PROMOTION OF COLORECTAL CANCER SCREENING COMPLETION THROUGH TRAINING OF PATIENT NAVIGATORS

AN EVIDENCED-BASED QUALITY IMPROVEMENT PROJECT SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAIʻI AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF NURSING PRACTICE

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Abstract

Background: Colorectal cancer (CRC) is the second leading cause of cancer death (National Cancer Institute [NIH], 2019), responsible for an estimated 53,200 deaths in 2020 in the U.S. (American Cancer Society [ACS], 2020). Despite numerous benefits of routine screenings for CRC, completion rates nationally remain low. Increasing CRC screening rates to diagnose the disease in early stages and to reduce the mortality rates is a major public health priority. Patient navigation (PN) is an emerging intervention that has been found to be highly effective in increasing CRC screening participation. Although beneficial, PN programs are resource intensive, thus training of existing clinical staff to be navigators may be more practical and feasible for some primary care clinics. **Purpose:** The purpose of this evidence-based practice (EBP) and quality-improvement project was to increase clinical staff members' knowledge and confidence levels by providing them a PN training session focused on CRC screening and motivational interviewing. **Results:** Participants' perspectives toward understanding of CRC (p = 0.01) and motivational interviewing (p = 0.000001), and confidence levels in patient counseling and education (p = 0.001) significantly increased after the training session. The knowledge assessed by multiple-choice questions mostly increased as well; however, the difference between pre- and post-tests were not statistically significant. A majority of the participants reported the highest scores for project evaluation questions. **Discussions/Conclusions:** This project successfully increased familiarity with the topics and confidence levels towards patient education and counseling for clinical staff members at a primary-care setting. The training session was well-received. The findings implied that clinical staff can play role as patient navigators and support the effort to increase CRC screening rates in today's busy primary-care setting where providers often have limited time to address the topic during regular patient encounters.

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Promotion of Colorectal Cancer Screening Completion Through Training of Patient Navigators

Introduction

Colorectal cancer (CRC) is one of the most common types of cancer among men and women worldwide. In the United States, it is the second leading cause of cancer death (NIH, 2019), responsible for an estimated 53,200 deaths in 2020 (ASC, 2020). Depending on the type of screening test, 15–33% by fecal occult blood testing (FOBT), 25–50% by sigmoidoscopy, and 60–70% by colonoscopy, routine screening of adults over age 50 can reduce mortality from CRC (Hawitson et al., 2008; National Cancer Institute [NCI], 2019). Additionally, some case-control studies indicate the incidence of CRC can also be reduced by colonoscopy, because potentially cancerous polyps can be removed during the examination (Brenner, Chang-Claude, Seiler, Rickert, & Hoffmeister, 2011; Doubeni et al., 2013; NCI, 2019). Age is a major risk factor for CRC; more than 90% of individuals diagnosed with CRC are older than 50, with the median age of diagnosis being 66 (ACS, 2020). The U.S. Preventive Services Task Force (USPSTF, 2016) currently recommends that men and women aged 50 to 75 receive CRC screening tests including the following: stool-based test (annual or every 3 years depending on test type), sigmoidoscopy every 5 years (although availability of sigmoidoscopy has declined in the U.S. [USPSTF, 2016]), or colonoscopy every 10 years. The ACS updated their CRC screening guidelines in 2018, lowering the age to begin screening from 50 to 45 and keeping the age to stop routine screening at 75, because their analysis of the data from a large population survey (i.e., almost 500,000 individuals diagnosed with CRC from 1974 through 2013) revealed more younger people today are developing CRC compared to older generations at the same age (ACS, 2017).

Description of the Problem

Despite the outstanding benefits of CRC screening, completion remains low and continue to be an obstacle for many average-risk individuals. Healthy People 2020 set a goal of increasing CRC screening rates among U.S. adults aged 50 to 75 years from 52.1% (in 2008) to 70.5% by 2020 (HealthyPeople.gov, 2020), which would mean 70.5% of individuals aged 50 to 75 will have had either a stool-based test (annual or every 3 years, depending on the test type), sigmoidoscopy in the past 5 years, or a colonoscopy in the past 10 years by 2020. Although CRC screening completion rates have been continuously increasing over the past two decades, with a current national median of 69.6% and a Hawai‘i state rate of 75.2% (Centers of Disease Control and Prevention [CDC], 2018), this still means one in three people in the U.S. who are among the recommended age range have never screened for CRC, contributing to the high mortality and incidence rates. Furthermore, the completion rates vary depending on health insurance status and demographic factors, tending to be lower among ethnic minorities and groups of lower socioeconomic status (Hall et al., 2018). Therefore, there is a great need to implement interventions to improve CRC screening behaviors.

While the cancer screening services are usually ordered or provided in primary-care settings, unlike other cancer screening procedures (e.g., mammogram, pap smear, HIV testing, and skin exam), CRC screening methods are more invasive and time consuming, and they may require complex measures prior to the procedure, such as bowel preparation and medication adjustment before colonoscopy. Consequently, many individuals experience multiple barriers that make CRC screening one of the most challenging cancer screenings to promote by healthcare professionals.

The commonly identified barriers by patients include, but are not limited to: lack of awareness, negative views of cancer (e.g., fatalism and fear), negative attitudes towards CRC screening tests, lack of motivation, logistical challenges (e.g., lack of transportation, not being able to afford a day-off for a colonoscopy, and lack of insurance coverage), and cultural beliefs (Honein-AbouHaidar et al., 2016; Jones et al., 2010; Lasser et al., 2008). In addition, the findings from several studies (Ma et al., 2009; Lasser et al., 2011; DeGroff et al., 2017) have indicated that language or culture can be significant barriers to CRC.

Although patient education as an intervention to promote CRC screening completion has been shown to raise awareness and improve knowledge of the disease and benefits of the screening, providing education solely fails to help patients actually participate in the screening tests (Konishi, 2013; Dougherty et al., 2018). Patient navigation (PN) programs, although relatively more resource intensive, focus on decreasing patients' barriers to care and have been shown to be highly effective in increasing CRC screening rates (Dougherty et al., 2018; Muliira & D'Souza, 2016) and could be used to promote CRC screening completion in primary-care settings in Honolulu, Hawai‘i.

Literature Review and Synthesis

Literature Search Strategy

The databases PubMed and CINAHL were used to search for literature related to CRC screening, including its effectiveness, individuals' screening behaviors, and patient navigation (PN) programs for improving CRC screening rates and their impact on outcomes and cost-effectiveness. No restrictions on publication year were used. The combination of search terms were the following: "patient navigation," "patient navigator," "navigation," "navigator," "colorectal cancer," "colon cancer," "colorectal cancer screening(s)," "colon cancer

screening(s)," "effectiveness," "barriers," "cost," and "cost effective." The search was also filtered by written language (i.e., English) and studies that involved human subjects. A manual review of reference lists of relevant articles was also conducted to capture additional studies that did not appear in a search by key terms. Sixty-one articles were identified from the initial search. Of these articles, the interventions not focused on PN (e.g., education programs) were excluded. Further, articles were excluded if they were non-CRC studies, duplicates, or qualitative studies that did not report screening outcome data. A total of 22 articles were identified as relevant and were critiqued for literature synthesis. These articles were graded based on Mosby's levels of evidence model (see Appendix A).

