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PILOT STUDY OF A PATIENT-CENTERED BEHAVIOR CHANGE COUNSELLING CURRICULUM FOR
PHYSICIAN ASSISTANT STUDENTS

By

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ABSTRACT OF THE DISSERTATION

Pilot Study of a Patient Centered Behavior Change Counselling Curriculum for
Physician Assistant Students

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Purpose: One in four adults in the US suffers from one or more chronic disease. Over half of the chronic disease is directly linked to lifestyle choices, in particular lack of exercise, poor nutrition, tobacco, and alcohol. PAs programs are required by accreditation to include instruction in communication skills and basic counseling and patient education skills. Effective communication between patient and practitioner is the first step toward real behavior change to reduce chronic disease risk. Behavior change counselling (BCC) embraces the spirit (collaboration, evocation, patient autonomy) and specific skills (open ended questions, affirmations, reflections, and summaries) of motivational interviewing in a brief intervention setting known to promote effective change. This project assessed a two-part, 6-hour pilot training program in BCC for PA students to evaluate feasibility of incorporating active/experiential BCC training in PA education. The program consisted of didactic lecture and group activities, role playing, and standardized patient (SP) experiential learning.

Methods: Mixed methods, quasi-experimental design was employed to assess process and outcome measures. Quantitative assessment included two-group comparison of both within and between group pre and post training assessment including knowledge (via multiple choice test items), confidence (via Likert scale ratings), and skills (via role playing and SP session).

Qualitative assessment included direct observation of organization, flow, and feasibility by the

PI; daily and overall student written evaluations; and post-training written evaluations and debriefing discussion with participating faculty.

Results: Faculty were invested in the program and assessment and provided constructive feedback during all phases of the project. Students completing the 6-hour training program showed significant within group improvement in knowledge (53.54 pre vs 59.38 post, $p=.049$) and confidence (6.28 pre vs 7.79 post, $p<.001$). Significant between group scores were also found including skills (40.24 trained vs. 33.13 untrained, $p<.001$). The scores on knowledge, confidence, and skills remained unchanged when trained students were assessed 5- months post training.

Conclusions: BCC training is feasible in PA education. PA students completing BCC training will be a major contributor in the efforts to promote healthy change. Faculty are receptive to training in BCC and its assessment. The training program is recommended to all PA education programs.

Acknowledgment and Dedication:

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I. Introduction/Statement of the Problem

Chronic disease is responsible for the majority of morbidity and mortality both in the United States and around the globe. The Centers for Disease Control and Prevention (CDC) estimates that cancer, cardiovascular disease, arthritis, diabetes, chronic respiratory disease, mental health disorders and substance abuse accounts for 7 out of 10 deaths annually and 90% of all health care costs in the US.^{1,2} Approximately one half of the US adult population has been diagnosed with at least one chronic disease and one half of this population, representing one in four US adults, suffers from more than one chronic disease.^{3,4,5}

Chronic disease is driven, in large part, by lifestyle choices that contribute to the etiology, chronicity, and exacerbation of chronic disease. The CDC estimates that four lifestyle behaviors—lack of exercise, poor nutrition, tobacco, and alcohol--contribute to the vast majority of chronic illness.^{3,6} An estimated 40% of cancer and 80% of cardiovascular disease and diabetes could be prevented through exercise, a healthy diet, and tobacco cessation.¹ The approach to chronic disease prevention must include both public health programs and clinical care. Primary care providers, including physicians, physician assistants, and nurses, have a responsibility to educate patients concerning the relationship between lifestyle behaviors and chronic disease and to facilitate behavior choices that are known to promotes wellness.

While primary care clinicians understand and support the need for prevention, rates of preventive efforts in clinical settings are far below ideal.⁷⁻⁹ Lack of time is a major barrier. The median time spent with a clinician during a primary care visit is 17 minutes,¹⁰ requiring clinicians to complete a full assessment, develop a plan, and demonstrate effective exchanges of information and facilitated guidance in a brief setting. Clinicians also cite perceived patient inability and lack of desire as well as their own lack of confidence and training to facilitate behavior change as factors that contribute to the low rates.^{9,11} Providers have traditionally

delivered patient education/preventive health in a directive manner where the provider is the authority and dictates instruction to the patient, expecting the patient to adhere to medical orders. Beneficial outcomes using this confrontational approach have been minimal at best.^{7,12,13} Often, both the provider and the patient are frustrated by this approach, contributing to the clinician's sense of failure and lack of motivation to pursue behavior change.^{9,12-14} Patients also report a low sense of control over their health and a lack of knowledge and skills to change behaviors that affect health.^{6,7,14}

The evolution of the patient-centered health care model, with its emphasis away from clinician-driven health care in favor of a model of patient empowerment, has compelled clinicians to reevaluate the approach to patient education and counseling.^{8,14,15} Models of behavior and behavior change theories, including the Health Belief Model, the Transtheoretical Model, and Social Cognitive Theory, have provided a framework to understand the elements that influence an individual's behavior and lifestyle choices by incorporating the various factors that both promote and inhibit behavior change. A major commonality among the theories is the importance of self-efficacy and motivation, which is the primary engine of patient-centered care.

Patient-centered care requires a shift in the mode of communication away from a clinician-directed approach and toward a patient-centered model. One such approach is Behavior Change Counseling which grew out of the success of Motivational Interviewing (MI), first described by Miller in 1983 and founded on Rogers' theory of client-centered counseling.^{13,16,17} MI has a goal of enabling patients to identify intrinsic promoting and inhibiting factors and work towards behavior change that will promote wellness.^{8,14,16,17} Working in addiction treatment, Miller observed that the counseling style displayed by the therapist had a significant impact on a client's motivation to change. When therapists allowed the treatment

to be driven by the client, urging clients to reflect on the factors influencing their behavior choice and to identify their own motivation to change, patients were more successful in changing their behavior and controlling their addiction. At the core of MI is a spirit of partnership, patient and practitioner, that is fundamental to successful counseling encounters. Rollnick and Miller¹² describe “the spirit of MI” as collaborative and evocative, a model that honors patient autonomy.

In the years following the introduction of MI, success with the model in the area of addiction treatment was trumpeted in the literature and MI experienced increased attention across disciplines.^{18,19} Evidence of its impact on successful behavior change in addiction counseling prompted investigation of its merit in the wider domain of clinical medicine including mental health, diabetes, physical exercise, and medication adherence. The facilitative communication skills and spirit of MI were adapted to the clinical setting as brief interventions, subsequently branded as behavior change counseling (BCC)²⁰. Training settings and programs began to be publicized through clinical conferences and reference materials.^{21,22} Studies of BCC in simulated practice environments have shown it to positively influence behavior change aimed at modifying specific behaviors and thus reducing risk of developing or exacerbating chronic disease including diabetes, respiratory disease, arthritis, and heart disease.^{20,23-26}

Patient-centered BCC, as adapted in the clinical setting, has a more modest goal than the full embodiment of MI. BCC aims to listen to the patient with the goal of understanding the patient’s perspective without judgment. As in MI, the goal is to assist the patient in their exploration to uncover the reasons they engage in the behavior and how they can initiate alternate choices and maintain healthier behaviors.^{27,28} However, BCC is designed as a brief intervention used in short encounters in the clinical setting. Mallisham, et al.²⁹ published an editorial in 2016 summarizing the history of early efforts at adaptation of MI into BCC. They

emphasize that BCC is not a technique as much as it is a way to engage in productive communication between two parties, patient and practitioner. The therapeutic relationship is the spirit behind the interaction which, when properly instituted, is one of compassion, acceptance, collaboration and evocation.

BCC requires empathy and respect for the individual's choices while helping the individual recognize their intrinsic motivations and steer their inner drive to change behavior. Many of the skills or techniques of BCC are directly those of MI, most prominently the four fundamental skills recognized as OARS: open ended questioning, affirmations, reflections, and summarizing.³⁰ Studies have shown that practicing clinicians who opt to attend training programs that both emphasize the spirit of BCC and offer practice with the basic skills of BCC gain confidence in their ability to facilitate effective behavior change in their patients.^{15,27,28,30-41} Recognition of the value of BCC and incorporation of BCC spirit and techniques is the first step toward improving the patient-provider relationship and fostering positive behavior change.

II. Literature Review

Behavior change interventions delivered by practitioners trained to provide brief, specific and patient-centered interventions have the potential to improve communication with patients as well as prompt behavior change to reduce risk. Training in BCC during training while students are first developing their personal communication skills and style, rather than after completion of medical training has a greater potential to have these skills become solidified as standard practice after graduation. Several studies designed to assess curricula promoting practitioner and/or medical student knowledge, confidence, and skills regarding the impact of behavior on health and potential communication and counseling skills aimed at changing behavior have published supportive evidence. Curricula are varied in scope ranging from basic interviewing to gathering and facilitating specific scenarios of desired behavior change, as well as formalized training using specific skills of MI or BCC. Programs are generally modeled on situations that require trainees to provide information to patients on the risks inherent to certain behaviors, to identify ambivalence, utilize change talk, and assist in goal planning.

Hauer, et. al⁴² conducted a systematic review of 109 studies assessing behavior change counseling curricula published between 1965 and 2011. Of the 109 studies identified, 35 studies were considered as high strength based on study design, sampling, use of a theoretical or conceptual framework, type of outcome data, data analysis and outcomes: 13 were based on medical student curricula and 22 on resident curricula. The studies designed for medical students involved 8 or fewer hours of training time. All curricula included both didactic and practical components; assessment consisted of written knowledge tests and confidence and attitude scales. Few studies included assessment of simulated patient encounters and no study reported evaluation of the use of specific BCC or MI techniques. Authors assessed “general communication skills” which consisted of simply inquiring about a specific behavior and

providing information to the patient regarding risk. Overall the authors concluded that the highest quality curricula consist of multimodal methods that stressed participant engagement, feedback from teachers/facilitators, and opportunities for learners to practice after receiving feedback.

Spollen, et. al⁴³ conducted a randomized controlled trial of BCC education for medical students. Using a quasi-experimental pre-post design, results from a knowledge test and performance test were compared. The two-hour workshop consisted of didactic and role play opportunities. Students who participated in the workshop (n=17) scored significantly higher compared to controls (n=18) on both the knowledge post-tests and performance as measured by the Behavior Change Counseling Index (BECCI) scale.²⁵ Repeated measures ANOVA indicated a significant group x time interaction for both knowledge and skills. No long term follow up was conducted.

Martino et. al⁴⁴ evaluated a behavior change curriculum entitled CHANGE (check, hear, avoid, note, give, end) that was developed by the research group. Third year medical students (45) volunteered to participate in the single session 2-hour curriculum employing lecture, videotaped cases, and practice with trained standardized patients (SPs). Evaluation consisted of pre-to-post student self-assessment with a 7-point Likert scale. Mixed effects modeling showed a statistically significant increase in the frequency and depth of reflection, a reduced frequency of communication roadblocks and a reduced frequency of closed questioning. Students also reported significant levels of increased confidence in, and commitment to, use of MI techniques. While these results are suggestive of the potential value of short-duration training, the study relied on self-reported data rather than demonstrated skills, had no control group, a short follow-up time of 4 weeks, and reported a high attrition rate (50% at week 4).

White et. al⁴⁵ also used a pre/post design to evaluate a 3-hour behavior change curriculum comprised of lecture and small group role-play sessions. Medical students completed pre-and post-tests assessing knowledge related to the consequences of health-related behaviors, stages of change, and motivational interviewing. They also provided feedback regarding the training, as well as completion of Likert scale items assessing quality and effectiveness of the curriculum and the perceived importance of the counseling techniques. Using the Motivational Interviewing Treatment Integrity scoring tool (MITI) to evaluate videotaped sessions with SPs acting as smokers in the pre-contemplative state. The investigators offered evidence to support inclusion of this training in medical school curricula. The majority of students (83%) stated the curriculum improved comfort level discussing behavior change and 98% reported that MI was an important skill that physicians should have. While 68% reported that the lecture was helpful, 90% reported that the small group sessions were effective. Pre-post scores also increased, but with mixed outcomes, and the study was hindered by a lack of baseline data on confidence and a lack of long-term follow up.

Bell and Cole⁴⁶ evaluated a curriculum titled “The 7 Steps of Medical MI” designed as an adaptation of the core principles of MI which the authors felt was better suited to general medical practice. The framework was reported as: mutual agenda setting; decision balance (patient’s perception of the pros and cons of the behavior); interest/readiness/ confidence rulers; individualized feedback (based on the patient’s own health data); summary; key question (ask patient “where do we go from here”); and negotiate change plan in partnership. The curriculum was embedded within a 4-week ambulatory medicine clerkship. Pre/post knowledge quiz and attitude scores showed significant improvement immediately after the course. Skills assessment consisted of watching a patient encounter video and answering six questions which

were scored for consistency with MI principles. Significant improvement post-training was reported by the investigators to be moderate.

