start, build, or participate in the business/market end of cannabis or cannabis-based medicine (CBM). Includes starting their own independent cannabis nursing practices, starting dispensaries, etc. | 27 | 77 |
| Federal Law and Policy | Mentions of federal law or policy toward cannabis, cannabis-based medicine, and clinicians involved. Includes the consequences to both patients and | 29 | 79 |

| 1. General Themes Codes | Description | Files | References |
|---|---|---|---|
| | practitioners of federal law and policy on using cannabis as medicine | | |
| Opinion on legalization | Nurses' opinions on whether/how cannabis should be regulated. Also referenced as "legalized" and "deregulated" | 16 | 23 |
| Deschedule | Remove cannabis (contains THC) from Controlled Substances Act drug schedule and legalize nationally | 8 | 9 |
| Reschedule | Reschedule cannabis (contains THC) as having medicinal value and not dangerous or addictive, but regulated as a pharmaceutical | 3 | 4 |
| Mainstream Healthcare | Umbrella code for references to mainstream health care, including healthcare provider arguments for and against and future of CBM; cannabis education in mainstream medicine. Includes references to the pharmaceutical industry and to hospital policy and regulation concerning cannabis-based medicine | 32 | 164 |
| Arguments for CBM | Arguments for CBM made by mainstream healthcare providers, including direct supervisors of cannabis nurses still employed in health care | 8 | 14 |
| Arguments against CBM | Arguments against CBM made by mainstream healthcare providers, including direct supervisors of cannabis nurses still employed in health care | 7 | 8 |
| Future of CBM | Future of CBM in mainstream health care in the opinion of healthcare providers | 6 | 12 |
| Medical education | References to nurse's education/educational experience in mainstream medicine | 11 | 17 |
| Pharmaceutical industry | References to/about the pharmaceutical industry and its role in CBM | 12 | 20 |

| 1. General Themes Codes | Description | Files | References |
|---|---|---|---|
| Physicians participation | Examples of how noncannabis docs work with cannabis nurses and patients | 20 | 50 |
| Regulation and hospital policy | Rules, regulations, and references to policy around CBM with admitted/residential patients—includes a scope of practice in Nursing Practice Acts | 10 | 18 |
| State Medicinal Cannabis Program | Umbrella code for references to the medical marijuana or regulation of MMJ programs in the states where the nurses live. | 26 | 103 |
| Consequences of the state's program | Intended and unintended consequences to both nurses and patients as a result of the state's regulation of CBM | 17 | 35 |
| MN state program | Minnesota's MMJ program | 1 | 2 |
| NJ state program | New Jersey's MMJ program | 1 | 1 |
| Stigma and Misinformation | Umbrella code for references to stigma the nurse feels, or the actions that were taken because of the stigma around cannabis, CBM, or being a cannabis nurse—includes references to misinformation and false narrative around CBM and CBM caregivers and patients | 32 | 107 |
| Technology | Umbrella code for references to information and communication technology including Web 2.0 tech and the technology the nurses use in practice or information seeking | 32 | 146 |
| Alerts and notifications | Nurse has set up alerts and notifications for sources and topics of interest | 12 | 13 |
| Collaboration platforms | Reference to the nurse using something like WordPress, SharePoint, Slack, etc. to work with other nurses or on CBM projects | 2 | 2 |
| Desired software or application | Examples of the kind, type, functionality of software applications the nurses need but feel are missing in the market | 24 | 28 |

| 1. General Themes Codes | Description | Files | References |
|---|---|---|---|
| Dispensary software | References to software the nurse uses while working in/dealing with a dispensary | 6 | 11 |
| EMR systems | References to electronic medical records (EMR) systems of any kind the nurse is currently using CBM | 8 | 12 |
| Patient use of ICTs | References to the patient's use or lack of use of/access to technology for the purposes of participating in CBM | 2 | 2 |
| Search technology | Use of search technology to find information—general examples of the nurse using search technology to find information | 13 | 15 |
| Use of ICTs | Examples of the nurse's use/incorporation of ICTs (smartphone, tablet, internet, wireless, etc.) into the practice of CBM—usually with patients | 5 | 9 |
| Use of social media as a communication tool | When the nurse uses social media as their personal platform—as opposed to turning to a Facebook group, etc. as a place to find a trusted source of information | 22 | 45 |
| Use of website as a communication tool | When the nurse has set up a website to publicly communicate information/facilitate patient contact | 4 | 6 |

