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Improving Health Care Provider Knowledge and Compliance of Breast Cancer Screenings

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**IMPROVING HEALTH CARE PROVIDER KNOWLEDGE AND COMPLIANCE
OF BREAST CANCER SCREENINGS**

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Mississippi University for Women

March 1, 2022

A DNP project was submitted to the faculty of the College of Nursing in partial fulfillment of the requirements for the degree of Doctor of Nursing Practice in the graduate college at Mississippi University for Women, COLUMBUS, MISSISSIPPI

Graduate Committee Approval

The Graduate Committee of Jalisha Brown
hereby approves his/her research project as meeting partial
fulfillment of the requirements for the Degree of
Doctor of Nursing Practice

Date _____

Approved _____
Chair

Approved:

Director of Graduate Studies

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IMPROVING HEALTH CARE PROVIDER KNOWLEDGE AND COMPLIANCE OF BREAST CANCER SCREENINGS

Jalisha Brown, FNP-C

Mississippi University for Women, 2022

Supervising Faculty: Dr. Alena Groves

Abstract

Breast cancer is the leading cause of cancer death in women worldwide. Different tests are used to detect breast cancer including mammograms, breast ultrasound, and breast MRI. Using screening mammography for breast cancer continues to be the most effective way to detect breast cancer in its early stages for better treatment outcomes. This Doctor of Nursing Practice (DNP) project aimed to determine if healthcare providers find that education regarding evidence-based guidelines for breast cancer screenings, increased knowledge, and compliance, and prompt a self-reported practice change. Participants were emailed a description of the project along with a pretest. The educational session was recorded via Zoom and uploaded to YouTube for participants to view due to the restrictions and limitations on hosting in-person sessions because of COVID-19. Immediately following the session, participants completed the posttest. Participants were given one to two months to implement changes in their clinical practice before the administration of a self-report practice change questionnaire.

DEDICATION

I dedicate this project to God and my family. God, you have heard my cries and prayers, although I fall short of your glory every day, you continue to pick up and place me on the right path. To my husband Antione, thank you for your unconditional love, sacrifices, and words of encouragement throughout my educational journey. I have spent the majority of the time we've been together in school. Every time I would tell you that I am going back to school you always say, "Go ahead baby, I know you'll do great". This is the end, I promise. To Bayleigh, thank you for being the light on my darkest days as well as giving me the motivation to strive for greater. I hope that someday you will follow in my footsteps. Family, thank you for your endless support throughout the past two years. There have been two of the most challenging yet rewarding years of my life. We did it!!

Most of you were my MSN classmates to my fellow DNP classmates, and we have grown close over the last three years. I know the struggle has been real but is finally finished. I will truly miss every last one of you. I hope you continue to be the excellent healthcare providers you are. Thank you for sticking it out with me this past two years!

ACKNOWLEDGEMENTS

I would like to express sincere gratitude to my project chair, Dr. Alena Groves. Thank you for your guidance, patience, and immense knowledge. The W has been my home since I started the BSN program in 2016. I would like to express sincere appreciation to the entire Department of Graduate Nursing for allowing me to continue my studies at The W. I would like to thank Dr. Carey McCarter for inspiring me to do this project, you are missed.

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IMPROVING HEALTH CARE PROVIDER KNOWLEDGE AND COMPLIANCE OF BREAST CANCER SCREENINGS

Breast cancer is a form of cancer that occurs in the breasts, and it is the most common cancer diagnosed in women after skin cancer. It is an invasive type of cancer; each year in the United States, about 245,000 breast cancer cases are diagnosed in women and about 2,200 in men. About 41,000 women and 460 men in the U.S. die each year from breast cancer (CDC, 2019). The incidence of breast cancer is high in developed countries because of the increase in urbanization, increased life expectancy, and the adoption of western lifestyles. Prevention strategies have helped reduce risk, but they cannot eliminate the disease.