Bunyan et. al⁴⁷ assessed the feasibility of using actual observed patient interactions to measure the impact of a 2-day MI training session on a small sample of nurses. The post-training analysis showed improved scores on the MIMISI (motivational interviewing measure of staff interaction), a 10-item tool utilizing peer ratings of actual clinical interactions. Subjects completing the post-training survey reported high satisfaction and a desire for opportunities to implement the training in the practice setting.

Herold et. al⁴⁸ reported successful outcomes of a BCC training program for smoking cessation that was embedded in a 6-week cardiovascular clerkship for fourth-year medical students. Significant improvements pre to post training on knowledge (multiple choice test) and skills (Objective Student Clinical Evaluation [OSCE]) measures were reported; significant difference in overall cohort performance compared to a historical cohort that completed an earlier version of the clerkship was also reported. Skills were retained at 6-month follow-up comparing students who completed this elective clerkship to students who did not. The authors concluded that a BCC-like program was an excellent and efficient modality to fulfill the requirement of training medical students on smoking cessation.

Although there is a growing body of evidence supporting the need for training and utilization of behavior change counseling by physicians, residents, nurses, and medical students, there is little research assessing counseling by physician assistants (PAs) or PA students. Physician assistants (PAs) are recognized as effective caregivers who expand the reach of primary care physicians, increasing patient access to quality care.^{49,50} Indeed, PAs in primary care spend more time with individual patients compared to physicians and are intimately involved in patient education and the promotion of healthy behavior choices to prevent or cope

with chronic disease.^{49,50} While PA training includes communication with the patient and advisement to facilitate healthy choices, there is a lack of published studies regarding training or evaluation of BCC among PA students, making this group an unexplored potential resource in achieving success with health prevention.

The Accreditation Review Committee-Physician Assistant (ARC-PA) includes the standard: “B2.09 The program curriculum must include instruction in basic counseling and patient education skills.”⁵¹ Students in the preclinical phase of PA training learn to obtain a thorough medical history, perform the appropriate physical examination, formulate a clinical assessment and develop a plan. An important component of this interaction is the ability to provide patient education and counseling. Once in the clinical phase of training, PA students practice and refine these skills with the goal of improving communication with the patient and, thus, improving outcomes. However, oftentimes this task is approached as a set of check-off items that the student must do to “pass” the clinical clerkship. Students often do not have good mentors that demonstrate BCC skills in practice. Little is known about the performance skills or level of confidence with patient counseling skills of clinical PA students.

McLaughlin et al.⁵² published a description of the development and implementation of a health behavior change counseling curriculum for PAs. The full semester course focused on cancer education and incorporated the principles of MI and the Transtheoretical Model. Over 12 sessions with a total of 25.5 hours of training, students were involved in lectures, discussions, brief demonstrations, and practice using trained standardized patients (SPs). Assessment included written exams, critique of standardized counseling scripts, and reflection journals. Pre and post-training analysis showed a significant improvement in knowledge and confidence; objective assessment of skills was not included. Although the outcomes of this study were positive, the length of the curriculum is long, making it less attractive to PA Programs which are,

on average, 27-30 months in duration. A concise, focused training program dedicated to brief counseling sessions may be a better fit for the PA training model and is likely to have a greater chance at adoption into standard PA education curricula than a larger curriculum that requires a greater time commitment by students and faculty.

PA educators have expressed a need for guidelines or curricula to train and assess student preparation to engage in patient counseling. A 2015 exploratory survey narrowly focused on motivational interviewing in PA training programs.⁵³ It found that a majority of PA programs introduce the concepts of MI in the curriculum in order to meet standard B2.09, primarily through inclusion of lectures on the philosophy of MI and/or videos demonstrating MI. The majority of responding PA programs also declared a desire to include additional opportunities and efficient methods to teach patient-centered skills that promote behavior change. Curricula with a foundation in BCC may be a more valuable option for PA student training. This survey also reported that most PA programs do not include assessment of students demonstrating patient counseling. As noted above, these conditions mean that no training materials, and no evaluation data, are systematically applied and evaluated for this student population.

III. Aim of this Research Project

Clearly there is evidence pointing to the potential value of incorporating BCC in a condensed but effective manner in order to practically fit into the 27-30 months of already dense training typical of physician assistant programs. No study thus far has included both pre- and post-assessment among both trained and untrained PA students, as well as a follow up assessment of students further into the clinical phase of their education to assess for persistence of skills. There is also variability in the measurement of knowledge, confidence, and skills with BCC and there is little indication of how qualitative and process evaluation data might impact the interpretation and reporting of outcomes. Most importantly, because few published studies included PAs or PA students, the potential effectiveness of a PA student utilizing BCC skills has yet to be explored.

This proposed pilot study will investigate the feasibility of a 6-hour BCC training among PA students. Study objectives include:

- 1) comparison of training participants and nonparticipants vis-à-vis their BCC knowledge, confidence, and skills;
- 2) investigation of the impact of potential confounding factors on pre-post changes within and between groups, specifically age, gender, previous clinical experience, and desire to work in primary care;
- 3) collection and analysis of process evaluation data to examine factors impacting training implementation, quality, and satisfaction.
- 4) development of recommended guidelines to facilitate the structure of future training programs across PA training institutions.

Through qualitative and quantitative perspectives, it is hypothesized that:

1) Students who complete training will exhibit greater knowledge related to BCC compared to students completing the previous Medical Interviewing course (comparison group)

1a. BCC trained students will perform significantly higher on posttest knowledge questions compared to pretest (within group analysis)

1b. BCC trained students will perform significantly higher on posttest knowledge questions compared to comparison group students (between group analysis)

1c. BCC trained students will continue to exhibit skills of BCC when tested on follow up (4 months after training, while completing clinical rotations)

1d. Students who are older, female, entered PA school with experience in primary care, or stated a desire to work in primary care at the time of PA school application will outperform students who are not regardless of group (trained or not trained)

2) Students who complete the training will exhibit stronger confidence in using BCC in clinical encounters compared to students completing previous Medical Interviewing course (comparison group)

2a. BCC trained students will perform significantly higher on posttest confidence questions compared to pretest (within group analysis)

2b. BCC trained students will perform significantly higher on posttest confidence questions compared to comparison group students (between group analysis)

2c. BCC trained students will continue to state confidence with the skills when tested on follow up (4 months after training, while completing clinical rotations)

2d. Students who are female, entered PA school with experience in primary care, or stated a desire to work in primary care at the time of PA school application will outperform students who are not regardless of group (trained or not trained)

3) Students who complete the training will exhibit greater skills in BCC compared to students completing the previous Medical Interviewing course

3a. Training students will outperform comparison group students in standardized patient (SP) sessions after completion of training

3b. Training students will exhibit comparable skills in BCC in SP sessions in follow up assessment (5 months later, while completing clinical rotations)

IV. Materials and Methods

IV.A. Study Design and Timeline

This was a pilot feasibility study in which 2nd year (didactic phase) Rutgers PA students participated in a 6-hour training including pre- and post-training assessment. Third year PA students (currently in the clinical phase of PA training) served as a comparison group. The 3rd year students completed the didactic portion of the PA Program prior to the inclusion of the BCC curriculum. Analysis of the training curriculum included collection of qualitative data and process evaluation data. The study was limited to a small sample (single PA Program) with obvious confounders surrounding differences in student history and both didactic and clinical exposure between groups but nonetheless provides preliminary data regarding the impact of a BCC training program as it unfolds within the global PA training experience. The diagram below summarizes the phases and activities of this study.

Table 1. Historical timeline of study activities and participants.

	Session 1 (11/13/17)		Session 2 (1/30/18)		Session 3 (2/13/18)	follow-up (8/2/18)	
Subjects	pretest [N=48]	training session #1 (3 hours)	training session #2 (3 hours)	posttest [N=48]	skills assessment (SP session) [N=48]	follow up: *survey of student observation of BCC in the clinical setting *repeat post-test [N=35]	skills assessment (SP session) [N=19]
Controls	(12/15/17)		(4/5/18)				
	pre-test [N=36]		post-test [N=30]	skills assessment (SP session) [N=30]			
Process evaluation		<u>students</u> : written evaluation <u>facilitators</u> : debriefing session	<u>students</u> : written evaluation <u>facilitators</u> : debriefing session	<u>students</u> : written evaluation of overall program <u>facilitators</u> : written evaluation	*feedback from observers *post experience evaluation from SPs *post experience	*feedback from observers *post experience evaluation from SPs *post experience evaluation from students *debriefing session with facilitators	

				of training program	evaluation from students *debriefing session with facilitators	
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IV.B. Subject Recruitment

The intervention group included 48 students in the graduating class of 2019 Rutgers University PA Program who completed the 6-hour BCC training during the fall 2017/winter 2018 semester including pre- and posttesting of BCC knowledge and confidence as well as post-training demonstration of skills. Students (N=30) from the graduating class of 2018 served as comparisons through participation in identical post-training assessments; this group of students completed the standard patient education unit of the Medical Interviewing course in the fall of 2016, consisting of lecture only. This study was reviewed by the university Institutional Review Board and all policies and procedures regarding student privacy, protection and grading equity were followed. Students completed written informed consent to permit inclusion of their data in the program assessment.

IV.C. Training Materials and Procedures

“Medical Interviewing” (PHYA 5157) is a required course in the preclinical (final didactic) semester of the Rutgers PA Program. This standard course trains physician assistant students in professional communication; 10 PA faculty facilitate the course utilizing small group interactive sessions. The course was expanded to include a curriculum devoted to patient-centered behavior change counseling. Rutgers University School of Health Professions approved the course expansion and objectives as added to the course for the fall 2017 semester.

Preclinical physician assistant (PA) students (class of 2019; the intervention group) completed the enhanced Medical Interviewing course (standard course plus the 6-hour patient centered BCC training curriculum). The BCC curriculum (Appendix 1) began with a short

presentation covering the definition, history and foundations of patient-centered BCC followed by short videos produced by Bill Matulich, PhD, member of the Motivational Interviewing Network of Trainers (MINT), which briefly present the history, philosophy, and skills of MI.⁵⁴ The presentation and video modules were augmented with classroom activities and role playing. The webinars, activities and role playing took place over two 3-hour class sessions. Students participated in activities designed to provide practice in BCC with particular emphasis on the four major techniques of MI (open ended questions, affirmations, reflection, summarizing). The class time activities (Appendix 2) were gleaned from Motivational Interviewing, Resources for Trainers, published by MINT⁵⁵ and similar activities found in Rosengren's Building Motivational Interviewing Skills, a Practitioner Workbook.⁵⁶ The classroom activities had been field tested with a group of 6 PA students from the class of 2017. A single informal qualitative post-activity focus group assessed student understanding of the purpose, directions, and ability to complete the activities. Responses provided feedback and suggestions for changes in the curriculum which were incorporated. Final activity structure, objectives, and assessment tools were reviewed and approved by the PA Program Curriculum Committee.

Students also participated in three in-class practice role play activities. Role playing is commonly utilized as a method to practice complex skills that require problem solving, communication, and self-awareness.⁵⁷ Each role play presented a clinical scenario with an opportunity to engage in patient-centered BCC to promote behavior change. Students worked in groups of three with one student acting as the patient, another as the clinician, and the third as an observer. Students rotated their participation among the three roles. Sessions were recorded on the student's iPad. Faculty and peer review of the session and evaluation of performance activities were completed immediately following each role play utilizing the Behavior Change Counselling Index (BECCI, Appendix 3), a validated instrument designed for trainers to score

participants' use of BCC in simulated consultations.²⁷ The table below summarizes allocation of time for the curriculum and assessment.

Table 2. Schedule of BCC curriculum and assessment activities.