**2. Cannabis and Health**

| 2. Cannabis and Health Codes | Description | Files | References |
|---|---|---|---|
| Cannabis (Plant) | Related directly to the cannabis plant and its characteristics | 22 | 52 |
| Business of Cannabis | References to corporate entities in the cannabis business—dispensaries, etc. or the business of cannabis | 7 | 8 |
| Cannabinoids & strains | Reference to cannabinoids as chemical element of the plant, etc. | 8 | 15 |

| 2. Cannabis and Health Codes | Description | Files | References |
|---|---|---|---|
| Cannabis terminology | References to specific preferences in talking about cannabis and CBM | 8 | 8 |
| Growing cannabis | Reference to growing cannabis plants | 5 | 6 |
| Hemp | Reference to hemp and hemp-based products such as CBD | 2 | 2 |
| Cannabis-based medicine (CBM) | Related to cannabis-based medicine (CBM) both as a medicine and a concept in healthcare | 31 | 208 |
| Access to CBM | References to patient's access to CBM | 2 | 2 |
| Adult use of cannabis | References to the recreational/adult use of cannabis | 12 | 16 |
| Delivery techniques | References to different delivery methods for taking CBM (vaping, smoking, pill, tincture, etc.) | 7 | 9 |
| Ethics | References to ethical issues with CBM | 2 | 5 |
| Labelling | References to labels and the importance of labelling in CBM | 7 | 7 |
| Making CBM | References to making CBM | 19 | 26 |
| Extraction | References to extraction/extraction techniques in making CBM | 1 | 1 |
| Specific CBM | Mention of a specific strain, product, protocol being used to treat a condition | 5 | 8 |
| Patient story or outcome | Stories about patient experiences and outcomes using CBM | 23 | 60 |
| Pets and CBM | Cannabis-based medicine for pets | 2 | 2 |
| Protocols for use as medicine | Protocol on how the nurse is to administer, titrate, etc. | 3 | 5 |
| Role for CBM | The role that CBM will play in mainstream healthcare (chronic pain, cancer, plant-based medicine, etc.) | 18 | 35 |

| 2. Cannabis and Health Codes | Description | Files | References |
|---|---|---|---|
| Replacement for narcotics | A role for CBM to replace narcotics/addictive substances in pain relief | 5 | 6 |
| Side effects and drug interaction | Examples of side effects of CBM as well as a reference to drug interaction concerns | 14 | 20 |
| Standards and testing for CBM | Reference to need for or existence of standard in making CBM as well as testing CBM for product profile | 8 | 11 |
| Health condition | Mention of a health condition that uses cannabis as a treatment option | 31 | 148 |
| Anxiety, depression, stress | Health condition | 7 | 7 |
| Arthritis | Health condition | 2 | 2 |
| Asthma | Health condition | 1 | 1 |
| Autism | Health condition | 1 | 1 |
| Autoimmune disease | Health condition | 1 | 1 |
| Cancer | Health condition | 11 | 24 |
| Chronic pain | Health condition | 12 | 15 |
| COPD | Health condition | 1 | 1 |
| Crohn’s disease | Health condition | 1 | 1 |
| Dementia and Alzheimer’s | Health condition | 3 | 5 |
| Ehlers Danlos Syndrome | Health condition | 1 | 1 |
| Epilepsy | Health condition | 2 | 3 |
| Fibromyalgia | Health condition | 2 | 2 |

| 2. Cannabis and Health Codes | Description | Files | References |
|---|---|---|---|
| General health conditions | Health condition | 8 | 16 |
| Geriatric care | Health condition | 1 | 1 |
| Heart conditions | Health condition | 0 | 0 |
| HIV/AIDS | Health condition | 1 | 1 |
| Hospice and End of Life | Health condition | 4 | 4 |
| IBS and/or IBD | Health condition | 2 | 2 |
| Inflammation | Health condition | 1 | 1 |
| Insomnia | Health condition | 1 | 1 |
| Interstitial Cystitis | Health condition | 1 | 1 |
| Lyme | Health condition | 1 | 1 |
| Macular Degeneration | Health condition | 1 | 1 |
| Migraines | Health condition | 1 | 1 |
| MRSA | Health condition | 1 | 1 |
| MS | Health condition | 1 | 1 |
| Neuropathic pain | Health condition | 2 | 2 |
| Neuroprotector | Health benefit | 1 | 1 |
| OCD | Health condition | 1 | 1 |
| Opioid use disorder | Health condition | 9 | 11 |
| Parkinson’s disease | Health condition | 1 | 1 |
| Pediatric | Health condition | 1 | 1 |