Statement of Purpose

The purpose of this Doctor of Nursing Practice (DNP) project was to improve the knowledge and compliance of health care providers with current evidence-based guidelines for screening of breast cancer in women/men with known risk factors. Healthcare providers must understand the critical screening practices, effective preventive strategies, and interventions to improve breast cancer screening rates. Focusing on a patient's and provider's level of health literacy and health beliefs are essential criteria to include in any initiative aimed at improving breast cancer screening rates (WHO, 2020). Additionally, clinicians must not assume all women understand the importance of early detection of breast cancer nor that they are aware of guidelines and recommendations. Healthcare providers are powerful in influencing women toward timely screenings and emphasizing life-saving measures through education and shared decision-making.

Background of the Problem

In the United States, breast cancer continues to be the second most common cancer diagnosis in females, and the second leading cause of cancer death in women (CDC, 2019). Breast cancer is a significant problem because its incidence reflects changes in reproductive patterns; among those reproductive changes are delayed childbearing and having fewer children, which are known risk factors for breast cancer (*uscs data visualizations* n.d.). In developing countries, breast cancer has increased adverse effects because the diagnosis is not made until the late stages.

Project Background

When further investigating breast cancer screenings and guidelines, the current researcher found that population-based cancer surveillance began in situ, and invasive breast cancer incidence and the first yearly recommended mammogram started in 1976 for women 50 years and over (WHO, 2019). In situ breast cancer incidence rates rose rapidly during the 1980s and 1990s primarily because of increases in mammography screening (Bever, 2018). Radhakrishnan et al. (2017) conducted a national survey of primary care providers about their breast cancer screening (BCS) practices and found that physicians primarily trusted BCS recommendations from The American Cancer Society, The American College of Obstetricians and Gynecologists, and The United States Preventive Services Task Force. Each of these guidelines endorses different initial screening ages, ongoing screening frequency, and age at which to discontinue mammography. There is a need to improve providers' knowledge and compliance with breast cancer screening guidelines to improve the health outcomes for the affected populations (WHO, 2020).

Problem Statement

Breast cancer screening encompasses a range of recommendations and interventions including breast awareness (BA) and self-breast exams (SBE), clinical breast exams (CBE), family history intake, screening mammography, and other imaging techniques. Together, these interventions aid in detecting breast cancer in its earliest form, usually before women notice signs or symptoms; ideally, these detectors protect against the spread of the disease. Early detection is key in decreasing mortality related to breast cancer and experts agree screening mammograms remain the single most effective intervention in achieving this (“Practice Bulletin No. 179 Summary,” 2017).

The current problem is that women continue to die from breast cancer each year. At the project site, there is a diverse population of women seeking health care who are of age for having a screening mammogram. Currently, there are no protocols in place at this project site to screen these women to determine their risk for acquiring breast cancer. Furthermore, there is limited patient education given by clinic providers regarding risk factors, prevention, and early detection. Therefore, the purpose of this DNP project is to improve the knowledge deficit and compliance of health care providers.

Objectives of the Project

The objectives of this project are to improve providers’ knowledge, skills, and attitudes towards breast cancer screenings. Providers may find it challenging to keep up with all the guidelines and changes throughout the years. Given the various guidelines, there remains confusion among providers, about which guideline is best and when to start screening. “There is a considerable debate about the risks of mammography screening

causing ‘harm’ to women in their forties that could lead to increased false positives requiring additional imaging, the risk of radiation-induced breast cancer from the cumulation of mammography, the potential for overdiagnosis, and additional psychological stress” (Nelson et al., 2016). The goal of this project is to provide meaningful evidence and recommend specific changes that may be considered to increase provider use of suggested breast cancer screening guidelines. In addition, the providers will gain an understanding of using current breast screening recommendations.

PICOT Question

Will the implementation of an educational session regarding breast cancer screening guidelines improve health care provider knowledge and compliance with breast cancer screening guidelines, and prompt a self-reported practice change?

Definition of Terms

For this study, several terms were defined as they apply to this study. The theoretical and operational definitions follow, respectively.

Breast Cancer Screenings

Theoretical. The CDC defines breast cancer screenings as checking a woman’s breast for cancer before there are signs or symptoms. (Centers for Disease Control and Prevention [CDC], 2021)

Operational. This study defines breast cancer screenings as any imaging, ultrasound, MRI, x-ray, clinical or self-breast exam to detect signs of breast cancer.