Literature Synthesis

There have been multiple strategies developed and adopted to increase cancer screening completion rates. For CRC screening behaviors, those strategies can be divided into two main categories: patient-directed and clinician-directed. Patient-directed interventions include FOBT outreach (e.g., mailing FOBT kits), PN, patient education, patient reminders (e.g., telephone and postal mail), and financial incentives for FOBT completion (Dougherty et al., 2018). Clinician-directed interventions are either non-visit-based or visit-based. A recent large-scale systematic review and metanalysis study (Dougherty et al., 2018) that included 73 RCTs evaluated different types of CRC screening interventions and the results showed that PN programs (RR: 2.01, 95% CI: 1.64-2.46) and FOBT outreach (RR: 2.26, 95% CI: 1.81-2.81) had the strongest evidence supporting substantial increase in completion of CRC screening. Further increase in screening was observed when multiple components were combined (e.g., PN with FOBT outreach) (Dougherty et al., 2018). Clinician-directed interventions, such as patient education, and patient reminders were also found to be effective, but to a lesser extent (Dougherty et al., 2018).

Patient Navigation in Primary-Care Settings

A recent systematic review article (Muliira & D'Souza, 2016) that included a total of 15 studies in their analysis found PN programs were very effective in improving CRC screening rates (11% to 91%) in primary-care settings. Also, multiple randomized controlled trials (RCT) have consistently shown the effectiveness of PN programs to significantly increase CRC screenings in urban settings (Jandorf et al., 2005; Lasser et al., 2011; Myers et al., 2014) and one at a rural federally qualified health center (FQHC). Motivational interviewing techniques have been utilized in many PN studies and the approach has been effective at increasing CRC screening rates (Ajeesh & Luis, 2018; Lasser et al., 2011; Percac-Lima et al., 2009).

Patient Navigation in Underserved, Minority, and Ethnically Diverse Groups

There is strong and consistent evidence that PN programs are especially successful in improving CRC screening rates among various minority populations (Domingo & Braun, 2017; Muliira & D'Souza, 2016; Roland et al., 2017; Honeycutt et al, 2013) in a cost-effective manner (Wilson et al., 2015).

Findings from two systematic review articles (Domingo & Braun, 2017; Roland et al., 2017) and one cohort study (Martin et al., 2017) supported that PN programs at FQHCs with culturally and socioeconomically diverse patient populations speaking a primary language other than English improved CRC screening completion rates, especially if programs were culturally and linguistically appropriate. The findings from several studies (Ma et al., 2009; Lasser et al., 2011; DeGroff et al., 2017) have indicated that language or culture can be significant barriers to CRC screenings.

Financial Impact

In a recent systematic review (Gervès-Pinquié et al., 2018) of nine economic evaluation studies of PNs, eight out of nine studies concluded that PN programs were undeniably cost-effective for favorable health outcomes and interests. Effectiveness outcomes were mainly evaluated through screening completion, quality of life, and time to diagnostic resolution (Gervès-Pinquié et al., 2018). Another systematic review study (Sunny & Rustveld, 2018), which reviewed four economic evaluation studies, also found that PN programs were cost-effective, with one of the four studies resulting in a profit for the organization over a two-year period (Jandorf et al., 2013).

Utilizing lay navigators is a method to conduct PN in a cost-effective manner, with emphasis on careful and well-prepared training and education for navigators (Meade et al., 2014; Jo et al., 2017). This was especially true when trained lay navigators were members of a multidisciplinary patient care team consisting of nurses, healthcare providers, and social workers (Ladabaum et al., 2015; Meade et al., 2014). More economic studies on PN programs are needed as economic modeling is complex and the results could have been affected by different factors, such as type of economic model used, types of health outcomes, and data sources.

Quality, Quantity, Consistency, and Limitations of Evidence

Since the first PN program was developed in the early 1990s in New York City to address cancer disparities by reducing patients' barriers to care, PN programs have been implemented and evaluated widely in the U.S. and Canada (Freeman & Rodriguez, 2011). Today the scope of PNs has expanded across healthcare fields from preventive care to management of chronic diseases. Overall, studies related to PN programs, including those designed to improve CRC screening rates, have consistently demonstrated their effectiveness. One limitation of these

studies is potential bias, as studies with negative outcomes are less likely to be published. An additional limitation was that the PN services offered varied across the studies, making it difficult to compare them. A limitation of the economic evaluation of PNs is that the methods of calculating and analyzing cost-effectiveness varied across studies; therefore, findings may not be generalizable or comparable. Further, multiple types of models were used across the studies and results could have been affected by each model's type, structure, data sources, and assumptions.

Intervention

Patient Navigation Training Program to Increase CRC Screening Rates

Based on promising evidence of PN programs' efficacy and economic stability mentioned above, a PN program was identified as an evidence-based practice (EBP) strategy to improve CRC screening completion rates at a primary care clinic in Honolulu, Hawai‘i. Adopting a PN program as a highly effective intervention has been an emerging trend in healthcare facilities; however, since such projects usually require hiring and training of new navigators, this may not be attainable for relatively small and busy primary care clinics with a limited budget. Therefore, to integrate PN elements in practice at those primary-care settings, providing PN training session to existing healthcare workers (e.g., medical assistants (MAs), medical scribes, practice manager, and providers) could promote increase of CRC screening completion rates among their patients. To enhance the screening outcome, the training session provided included not only basic information on CRC and the screening, but also motivational interviewing techniques which have been effective approaches at increasing CRC screening rates (Ajeesh & Luis, 2018; Lasser et al., 2011; Percac-Lima et al., 2009).

Conceptual Framework

In order to implement this project, the Advancing Research and Clinical Practice through Close Collaboration (ARCC) model for System-Wide Implementation and Sustainability of EBP, developed by Melnyk, Fineout-Overholt, Gallagher-Ford, & Stillwell (2011), has been chosen as an appropriate conceptual framework. This model consists of five steps: (1) assessment of organizational culture and readiness for implementation in the healthcare system; (2) identification of strengths and barriers of the EBP process in the organization; (3) identification of EBP mentors; (4) implementation of the evidence into organizational practice; and (5) evaluation of the outcomes resulting from the practice change (see Appendix B). A unique focus of the ARCC model, which makes it different from other EBP models, is that it emphasizes organizational and system-level readiness for an EBP.

PICO Question

For clinical staff at a primary care clinic in urban Honolulu, does a PN training program about CRC screening and motivational interviewing improve the knowledge and confidence levels in appropriately counseling and educating their patients due for CRC screening?

Method and Procedures

Purpose Statement and Project Objective

The purpose of this EBP and quality improvement project (or DNP project) was to increase clinical staff members' knowledge and confidence levels in CRC screening promotion by providing them a PN training session focused on CRC screening and motivational interviewing. The objective of this EBP project was the following: by the end of March 2020, 70% of Primary Care Clinic of Hawai‘i (PCCH) in Kalihi clinical staff members (i.e., MAs, medical scribes, executive director, and provider) who participated in the PN training session

would indicate increased knowledge and confidence levels related to CRC screening promotion for their patients compared to pre-training.