| 2. Cannabis and Health Codes | Description | Files | References |
|---|---|---|---|
| Poly pharmaceutical overload | Health condition | 14 | 23 |
| Psoriasis | Health condition | 1 | 1 |
| PTSD | Health condition | 4 | 6 |
| Sciatica | Health condition | 1 | 1 |
| Seizures | Health condition | 2 | 2 |
| Traumatic brain injury | Health condition | 1 | 1 |
| Ulcerative colitis | Health condition | 1 | 1 |
| Human body | The physiological connection between cannabis and the human body—all endocannabinoid system references | 32 | 74 |
| Endocannabinoid system | References to the endocannabinoid system in any way | 30 | 59 |
| How CBM works in the body | How cannabis-based medicine works in the body—results of research | 7 | 10 |

**3. Cognitive Authority**

| 3. Cognitive Authority Codes | Description | Files | References |
|---|---|---|---|
| Cognitive authority | Source of information that either satisfies the nurse's need for information or influences what facts and data the nurse finds informative (influence means it changes the nurse's mind or is expressed in action) | 35 | 791 |
| Nurse actively acts as a cognitive authority | Instances when the nurse is actively putting themselves into view of potential seekers of CBM information—includes teaching, sitting on a panel, speaking at a conference, informal dialogue, acting as an expert, etc. | 34 | 159 |

| 3. Cognitive Authority Codes | Description | Files | References |
|---|---|---|---|
| Firsthand knowledge | Examples of the nurse referring to their firsthand knowledge of CBM as effective as evidence. Includes their own personal knowledge and experience with family members, patients, and their own personal experience | 8 | 10 |
| Thought leader role | When the nurse takes on the role of public speaker, writer, blogger; may be active on social media. Takes an educational focus, is vocal and publicly acknowledged as CBM expert | 6 | 9 |
| First choice source | What source the nurse first turns to when an information need arises | 17 | 24 |
| Google it | Nurse's first action is to google the search term | 1 | 1 |
| Another cannabis nurse first choice | When the nurse's first action is to contact another cannabis nurse | 6 | 7 |
| Social media as a source | When the nurse turns to social media sites first when seeking information | 9 | 10 |
| Social media not trusted as a source | When the nurse expressly says they do not trust the information found via social media | 6 | 6 |
| Social media trusted as a source | When the nurse expressly says they do not trust the information found via social media | 0 | 0 |
| Human sources | Human sources (including professional associations) as trusted sources of information, including the level of influence as well as the type of information the nurses learn from the source | 32 | 290 |
| Contacts in the cannabis world | People with expertise in cannabis and business of cannabis | 4 | 4 |

| 3. Cognitive Authority Codes | Description | Files | References |
|---|---|---|---|
| Cultivators | Farmers, growers, people who produce the plant material | 25 | 28 |
| Dispensary workers | People who work in dispensaries—budtenders, budristas, etc. | 22 | 25 |
| Family members of patients | Family members the nurse comes in contact through patient encounters and caregiving | 23 | 28 |
| Medical and cannabis industry associations | Organizations devoted to promoting a particular field of study or profession within a field of study | 23 | 29 |
| Nurses (noncannabis) | Nurses who do not identify or advocate for cannabis-based medicine | 26 | 35 |
| Other cannabis nurses | Other cannabis nurses as a trusted source (includes participants coded at First Choice) | 12 | 15 |
| Patients as a cognitive authority | Patients are considered trusted sources | 26 | 29 |
| Pharmaceutical industry representatives | People who work for pharmaceutical firms or references to pharma as an entity | 22 | 24 |
| Physicians | Physicians and medical specialists | 22 | 34 |
| Product vendors | People who work for CBD product manufacturers, producers, and distributors | 24 | 29 |
| Rating as cognitive authority | How the nurse rated the specific source of information on a scale of 1–5 based on the level of influence as well as the type of information they learn from the source | 27 | 159 |
| No rating | When the nurse made a comment but didn't give a rating number | 7 | 15 |
| Rating = 0 | Nurse rated the source as having zero influence or as a trusted source of information | 7 | 10 |