Health care providers

Theoretical. Taber defines the health care provider as a professional who gives health care services or an institution that supervises the rendering of such services (Health Care Provider, n.d.)

Operational. This study defines the primary care provider as a Doctor of Medicine, Doctor of Osteopathic Medicine, physician's assistant, or a nurse practitioner in a clinical setting who provides health care to patients that can develop breast cancer.

Knowledge

Theoretical. Webster defines knowledge as facts, information, and skills acquired by a person through experience or education, the theoretical or practical understanding of a subject (Definition of Knowledge, n.d.)

Operational. This study defines knowledge as awareness gained through an educational program of breast cancer screenings

Compliance

Theoretical. Webster defines compliance as the action or fact of complying with a wish or command (Definition of Compliance, n.d.)

Operational. This study defines compliance as following or obeying breast cancer screening guidelines set forth by a credible organization

Guidelines

Theoretical. Webster defines guidelines as an indication or outline of policy or conduct (Definition of Guidelines, n.d.)

Operational. This study defines guidelines as statements that include recommendations, intended to optimize patient care, that are informed by a systematic review of evidence.

Conceptual Framework

To effectively implement a breast cancer screening educational program, it is vital to select a framework to shape the implementation process of the educational session regarding breast cancer screening guidelines to improve provider knowledge and compliance with breast cancer screening guidelines. For this project, the selected framework is the Six Sigma DMAIC (Define, Measure, Analyse, Improve, Control) framework to guide the development, implementation, and evaluation. The Six Sigma DMAIC framework is a data-driven problem-solving approach that ensures quality improvement throughout the implementation process. Research has indicated that this theoretical framework has been associated with positive outcomes in the healthcare sector by ensuring continuous improvement in the planning, implementation, and evaluation

phases of various interventions (Tolga Taner et al., 2007). It is important to describe the five interconnected phases of the approach to understanding its inner working:

- **Define-** This phase involves the process of identifying the nature of the problem, the improvement activity, and the goals and desired outcome of the proposed activity. This phase decodes the general overview of the situation at hand.
- **Measure-** This phase is a performance assessment phase. It involves monitoring the process map to determine its ability to meet the intended goals and objectives. This phase can provide feedback on aspects of the process that should be readjusted.
- **Analyze-** This phase utilizes statistical analysis to formulate a causal effect relationship. The root causes of performance variations are analyzed and appropriate measures are taken to improve the process.
- **Improve-** This phase relies on the previous phase and involves developing a plan to eliminate the root causes of variations. It involves comparing alternative remedies and selecting the most appropriate one to increase the effectiveness of the process.
- **Control-** This phase involves the process of taking charge of the process to breed sustainability and ensure the attainment of the goals. This process involves continuous monitoring to detect any factor that may jeopardize the process (Moran et al., 2020).

Overall, the Six Sigma DMAIC framework is a comprehensive approach that comprises interconnected phases. It presents a major advantage in ensuring sustained improvement. Besides, it allows for the identification and elimination of any factors that

may hinder the implementation process. It also allows the application of evidence-based practice to improve the process by identifying the most recent developments in the scientific world. Therefore, this provides adequate justification for its selection.

Utilization of Six Sigma DMAIC Framework in the Project

The Six Sigma DMAIC framework will provide the theoretical framework for identifying methods to improve provider knowledge of breast cancer screening guidelines through assessing barriers, selecting, tailoring, and implementing educational requirements. For effective utilization, all the processes will be duly followed as discussed.

In the define phase, the problem identified is the knowledge deficit in breast cancer guidelines that exist among healthcare providers. The intervention chosen to address this deficit was the incorporation of an educational program for providers to educate them on current breast cancer screening guidelines. . This project will assist in expanding the standards of care to improve provider adherence to breast screening practices while emphasizing efforts to close the gaps associated with conceivable barriers. This project will provide meaningful evidence and recommend specific changes that may be considered to increase provider use of recommended breast cancer screening guidelines. In addition, the providers will gain an understanding of using current breast screening recommendations.