Project Plan

Participants

A total of 13 clinical staff members consisting of males and females who are age 18 and older participated in the PN training session. The staff members are all employees of PCCH and they include the following: seven MAs, four medical scribes, one executive director, and one provider. These participants were selected for this EBP project based on availability to attend the 1-hour PN training session conducted on March 16, 2020.

Setting

PCCH is a private practice owned by an internal medicine physician and it currently has two clinics on Oahu (Kalihi and Waipahu) and one clinic on Kauai (Lihue). This DNP project was implemented at PCCH Kalihi, located in Honolulu, Hawai‘i. PCCH clinics serve an estimated 20,000 patients, comprised mostly of adults of primarily Filipino decent, including recent immigrants from Philippines and Filipino Americans. The letter authorizing implementation of this DNP project was obtained from PCCH and attached in Appendix C.

The author completed the Collaborative Institutional Training Initiative (CITI) Training for Health Insurance Portability and Accountability Act (HIPAA) Training on patient privacy protections. This DNP project involved making judgements about a program to improve or further develop program effectiveness and inform decisions about future programming within an organization (University of Hawai‘i Human Studies program, personal communication, August 2, 2018). All these tasks were related to quality improvement and did not produce generalizable

knowledge. Thus, this DNP project, as approved by the DNP student's project committee, did not require IRB application and review.

Procedures

The primary project steps were the following: (1) a PowerPoint presentation for a 1-hour PN training session was developed and was composed of basic information about CRC screening and the disease, common patient barriers, and motivational interviewing as a counseling style (see Patient Navigator Training Session Outline in Appendix D); (2) a PN training session was provided to the clinical staff members at PCCH in Kalihi; (3) a pre- and post-test and a program evaluation survey were administered to assess changes in knowledge and confidence levels of the participants; and (4) recommendations for a future PN project were formulated based on the results. The project timeline can be found in in Appendix E. The PN training session was performed by the DNP student during the clinic's regular lunch break (12 noon to 1:30 p.m.) at PCCH in Kalihi on Monday, March 16, 2020. A complimentary bento lunch was provided to each participant to encourage the attendance and to show appreciation.

Measurements and Data Collection Procedures

To document changes in participants' levels of knowledge and confidence, pre- and post-tests were conducted at the time of the training session. Each questionnaire for the pre- and post-tests had ten question items in total which were developed by the DNP student (see Figure F-1 and F-2 in Appendix F). The first three items (questions 1 through 3) included questions with a Likert scale from 1 (strongly disagree or not comfortable at all) to 5 (strongly agree or very comfortable) that were designed to assess changes in each participant's perception of understanding about CRC and motivational interviewing, and confidence levels in educating patients on those topics. The remaining seven items (questions 4 through 10) were all multiple-

choice questions about facts and information that are discussed in the training session (e.g., current screening recommendations, CRC risk factors, and skills of motivational interviewing) and they were intended to examine improvement in each participant's knowledge. Participants were asked to anonymously answer the questions on pre-tests prior to the training session and do the same on post-tests after the session. In addition to the post-tests, a student-developed program evaluation survey (see Appendix G) was also distributed to and completed by the participants at the end of the training session. This survey was also anonymous and included a total of six items (five Likert scale questions and one open-ended question) that evaluated the student's performance, quality of the session, and overall satisfaction of the participants. The data were entered into a dataset for analysis using the Microsoft Excel program.

Data Analysis

The responses of the training participants to the Likert scale items (i.e., questions 1 to 3) in the test was analyzed by comparing the means of each item. The changes from pre-test to post-test on these items was measured using a paired-samples *t*-test. Correct or incorrect responses to questions 4 through 10 (multiple-choice questions) were also analyzed and compared between pre-test and post-test. McNemar's test was utilized to assess the statistical difference in questions 4 through 10 before and after training.

Results

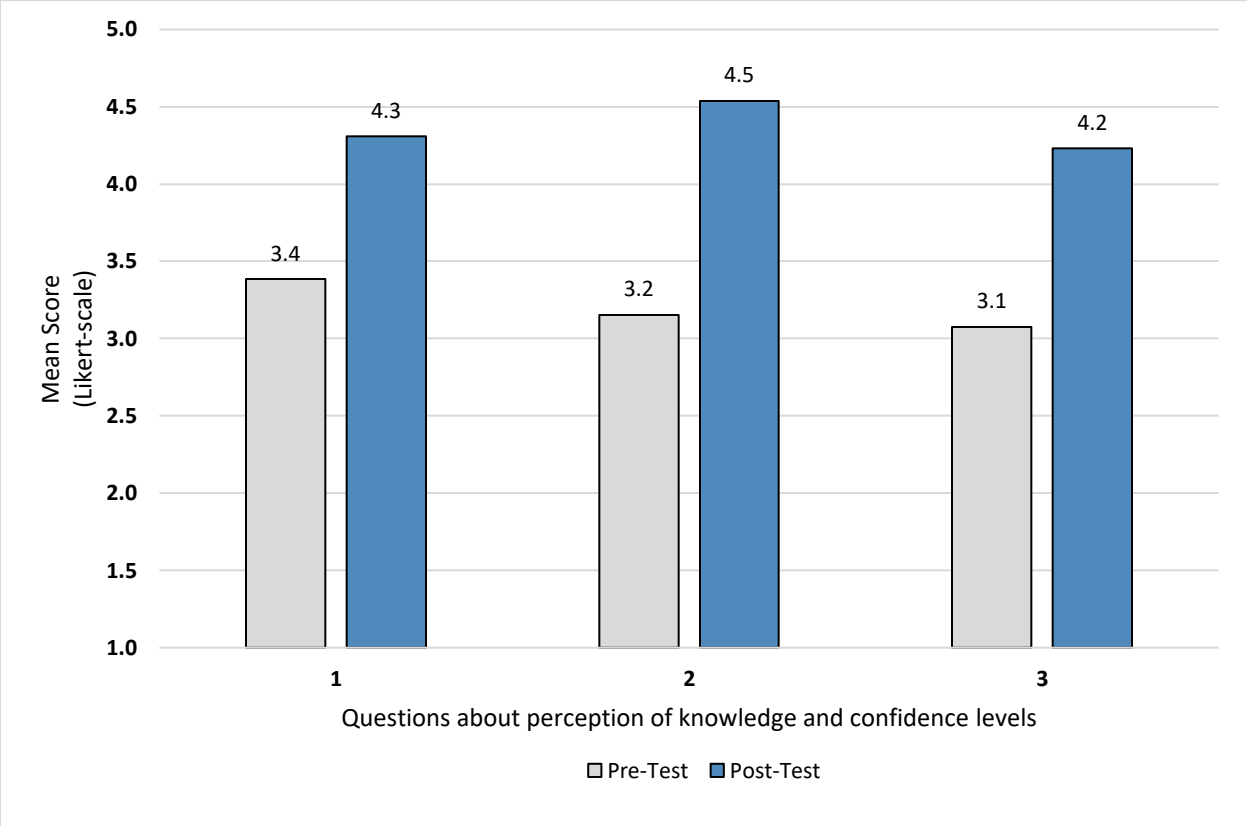
Participants were asked to complete both pre- and post-tests, and a total of 13 and 11 individuals completed pre- and post-tests and the program evaluation survey, respectively.