| 3. Cognitive Authority Codes | Description | Files | References |
|---|---|---|---|
| Rating = 1 | Nurse rated the source as having very little influence and not being a trusted source of information | 19 | 38 |
| Rating = 2 | Nurse rated the source as having a slight influence or as a trusted source of information | 12 | 17 |
| Rating = 3 | Nurse rated the source as having some influence or being somewhat trusted as a source of information | 16 | 23 |
| Rating = 4 | Nurse rated the source as a considerable influence and a trusted source of information | 17 | 20 |
| Rating = 5 | Nurse rated the source as having the most influence and as a highly trusted source of information | 20 | 36 |
| Information sources | Trusted sources of information, including individuals mentioned by the nurse | 28 | 49 |
| Organizational sources | Organizations the nurses mention as influential or sources of information | 12 | 21 |
| Research | Specific references to research as important to proving the validity of cannabis—also use of research to augment their positions as well as instances of cognitive overload with the amount of information coming at the nurse from various sources | 21 | 39 |
| Cognitive overload | When the nurse feels too much information is coming into their brain to process, causing stress | 7 | 7 |
| Use of research as a cognitive authority | When the nurse uses research findings to support their position in a conversation | 6 | 8 |

**4. Community of Practice**

| 4. Community of Practice Codes | Description | Files | References |
|---|---|---|---|
| Community of practice | Attributes of shared experiences coming into the domain of cannabis nursing . . . common characteristics and the building of community. What makes cannabis nursing different from other nursing | 33 | 450 |
| ACNA | Reference to the ACNA—as a source, resource, credential, etc. | 20 | 34 |
| Advocacy | Examples of when the nurse is publicly advocating for legalization, acceptance, change in laws, etc. | 23 | 69 |
| Attributes of a cannabis nurse | Response to the list of characteristics and attributes ascribed to the identity of "cannabis nurse" | 18 | 19 |
| Background as a nurse | Nurse's story on how they got into nursing and what led them into cannabis nursing | 30 | 51 |
| Holistic | Nursing background is holistic, alternative, wellness, integrative medicine, etc. | 7 | 9 |
| Insurance | Works for the insurance industry | 1 | 1 |
| Oncology | Specializes in oncology nursing | 1 | 1 |
| Prison | Works in prisons, etc. | 1 | 1 |
| Difference vs. "regular" nursing | Explanations and opinion of the nurse about whether cannabis nursing requires different skills than nursing as practiced in mainstream medicine | 23 | 33 |
| Knowledge sharing | When the nurse shares knowledge (experience and information) with another cannabis nurse | 15 | 21 |
| Nurse is CBM patient | Nurse self-discloses their status as a medicinal cannabis patient/consumer of cannabis products | 16 | 29 |
| Identity as nurse | Responses to questions as to how the nurse identifies as either a cannabis nurse or nurse | 30 | 69 |

| 4. Community of Practice Codes | Description | Files | References |
|---|---|---|---|
| | who advocates for cannabis—slight variations included | | |
| Advocate for CBM | Describes self as an advocate for cannabis-based medicine | 11 | 11 |
| Cannabis nurse | Publicly/semipublicly describes self as "cannabis nurse" | 14 | 17 |
| Reveals self as cannabis nurse | When, why, and how a nurse decides to publicly reveal themselves to be a cannabis nurse | 21 | 30 |
| Depends on the situation | Nurse decides based on the situation and social setting | 1 | 1 |
| Family response to the revelation | References to how the nurses' family members responded when the nurse "came out" as a cannabis nurse | 16 | 20 |
| Member of community of practice (CoP) | References to being part of a formal/informal group of cannabis nurses—or desire to be part of this kind of group | 17 | 23 |
| Formal CoP | Belongs to a group that is formalized and organized, including ACNA | 6 | 8 |
| Informal CoP | Member of an informal group with other cannabis nurses with the purpose of developing knowledge | 12 | 12 |
| Role of cannabis nurse | Nurses' opinion on where cannabis nursing fits in/role of the cannabis nurse in society, etc. | 28 | 69 |
| Conducting research with patients | Examples of where the nurse actively experiments/studies patient responses to CBM | 1 | 3 |
| Emotional intelligence | Examples of the nurse using emotional intelligence to size up/respond in a social situation or to opposing/negative views. | 15 | 23 |

| 4. Community of Practice Codes | Description | Files | References |
|---|---|---|---|
| | Linked to learning how to deal/deflect stigma and desire to knock back misinformation | | |