Session 1	3 hours	Overview and baseline assessment (pre-test)	15 minutes
		Introduction to patient counseling	10 minutes
		Webinar #1; communication styles, foundations of BCC	45 minutes
		activity (communication styles)	15 minutes
		activity (spirit of MI/BCC)	15 minutes
		Webinar #2; change talk, readiness ruler	45 minutes
		Evaluating readiness for change, decisional balance, OARS	15 minutes
		Session evaluation and reflection	15 minutes
Session 2	3 hours	Review of spirit and process of BCC	10 minutes
		Prebrief practice skills	10 minutes
		Practice sessions including review/feedback from facilitator and peers	120 minutes (groups of 3; 30-40 minutes per student)
		Debriefing session	15 minutes
		Session evaluation and reflection	15 minutes
Session 3		prebrief instructions	10 minutes
All subjects—training participants and comparison group students [within 2 weeks of Session 2]		Post-test	10 minutes
		Demonstration of skills in a simulated environment (SPs); 12 trained SPs concurrently, up to 8 sessions each (each student completes one videotaped encounter)	100 minutes (10 minutes per individual student; 3 min between sessions for transition)
		Debrief session, full group	15 minutes
		Evaluation and reflection	15 minutes
Session 4		Posttest	15 minutes
Training participants only [5 months after Session 3; all subjects in clinical rotation phase of PA program at this time]		prebrief instructions	10 minutes
		Demonstration of skills in a simulated environment (SPs); 12 trained SPs concurrently, up to 8 sessions each	100 minutes (10 minutes per individual student, 3 minutes between sessions for transition)
		Debrief session, full group	15 minutes
		Evaluation and reflection	15 minutes

IV.D. Assessment Instruments and Procedures

Pre- and post-testing instruments addressed knowledge of BCC and confidence in performing BCC. Knowledge and confidence were assessed among study participants using a 10-

item multiple choice and 4-item Likert scale questionnaire. (Appendix 4) This instrument was adapted by the PI from validated materials available through I-Tech (International Training & Education Center)⁵⁸ and the Pre-Post Motivational Interviewing Quiz of the Community-Academic Partnership on Addiction, Washington University at St. Louis.⁵⁹ At the 5-month follow up session, study participants repeated the posttest and 4 additional questions asking the student to recall any observation of patient-centered BCC observed in practice while completing clinical rotations. Knowledge and confidence were assessed among the comparison group using the same instruments at two distinct time periods: week 35 and again at week 48 of the 52 weeks of required clinical clerkship experience.

To assess skills, students demonstrated patient-centered BCC via a simulated clinical environment with standardized patients (SPs). SPs are trained actors hired by medical schools to perform as patients in simulation exercises. The individuals are trained to act as real patients using guidelines established by the faculty in order to afford students an opportunity to learn and be evaluated in a simulated clinical environment. (Appendix 5) The PA Program hires SPs through Robert Wood Johnson Medical School for several assessment opportunities within the program.

Videotaped simulated sessions took place two weeks after the completion of training and then again 5 months later to assess persistence of knowledge, confidence, and skills. The students in the comparison group completed a single videotaping session; a 5-month follow up was not feasible as this group of students had graduated. SPs were blinded as to group.

Videotaped sessions were scored using the Behavior Change Counseling Index (BECCI, Appendix 3), a psychometrically validated and reliable instrument designed and tested to assess the demonstration of BCC in an SP assessment.²⁷ This tool, developed by Lane and assessed in several clinical settings including medical students and other health professions students,

consists of 11 items scored from 0 (not at all) to 4 (to a great extent). This instrument is brief and is designed to be coded in one pass (maximum score 44). It focusses on the spirit and principles of BCC. Prior to the SP session, PA faculty were trained in using the BECCI until consensus of scoring was achieved. The BECCI was completed and scored for each videotaped session using the guidelines published in the BECCI Manual.

A subset of videotapes was evaluated by 2 faculty, who have training and experience in this area, in order to check for consistency in scoring. A third facilitator evaluated any session with disparate scores.

IV.E. Process Evaluation Instruments and Procedures

Process evaluation was conducted in order to identify which parts of the curriculum were effective and which may need strengthening while guiding future revisions to the curriculum. Process evaluation included input from the participants (students), the facilitators, and the SPs. (Appendix 6) Daily written evaluations (anonymous) using Physician Assistant Program standard student evaluation instruments were requested from the students followed by an overall written evaluation at the completion of the curriculum. This evaluation assessed the students' subjective responses to the training: i.e., what worked well, what did they learn, what did they not understand, how will they apply what they learned.

Eight facilitators met immediately after the role play training session and after the SP session to debrief on the procedures, flow and quality of the sessions. The debriefs covered the day's activities, what went well and what needed adjusting. Topics discussed included: facilitator's experience using the materials; thoroughness of the content and appropriateness to PA student education; ability of the SPs to fulfill their role as patients and respond appropriately during the interaction; and suggestions for improving, revising or adding to the training curriculum. Facilitators also completed a written evaluation at the conclusion of the training that

required each facilitator to rate how well each section (presentation, activity, discussion, role play, SP) met the objectives of the training. SPs completed the RU PA Program standard SP feedback form providing assessment of student communication skills.

The PI acted as an observer throughout all sessions. The PI took notes during each activity and role play session during the training to monitor how the facilitators used the materials, how well the participants were able to complete the activities, the quality of participant interactions (student-student and student-facilitator), level of participant engagement, and where further clarification or revision is needed.

IV.F. Data Management and Analysis

IV.F.a. Impact Evaluation

1. Collection of Data. Student demographic data was extracted from the PA Program Admissions database and entered into an excel spreadsheet on an encrypted laptop. Pre-and post-test responses (both quantitative and qualitative data) and the follow-up questionnaire were identified by student name; daily evaluations and final course evaluation were anonymous. All survey instruments were conducted via paper and pencil. Data was entered into an excel spreadsheet and housed on a Rutgers University encrypted laptop. Paper copies were stored in a locked cabinet at the Rutgers PA program and destroyed at the completion of data entry. Data analysis was completed using SPSS.

2. Subjects. The composition and characteristics of each group (subjects/trained and controls/untrained) were compared to evaluate comparability of groups. Groups were compared on both continuous variables (age, hours of previous healthcare experience) and dichotomous variables (gender [male/female], desire to enter primary care [yes, no]). Distribution of each continuous variable was tested for normalcy.

3. Outcomes. The primary independent variable was group: subject (trained) and control (not trained). Dependent variables included change in BCC knowledge scores (H1), confidence scores (H2), and skills performance scores (H3). Knowledge, confidence, and skills represent different constructs that are not necessarily correlated; it is commonly experienced in medical education that students who do well on knowledge tests do not do well with application of that knowledge (skills) and vary greatly in confidence. Therefore, the three outcome variables were analyzed separately.

Multiple choice on knowledge tests were scored as correct or incorrect; final score was percentage correct. Likert scores on BCC confidence statements were assessed as semi-continuous variables. To assess skills, videotaped SP sessions were evaluated using the validated BECCI scoring guidelines with a maximum of 44 points. Repeated measures comparisons (participants) as well as participant-to-control comparisons of quantitative data (scores on knowledge test, confidence scales, and demonstration of skills scored via BECCI) were assessed to determine differences in performance of patient-centered BCC.

Modeled on studies by Pollen⁴³ and Bell and Cole,⁴⁶ quantitative pre-and posttest scores on knowledge and confidence as well as potential confounding variables were analyzed descriptively as well as inferentially using t-tests for simple comparisons. Change in trained student scores (knowledge, confidence) from pre to post and from post to 5-month follow up were assessed using paired t-tests. Difference in scores between the two groups (trained vs control) per variable (knowledge, confidence) pre training and post training were also analyzed using t-tests. BECCI scores (skills) were compared after training (comparing trained vs untrained,) and at follow up (5 months later, trained students only) comparing post training skills assessment (BECCI 1) to follow up skills assessment (BECCI 2) using t-tests.

Next, screening for relationships between the continuous potentially confounding variables that are normally distributed (age, GPA, and hours of previous health care experience) and two nominal variables (gender and desire to enter primary care) and each of the three outcome variables (knowledge, confidence, and skills) was conducted using Pearson or Spearman correlation. The unadjusted differences in knowledge, confidence, and skills were assessed for main effects using simple regression assuming reasonable normality of outcome variables. Variables found to be associated with any outcome variable at $\alpha \leq .10$ would be considered for entry into an adjusted model.

IV.F.b. Process Evaluation

Qualitative data (via open ended questions) extracted from anonymous daily feedback and reflection, final course evaluations, and facilitator debriefing sessions underwent thematic analysis to complement the quantitative analysis. Qualitative comments from SPs including the SPs perceived score/rating of the encounter and performance by the students was also analyzed. Written comments and debriefing sessions were reviewed at least twice searching for patterns within the responses. Using both an inductive and a deductive approach, key concepts were explored including clearness of instruction, student report of what worked and what could be improved, perceived need for additional training, and perception of how the training can be used in practice. Any discrepancy of analysis was re-examined by another trained facilitator.

Facilitator debriefing focused on process evaluation including the ability to guide students through the training sequence and activities, ability to provide feedback to the students during role plays, faculty perception of the relevance to PA education and any barriers and limitations that potentially could affect delivery of the curriculum. Observation notes gathered by the PI underwent manual qualitative analysis building on the PI's experience with PA education and evaluation of classroom activities. Responses were grouped into similar

categories; themes emerging from the qualitative data were reviewed several times, condensed where appropriate, and organized for manageability.

V. Results

This pilot study investigated the feasibility of a 6-hour BCC training program in a single PA program. The research study culled both outcomes and process evaluation to assess implementation and outcomes of a stand-alone 6-hour curriculum in BCC. Study objectives included assessment of scores on knowledge test, confidence scales, and skills demonstration for a group of trained students compared to nontrained students.

V.A. Subjects

A total of 88 students consented to participate in the study: 48 trained subjects (Class of 2019) and 40 untrained controls (Class of 2018). Two-tailed t-tests for continuous variables (age and patient care hours) and chi-square tests for nominal variables (gender and interest in primary care) with unequal variances were run comparing demographic variables. The groups did not differ in age, gender composition, number of patient hours prior to matriculation in the PA program, nor in their stated desire at admission to enter primary care upon completion of PA training. (See Table 3)

Table 3. Comparison demographics for subject and control groups.

	subjects (trained) Class of 2019	control, (untrained) Class of 2018	p
N	48	40	n/a
Age, mean (range)	26 (21-46)	27 (21-41)	0.267
Gender	Female 40 Male 8 (16%)	Female 30 Male 10 (25%)	0.347
Patient care hours, mean (range)	947.3 (0-14,000)	896 (0-10,000)	0.910
Interested in primary care at enrollment number (% yes)	24 (50%)	19 (48%)	0.818

V.A.1. Completion Rates/Study Attrition

The number of students completing successive portions of the study diminished over time. (See Table 4) For the control students (untrained, Class of 2018), out of the 46 in the cohort, only 40 consented to the study, 37 completed the pretest (test 1), and 30 completed the post-test (test 2) and skills assessment (SP session) (65%). This was likely because the research activities were not conducted during regularly scheduled class time, therefore, attendance was not mandatory at any time for this cohort. There was no ability to compare the students who did continue to participate to those who did not.

For the trained subjects (Class of 2019), the training sessions were delivered as part of a mandatory course (Medical Interviewing) within the PA program curriculum. The first SP session (skills assessment 1), although not part of the course and presented as optional, was scheduled during the same didactic semester and attended by 45 out of 48 of the trained subjects; this was likely due to the nature of the program's mandatory attendance policy for classroom activities. Students accepted the invitation as part of the course and may not have realized, although told of, the optional status. The follow up session (survey and skills assessment 2) was held 5 months later.

Table 4. Completion/attrition rates by dates and study steps for subjects and controls.

Event->	consent	pretest	training	posttest1	skills assessment 1	skills assessment 2	posttest 2
Subjects date, N	11/10/17 48	11/13/17 48	11/13/17 (6 hours) 48	1/30/18 48	45*	8/2/18 19	8/2/18 35
Controls date, N	12/8/17 40	12/15/17 37		4/5/18 30	4/5/18 30**		

* 1 session with technical difficulty, 2 students absent

**5 subjects off site; 2 subjects no show

The trained students began the clinical phase of the physician assistant program three weeks after the first skills assessment session. Students have unique schedules and complete each of 11 specific clinical rotations in different order over 15 months. Clinical rotations are completed at several inpatient and outpatient sites across the state of NJ. Students return to campus twice per month for Seminar, a series of workshops, case presentations, special topic speakers, and health policy sessions. During one of the return seminar sessions, students were invited to participate in a follow up assessment session including a repeat of the post test, a short 4-question survey of observation of BCC skills in the clinical setting, and a follow up skills assessment session. A total of 35 students completed the posttest and survey. Of this group, 21 volunteered to complete the skills assessment session (SP2), however 2 sessions were not taped due to technical difficulty, leaving an N of 19 SP sessions (SP2) for review.

Low turn-out was likely due to the low stakes perception of the event, participation was purely voluntary. Students were asked to give 25 minutes of their “off” time during a busy seminar day. The original training program was part of a mandatory course and, although the skills assessment (SP session) was voluntary and students were recruited and consented prior to participation, the culture of mandatory class attendance was a strong incentive to participate. On the follow up skills assessment day, many students did present to the designated classroom and agreed to complete the survey but voiced the need to save the remainder of their free time that day to use on other chores/necessities/errands/tasks.