Scores for questions 1 to 3: (1) participants' perspective towards CRC (*"I am knowledgeable about colorectal cancer (CRC) and current screening guidelines."*), (2) motivational interviewing (*"I am familiar with the concepts and some of the strategies of*

Motivational Interviewing."), and (3) confidence in patient education (*"How comfortable are you with educating patients about CRC and screening for it?"*) significantly increased from pre-test to post-test. Differences found among these questions were all statistically significant with *p*-values of 0.01, 0.000001, and 0.001, for questions 1, 2, and 3, respectively. Results for these questions can be seen in Figure 1.

Figure 1

Mean Difference in Values on Likert-Scale Answers between Pre- and Post-Training



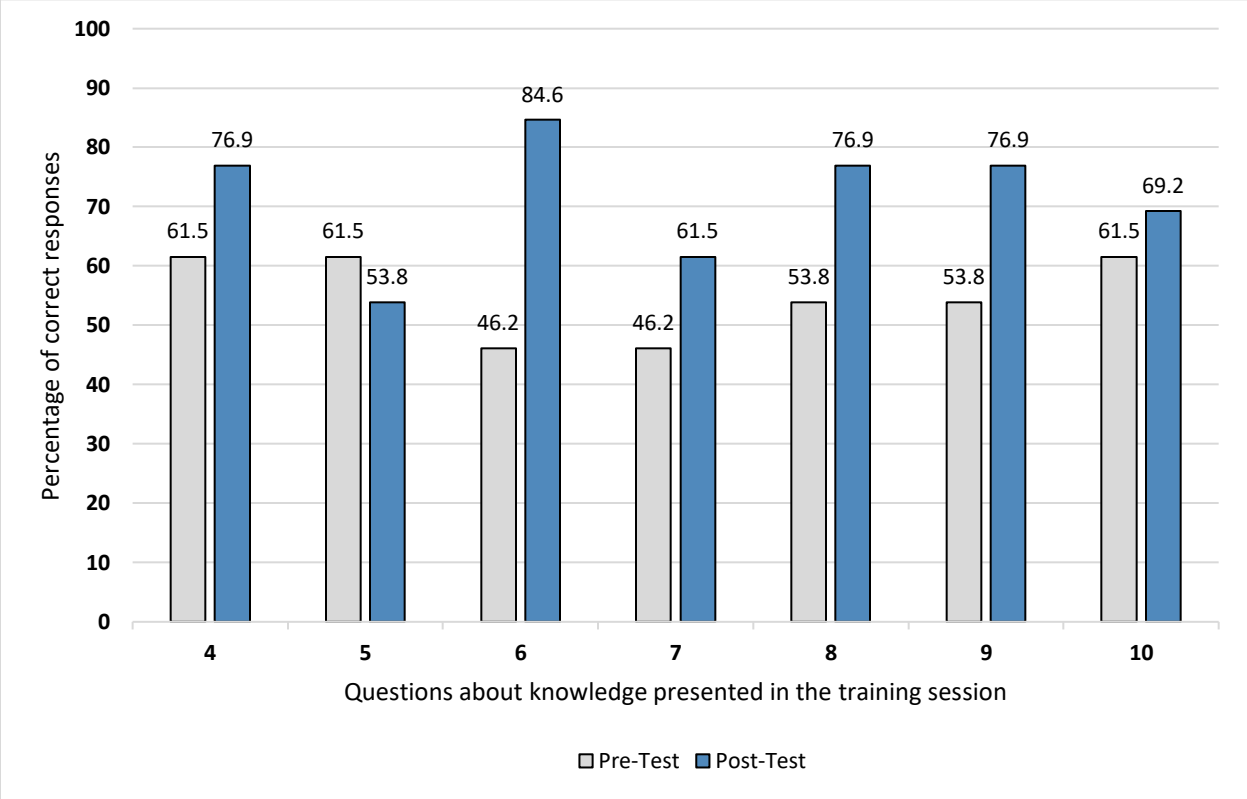
Note. The *y*-axis scale denotes the 1 (strongly disagree or not comfortable at all) to 5 (strongly agree or very comfortable) rating as recorded by the pre- and post-test. The *x*-axis shows the three questions with Likert-scale answer choices.

The percentages providing correct responses about CRC screenings and motivational interviewing knowledge in post-tests were all greater than the percentages in pre-tests except question 5 (see Figure 2). Except question 6 (*p*-value = 0.03), the differences between pre-tests

and post-tests, however, were mostly not statistically significant (*p*-values were 0.34, 0.5, 0,24, 0.12, 0.18, and 0.5 for questions 4, 5, 7, 8, 9, and 10, respectively).

Figure 2

Percentage of Correct Responses between Pre- and Post-Training



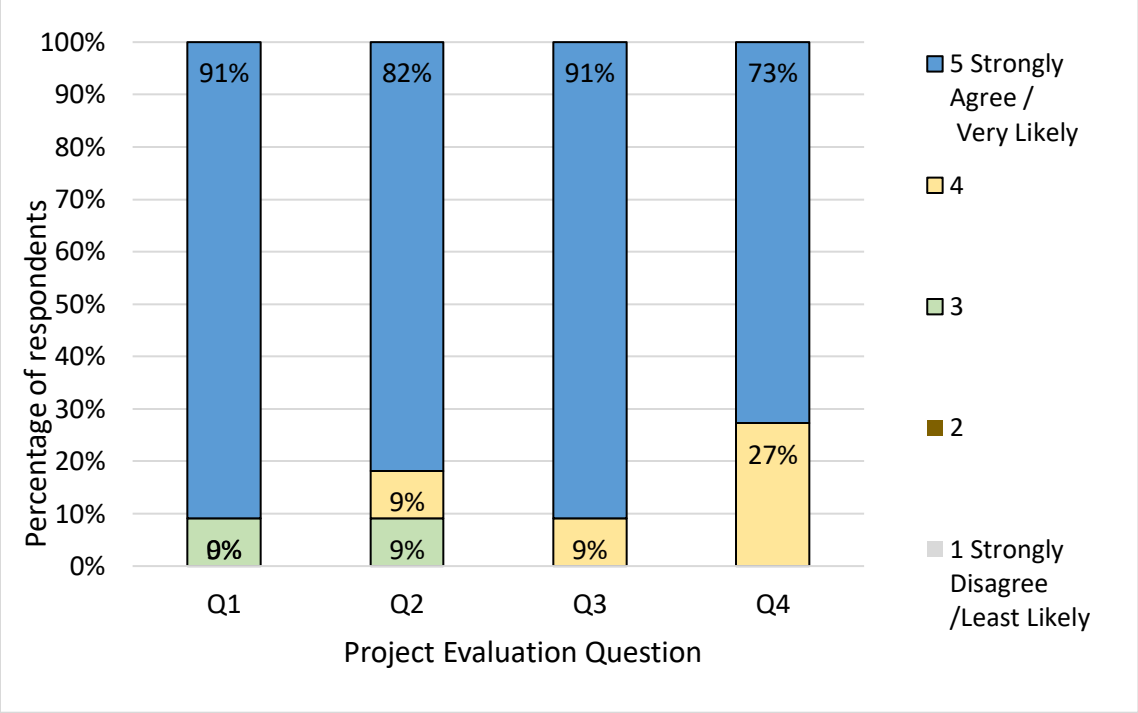
Note. The *y*-axis scale denotes percentage of people who answered the question correctly as recorded by the pre- and post-test. The *x*-axis shows questions numbered from 4 to 10, which were multiple-choice questions.