**5. Dissertation Elements**

| 5. Dissertation Elements Codes | Description | Files | References |
|---|---|---|---|
| Memorable quotes | Quotes and citations that are memorable, controversial, well-said, funny, etc. | 32 | 194 |
| Memorable stories | Stories that stood out or represented common experiences regarding how the nurse became a cannabis nurse or works as a cannabis nurse | 4 | 5 |
| Kelly's story | P1-03 – Nurse uses CBM for chronic pain from a back injury—polypharmaceutical overload | 1 | 1 |
| Kody's story | Cannabis doc's story about the journey into CBM | 1 | 2 |
| Loren's story | M-21 – Loren is director of nursing care facility and a long-time cannabis nurse/administrator | 1 | 1 |
| Nico's story | P-2 – Story of nurse leaving mainstream medicine to pursue nursing in a way that was compatible | 1 | 1 |
| Possible titles and captions | Especially interesting, mostly short quotes that could be used for chapter titles, picture or table captions, posters, etc. | 12 | 28 |

**6. Information**

| 6. Information Codes | Description | Files | References |
|---|---|---|---|
| Informatics of cannabis care | Umbrella code for references to specific data, data types, or information needs pertaining to/unique in the domain of | 2 | 2 |

| 6. Information Codes | Description | Files | References |
|---|---|---|---|
| | cannabis nursing, medical cannabis programs, and cannabis-based medicine. Not about cannabis cultivation, processing, or chemical elements, but the use of cannabis as a treatment modality/part of the patient care plan | | |
| Information literacy | Umbrella code for times when the nurse recognized a need for information, located, evaluated the quality of the source's information and effectively used information to educate or persuade; also examples of when the nurse gauged the level of information literacy displayed by the other person and adjusted and aligned their discourse to the other person's level. Also, examples where the nurse displays the ability to critically assess the quality of the research product | 26 | 65 |
| Information practices/modes | An array of information related activities and skills (info work) constituted, justified, and organized through arrangements of a social site. Mediated socially and materially with the aim of producing knowledge, etc. (Lloyd, 2011) | 33 | 279 |
| Active scanning | The practice of seeking firsthand sources of information in likely social environments and information grounds and places where these sources are likely to be found, such as going to a conference, meeting, meetup, etc. Secondhand active scanning would include general Google search on a broad topic | 29 | 74 |
| Active seeking | The practice of actively seeking sources of information to answer specific questions or on specific topics in a specific information ground. Firsthand active seeking would be to search out a specific person for the answer to a specific question. Secondhand active seeking would include a Google | 29 | 96 |

| 6. Information Codes | Description | Files | References |
|---|---|---|---|
| | search for a specific person or a specific topic | | |
| By proxy | The practice of seeking a source of information through the referral of another person or being identified as a source of information by a third party or gatekeeper. Firsthand by proxy would be when a third party tells an information seeker that the nurse is an expert in CBM; or when the nurse seeks a referral through their personal network; secondhand by proxy would be when the nurse links to a reference embedded in a paper—the paper's author is acting by proxy | 24 | 68 |
| Nondirected monitoring | A serendipitous encounter in an unlikely place and the recognition as a source/cognitive authority. Coming across interesting information in an unexpected media source. Bumping into information/or information seekers. Gaining information from observation of other people alone | 26 | 40 |
| Information practices/phases | Stages of the communication process the nurse goes through in establishing a relationship with a patient or interested party (either pro or anti cannabis) | 24 | 79 |
| Connecting | Actively seeking contact with an identified source in a specific information ground; identifying a likely source, browsing in a likely information ground; serendipitous encounters in unexpected places; being identified as an information seeker/or connecting to a cannabis nurse | 12 | 35 |
| Interacting | Examples of when the nurse decides to interact with a likely source of information found through all modes of information practices. Strategies for interacting vary | 22 | 44 |