V.B. Impact Evaluation

V.B.1. KNOWLEDGE

Knowledge was assessed using a 10-item multiple choice test (see Appendix 4) repeated at three intervals: pretraining, post training, and 5-month follow-up. (See Table 5) The average score on the knowledge section of the pretest for the trained subjects (N=48) was 53.54

(maximum 100; range 20-90; SD 15.5); the average for the untrained subjects (N=37) was 57.57 (range 20-90; SD 15.67). Although the untrained students scored slightly higher on knowledge on the pretest, the between group difference was not significant ($p=0.245$).

After training, the average score on the posttest for the trained subjects (N=48) rose to 59.38 (range 30-90; SD 13.75), a small but significant within group increase ($p=0.049$). The scores on the posttest were lower than expected at both times. This may in part be due to the instrument. Further assessment of the tool is recommended.

The posttest session for the control group was delayed by 2 months, allowing the potential opportunity for additional exposure to BCC or similar counseling techniques in the clinical setting. However, even though the control subjects averaged another 8 weeks of full-time clinical training in academic settings, the average score for the untrained subjects (N=30) on the posttest dropped to 48.67 (range 20-70; SD 13.84), a significant reduction in score ($p=0.002$).

Confirmatory analysis was conducted comparing the change in score from pretest to posttest which showed statistical difference between groups. The average change in score on knowledge for the trained subjects (N=48) was 5.83 points (range -40 to +50); for the untrained subjects (N=37) the average change in score on knowledge was -18.11 points (range -70 to +10), a significant difference ($p<0.001$).

Follow-up repeat of the post-test 5 months following the training, while trained students were completing clinical clerkships, resulted in no significant change in knowledge in the trained group. The average score on the post-test immediately after training was 59.37 (range 30-90, SD 13.75) compared to the average score 5 months post-training 59.71 (range 20-90, SD 15.58, $p=0.997$).

Table 5. Comparison of knowledge between and within study and control groups, pre-test scores, post-test scores and score change.

N, group mean, (range), SD=standard deviation

	Subjects	Controls	(between group)
pretest mean (range) SD	N=48 53.54 (20-90) 15.5	N=37 57.57 (20-90) 15.67	p=0.245
posttest mean (range) SD	N=48 59.38 (30-90) 13.75	N=30 48.67 (20-70) 13.84	p<.001
pre to post (within group)	p=.049	p=0.002	
change in score mean (range)	5.83 (-40 to +50)	-18.11 (-70 to +10)	p<.001

V.B.2. CONFIDENCE

Four items on the pre and posttest asked subjects to rate statements designed to assess confidence on a scale of 1 (lowest) to 10 (highest). (See Appendix 4) Difference in confidence as measured via the Likert scale items from the pre to the posttest was significant for the trained subjects but not for the controls (untrained). (see Table 6) Trained students reported an increase in rating of the effectiveness of BCC (pre 9.3, post 9.54, p=.047) and a greater desire to seek further opportunities to train in BCC (pre 8.74, post 9.38, p=.002). Trained students also expressed greater confidence in assessing a patient's readiness to change (pre 6.28, post 7.79, p<.001) as well as confidence in their ability to utilize BCC (pre 6.06, post 7.69, p>.001). There was no difference in rating of any of the four items comparing post training rating scores to follow up scores 5 months later.

Table 6. Comparison of confidence within subject group based on mean ratings at pre-training, immediately after training, and 5 month follow up.
mean scores, (range), SD=standard deviation

	Pretest (N=48)	Posttest1 (N=48)	Pre/post1 comparison	posttest2 (N=35)	Posttest1/post2 comparison
1. effectiveness mean (range) SD	9.30 (6-10) 1.020	9.54 (1-10) 0.820	p=.047	9.09 (8-10) 0.631	p=.744
2. confidence in readiness mean (range) SD	6.28 (2-10) 1.741	7.79 (4-10) 1.237	p<.001	8.06 (6-10) 1.027	p=.545
3. confidence in ability mean (range) SD	6.06 (1-10) 1.949	7.69 (4-10) 1.417	p<.001	8.14 (5-10) 1.192	p=.304
4. seek opportunities mean (range) SD	8.74 (5-10) 1.276	9.38 (7-10) 0.866	p=.002	9.29 (7-10) 0.987	p=.119

Untrained students (controls) also completed the four Likert scale items confidence ratings at two time periods: at week 35 out of 52 of required clinical training and again at week 48. Scores on the four Likert items showed no difference comparing test1 and test 2 results.
(see Table 7)

Table 7. Comparison of confidence within control group based on mean ratings at pretest (test1) at week 35/52 and posttest (test 2) at week 48/52.

mean scores, (range), SD=standard deviation

	Test1 N=37; (12/15/17)	Test2 N=30; (4/5/18)	Test1/Test2 comparison
1. effectiveness mean (range) SD	9.13 (7-10) 0.897	9.33 (7-10) 0.884	p=.297
2. confidence in readiness mean (range) SD	6.57 (2-10) 1.659	6.70 (1-10) 2.020	p=.634
3. confidence in ability mean (range) SD	6.73 (2-10) 1.610	6.87 (2-10) 1.687	p=.402
4. seek opportunities mean (range) SD	8.11 (4-10) 1.76	8.10 (4-10) 1.709	p=1.00

Comparison of post-test confidence between the two groups (trained and untrained)

was mixed. (see Table 8) No difference was seen on subject rating of the effectiveness of behavior change counseling; both groups gave high scores to this item (p=.303). The trained subjects had significantly higher ratings on confidence in their ability to assess a patient's readiness to change (p=0.011) as well as on desire to seek further opportunities to utilize the skills (p<.001); however, trained subjects were no different in rating confidence in their ability to counsel patients (p=.132).

Table 8. Comparison of confidence between groups based on mean ratings of subjects posttest vs control test2.

mean score (range), SD=standard deviation.

	Posttest subjects N=48; (1/30/18)	Test2 controls N=30;(4/5/18)	p
1.effectiveness mean (range) SD	9.54 (1-10) 0.820	9.33 (7-10) 0.884	.303
2. confidence in readiness mean (range) SD	7.79 (4-10) 1.237	6.70 (1-10) 2.020	.011
3. confidence in ability mean (range) SD	7.69 (4-10) 1.417	6.87 (2-10) 1.687	.132
4. seek opportunities mean (range) SD	9.38 (7-10) 0.866	8.10 (4-10) 1.709	<.001

V.B.3. SKILLS

A total of 75 students completed the first SP session, 45 trained and 30 untrained.

Videotapes were scored once by faculty using the validated BECCI index (maximum 44 points).

A subset of 47 videos was rated by two facilitators. Discrepancies of score greater than 1 were separated for further evaluation. Only 2 tapes met this criterion, yielding a 96% concordance rate.

Students who completed the training outperformed the untrained students during skills assessment (BECCI score 40.24/44 trained vs 33.13/44 untrained, $p<0.001$). The BECCI score sheet also includes a quick estimation that assesses the approximate proportion of the interview time that the interviewer spent talking. If the interviewer (student) talked more than half the time (score 1), about half the time (score 2), and less than half the time (score 3). The trained students scored an average of 2.3/3 vs an average of 1.9/3 for the untrained students ($p=0.010$),

indicating that the trained students let the patient speak more during the interview which supports the spirit of patient-centered care.

Further analysis of the first skills assessment session was conducted by counting the frequency of directed counseling statements by the students as well as the frequency of open and closed ended questions. (see Table 9) A successful demonstration of BCC would be supported by a low frequency of directed counseling statements made by the student-practitioner; the practitioner would be expected to ask open ended questions and avoid closed ended questions. Simple frequencies provided an absolute score per subject which was entered into the spreadsheet. In general, the trained subjects outperformed the untrained subjects on this frequency count evaluation. The trained subjects did less directed counseling (trained 3.82 events in the taped session, untrained 6.37 events, $p < 0.000$) and more open-ended questioning (trained 5.4 open ended questions in the taped session vs. untrained 3.9 open ended questions, $p = 0.0137$); there was no difference in the frequency of closed ended questions (trained 5.69 closed ended questions in the taped session vs. untrained 4.87 closed ended questions, $p = 0.271$).

At the 5-month follow-up skills assessment, the trained students scored an average of 36.47 on the BECCI. Although this was lower than the average score on the first skills demonstration (BECCI score 40.24), the difference was not significant ($p = 0.093$). No significant change in frequency of directed counseling or open-ended questions was seen; however, there was a significantly lower frequency of closed ended questions (session 1: 5.69 closed ended questions per session vs. session 2: 3.34 closed ended questions per session; $p = 0.010$).

Table 9: Table 9: Mean number of times students used directed counseling statements, open ended questions, and closed ended questions: controls at week 48/52 of clinical training vs. subjects at posttest1 (end of training) and posttest2 (5 months follow up).

Mean frequency; SD=standard deviation.

	directed counseling	open ended	closed ended
controls, N=30			
mean frequency	6.3667	3.9000	4.8667
SD	(2.99)	(2.29)	(3.56)
subjects, posttest1, N=48			
mean frequency	3.82	5.4	5.69
SD	(1.77)	(2.82)	(2.33)
p-value*	<0.001	0.0137	0.271
subjects, posttest2, N=19			
mean frequency		5.8235	3.2353
SD	4.3529 (2.80)	(2.35)	(1.60)
p-value**	0.7963	0.4930	0.0100

*comparison of controls vs subjects

**comparison of subjects posttest vs. 5 months follow up

V.B.4. POTENTIAL CONFOUNDING VARIABLES

Five possible confounding variables (age, gender, health care related experience prior to enrollment in PA school, patient care experience prior to enrollment in PA school, and desire to enter primary care) were chosen, based on anecdotal evidence, as potential variables that may predict successful training outcomes. Distribution of scores for age and experience approached normal. The sample was predominantly female. Simple correlations were run for each of these variables against scores on knowledge assessment (score), two confidence score/ratings (Likert average), and skills performance (BECCI score). (See Table 10) Results for both cohorts were overwhelmingly nonsignificant. The only variable to meet the $p \leq .10$ criterion for possible inclusion into a model was a negative correlation between the number of direct patient experience hours prior to enrollment and score on the BECCI skills rating tool. This stand-alone value was thought to be spurious as it did not fit into any logical hypothesis. The sample is small,

and the lone data point of significance is unimpressive, therefore, no further attempt to build a model was attempted.

Table 10. Knowledge, confidence, skills correlations with 5 potential confounding variables, subjects and controls. [Pearson for parametric; Spearman for nonparametric]

Correlation r (p value); **bolded**= significant at $\alpha \leq 0.10$.

10A. Subjects (Class of 2019, trained); N=48

	age	gender	total healthcare experience*	direct patient care**	desire to work in primary care
knowledge (posttest scores)	-.151 (.301)	.231 (.113)	-.018 (.907)	-.009 (.949)	.011 (.939)
confidence 2 (readiness)	.187 (.202)	-.107 (.500)	.025 (.872)	.052 (.726)	.102 (.490)
confidence 3 (ability)	.004 (.979)	-.118 (.423)	-.068 (.656)	.065 (.661)	.074 (.616)
(skill) BECCI score	.071 (.786)	-.251 (.330)	.076 (.628)	-.314 (.034)	.018 (.907)

10B. Controls (Class of 2018, untrained); N=30

	age	gender	total healthcare experience*	direct patient care**	desire to work in primary care
knowledge (posttest scores)	-.044 (.816)	-.012 (.950)	.068 (.715)	-.067 (.722)	.199 (.299)
confidence 2 (readiness)	.064 (.737)	-.211 (.210)	.186 (.278)	.024 (.887)	.036 (.833)
confidence 3 (ability)	.030 (.875)	-.011 (.947)	.023 (.893)	.036 (.831)	-.044 (.798)
(skill) BECCI score	.058 (.761)	.059 (.756)	.057 (.764)	-.197 (.297)	.035 (.857)

*=total number of health care hours experience prior to enrollment

**=total number of direct patient care hours experience prior to enrollment

V.C. Process Evaluation

Process evaluation was conducted to assess how well the program was implemented and identify areas in need of revision to improve future delivery of the BCC training. Process evaluation included observation of training activities and assessments by the PI as well as feedback from the participants (students), the facilitators, and the SPs. Process evaluation data

via Likert scale survey items and open-ended questions was extracted from anonymous daily student evaluations, final course evaluations, and facilitator debriefing sessions and written evaluations. Response frequencies to all Likert items were calculated and open-ended questions underwent thematic analysis. Written comments on evaluation forms and notes taken during debriefing sessions were reviewed by facilitators searching for patterns within the responses. Using both an inductive and deductive approach, key concepts were organized into major themes. Any discrepancy of analysis was re-examined by the PI and facilitators until consensus was made.