The project evaluation survey was completed by 11 out of 13 participants. Overall, the participants expressed considerably high satisfaction with the session. The survey questions 1, 2, 3, and 4 were regarding helpfulness of the information, structure and organization of the session, whether the language used was easy to understand, and how likely one would be to utilize what had been learned from the training for everyday work in a healthcare setting, respectively. A majority of the participants chose "strongly agree" and "very likely" to the statement in each question (see Figure 3). There were no participants who selected answer choice of 1 or 2.

Question 5 asked about overall rating of the training session with answer choices from 1 (poor) to 10 (excellent), and a majority of the participants (73%) indicated the highest number (see Figure 4). No participants selected answer choices between 1 (poor) and 6.

Figure 3

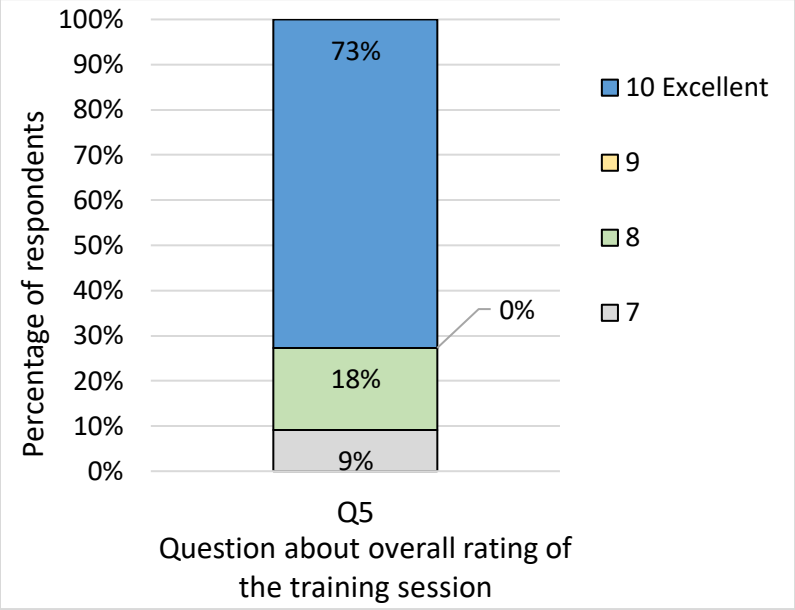
Percentage of Respondents for Project Evaluation Questions



Note. The *y*-axis scale denotes percentage of people as recorded by the project evaluation survey. The *x*-axis shows questions numbered from 1 to 4, which had Likert-scale answers choices from 1 (strongly disagree / least likely) to 5 (strongly agree / very likely).

Figure 4

Percentage of Respondents for Overall Rating of the Training Session



Note. The *y*-axis scale denotes percentage of people as recorded by the project evaluation survey. The *x*-axis shows question number 5, which had Likert-scale answer choices from 1 (poor) to 10 (excellent). No participant chose answer number choices from 1 through 6; thus, the figure only shows percentages of answer from 7 to 10.

Discussion

This EBP project demonstrated that a PN training session regarding CRC, screening for CRC, and motivational interviewing successfully increased familiarity with these topics and confidence levels towards patient education and counseling for clinical staff members at a primary-care setting. The results of this project suggest that information about motivational interviewing is a useful tool for clinical staff such as MAs to counsel and educate patients on CRC screening. In addition, the notable increase in confidence level after the training and the high likelihood of utilizing information presented in the session reported by the participants strongly indicates that they are most likely to employ the skills and strategies of motivational interviewing to encourage their patients to receive CRC screening tests.

Limitations

Although participants' perception of understanding about CRC and motivational interviewing, and confidence levels in educating and counseling patients notably improved after the training session, the scores on knowledge questions between pre-test and post-test did not yield statistically significant changes. One of the possible explanations is that the questions might have been too difficult or slightly complex. For example, question 4 in pre- and post-test asked about the age range for CRC screening currently recommended by the USPSTF. This topic was discussed in the training; however, there was also a discussion about controversy surrounding starting the screening at the age of 50 as the CRC incidence rates are rising among younger age groups in the past decade. Another possibility is that participants might have been less attentive because the training session was conducted during the clinic's regular lunch break, which was from 12:00 noon to 1:30 p.m., and was in a somewhat informal setting. Furthermore, even though PCCH in Kalihi is a busy primary care clinic in general, the clinic was even more hectic than usual at that time as it was a few days after the World Health Organization announced that it was characterizing COVID-19 as a pandemic and all of the healthcare facilities in the country had to quickly adopt a "new normal" of social distancing practices and safety precautions.

In addition, this project was a part of a DNP program with limited resources and no funding support. Although the training session concluded on time and it generally went well without any major issues, it could have been more effective if there had been personnel who could assist in providing the session. For example, when the presenter is setting up the PowerPoint slides on the screen, an assistant could distribute the surveys and ensure the participants are using the right form and are properly understanding the questions.

Originally, this project was planned by the DNP student to be implemented as a fuller PN project involving providing various PN services (e.g., facilitating communication with patients, providing patient education and emotional support, helping with scheduling appointments, resolving insurance issues, etc.) to patients through utilization of trained navigators. Due to logistical challenges with the original implementation institution and site, however, it was necessary to downsize the project and have it focused on just one of the components of the originally planned project, which was providing PN training. Therefore, this EBP project included only PN training which lacked other components, including PN services, that may have produced more robust outcomes, such as actual increase in CRC screening completion rates among patients who are due for CRC screening.

Recommendations

Fostered by the consistent evidence of increasing CRC screening rates and addressing other health problem areas, growing numbers of healthcare institutions are utilizing PN or similar types of patient outreach programs. Yet, it could be challenging to adopt PN for some institutions, especially because it is an investment of time and finances (particularly if they hire new navigators) even though it would more likely be cost-effective in the long term. For those facilities and providers where there is room for improvement in CRC screening among their patients but which have limited budgets and/or are unsure if PN would be a beneficial investment for them, this training session can be replicated as clinical staff education focusing on train staff to be navigators; in other words, staff can be trained so they can effectively promote CRC screening for their patients.

For the PN training implementation, where possible, it may be more effective and preferred to conduct the sessions during regular business hours instead of more casual times such

as a lunch break, and to reserve the time for two to two and a half hours instead of one and a half hours, so that participants can take a break between the sections in the presentation. The training covers two major topics, CRC and motivational interviewing, thus a break between these topics and one shorter stretch break in the middle of the motivational interviewing section may be most logical. In this way, participants are more likely to be able to stay focused and also to have adequate time to answer questions in pre- and post-tests and surveys. During the session, the trainer can especially emphasize the key take-home messages which will be asked in the post-test, to ensure the participants can retain such important information.

Question 5 in the pre- and post-test was the only item where the percentage of correct answers did not increase at post-test (see Figure 2), and it was the question about USPSTF recommendations on how often the fecal immunochemical test [FIT] should be performed for average risk population. It is speculated that some participants might have been confused because the training session discussed two main stool-based tests – FIT and Cologuard (stool-DNA test) – which require testing annually and every three years, respectively. To help the participants to remember key information, utilization of mnemonic devices may also be effective. For example, to assist PNs to remember the recommended screening timeframes, participants can be told "FIT" (shorter word length) is associated with the one- year test interval and Cologuard (longer word length) is associated with the every three years testing interval.