**7. Practices**

| 7. Practices Codes | Description | Files | References |
|---|---|---|---|
| Practice of cannabis nursing | References to all/any direct and indirect, activities, tasks, and topics related to cannabis nursing as a profession | 32 | 582 |
| Best practices | Examples of cannabis nursing best practices that the nurse has developed | 10 | 16 |
| Black market | References to buying cannabis on the black market | 2 | 3 |
| Cannabis nursing specific | Tasks and activities unique to cannabis nursing | 30 | 196 |
| Acquiring card | Nurse helping the patient acquire their medical cannabis card to go to the dispensary | 3 | 3 |
| Dosing | References to issues with/knowledge about dosing CBM | 11 | 18 |
| Hard-to-find information | Information about CBM that the nurse has found hard to find | 12 | 12 |
| Knowledge about dispensary practices | Nurses guiding the patient through the purchase/navigation of dispensaries and MMJ programs | 17 | 39 |
| Medication administration | How nurses account for/administer CBM in hospitals and nursing homes | 3 | 3 |
| Product recommendations | When the nurse makes specific CBM product recommendations | 16 | 32 |
| Reaction from other people | How other people react when the nurse reveals they are a cannabis nurse | 12 | 15 |
| Relationship with physicians | Examples of the relationship between the cannabis nurse and physicians in day-to-day practice | 9 | 17 |
| Use of external technology | When the nurse goes uses services and sites such as Leafly, WeedMaps, and patient registries | 9 | 12 |

| 7. Practices Codes | Description | Files | References |
|---|---|---|---|
| Use of patient journaling | References to instances concerning use, the efficacy of having patients journal about their day-to-day experiences with CBM | 13 | 21 |
| Cannabis physician practice | Physician-led cannabis-based medicine practices and cannabis physicians | 11 | 16 |
| Identity as cannabis doc | Related to identifying/being a cannabis physician | 1 | 1 |
| Compensation | How much a cannabis nurse is compensated | 12 | 15 |
| Document | All things related to the creation of purpose-driven documentation to support the work of cannabis nursing | 19 | 27 |
| Developed new document | Nurse created a new document/form to support the work of cannabis nursing | 7 | 9 |
| Revised existing document | The nurse used/found an existing document/form to develop a new document | 3 | 4 |
| Source of the original document | *Where the nurse acquired the original document they used as a basis for a new document* | *2* | *2* |
| Documenting patient record | Documenting the patient's record regarding specifics of (product, dosage, etc.) and use of/outcomes of CBM treatments | 24 | 54 |
| Not documented | Example of when the nurse deliberately does not document the patient record | 3 | 5 |
| Drug testing | References to the nurses having to be drug tested as a reason for not learning about CBM | 3 | 3 |
| Education and training | Education of training of the cannabis nurse; nursing training-related items; also references to education programs the nurses are giving to patients about the use of CBM | 23 | 67 |

| 7. Practices Codes | Description | Files | References |
|---|---|---|---|
| Nurse education and training | Educating nurses and healthcare providers including physicians on how to use CBD, dosing, equipment, etc. | 16 | 33 |
| Patient education and training | Examples of when the nurse is providing/delivering CBM educational materials and training to patients | 19 | 30 |
| Emergence of specialization | References to further specialization within the domain of cannabis nursing (pediatric oncology > breast cancer, etc.) | 2 | 3 |
| Employment and job description | Cannabis nursing as a job/job requirement | 6 | 6 |
| Family participation in patient's care | When family members actively participate in using/facilitating the use of CBM for the patient | 12 | 21 |
| Nursing work in a dispensary | References to cannabis-related nursing jobs in MMJ dispensaries | 6 | 15 |
| Tracking data/reporting to State | Information work related to updating, maintaining, and completing mandated state reporting for dispensaries | 2 | 2 |
| Patient care | Taking care of the patient in a therapeutic way using CBM | 24 | 89 |
| Care plan | Specific reference to the creation of a written care plan that is given to the patient | 6 | 8 |
| Cost of patient care | References to the cost the patient incurs when using CBM | 2 | 2 |
| Patient centeredness | Examples of when the nurse is putting the patient's needs first, including understanding their physical, emotional, and family situations | 16 | 26 |
| Use of research in practice | When the nurse talks about how they use evidence-based research in the patient encounter | 12 | 23 |

| 7. Practices Codes | Description | Files | References |
|---|---|---|---|
| Patient encounter | Examples of how the nurse conducts a patient encounter or describes how information is used or ways in which the topic of CBM is discussed | 28 | 51 |
| Chris's patient encounter process | M8-Chris—description of the patient encounter she envisions conducting in her role as nursing director at a dispensary | 1 | 1 |