For each training day, all 48 students arrived on time and moved to specific locations for activities in an orderly fashion. Classroom activities were completed within the time frame assigned; perhaps too much time was allowed for one activity on Day 1, the Venn diagram depicting the spirit of MI/BCC. Although 10 minutes was allotted for this activity, it was completed within less than 5 minutes. Students were observed to be active and attentive during the didactic training (Day 1) as well as the active learning (role play) session (Day 2). One group experienced technical difficulty at the start of Day 2 role plays leading to the loss of one role play videotape out of the three for that group.

V.C.1. Student evaluations

Written evaluations (anonymous) using the Physician Assistant Program standard student evaluation instrument were completed by all students (N=48) after the 3-hour didactic training (Day 1) and after the role play session (Day 2). The instrument consists of 10 Likert scale items and 4 open response questions. Responses to the 10 Likert scale items were overwhelmingly positive each day of training (Table 10A and 10B) No item received any rating of “disagree” or “strongly disagree.”

Table 11. Subject group responses to evaluation statements, by frequency and percentage (N=48).

11A. Day 1.

		strongly disagree or	agree	strongly agree	no response
1	The objectives for today's session were clearly stated.	0	12 (25)	36 (75)	
2	Participation and interaction were encouraged.	0	10 (21)	38 (79)	
3	The topics covered were relevant.	0	14 (29)	34 (71)	
4	The content was organized and easy to follow.	0	10 (21)	38 (79)	
5	The materials distributed were helpful.	0	18 (38)	29 (60)	1
6	The trainer was knowledgeable about the topics and skills.	0	6 (13)	42 (88)	
7	The trainer was well prepared.	0	5 (10)	42 (88)	1
8	The objectives for the day were met.	0	8 (17)	39 (81)	1
9	The time allotted for the activities was sufficient.	0	16 (33)	32 (67)	
10	The facilities were adequate and comfortable.	0	13 (27)	35 (73)	

Table 11B. Day 2.

		strongly disagree or disagree	agree	strongly agree	no response
1	The objectives for today's session were clearly stated.	0	11 (23)	36 (75)	1
2	Participation and interaction were encouraged.	0	8 (17)	40 (83)	
3	The topics covered were relevant.	0	8 (17)	40 (83)	
4	The content was organized and easy to follow.	0	14 (29)	33 (69)	1
5	The materials distributed were helpful.	0	15 (31)	32 (67)	1
6	The trainer was knowledgeable about the topics and skills.	0	5 (10)	43 (90)	
7	The trainer was well prepared.	0	7 (15)	41 (85)	
8	The objectives for the day were met.	0	6 (13)	42 (88)	
9	The time allotted for the activities was sufficient.	0	7 (15)	41 (85)	
10	The facilities were adequate and comfortable.	0	6 (13)	42 (88)	

Additional details for each training day are provided next.

V.C.1.a. Day 1

Items receiving the highest percentage of “strongly agree” ratings after Day 1 included: “The trainer was knowledgeable about the topics and skills.” (88%); “The trainer was well prepared.” (88%); and “The objectives for the day were met.” (81%).

The open-ended evaluation questions were analyzed for general themes. Responses ranged from simple one-word answers to fuller responses with multiple answers. (Table 12) At the conclusion of Day 1, when asked what students liked most about the day’s session, the most popular theme centered around the opportunity to work in groups and interact with other students. Students also reported that they appreciated learning new techniques to use when interacting with patients; two students mentioned specific techniques (the change ruler, open-ended questioning). Many students reported that the videos were very helpful, but it is unclear if by “videos” the students were referring to the instructional videos (Dr. Matulich) or the videos demonstrating bad techniques versus good techniques. Each of the videos was followed by robust discussions with energetic interactions among the students.

When asked what aspects of the training could be improved, the most frequent theme reported from students was a desire for additional opportunities to practice and to participate in role plays or patient simulations utilizing the skills and receiving feedback. Several students commented that the videos were slow and/or passive; a few students commented that the session was too long and too early in the morning,

The two major themes emerging from the question “How do you think this training will impact your practice as a PA?” were improved communication skills and learning strategies to address behavior change with patients. Students also reported that they would likely show more

empathy towards patients, use more facilitative and supportive listening skills and increased compassion, and be less judgmental towards patients.

When asked to reflect on opportunities for additional training, students again reported that they desired more practice with the skills including more role plays, patient simulations, and examples of good technique. A second theme to emerge was a desire to learn how to communicate with patients who do not want to change or with patients with psychiatric illness.

Table 12. Themes from content analysis of subject comments, Day 1 (N=48).

Item	Theme	Number of responses
What did you like most about today's session?	working in groups, interactive format	14
	the videos	13
	new techniques	13
	the activities	3
	relaxed atmosphere	1
What aspects of today's training could be improved?	more practice, role plays, simulations, examples	10
	videos slow, passive	7
	session too long	3
	session too early in the morning	3
	location	1
How do you think this training will impact your practice as a PA?	improved communication skills	19
	strategies to address behavior change	14
	more empathy towards patients	7
	facilitative and supportive listening	7
	increased compassion	3
	be less judgmental	1
	think before speaking	1
	improved confidence	1
What additional training would you like to have in the future regarding patient counseling?	more practice, role plays, case studies	19
	how to approach patients who do not want to change behavior	3
	how to discuss sensitive topics	3
	how to communicate with psychiatric patients	2
	how to assess problems that are not the primary reason the patient presents	1
	time management	1

V.C.1.b. Day 2

At the conclusion of Day 2, the survey items receiving the highest percentage of “strongly agree” responses included: “The trainer was knowledgeable about the topics and skills.” (90%); “The objectives for the day were met.” (88%); and “The facilities were adequate and comfortable.” (88%).

The overwhelming theme emerging from the open-ended questions after Day 2 (Table 13) was a desire for more practice: having the opportunity to practice was the most liked aspect of the session followed by the opportunity to get feedback from both faculty and peers. Students also reported that the environment was comfortable and safe. Suggestions to improve the session included revisions to the patient scenarios including more detailed information to facilitate the role plays, more complex patient histories, and the opportunity to practice using a behavior change of their choice rather than a pre-set script provided by the facilitator. A few students expressed a desire to redo the role play after viewing and discussing the video, although that would require more time dedicated to the session which is difficult in an already tightly packed PA curriculum.

The majority of students reported that the training and practice sessions would impact them positively as practicing PAs including having better skills to engage with patients, being sure to guide patients rather than direct patients, and a greater comfort discussing behavior change with patients. Similar to the responses after Day 1, students wanted more practice in general as well as practice using the techniques with sensitive topics or more complicated patient interactions.

Table 13. Themes from content analysis of subject comments, Day 2, N=48.

Item	Theme	Number of responses
What did you like most about today's session?	opportunity to practice	24
	getting feedback from faculty and peers	12
	being able to play all three roles (patient, practitioner, observer)	5
	open, comfortable, safe environment	5
	active learning	3
What aspects of today's training could be improved?	hold practice session closer in time to the didactic session	5
	improved patient scenarios	5
	ability to repeat practice after viewing the tape	5
	more time in each role	2
	clear staff instruction	2
	handouts with definitions of terms	1
How do you think this training will impact your practice as a PA?	better skills to engage patients, guide patient, facilitate change	23
	use open-ended questions, choose words carefully, not directive	10
	more comfortable talking to patients, empathy, understanding	7
	more strategies to use	3
What additional training would you like to have in the future regarding patient counseling?	more practice, throughout the course	20
	more opportunities to get feedback from faculty and peers	3
	practice with sensitive topics	1
	psychological counseling	1
	when to use this vs directed communication	1

V.C.1.c. Overall Program, Student Evaluations

Overall the training was delivered as planned without complications. Students were engaging and demonstrated improvement in understanding patient centered BCC. An additional anonymous written evaluation for the overall training program was completed at the conclusion of the curriculum (n=48; however, 5 students submitted blank forms). The course evaluation consisted of 8 Likert scale items. (Table 14) Only one of the items ("The videotaping and review were helpful in improving my knowledge and skills.") received responses of "disagree" (2

students) or “strongly disagree” (1 student). This type of class activity can be anxiety producing task for some individuals. The vast majority of students felt this activity was worthwhile. All other items received positive responses. Most notably 85% of students agreed that: “Patient-centered BCC is effective in promoting healthy lifestyle changes.”; “The activities included in the training were appropriate to improve my knowledge and skills.”; and “I plan to apply the knowledge and skills from this training in clinical practice.”

Table 14. Subject group responses to course evaluation statements, by frequency and percentage, N=48.

		strongly disagree	disagree	agree	strongly agree	
1	The objectives of the course were clearly stated.			8 (17)	37 (79)	5
2	The training program met the stated objectives.			7 (15)	38 (81)	5
3	Patient-centered BCC is effective in promoting healthy lifestyle changes.			5 (11)	40 (85)	5
4	The skills of MI are valuable tools to enhance healthy behavior choices.			7 (15)	38 (81)	5
5	The activities included in the training were appropriate to improve my knowledge and skills.			5 (11)	40 (85)	5
6	The videotaping and review helpful in improving my knowledge and skills.	1 (2)	2 (4)	10 (21)	32 (68)	5
7	I plan to apply the knowledge and skills from this training in clinical practice.			5 (11)	40 (85)	5
8	I recommend this training to other PA students.			7 (15)	38 (81)	5

V.C.2. Facilitator evaluations

Nine facilitators participated in Day 2; each facilitator supervised 1 or 2 triads of students (consecutively, not simultaneously), directing the role play as well as coordinating videotaping via student iPads and uploading videos to a secure Google Drive folder. Each group

was assigned to a separate classroom; students and facilitators reported to assigned classrooms after a brief review of BCC and instructions by the PI. All groups completed the role plays, review of videotape with feedback, and completion of evaluations within the allotted two-hour time. Eight of the facilitators met immediately after completing the second triad of student role plays to debrief on the procedures, flow and quality of the sessions. Facilitators completed a written evaluation prior to open discussion.

All 8 responding facilitators reported that they felt adequately prepared to facilitate the role play sessions and that the students were well prepared to practice the skills of BCC through role playing. All agreed that the session went well and it was able to be completed within the time allotted. One role play scenario (“flossing”) was found to be less stimulating; recommendations to replace the scenario were discussed. Facilitators also discussed giving the students the opportunity to choose a behavior change goal of their own to role play; however, the facilitators also agreed that this may result in logistical stressors including time spent trying to decide on a behavior change goal or opening students up to revealing potentially sensitive or personal issues. Another suggestion was to have each of the three students in the group role play the same scenario; each successive iteration may show improvement in both BCC skills and peer feedback.

Facilitators were unanimous in agreement that the training and role play sessions were appropriate for PA students, thorough in content without being overwhelming, and should be continued as an integral part of the Medical Interviewing course. One facilitator captured the sessions via iPad recording but did not have the students review the tape during feedback. This facilitator admitted during the debrief that she personally did not like viewing videos of her performance and gave the students the choice whether to review the tape together as a group or on their own. She apologized for not following the directions.

The written facilitator evaluations were also positive; respondents rated each Likert item as “agree” or “strongly agree.” (Table 15) The item “I felt confident in my ability to facilitate student’s experience with this curriculum.” received the fewest “strongly agree” responses (3/8) (although the remaining respondents still indicated agreement with this statement). This may be a reflection of the newness of the curriculum and will likely improve with subsequent iterations of the session. The facilitators agreed (4/8) or strongly agreed (4/8) with two additional items: 1) “The activities included in the training were appropriate to train students regarding BCC.” and 2) “The videotaping and review were helpful in assessing student knowledge and skills.” One respondent wrote that the cases should be more complex.

Table 15. Facilitator responses to facilitator evaluation, by frequency and percentage, N=8.

	Item	strongly disagree or disagree	agree	strongly agree	no response
1	The objectives of the course were clearly stated	0	2 (25)	6 (75)	
2	The training program met the stated objectives.	0	3 (38)	5 (63)	
3	Patient-centered BCC is effective in promoting healthy lifestyle change.	0	1 (13)	7 (88)	
4	The skills of MI are valuable tools to enhance healthy behavior choices.	0		8 (100)	
5	The activities included in the training were appropriate to train students regarding BCC.	0	4 (50)	4 (50)	
6	The videotaping and review were helpful in assessing student knowledge and skills.	0	4 (50)	4 (50)	
7	I felt confident in my ability to facilitate student’s experience with this curriculum.	0	5 (63)	3 (38)	
8	I recommend this training to other physician assistant programs.	0	2 (25)	6 (75)	

The open-ended questions on the written feedback supported a desire for more practice for both faculty facilitators and students, although one facilitator added that in the ideal world, we would want to be able to provide additional practice with many of the skills

within the course but are constrained by the overall limitations of the PA curriculum. Final comments were positive and encouraged more applied learning sessions to be incorporated within the course.