Also, the training session would run more smoothly with an assistant, who can distribute and facilitate pre- and post-tests would be helpful for smoother implementation. Furthermore, to promote sustainability of the project, it would be beneficial to involve and identify a champion among the staff (an insider) who can ensure the project being integrated in their daily work. In addition to a training session, providing the participants a toolkit that includes a FAQ sheet, a

CRC screening fact sheet, an information sheet with motivational interviewing techniques and sample sentences, and a checklist for navigating patients through from visit to visit would probably further enhance project sustainability.

Beyond suggestions for improving retention of information on CRC, CRC screening, and motivational interviewing, it is also recommended that the scope of this project be expanded in the future to include the components that could not fit into the current project. That is, the originally planned fuller exploration of whether the PN training sessions could be implemented and actually improve CRC screening rates over time at those healthcare facilities.

Conclusions

This EBP and quality improvement project was successful in increasing familiarity with the topics and confidence levels towards patient education and counseling for clinical staff members at a primary-care setting. The training session was positively received by the clinical staff who participated in the session at PCCH in Kalihi. The results of the current project had important implications which are that clinical staff such as MAs and receptionists who are on the front lines of care and usually the first persons to interact with patients when they visit the clinic, are likely to be able to play the role of patient navigator and support the effort of increasing CRC screening rates. This is a favorable indication for many busy primary-care providers who often feel they only have time to address the most pressing problems of a patient and do not have enough time for health promotion conversations, including for routine CRC screening.

Since well-trained navigators are vital for successful implementation of a PN project, the results and recommendations presented in this paper can be useful information for providers and organizations interested in improving CRC screening rates among their patients. Such institutions can adopt this project model as a one-time staff training project, or an initial step for

implementing more involved PN projects later. Furthermore, replicating this training session may be used to evaluate whether such clinics and organizations are a good fit and ready for a full-scaled PN project, for which evidence of effectiveness has been strong and consistent in literature. Various factors, including significant intervention time, available resources such as staffing and EHR, support and buy-in from the organization, a project champion, partnership with endoscopy facilities, and budget to hire lay navigators can all influence the outcomes of a project that involves PN.

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Appendix A

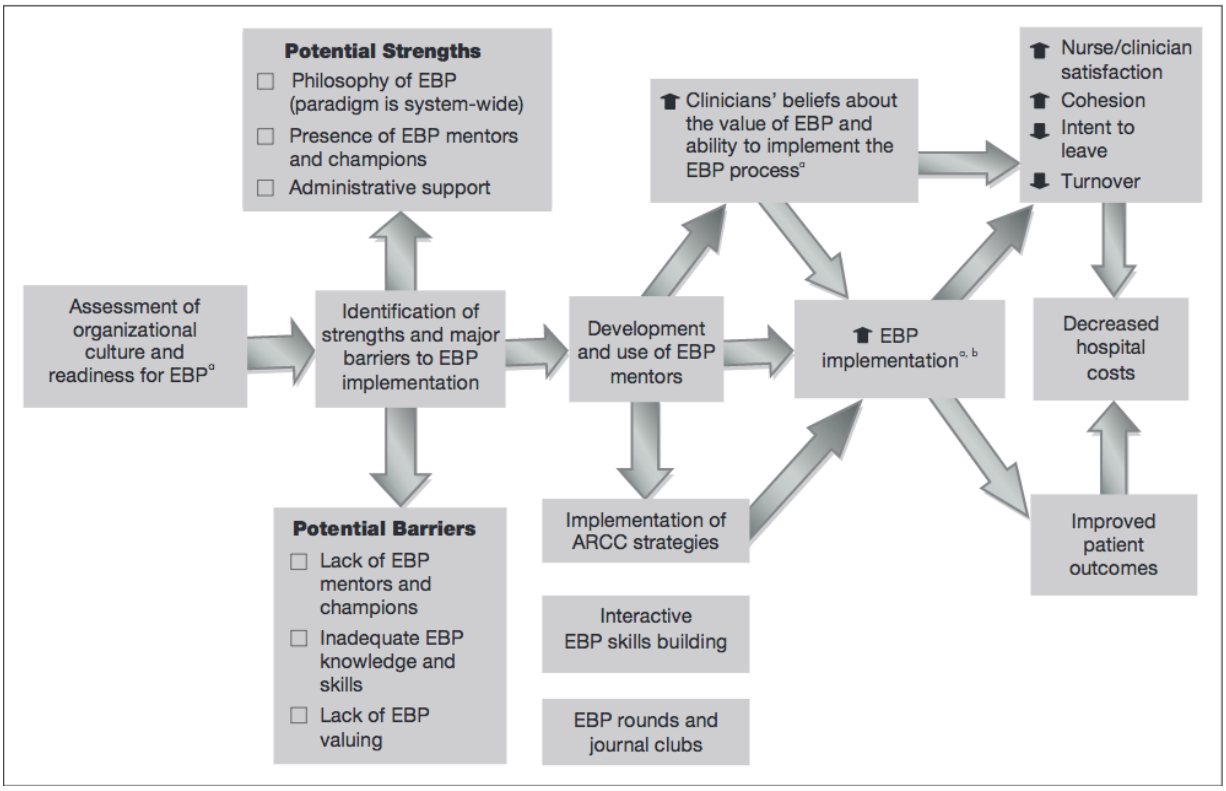
Mosby's Levels of Evidence Rating Scheme

*Level of Evidence	Description
Level I	Evidence from a systematic review or meta-analysis of all relevant RCTs (randomized controlled trial) or evidence-based clinical practice guidelines based on systematic reviews of RCTs or three or more RCTs of good quality that have similar results.
Level II	Evidence obtained from at least one well-designed RCT (e.g. large multi-site RCT).
Level III	Evidence obtained from well-designed controlled trials without randomization (i.e. quasi-experimental).
Level IV	Evidence from well-designed case-control or cohort studies.
Level V	Evidence from systematic reviews of descriptive and qualitative studies (meta-synthesis).
Level VI	Evidence from a single descriptive or qualitative study.
Level VII	Evidence from the opinion of authorities and/or reports of expert committees.

*This level of effectiveness rating scheme is based on the following: Ackley, B. J., Swan, B. A., Ladwig, G., & Tucker, S. (2008). *Evidence-based nursing care guidelines: Medical-surgical interventions.* (p. 7). St. Louis, MO: Mosby Elsevier.

Appendix B

ARCC Model for System-Wide Implementation and Sustainability of EBP



ARCC = Advancing Research and Clinical Practice through Close Collaboration
EBP = Evidence-based practice
This diagram was retrieved from an article written by Melnyk and Fineout-Overholt (2011).
[a] Scale developed.
[b] Based on the EBP paradigm and using the EBP process.