**8. Situativity**

| 8. Situativity Codes | Description | Files | References |
|---|---|---|---|
| Situativity | How the nurse acts/reacts in everyday life information-seeking opportunities for situated learning and situated action. Also, the influence of setting and changes in the environment (legal changes, state of residence) on information needs, information types, and chances of interactions with actual or potential seekers of CBM information. Situativity drives the exact choice of information practice mode, behavior, and exact nature of the information work | 33 | 236 |
| Negative or opposing views | Examples of situations in what the nurse does when they encounter people who express negative or opposing viewpoints regarding the use and users of cannabis as medicine | 32 | 105 |
| Family member | Negative or opposing responses to CBM from the nurse's family members—includes changes in attitudes | 3 | 4 |
| Healthcare Provider | Negative or opposing views of CBD by other healthcare providers | 7 | 8 |
| Social justice perspective | When the nurse responded to negative comments with a social justice argument for why CBM should be allowed/legal | 2 | 6 |

| | | | |
|---|---|---|---|
| Stranger | Encounters with strangers regarding negative or opposing comments about CBM | 2 | 2 |
| Patient encounter | Examples of when the nurse is in an active encounter with a patient for the express purpose of using CBM as the treatment modality | 28 | 51 |
| Reveals self as cannabis nurse | When, why, and how a nurse decides to publicly reveal themselves to be a cannabis nurse | 21 | 31 |
| Depends on the situation | Nurse decides based on intuition about other actors involved | 1 | 1 |
| Family response to the revelation | References to how the nurses' family members responded when the nurse "came out" as a cannabis nurse | 18 | 22 |
| Serendipitous situations | Examples of when the nurse unexpectedly finds themselves in a situation where CBM is/becomes the topic | 21 | 28 |
| Information grounds | Information-rich places where information seekers were aware that a knowledge source might be located. These places would include a doctor's office, a coffee shop, bookstores, libraries, etc. | 14 | 17 |

**9. Structure**

| 9. Structure Codes | Description | Files | References |
|---|---|---|---|
| Structure | How their involvement in cannabis medicine shapes their everyday life. Any mention of rules of behavior, routine responses, routine use of the same technology, dependence on the same sources, etc. Where they spend their time | 32 | 235 |
| Information work | Includes seeking, categorization, classification, and curation of found information. Also examples of when the | 32 | 125 |

| | | | |
|---|---|---|---|
| | nurse expends time, money, or personal connections, to satisfy any information need. Activities such as gathering, finding, probing for information, sorting, interpreting, assimilating, giving, sharing, and handing out documents can be considered information work | | |
| Categorization and classification | When the nurse spends time categorizing (grouping by similar context) and classifying (grouping by similar attributes) research about CBM | 23 | 29 |
| Collecting data | Examples of when the nurse is actively researching a topic and collecting specific data | 5 | 5 |
| Information management | Umbrella code for when the nurse is spending time-saving searches, making lists, setting up categories, etc. Expending time to capture and procure information | 18 | 24 |
| Information sharing | When the nurse passes along information in the form of research, etc. to others, including other healthcare providers, public, and patients | 18 | 40 |
| Information to patients | Sending and/or giving patients research and information about CBM before, during, after a patient encounter. This work could also be before the person is an actual patient | 9 | 16 |
| Posting content to the internet | Examples of when the nurse considers it their role to curate and post information (research, etc.) to websites, blogs, social media, etc. | 3 | 3 |
| Routine response in a social setting | Routine responses/script the nurse developed over time in response to negative or opposing views, information grounds, and information seekers | 29 | 50 |
| Use of information in a social situation | When a nurse uses information to persuade or respond when in a conversation about CBM with another person | 3 | 3 |

| | | | |
|---|---|---|---|
| Routines for being informed | Daily information-seeking routines the nurse has developed to help stay informed about topics of both general and specific interest | 30 | 44 |
| Rules of behavior | Self-imposed rules about where/what to say to whom | 9 | 9 |

# APPENDIX F: ADAPTATION OF THE MCKENZIE INFORMATION PRACTICES MODEL TO CANNABIS NURSES

The model below is based on McKenzie's (2003b) Information Practices Model as refined by Yeoman (2010).