V.C.3. Standardized Patients Feedback

Students participated in structured BCC sessions using standardized patients (SPs) two weeks after the role play sessions and again at the 5 months follow up. SPs were hired through the Clinical Skills Coordinator program at RWJ Medical School. SPs were given a brief (10 minute) introduction to behavior change counseling (Appendix 5) and instructed to be somewhat reluctant to change but not resistant to change. The spirit of BCC as one of patient centered counseling where the clinician (student) is guiding the conversation but not directing was emphasized. SPs knew that the goal of the session was to discuss strategies to increase physical activity in their busy daily lives. They were provided with a brief script depicting a patient that is otherwise healthy but has an elevated blood glucose level meeting the criteria for pre-diabetes. The SPs were told that the only exercise the patient currently included in their daily lives was walking their dog for about 15 minutes daily. The SPs were instructed to tell the student that they had an appointment with the nutritionist if the student introduced the subject of dietary changes.

The PI met with the 7 SPs immediately after the completion of the tapings for a 20-minute debriefing. Each SP completed 6-8 sessions; all sessions were captured on video through the RWJ Media department. SPs unanimously reported that they felt adequately prepared to play the patient in this session. One of the SPs stated that the sessions prompted him to actually plan new ways to increase physical activity going forward. SPs reported that the majority of students appeared comfortable and confident in the sessions, listened well and encouraged the patient to discuss the situation. One SP stated that he felt the student should talk more and give

more advice; interestingly another SP then reminded the group that the point of the session was to have the patient do most of the talking and not be told what to do. This launched a 10-minute discussion of how important it is to be listened to as a patient and that more students should be trained in this way. SPs were grateful for the opportunity to train the students in listening skills. All SPs agreed that they were treated with respect and felt safe discussing health behavior issues with the student.

VI. Discussion

This feasibility pilot project evaluated a training program designed to provide PA students with instruction in the spirit and skills of behavior change counseling (BCC). A complete and thorough program evaluation, including both process and outcome evaluation, supported the incorporation of BCC training in PA education. The core skills of BCC foster the guided communication skills necessary to promote the positive lifestyle changes needed to reduce risk factors of chronic disease. PAs are integral members of the health care team who have the responsibility to make each patient encounter productive through optimal communication and counseling regarding lifestyle risk.

BCC, modeled on a patient-centered, collaborative culture embraces a practical, patient centered framework to promote healthy behavior change through communication using the basic elements of motivational interviewing (MI): open ended questioning, affirmations, reflections, and summarizing.^{27,30} The clinician is a partner, guiding the individual to explore their intrinsic motivation to facilitate growth toward positive change. A steadily expanding collection of data supports BCC as an effective method in the primary care setting, especially in the realm of chronic disease prevention and management.^{19,20,25,26,60} The rapport developed through effective communication is the first step, laying the foundation for effective counseling. The resulting positive behavior changes will result in reduced risk for chronic disease and poor clinical outcomes.

Medical clinicians, including PAs, are trained from an acute-care medical perspective. Behavioral medicine experts have a deeper understanding of human behavior and a greater armamentarium of skills necessary for effective long-term therapy utilizing the full scope of MI.⁶¹ A very important issue to emphasize in primary care is the role of referral to behavior medicine experts. A successful implementation of BCC in the primary care setting must include

knowing when to refer to behavioral medicine experts for long-term, deeper therapy when appropriate. However, there is ample opportunity in primary care to provide brief interventions using evidence-based methods such as BCC to initiate behavior change.^{20,26,61} Brief interventions can be very successful in primary care by initiating movement toward healthy lifestyle behaviors. A brief intervention may be the first step in a patient's journey toward positive change, either through referral to long term counseling with a behavior medicine expert or, when appropriate and acceptable to the patient, via follow up with the primary care clinicians.²⁰

Behavior change is an essential component in the public health efforts to reduce the burden of chronic disease and success with behavior change in primary care is vital to the success of this goal. Clinicians can use BCC in the primary care setting to reach individuals reluctant to engage in long term counseling or to seek out services outside of the traditional physician-based setting. Physicians are one player in primary care; BCC training has also been successful with nurses, health educators, and other allied health professionals.^{30,31,62} This project provides evidence that PA, as respected and qualified primary care providers, should be included in the group targeted for BCC training.

Research has shown that clinicians can successfully mirror BCC during structured training in brief counseling such as BCC and that application of these skills in practice is correlated with better clinical outcomes.^{25,32,40,41} Further research continues to investigate best practices in BCC training. Dragomir et. al⁶⁰ published a systematic review of 9 controlled trials of BCC training. Training programs varied in structure but shared the basic philosophy and skills of BCC. All studies reported significant improvement in skills. Outcomes across studies highlighted increased use of open-ended questions, incorporating reflections and summarizations, a spirit of partnership and collaboration, eliciting readiness for change, and empathy scales. This evidence supports targeted training programs for clinicians in practice but lacks rigorous follow up in real-

time settings. Training programs were deemed most successful if they emphasized the spirit of MI as a priority objective for the training program. No consensus could be made on the structure, length, content, and assessment standards for training programs.

Cook, et. al⁶² reviewed 10 years of interprofessional training of practicing clinicians in BCC and declared that BCC is a growth industry that should be brought to the initial medical training arena as standard education. Although this research group could not arrive at a final recommendation regarding recommended structure, length, or avenues to assess the impact of BCC training, they offered a consensus on content: establishment of collaborative efforts, utilization of OARS, assessing readiness to change, and eliciting change talk. The spirit of MI is consistently stated to be the most important component of any behavior change counseling training effort.

Studies have also provided data to illustrate successful BCC training in medical and other health care students.⁴²⁻⁴⁷ Few studies include PAs or PA students, thus the importance of this research project. PAs fulfill an important role on the clinical team. The number of patients seen by PAs has been increasing steadily over the past two decades. The proportion of Medicare practice settings operating within a shared model of physician plus advanced practice clinician (PA or NP) rose from 11.9% to 23.3% between 2009 and 2014 with projections for further increase.⁶³ A 2019 report found that 35% of clinicians practicing in non-rural primary care settings were either PAs or NPs.⁶⁴

PAs are trained in the medical model with a foundation in primary care. Following graduation, PAs enter all aspects of clinical medicine but must maintain recertification through examination with a primary care core. This structure allows PAs lateral movement across specialties in the workforce. In every setting, there is opportunity to advocate for healthy

lifestyle/behavior choices in patients. The value of the patient as a partner in care is inherent in the competencies of the practicing PA, regardless of practice setting.⁶⁵

As more and more patients receive care from PAs, further research evaluating best practices for PA training programs to build skills in effective communication and patient education will be needed. It is important that PA programs include opportunities to develop the knowledge and skills to facilitate positive behavior change in patients. A brief training in BCC has the potential to fill that educational need, as supported by this pilot research project.

Physician assistant is one of the fastest growing occupations in the United States. The US Bureau of Labor Statistics places PA as one of the fastest growing health care professions with a projected increase of 37% over the next ten years.⁶⁶ PAs in every type of practice are responsible for educating patients in both primary prevention of chronic disease as well as acute and chronic disease management. At the utmost concern in this management is lifestyle change. PAs can be effective change agents.

Health care is fast paced; efficient, thorough, accurate communication is essential. This is especially important in the flow of information between the clinician and the patient. Lifestyle change is difficult. The PA holds an important position on the team, working with the patient and to guide their self-directed quest toward healthy choices. BCC provides an effective method for PAs to help patients identify their ambivalence toward change and evoke their intrinsic motivation to change. The collaborative spirit of BCC is driven by compassion and acceptance which are core values included in the Ethical Guidelines for the PA profession.⁶⁷

This pilot program assessed a focused curriculum designed to improve knowledge and facilitate skill development in PA students utilizing the techniques of BCC. BCC training that is incorporated into standard medical training, rather than introduced to clinicians later while in practice, has the added potential to have BCC become engrained as standard clinical practice

and, therefore, lead to more successful implementation in the clinical setting.⁶² Promotion of health/wellness behavior and lifestyle factor options will lead to reduction in chronic disease—both primary prevention of chronic disease AND tertiary prevention of the complications and morbidity of chronic disease. Incorporating skills of BCC early in training of PA students will be a strong force moving BCC into standard practice. PA students vested with the skills of BCC during initial training will practice within a framework of BCC and facilitate the change needed to improve chronic disease outcomes.^{62,68}

PA education is challenging; it is compressed in time and very rigorous. Programs must include instruction across a wide range of standards in a short period of time. The exponential growth in understanding of disease states, coupled with the multitude of clinical and technological advances, leaves little room for additional training in the typical PA curriculum. However, even within this fast-paced learning environment, faculty and students both cite effective interaction as priority and desire additional opportunities to hone their skills in efficient yet effective communication and patient interaction skills. Any training program that is to be implemented in PA training must be focused and efficient in implementation. The results of this pilot study of BCC training are very promising. The 6-hour curriculum was easily incorporated into the existing PA curriculum. Faculty were enthusiastic and readily trained in both BCC skills and facilitation of training. Change in knowledge scores, although in a positive direction and statistically significant pre to post test, was not large. Further evaluation of the tool and/or the training are suggested.

Assessment of this brief but focused training curriculum provides strong evidence that physician assistants are appropriate for BCC training. The change in scores pre to post-training in confidence and skill building were significant within the trained group as well as in comparison to a similar but nontrained cohort of students. Both process and outcomes evaluation were

successful. The multi-modal interactive training curriculum was effective in producing change in both knowledge and skills. The quality of simulated performance by the trained cohort and the requests for additional opportunities for practice provides evidence that supports expansion of BCC training in PA education.

VI.A. Strengths

The greatest strength of this study is its multimodal and comprehensive examination of a range of outcomes that separately and together support BCC training for PA students. The training offers a brief yet focused curriculum designed for developing students during initial skills-building, before entering the clinical arena. The BCC training was delivered efficiently in two sessions. This brief training program was designed by PA educators with input from PA students and graduates in clinical practice. Faculty were supportive of the goals and objectives of the training, engaged in the delivery and assessment of the training, and enthusiastic in their feedback following the training. Additionally, the tool used to evaluate student skills (BECCI) is easy to use and designed for a single pass through in scoring.²⁷ It can be used as a spring board for feedback to the student as well as for overall assessment of skills.

The skills gleaned from the training were assimilated into the trainee's culture of professional behavior. Endurance of skills was evident at 5 months; although this does not necessarily prove that skills will not be lost, it does provide evidence that skills will not devolve. This supports the pursuit of further training and research regarding training and utilization of BCC by PAs. Periodic assessment of skills throughout the clinical phase of PA training is recommended. Long term follow-up of BCC training in PA education and its impact in the clinical setting is a larger project that should be designed and carried out by a team of experts.

Physician assistant programs, pressed to deliver a thorough training program in a very short amount of time, are eager for succinct, focused programs that are evidence-backed. This

pilot study of a BCC training curriculum provides a framework for further curriculum development and assessment of BCC in PA education.

VI.B. Limitations

This research project, however, is limited in design and scope. The data is from a single PA training program with a relatively small sample size. The project is not an experimental design as student randomization was not practical. Subjects were from two separate class cohorts which may have limited their comparability. Although follow up assessment was limited to 5 months post training and the project did not include assessment of real-time skills applied in true clinical settings, results support the endurance of skills and knowledge and, most especially, a desire to learn and practice more. A majority of study respondents who completed the follow up survey 5 months post-training stated that they did not observe BCC in practice during clinical clerkships. If students did observe BCC in practice, it was most likely encountered during psychiatry/behavioral health clerkships. The lack of clinical mentors demonstrating BCC is a major issue that needs further consideration in academic medicine. Failure to engage in BCC skills with clinical preceptors risks the erosion of the student's perceptions of the value and merit of BCC. The majority of respondents voiced a desire for additional training and opportunities to apply the skills in practice, regardless of whether they observed BCC in practice; this desire should be fulfilled.

Although comparison of demographic factors (age, gender, previous experience and self-reported interest in pursuing primary care as a graduate PA) showed no significant difference between the two cohorts, there is still potential for bias. The control cohort was a year ahead in training and completing clinical clerkships in a variety of settings and institutions at the time of assessment. There was potential for contamination through experience and

maturation. It was not practical to control for clinical exposure due to the small cohort of students and complex variety of clinical settings and preceptors.

The two cohorts also attended PA seminar sessions together twice per month and may have discussed the project with each other. Students in the trained cohort may have shared some of the concepts of BCC with their colleagues, especially those who thought the training was of great value and practical use. Seminar students discuss cases, etc. in small group and larger presentations; the spirit of MI/skills of BCC may have been discussed at this time between members of the two cohorts.

The training and the assessment were both conducted in structured, simulated conditions. The control subject students completed their assessments at separate calendar times than the training students, separated by a maximum of 8 weeks. Interaction among the student groups during that time may have influenced scores. Students in clinical training programs often behave in ways to please the teacher or researcher. Students in both cohorts had a relationship with the PI and all faculty involved in both delivery and assessment of the training program. Relationships between students and faculty in PA training is traditionally positive and upbeat. Faculty are eager for students to thrive and succeed. The mutual encouragement and support evident between the faculty and students has a potential to bias student behavior as well as faculty scoring toward the expected outcome.