Appendix C

Authorization Letter from Implementation Site

Primary Care Clinic of Hawaii

1807 North King Street
Honolulu, HI 96819

March 25, 2020

Minami Konishi, MPH, RN, DNP (c)
2002G Hunnewell Street
Honolulu, HI 96822

Alice Tse, PhD, RN, APRN, FAAN
University of Hawai'i at Mānoa
School of Nursing and Dental Hygiene
2528 McCarthy Mall, Webster 405
Honolulu, HI 96822

Dear Minami Konishi and her DNP Project committee members,

This letter is to inform you that I am aware of Minami Konishi's doctoral project, Promotion of Colorectal Cancer Screening Completion Through Training of Patient Navigators, and have authorized the implementation of the project at Primary Care Clinic of Hawai'i.

If you have any further questions, please call 808-841-4195 or email me at rhea@primarycareclinichawaii.com.

Mahalo,

Rhea Alarin
Director

Appendix D

Patient Navigator Training Session Outline

1. **General Information about Colorectal Cancer (CRC)**
    a. **CRC Facts and Epidemiology**
        i. CRC is the second leading cause of cancer death
        ii. Current national and State of Hawai‘i CRC screening rates
    b. **CRC Overview**
        i. Development of CRC
        ii. Stages of CRC and 5-year survival rates
    c. **Risk Factors**
        i. Age
        ii. Family history and inheritance
        iii. Personal history of inflammatory bowel disease
        iv. Lifestyle
            - Cigarette smoking
            - Alcohol use
            - Obesity
            - Diet high in fat and red or processed meat
    d. **Prevention**
        i. Protective factors
            - Regular physical activity
            - Diet (i.e., fruits and vegetables)
        ii. Interventions with adequate evidence for a decreased risk of CRC
            - Daily aspirin (benefits and risk)
            - Polyp removal (especially for larger polyps > 1 cm)
    e. **CRC Screening Tests**
        i. The U.S. Preventive Services Task Force (USPSTF) recommendations
        ii. Colonoscopy (gold standard)
            - What to expect during a colonoscopy?
        iii. Stool-based tests (fecal immunochemical test [FIT] and stool-DNA screening test [Cologuard])

iv. Why CRC screening is so important?
    - CRC screening can save lives
    - Survival rate is higher when CRC found in early stage
    - 1 in 3 people in the U.S. who should get tested for CRC have never screened

2. Patient Education and Encouragement

a. Common Barriers to Participation in CRC Screening

i. Lack of awareness and knowledge

ii. Negative views of cancer
    - Fear of cancer and screening results
    - Fatalism

iii. Negative attitudes towards CRC screening tests
    - Physically unpleasant procedures
    - Embarrassment

iv. Lack of motivation
    - Competing other life demands
    - Scheduling challenges

v. Cultural, gender, or socioeconomic reasons
    - Cultural beliefs (e.g., belief in natural remedies or particular ethnic diet protection from cancer)
    - Females perceiving CRC as a male disease
    - Males perceiving CRC screening as offensive to masculinity
    - Transportation challenges
    - Language barriers

b. Resources for Patients and Healthcare Professionals

i. 7 things to know about getting a colonoscopy (ACS, 2018a; for patients)

ii. Pros and cons of CRC screening tests (ACS, 2018b; for patients)

iii. Steps for increasing CRC screening rates: a manual for community health centers (de la Cruz, & Sarfaty, 2014; for healthcare professionals)

c. Motivational Interviewing as a Counseling Style

i. Introduction and background of motivational interviewing

- The origin and history of motivational interviewing (treatment of alcohol abuse)
- Stages of Changes (SOC): Precontemplation, Contemplation, Preparation, Action, and Maintenance

ii. Change talks vs. sustain talks
- Ambivalence and its role in client motivation

iii. The Spirit of Motivational Interviewing
- Partnership
- Acceptance
- Compassion
- Evocation

iv. Core skills of motivational interviewing: OARS
- Ask **O**pen-ended questions
  - Closed questions vs. open questions
- **A**ffirming
  - Emphasize client strengths, past successes, and efforts to take steps
  - Example affirming statements
- **R**eflective listening
  - Gordon's 12 Roadblocks to Active Listening
  - Types of reflective listening responses
  - How to form complex reflection (6 steps)
  - Tips for providing facts and information about CRC
    - Motivational Interviewing RULE: Resist telling them what to do, understand their motivation, listen with empathy, and empower them
  - Conversation Road Map (specific to CRC conversation)
- **S**ummarizing

v. Motivational interviewing video showing
- Ineffective approach
- Effective approach

Appendix E

Project Timeline

	2019							2020			
Activity	**June**	**July**	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**	**Jan.**	**Feb.**	**Mar.**	**Apr.**
Communication with committee											
Literature review & updates											
Project proposal presentation to committee											
Informal proposal to implementation site											
Development of training materials											
PN training session (intervention) & pre/post tests											
Data collection and analysis											
Final Paper to Committee											
Final Presentation to Committee											

Appendix F

Figure F-1

Patient Navigator Training to Promote Colorectal Cancer Screening

Pre-Test

Please fill this out **BEFORE training session.** You do not need to write your name.

1. I am knowledgeable about colorectal cancer (CRC) and current screening guidelines.

Strongly Disagree				Strongly Agree
1	2	3	4	5

2. I am familiar with the concepts and some of the strategies of Motivational Interviewing.

Strongly Disagree				Strongly Agree
1	2	3	4	5

3. How comfortable are you with educating patients about CRC and screening for it?

Not comfortable at all	Uneasy	Neither	Fairly comfortable	Very comfortable
1	2	3	4	5

4. For the average-risk population, for what age range does the US Preventive Services Task Force (USPSTF) currently recommend CRC screening?

a) 30 - 75
b) 40 - 75
c) 45 - 75
d) 50 - 75
e) 75 - 85

5. According to USPSTF, how often should a fecal immunochemical test (FIT) be done (for average-risk population)?

a) Once a year
b) Every 3 years
c) Every 5 years
d) Every 10 years
e) Only when there are symptoms

6. According to USPSTF, how often should colonoscopy be done (for average-risk population)?

a) Every 3 years
b) Every 5 years
c) Every 10 years
d) Only when there are symptoms

Next page, please →

7. Which of the following is the correct combination of CRC risk factors?

a) Age >50, history of GERD (acid reflex), and obesity
b) Age >50, history of hypertension, and history of Type 2 diabetes
c) Age >40, history of ulcerative colitis, and smoking
d) Age >40, history of irritable bowel syndrome, and history of Type 2 diabetes

8. Which of the following is correct about the spirit of Motivational Interviewing?

a) Partnership, encouragement, trust, respect
b) Partnership, acceptance, compassion, evocation
c) Autonomy, encouragement, trust, ethics
d) Autonomy, acceptance, compassion, evocation

9. Which of the following sentences uses skills of Motivational Interviewing?

a) "Help me to understand. On the one hand CRC screening would be a good idea for you, but on the other hand you feel it's too much a trouble and you don't have time."
b) "Would you be interested in CRC screening?"
c) "Which test do you want to do: stool-based test or colonoscopy?"
d) "I would get a colonoscopy done if I were you."

10. Which of the following is the best description of reflective listening?

a) Reflective listening is about pointing out a patient's motivation for change from their statements.
b) Approving or praising a patient is always a good idea and it can help the counselor build a friendly and positive relationship with the patient.
c) Reflective listening is about listening to a patient without reacting or interrupting.
d) By repeating or paraphrasing a patient's statement, the counselor can share that they heard and digested what the patient said.

Stop here, please.

Please return this form to Minami Konishi.