Individuals may become sources of information for others in a mesh of interactions.

| **Individuals in context** | | | | | | | |
|---|---|---|---|---|---|---|---|
| **Active Seeking Information Practices Mode** | | | | **Active Seeking Communication Phases** | | **Example Based on Type of Source** | |
| Objective | Description | | Practice/ Action | Connecting | Interacting | Textual | Human |
| To answer a known question | "I know what I'm looking for." | Nurse engages in directed and purposeful; searching for desired information in environments where known cannabis information sources are likely present | Nurse searches for specific answers or information about cannabis | Nurse seeks out a known source for the type of cannabis information they need | Nurse asks planned questions or seeks specific information to inform about a known topic<br><br>Nurse observes and absorbs information without interpersonal interaction | Searching PubMed for a specific cannabis study on about a specific health condition | Calling another cannabis nurse to find the answer to a specific question about cannabis care |
| **Active Scanning Information Practices Mode** | | | | **Active Scanning Communication Phases** | | **Example Based on Type of Source** | |
| Objective | Description | | Practice/ Action | Connecting | Interacting | Textual | Human |
| To deepen and widen their stock of knowledge | "I'll know it when I see it." | Nurse engages in semidirected browsing for information in environments likely to produce added information and connections to cannabis | Nurse identifies likely sources or goes to likely locations for sources of desired cannabis information or where an information ground may develop | Nurse scans likely environment for general information about cannabis or to discover unknown information about cannabis | Nurses identify opportunities to ask sources spontaneous questions<br><br>Nurse observes or overhears information sources without | Searching Google Scholar for general cannabis info<br><br>Browsing a book shop for cannabis information | Talking to speakers at cannabis conferences<br><br>Striking up conversations in elevators with other cannabis conference attendees |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | | | | personal interaction | | |
| **Nondirected Monitoring Mode** | | | | **Nondirected Monitoring Communication Phases** | | **Example Based on Type of Source** | |
| Objective | Description | | Practice/ Action | Connecting | Interacting | Textual | Human |
| To educate, advocate, and offer guidance | "My ears perk up when I hear the word cannabis." | Nurse serendipitously encounters or recognizes sources of needed/desired information in unlikely environment for cannabis information | Nurse nondirectly monitors and scans all environments for needed/ desired information about cannabis | Nurse's senses alert the nurse to cannabis information sources or seekers in public places | Nurse engages with strangers in public places to talk about cannabis therapeutics<br><br>Nurse observes or overhears information seekers without engaging in personal interaction | Browsing *Forbes* magazine and coming across a cannabis study that answers questions the nurse didn't know to ask | Introducing oneself to a stranger as a cannabis nurse, then sharing personal experience and scientific information about cannabis with the intent of providing "true" facts and data |
| **By Proxy Mode** | | | | **By Proxy Communication Phases** | | **Example Based on Type of Source** | |
| Objective | Description | | Practice/ Action | Connecting | Interacting | Textual | Human |
| To share sources and information with others | "I know someone."<br><br>"I can refer you to someone."<br><br>"Who told you about me?" | Nurse connects or is connected to cannabis information seekers or sources through the actions of other people* | Nurse is considered an expert in cannabis care and referred by a third party (proxy) to a cannabis information seeker<br><br>Nurse seeks out cannabis experts and information by asking for referrals to sources | Nurse is identified as a cannabis information source by a third party<br><br>Nurse is referred to a cannabis information source by a third party | Nurse talks to the third party about cannabis on behalf of another information seeker<br><br>Nurse contacts referred information sources | Potential cannabis patient searches state medical cannabis registry for names of cannabis nurses; contacts a nurse on this list | Primary care physician refers their patient to a cannabis nurse for care and education about cannabis therapeutics |

*Connections made through algorithms should also be considered in future models.

Information practices may be used as counter strategies in the face of connection or communication barriers. Not all barriers can be successfully navigated.

~END~