VII. Conclusion and Recommendations

PAs are expanding their presence in primary care, including as advocates of health promotion. PAs are also increasingly more responsible as managers of chronic disease. PA education must include training in the most effective skills to promote successful behavior change in patients in order to both prevent and manage chronic disease. BCC is an effective, validated skill that is appropriate for brief interventions in clinical practice with the potential to facilitate significant reduction in the behavior/lifestyle risks associated with chronic disease. This pilot project provides evidence that training in BCC can be helpful and useful to PAs.

Additional research to evaluate the training and application of BCC with PAs and PA students is needed. Further research is needed to evaluate this BCC curriculum across PA programs that operate under different educational models, faculty and student demographics, academic philosophy and program missions. Data is needed to evaluate the best setting, structure, and implementation of training as well as ongoing evaluation of training in simulated settings and actual clinical settings.

VI.A. Further research is recommended on several fronts.

- Research should continue to assess the circumstances where BCC is best utilized in the primary care setting. Areas of patient care with potential for effective change using BCC include nutrition, medication adherence, exercise, and stress reduction, among others.
- Research should also assess guidelines for clinicians to properly refer patients to behavioral medicine experts for more intensive therapy as needed.
- Research should expand beyond analysis of training programs and into analysis of proficiency of real-time application of BCC in the clinical setting including clinician performance and patient outcomes.

- Research is needed to assess the role of follow up training or coaching sessions with health care practitioners in actual treatment settings. Schwalbe et al.⁶⁹ examined 21 papers describing training programs that emphasized MI skills with clinicians. They concluded that clinicians completing training programs that include a minimum of three post-training follow up sessions were significantly better at BCC in the workplace. Both performance scores and confidence scales were significantly higher in those clinicians completing the follow up sessions indicating greater sustainability of skills with ongoing support and mentorship. As evidence is collected and curricula are analyzed, perhaps alternative models of fostering BCC in health professionals and students, including PA, will be identified.

This BCC training program was successful and will continue with a secured position within the didactic phase of the Rutgers PA Program. The structure of the curriculum, the activities to enhance learning, the experiential role playing, and simulated exercise should be disseminated through PA education via educational conferences, workshops, and publications. Additional studies with larger sample sizes, combining and comparing performance of students from various programs, will provide opportunities to improve delivery and assessment of the training. Ultimately, methods to evaluate the bridge between simulated, structured training and actual practice can be designed.

VI. B. Final Recommendations

At this time, reflecting on the experience of delivering and analyzing this BCC curriculum with PA students, the following 7 general recommendations for designing a training program are offered:

1. Have clear objectives and expectations. Both faculty and students will benefit from knowing the purpose of the sessions. Trainees who understand what is expected of them at the beginning of training are more likely to conform to expectations.

2. Faculty buy in is essential. Those leading the experiential settings must reflect upon and believe that BCC is an effective skill. Faculty must be comfortable with their skills in BCC as well as their ability to facilitate a trainee group.

3. Provide a theoretical background. A short overview of the basic philosophy and history of motivational interviewing and the development of specific BCC skills helps the trainee understand the place of BCC in health promotion. An understanding and support of patient centered medicine is essential.

4. Provide evidence of effectiveness and ease of use. PA students are adult learners, driven to excel in a stressful academic environment. Tasks are examined for practical value. Students often make choices based on perceived priorities of the learning task. If learning sessions are perceived as entirely theoretical, without evidence of clinical impact, students are less likely to buy in. Both faculty and students must accept BCC as valuable and effective in order to assure successful training and incorporation of BCC skills into clinical practice.

5. Emphasize the spirit of BCC. Collaboration, acceptance, evocation, and compassion are the basic foundation to successful patient-practitioner relationship. This spirit is emphasized in BCC.

6. Include experiential learning and skills practice. Active learning has a much greater chance at success. Passive learning has its role, but active learning assures enhanced understanding and greater potential for proper application.

7. Include opportunities to reflect. Both students and faculty should be encouraged to stop and review the experience and its impact on self-development. Reflection provides the

opportunity to assess learning, check whether objectives and expectations have been met, identify strengths and weaknesses of the training program, and obtain input that may not have been captured during the training. Reflection can be written or verbal through focus groups or other means.

In conclusion, BCC training programs should be incorporated into PA training curricula. The accreditation standards require instruction in patient education and counseling. BCC is a validated method of brief intervention with good data to support its effect on chronic disease. The results of this program assessment should persuade all PA programs to expand BCC training. Dissemination of program design and program assessment is needed; further research is recommended.

VIII. Appendices

Appendix 1.

Rutgers University PA Program, Patient centered behavioral counselling curriculum.

Approved June, 2016.

Course description/course goal: This 6-hour curriculum is designed for physician assistant (PA) students to learn and experience patient centered behavioral counselling with an emphasis on the basic skills of brief motivational interviewing (BMI). Students will engage in activities designed to foster a culture congruent with the spirit of patient centered counseling with the goal of applying the concepts and skills of this counselling style in interactions with patients.

Course objectives: at the end of the training, PA students will be able to:

1. define patient centered behavioral counselling and brief motivational interviewing
2. defend the importance of listening and differentiate the three styles of communication (directing, following, and guiding)
3. describe the four fundamental processes of MI (engaging, focusing, evoking, and planning) and describe the sequential and recursive nature of these processes
4. develop competence with the basic skills of BMI: open ended questions, affirmations, reflections, and summarizing; evoking change talk and responding to change talk and sustain talk; assist patients in developing a plan of action
5. utilize the knowledge and skills to provide patient centered counselling in a style consistent with BMI, creating an environment of partnership, acceptance, and compassion

Session One (3 hours)	objectives	time allotted	resources
Introduction and overview of the curriculum	1. orient participants to the progression of the curriculum 2. review overall course goals and objectives	5 min	agenda, 2 sessions course objectives
baseline assessment	1. assess participants baseline knowledge and attitude regarding brief motivational interviewing	10 min	pre-test
Introduction to patient counseling	1. define patient centered counselling 2. differentiate the three styles of communication (directing, following, guiding) and delineate the appropriate use of each 3. provide a definition and brief history of motivational interviewing 4. review the transtheoretical model of change and how it can be used effectively in patient centered counseling	10 min	powerpoint
Webinar: Introduction to Motivational Interviewing Bill Matulich, PhD	1. define motivational interviewing 2. identify the four key aspects of the "spirit of MI" (partnership, acceptance, compassion, and evocation)	20 min	https://www.youtube.com/watch

motivationalinterviewin gonline.com	4. describe the four fundamental processes of MI (engaging, focusing, evoking, and planning) 5. identify the four core BMI counseling skills 6. differentiate open-ended from closed-ended questions 7. define affirmations and defend their value in establishing trust in the patient-provider relationship 8. describe four different types of reflections 9. identify summaries as a special type of reflection		?v=s3MCJZ7OGRk
communication styles	1. identify examples of directing, following, and guiding style of communication 2. describe the righting reflex and develop methods to resist the righting reflex	15 min	activity: communication styles
spirit of MI	1. define the spirit of BMI by illustrating the interrelationship of partnership, acceptance, compassion and evocation 2. explain the four fundamental processes of MI	10 min	activity: MI Venn diagram, MI processes
break		10 min	
overview of evoking change talk, sustain talk	1. define change talk and sustain talk 2. list and provide examples of different categories of change talk 3. demonstrate how to use open ended questions to evoke change talk 4. list strategies that can be used to respond to and elicit change talk	10 min	powerpoint
Webinar: Decisional Balance Bill Matulich, PhD	1. describe decisional balance tool and defend its use in brief motivational interviewing 2. demonstrate how the decisional balance tool can assist in eliciting change talk and sustain talk 3. define the change ruler and explain how it can aid in the process of evoking change talk	10 min	https://www.youtube.com/watch?v=7vJ8jBqzVqU
analyze and critique patient encounters	1. identify barriers to effective communication 2. describe examples of ineffective communication	15 min	ineffective: https://www.youtube.com/watch

	<p>3. identify examples of effective communication using strategies of brief motivational interviewing</p>	<p>?v=80XyNE89eCs mother and child, ear infection and smoking</p> <p>https://www.youtube.com/watch?v=dmmvAR6K1TQ&index=12&list=PL0Iq5_Y7Dui_KxWHbo81xvxHr3e9y_j pharmacist scolding patient who wants a nicotine patch</p> <p>revised, better: https://www.youtube.com/watch?v=URiKA7CKtfc pediatrician with smoking mother</p> <p>https://www.youtube.com/watch?v=5UU63mfNnD4 pharmacist meeting patient where he is</p>
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			with smoking
concluding remarks	elicit remarks from the class	10 min	
evaluation of the day		5 min	evaluation form

Session Two (3 hours)	objectives	time allotted	resources
check in and review	1. describe the spirit of MI as the intersection of partnership, acceptance, compassion, and evocation 2. review the four processes of MI 3. review the core skills of MI: OARS, evoking change talk, decisional balance, change ruler	20 min	activities open ended vs closed ended questions affirmations reflections summarizing change talk
role play #1	1. practice the skills of brief motivational interviewing by engaging in communication with a person who wants to make a change in their behavior 2. demonstrate reflective listening, using open ended questions, providing affirmations, reflecting back to the person, and summarizing 3. provide feedback to a colleague who is learning the skills of BMI	30 min	scenario: flossing daily
break		10 min	
role play #2	same	30 min	scenario: starting an exercise regimen
role play #3	same	30 min	scenario: medication adherence
summary of the experience		8 min	
post test		10 min	
evaluation of the course		5 min	evaluation form

Session 3: Videotaping sessions, demonstration of MI with standardized patients.

Appendix 2.

Rutgers University PA Program, Patient centered behavioral counselling curriculum
Classroom activities: OARS

I. Identifying open ended vs. closed ended questions [with key, individual assignment, submit to instructor]

I.A. You are working at a community health center. Your patient is a 38-year old male that smokes 1 ppd for the past 20 years and wants to quit. For each of the following inquiries, identify as open ended or closed ended. If identified as closed ended, suggest a substitute inquiry that is open ended.

1. At what age did you first begin smoking?

[closed; possible open: Tell me about the first time you smoked a cigarette.]

2. Have you ever tried to quit before?

[closed; possible open: Can you describe past attempts at quitting?]

3. Tell me what it's like to go without a cigarette when you want one.

[open]

4. Are you having health issues because of your smoking habit?

[closed; possible open: Describe how your smoking has affected your health.]

5. Have you tried to quit recently?

[closed; possible open: Tell me about the most recent quit attempt.]

I.B. Compose two closed ended questions that you have heard in an interview. Re-write the inquiry in an open ended structure.

II. Affirmations

Students pair up. Starting with vignette #1, each student writes an affirmation. With faculty guidance and facilitations, students review each other's responses and provide feedback to each other highlighting the strengths and/or limitations of the affirmation. At the conclusion of the 4 vignettes, student spend a few minutes discussing the activity and how they felt providing feedback to each other.

1. I have tried so many times to quit biting my nails and each time I fail. It's always something, stress from work or home, and I get so upset that I turn to biting my nails. It helps me relax a bit so I can face the stress. I know it's bad for me and I feel guilty about it and once I start, it's right back to biting them to nubs.

2. My mother is after me to lose weight. My father was obese his whole life, developed diabetes. He got serious and lost 40 pounds but died of a heart attack three months later. I've lost 4 pounds this month but I'm scared.

3. I went a six days without smoking a single cigarette. Then on Friday night I went out to a bar with friends. Right outside the bar, there was the usual group of smokers. They were laughing together and having a good time. I was so tempted! But I told my friend, we have to get away from here, I don't want to be tempted. I think he/she was annoyed because he/she really likes that particular bar. But we went to another place and it was OK.

4. My partner started going to the gym six months ago. He/she is very proud of her accomplishments. He/she is constantly nagging me to join her. But I hate going to the gym. I'm so embarrassed when others see me. I'm overweight and I can't do all the things the others are doing. I'd rather try to do something at home, like taking a walk, or doing some exercise tapes, nobody would be watching.

III. Practicing reflection

III.A. Simple reflections

Students form pairs.

Student #1 acts as the patient using the following patient dialogue. Student #2 responds with a possible reflection using one of the simple reflection techniques discussed in the webinar: repeat or rephrase; paraphrase; reflect the feelings. Student #1 identifies the type of reflection and provides feedback to the student #2 regarding how she felt when receiving the reflection. Faculty facilitates discussion of the interaction and what they learned or what could be improved.