Figure F-2

Patient Navigator Training to Promote Colorectal Cancer Screening
Post-Test

Please fill this out **AFTER training session.** You do not need to write your name.

1. I am knowledgeable about colorectal cancer (CRC) and current screening guidelines.

Strongly Disagree				Strongly Agree
1	2	3	4	5

2. I am familiar with the concepts and some of the strategies of Motivational Interviewing.

Strongly Disagree				Strongly Agree
1	2	3	4	5

3. How comfortable are you with educating patients about CRC and screening for it?

Not comfortable at all	Uneasy	Neither	Fairly comfortable	Very comfortable
1	2	3	4	5

4. For the average-risk population, for what age range does the US Preventive Services Task Force (USPSTF) currently recommend CRC screening?

f) 30 - 75
g) 40 - 75
h) 45 - 75
i) 50 - 75
j) 75 - 85

5. According to USPSTF, how often should a fecal immunochemical test (FIT) be done (for average-risk population)?

f) Once a year
g) Every 3 years
h) Every 5 years
i) Every 10 years
j) Only when there are symptoms

6. According to USPSTF, how often should colonoscopy be done (for average-risk population)?

e) Every 3 years
f) Every 5 years
g) Every 10 years
h) Only when there are symptoms

Next page, please →

7. Which of the following is the correct combination of CRC risk factors?

e) Age >50, history of GERD (acid reflex), and obesity
f) Age >50, history of hypertension, and history of Type 2 diabetes
g) Age >40, history of ulcerative colitis, and smoking
h) Age >40, history of irritable bowel syndrome, and history of Type 2 diabetes

8. Which of the following is correct about the spirit of Motivational Interviewing?

e) Partnership, encouragement, trust, respect
f) Partnership, acceptance, compassion, evocation
g) Autonomy, encouragement, trust, ethics
h) Autonomy, acceptance, compassion, evocation

9. Which of the following sentences uses skills of Motivational Interviewing?

e) "Help me to understand. On the one hand CRC screening would be a good idea for you, but on the other hand you feel it's too much a trouble and you don't have time."
f) "Would you be interested in CRC screening?"
g) "Which test do you want to do: stool-based test or colonoscopy?"
h) "I would get a colonoscopy done if I were you."

10. Which of the following is the best description of reflective listening?

e) Reflective listening is about pointing out a patient's motivation for change from their statements.
f) Approving or praising a patient is always a good idea and it can help the counselor build a friendly and positive relationship with the patient.
g) Reflective listening is about listening to a patient without reacting or interrupting.
h) By repeating or paraphrasing a patient's statement, the counselor can share that they heard and digested what the patient said.

Stop here, please.

Please return this form to Minami Konishi.

Appendix G

Patient Navigator Training to Promote Colorectal Cancer Screening

Training Evaluation

You do not need to write your name.

1. The training session was helpful and informative.

Strongly Disagree				Strongly Agree
1	2	3	4	5

2. The contents and language used in the training session were easy to understand.

Strongly Disagree				Strongly Agree
1	2	3	4	5

3. The training session was well-organized.

Strongly Disagree				Strongly Agree
1	2	3	4	5

4. How likely will you be utilizing or adopting some of the things you learned from today's training for your everyday work as a healthcare professional?

Least likely				Very likely
1	2	3	4	5

5. How would you rate the overall training session?

Poor									Excellent
1	2	3	4	5	6	7	8	9	10

6. Please feel free to leave comments / feedback / questions.

I appreciate your help and thank you so much for your participation. Mahalo!!
Please return this form to Minami Konishi.

Appendix H

DNP Essentials

DNP Essentials	DNP Student Project
I. Scientific Underpinnings for Practice	• Integrated nursing science and evidence-based practice knowledge to advance delivery of improved quality of care by healthcare professionals in primary-care settings, and to enhance health outcomes for patients. • Utilized scientific concepts and theories to develop and lead new practice approaches to improve healthcare professionals' knowledge and confidence levels in promoting colorectal cancer (CRC) screening. • Utilized scientific methods to evaluate the project outcomes.
II. Organizational and Systems Leadership for Quality Improvement and Systems Thinking	• Utilized advanced communication skills and processes to lead evidence-based practice and quality improvement project within a primary care clinic system. • Employed principles of nursing leadership, program management, health economics, and implemented an effective project for a practice-level initiative designed to improve the quality of care delivery. • Demonstrated awareness and sensitivity to diverse organizational and patient cultures that are unique to the project implementation site to improve delivery of care in a culturally appropriate manner.
III. Clinical Scholarship and Analytical Methods for Evidence-Based Practice	• Utilized analytic methods to critically appraise existing literature and scientific evidence to determine and implement the best evidence-based practice to improve healthcare professional delivery of care (regarding promotion of CRC screening) • Designed, directed, and evaluated evidence-based and quality improvement methodologies to promote safe, timely, effective, efficient, equitable, and patient-centered care related to promotion of CRC screening. • Applied relevant findings to develop recommendations to improve practice and patient health outcomes. • Served as a practice specialist and consultant to guide and direct improvement in delivery of care.
IV. Information Systems/ Technology and Patient Care Technology for the Improvement and Transformation of Health Care	• Demonstrated the conceptual ability and technical skills to develop and execute an evaluation plan involving data collection and analysis. • Demonstrated proficiency and competency in the use of information and technology systems/resources to develop and implement a project involving training for healthcare professionals. • Provided instructions and guidance regarding the ethical and legal use of information, information technology, communication networks, and patient care technology to healthcare professionals.

V. Healthcare Policy for Advocacy in Health Care	• Critically analyzed health policies, guidelines, and recommendations from the perspective of patients, healthcare professionals, payers, and other stakeholders in healthcare systems. • Stayed up to date with and actively engaged in the processes of health policy and guidelines. • Advocated for practice-level healthcare policy change to address healthcare disparities and public health needs for preventive and health maintenance measures. • Advocated and promoted social justice, healthcare access and equity, and patient-centered care by educating and training healthcare professionals on patient education and counseling for CRC screening.
VI. Interprofessional Collaboration for Improving Patient and Population Health Outcomes	• Exercised effective communication and collaborative skills in the development and implementation of evidence-based and quality improvement practice involving training for multidisciplinary healthcare professionals. • Demonstrated strong leadership in leading interprofessional teams during communication and collaboration with practice executive director, providers, medical assistants, administrative staff, and nursing educators.
VII. Clinical Prevention and Population Health for Improving the Nation's Health	• Demonstrated solid knowledge in clinical prevention and population health by developing an evidence-based project focused on CRC screening which is one of preventive care that needs to be improved nationwide. • Analyzed and synthesized epidemiological, biostatistical, and demographic data related to population health to develop effective evidence-based and quality improvement project. • Implemented clinical prevention project to promote and increase CRC screening completion rates, which is an urgent public health priority.
VIII. Advanced Nursing Practice	• Demonstrated foundational practice abilities and assessment skills by applying biophysical, psychological, social and behavioral science to patient care and evidence-based project development and implementation. • Demonstrated advanced levels of clinical judgment, systems and critical thinking, and designing, delivery, and evaluation of evidence-based practice project to improve quality of care and patient outcomes (i.e., increasing CRC screening completion rates to promote prevention and early diagnosis of the disease).