I have started a healthy diet every New Year's Eve. I have all intentions of actually succeeding. I throw out all the junk food, I tell my family I'm going to eat healthy, I stock up on good food choices, I get myself all psyched up. But I have failed each time. One year I lasted almost a month. Last year it was only two days. Now that New Year's is coming up again, I want to try again. And this time I want to really stop. I deal with the consequences of junk food—my skin, my nails, my bowels, my mood. My family makes fun of me whenever I start talking about their bad choices.

III.B. Complex reflections

Student switch roles and repeat the exercise but provide complex reflections.

C. Simple, complex, amplified reflections.

Students read the following paragraph. Student #1 provides an amplified reflection. Student #2 responds to correct the misunderstanding. Switch roles and repeat. Together develop a double sided reflection. With faculty facilitation, students discuss the interaction and what they learned or what could be improved.

I'm such a loser. All my friends have quit smoking, why can't I? I know they are disgusted with me, they tell me I stink all the time. One of my friends made me leave my coat outside her house last week. I was so embarrassed. I know they think I'm weak, but I'm not, I can quit, I'm just not ready yet. To tell you the truth, I have quit for a whole day, but then something happens and I start again. I don't really have a good plan to quit. But I'm feeling like a loser.

IV. Summarizing

Listen to the following interview. Distinguish episodes of change talk and then write a summary statement that would be appropriate using the skills of OARS.

<https://www.youtube.com/watch?v=URiKA7CKtfc>

V. Listening and critiquing

Listen to the following interview. Identify issues of communication between the patient and the provider. Then listen to the second interview. Identify strategies of MI: open ended and closed ended questions, affirmations, simple and/or complex reflections, summaries, change talk/sustain talk. Discuss how the four processes of MI are demonstrated: engaging, focusing, evoking, and planning. Write a brief explanation of the difference between the two interviews, which interview was more effective, and why.

Poor interview examples:

1. <https://www.youtube.com/watch?v=80XyNE89eCs>

mother and child, ear infection and smoking

2.

https://www.youtube.com/watch?v=dmmvAR6K1TQ&index=12&list=PL0lq5_Y7Dui_KxW_Hbo81xvxHr3e9y_j

pharmacist scolding patient who wants a nicotine patch

Show video. Students take notes, identifying examples of ineffective communication, compile a list. At the end of the video, students share their lists with each other in groups of 3 or 4.

Revised, more effective interview:

1. <https://www.youtube.com/watch?v=URiKA7CKtfc>

pediatrician with smoking mother

2. <https://www.youtube.com/watch?v=5UU63mfNnD4>

pharmacist meeting patient where he is with smoking

Show video. Students identify effective communication, examples of the strategies of motivational interviewing. Students share their lists with each other in groups of 3 or 4.

Class reconvenes, discuss the experience.

VI. Role plays—three different scenarios. Groups of three students; take turns playing the patient, the practitioner, and an observer.

Observer takes notes while two students perform the role play.

Take no more than 10 minutes of interviewing. Have the student who played the patient describe how he/she felt during the interview; others do not comment. Then have the practitioner describe how he/she felt interviewing the patient. Finally, the observer provides feedback from their observations. Students discuss together what they learned, what they could improve.

Repeat two more times with students playing di

Practice role plays

1. You have been diagnosed with early gum disease and recommended to floss daily. You do not like the feeling of floss but understand its value. You have a hectic schedule that is varied day by day and find it hard to remember to floss.
2. You wish to reduce your cardiac risk factors including starting an exercise regimen. You do not have the funds to attend a gym. In the past you have tried exercise videos but don't stick to them more than a week or so. Your mother was recently diagnosed with ischemic heart disease.
3. You have diabetes and hypertension but you feel fine, no symptoms. You often forget to take your medications due to your busy schedule

Appendix 3.

Behaviour Change Counselling Index (BECI; Lane, 2002)

BECI is an instrument designed for trainers to score practitioners' use of Behaviour Change Counselling in consultations (either real or simulated). To use BECI, circle a number on the scale attached to each item to indicate the degree to which the patient/practitioner has carried out the action described.

Before using BECI, please consult the accompanying manual for a detailed explanation of how to score the items. As a guide while using the instrument, each number on the scale indicates that the action was carried out:

- 0. Not at all
- 1. Minimally
- 2. To some extent
- 3. A good deal
- 4. A great extent

The Topic: AHW interview with simulated patient (actor)

Item	Score
1. Practitioner invites the patient to talk about behaviour change	not at all 0 1 2 3 a great extent 4
2. Practitioner demonstrates sensitivity to talking about other issues	not at all 0 1 2 3 a great extent 4
3. Practitioner encourages patient to talk about current behaviour or status quo	not at all 0 1 2 3 a great extent 4
4. Practitioner encourages patient to talk about change	not at all 0 1 2 3 a great extent 4
5. Practitioner asks questions to elicit how patient thinks and feels about the topic	not at all 0 1 2 3 a great extent 4
6. Practitioner uses empathic listening statements when the patient talks about the topic	not at all 0 1 2 3 a great extent 4
7. Practitioner uses summaries to bring together what the patient says about the topic	not at all 0 1 2 3 a great extent 4
8. Practitioner acknowledges challenges about behaviour change that the patient faces	not at all 0 1 2 3 a great extent 4
9. When practitioner provides information, it is sensitive to patient concerns and understanding Not Applicable	not at all <input type="checkbox"/> 0 1 2 3 a great extent 4
10. Practitioner actively conveys respect for patient choice about behaviour change	not at all 0 1 2 3 a great extent 4
11. Practitioner and patient <i>exchange</i> ideas about <i>how</i> the patient could change current behaviour (<i>if applicable</i>)	not at all <input type="checkbox"/> 0 1 2 3 a great extent 4

Practitioner BECI Score: _____

Practitioner speaks for (approximately):-

More than half the time ☐

About half the time ☐

Less than half ☐

Appendix 4.

Rutgers PA Program, Patient-centered behavior counseling
Pre/Post test

1. Motivational interviewing is a _____, practitioner-directed method for enhancing _____ motivation to change by exploring and resolving ambivalence.
 - a. consequence-driven; low
 - b. superior; inadequate
 - c. primary care; outward
 - d. client-centered; intrinsic
2. The clinical technique most strongly associated with empathic or active listening is:
 - a. affirmations
 - b. summarizations
 - c. open-ended questions
 - d. reflections
3. Which of the following words is not used to describe the Spirit of Motivational Interviewing?
 - a. collaboration
 - b. expertise
 - c. evocation
 - d. compassion
 - e. acceptance
4. Resistance is a signal for the clinician to:
 - a. repeat reasons for change
 - b. use confrontation to break through resistance
 - c. ask for a time-out
 - d. respond differently
5. If someone is ambivalent, they are:
 - a. in a state of denial
 - b. struggling with competing motivations
 - c. ready to make a life change decision
 - d. avoiding the inevitable
6. Motivational interviewing is:
 - a. a way to determine the “triggers” that cause people to engage in unhealthy behaviors.
 - b. interviewing about someone’s goals and obstacles in life.
 - c. the style of interview that takes place when the clinician is exploring barriers to change.
 - d. a style, technique and approach serving to engage with others in a non-adversarial way.
7. When individuals are struggling to make the decision to take action steps to make changes resulting in new outcomes they often engage in which of the following?

- a. affirmation
- b. rolling with resistance
- d. OARS
- e. change talk

8. Empathy statements are best expressed through which interviewing technique?

- a. open ended questioning
- b. reflective listening
- c. change talk
- d. affirmations

9. Which of the following is not a value of motivational interviewing?

- a. free choice
- b. collaborating together
- c. bringing forth strength for change
- d. giving information

10. Which of the following is not a change talk strategy?

- a. summarizing
- b. elaborating
- c. using the importance ruler
- d. querying extremes

On a scale of 1 (strongly disagree) to 10 (strongly agree), please rate the following:

1. Patient-centered behavior counseling is an effective strategy to promote healthy lifestyle choices.

1	2	3	4	5	6	7	8	9	10
Strongly Disagree					Strongly Agree				

2. I am confident in my ability to assess a patient's readiness to change.

1	2	3	4	5	6	7	8	9	10
Strongly Disagree					Strongly Agree				

3. I am confident in my ability to counsel patients to change a health related behavior.

1	2	3	4	5	6	7	8	9	10
Strongly Disagree					Strongly Agree				

4. I will seek opportunities to utilize the skills of motivational interviewing in my interactions with patients.

1	2	3	4	5	6	7	8	9	10
Strongly Disagree					Strongly Agree				

Appendix 5.

Rutgers PA Program, Patient-centered behavior counseling curriculum.
Skills assessment, standardized patient (SP) guide.

You are a 54-year old who is returning for review of routine labs. Your glucose and cholesterol are both elevated. Your father had diabetes and died of a heart attack at age 62. Your mother is alive at age 73 and takes medication for high blood pressure. You have no chronic diseases and do not take any medications, including vitamins. You are an only child. Your spouse has high blood pressure and makes the effort to watch his salt and go to the gym 1-2 times/week. Neither of you smoke cigarettes. You have two children, both adults and on their own. The older child is a marathon runner.

You are in the pre-contemplative stage of change. You understand there is a need for behavior change in your life, including exercising more, watching what you eat, and losing weight. You are currently 25 pounds overweight and the only exercise you get is walking the dog once or twice per day for about a mile. You have started diet and exercise regimens many times but typically stop after a week or two. You have a sweet tooth, especially dark chocolate. You enjoy all types of food, including fruits and vegetables. You eat meat, either beef or chicken or pork, every day.

Students have been directed to use their skills to facilitate a strategy to change your diet and/or exercise regimen to reduce your risk of diabetes and heart disease. You should have some resistance to change but not absolute resistance. Be realistic, you can't make too many changes at once. Think about what you would be willing to do in this situation.

The student should be using the skills of patient-centered behavior change counselling to get you to identify your ambivalence to change—the reasons for and against the change. They should be empowering you to come up with strategies of your own.

Appendix 6.

Rutgers PA Program, Behavior change counselling curriculum.
Process Evaluation tools.

6A. Daily evaluation

1. The objectives for today's session were clearly stated.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

2. Participation and interaction were encouraged.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

3. The topics covered were relevant.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

4. The content was organized and easy to follow.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

5. The materials distributed were helpful.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

6. The trainer was knowledgeable about the topics and skills.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

7. The trainer was well prepared.

- ☐ strongly agree

- ☐ agree
- ☐ disagree
- ☐ strongly disagree

8. The objectives for the day were met.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

9. The time allotted for the activities was sufficient.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

10. The facilities were adequate and comfortable.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

1. What did you like most about today's session?

2. What aspects of today's training could be improved?

3. How do you think this training will impact your practice as a PA?

4. What additional training would you like to have in the future regarding patient counselling?

5. Please share other comments or expand on previous responses.

6B. Course Assessment

1. The objectives of the course were clearly stated.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

2. The training program met the stated objectives.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

3. Patient-centered behavior counseling is effective in promoting healthy lifestyle change.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

4. The skills of motivational interviewing are valuable tools to enhance behavior change counseling.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

5. The activities included in the training were appropriate to improve my knowledge and skills.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

6. The videotaping and review were helpful in improving my knowledge and skills.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

7. I plan to apply the knowledge and skills from this training in clinical practice.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

8. I recommend this training to other physician assistant students.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

6C. Course Assessment--Facilitators

1. The objectives of the course were clearly stated.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

2. The training program met the stated objectives.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

3. Patient-centered behavior counseling is effective in promoting healthy lifestyle change.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

4. The skills of motivational interviewing are valuable tools to enhance healthy behavior choices.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

5. The activities included in the training were appropriate to train students regarding behavior change counseling.

- ☐ strongly agree
- ☐ agree
- ☐ disagree
- ☐ strongly disagree

6. The videotaping and review were helpful in assessing student knowledge and skills.

- ☐ strongly agree
- ☐ agree

- disagree
- strongly disagree

7. I felt confident in my ability to facilitate student's experience with this curriculum.

- strongly agree
- agree
- disagree
- strongly disagree

8. I recommend this training to other physician assistant programs.

- strongly agree
- agree
- disagree
- strongly disagree

9. What went well with this training experience?

10. What could be improved in this training program?

11. Any further comments:

6D. Standardized patient feedback

Score the following aspects of the experience using the scale: 1 (lowest) to 5 (highest)

The student introduced themselves at the beginning of the encounter.	1	2	3	4	5
The student was able to establish good rapport with me during the encounter.	1	2	3	4	5
The student listened to me throughout the encounter.	1	2	3	4	5
The student allowed me to express my concerns throughout the encounter.	1	2	3	4	5
I felt adequately prepared to perform as a standardized patient.	1	2	3	4	5
What overall score do you give the student in this encounter?	1	2	3	4	5
Other comments:					

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