The measure phase involved a knowledge assessment by providing a pre and posttest to healthcare providers. A test was issued before the educational session to form a baseline, and after learning to monitor the progress. Written practical-based tests were

administered. The providers were given a pretest to assess their current level of knowledge regarding breast cancer screenings. After the pretest, an educational session took place, and the providers were given a PowerPoint handout as well, followed by a posttest. Following the posttest, clinicians provided their email addresses and a link was emailed containing a questionnaire to self-report what practice changes they have made if any.

The analysis phase involved statistical analysis of the test scores and survey questions. The primary statistical measure used is the percentage mean. A detailed analysis was conducted to assess the effectiveness of various modes of teaching and various factors that affect performance.

In the improvement phase, feedback from healthcare providers will be key to identifying their learning needs and the knowledge gap associated with breast cancer screening guidelines. Their suggestions will be used to improve future educational sessions on breast cancer screening practices.

The control phase included the continuous application of evidence-based research into practice and the continuous assessment of outcomes related to breast cancer screening practices.

Population and Setting

The target population was all healthcare providers who provide care to patients aged 40 and above with an average risk for breast cancer. The accessible population consisted of nurse practitioners (NP), medical doctors (MD), and physician assistants (PA) who agreed to participate in the educational session and pre and posttests, and self-

report questionnaire. The education session took place on a recording platform, Zoom, and uploaded to Youtube where providers could easily watch at their convenience.

Review of Literature

Search Method

The role of the DNP scholarly project focuses on bringing evidence into practice by bridging the ever-present gap that exists between the two. Developing a high-quality, comprehensive review of the literature provided an evidence base for a scholarly project proposal and guided the researcher in project development. Finding the appropriate scope and searching mechanisms for a literature review on a topic of interest can initially be a daunting, overwhelming venture.

In this project, the phenomenon of interest was breast cancer screenings. The electronic database of EBSCOhost was used to explore the issue of Breast Cancer Screenings. The keywords searched were *breast cancer screenings, education, providers, guidelines, and primary care*.

The researcher started the review with EBSCOhost where "Breast Cancer" was entered. There were 2,070,708 results obtained. To narrow the search, the researcher then filtered the search criteria to articles between 2015 and 2020. Then 691,724 results were obtained. Next, "Screening" was added to "Breast Cancer," which resulted in 626,211 articles. Then, "Education" was added to the search criteria, resulting in 194,239 results. Continuing with the search, "Providers" was added to the search criteria, narrowing the literature to 73,790 articles. "Guidelines" was added to the search, which resulted in 11,598 articles. Since the project would take place in the primary setting, "Primary Care"

was added, which yielded 6,894 results. Lastly, the articles were filtered to scholarly peer-reviewed journals, which equated to 387 results.

Literature Synthesis

Critical review and analysis of scholarly research articles on breast cancer screening are essential to this study. Journals to be reviewed were acquired from PubMed, CINAHL, Google Scholar, and Cochrane. Different electronic sources increase the reliability of the literature review. This study selected the journals using six keywords and phrases: breast cancer, mammography, breast cancer screening, cancer screening compliance, and evidence-based practice. The subsequent part of the paper systematically reviewed articles on the research topic, “Will the implementation of an educational session regarding breast cancer screening guidelines improve provider knowledge and compliance with breast cancer screening guidelines, and self-reported practice change?”

Edwards and Seibert (2010) evaluated breast cancer risk assessment (BrCRA) by nursing practitioners in health facilities that offer primary care. In the survey, 35 nurse practitioners (NPs) were administered a pre and post-test on how effective a BrCRA program was in alleviating errors in breast cancer screening. Participants were attendees of a national nursing conference. All 35 nurse practitioners involved in the pretest also participated in the posttest with a 100% participation rate. Following the educational program, the NPs were asked to complete a computerized survey evaluating the effectiveness of the program. The surveys were analyzed statistically, and the results were included as part of the study. The study revealed that many NPs fail to assess the risk of breast cancer in women because of a lack of ample and reliable knowledge. The study pinpointed poor interpretation of family history and inadequate knowledge in using

empirical modeling skills to detect breast cancer. Edwards and Seibert (2010) contributed to the current practice change project by identifying a knowledge gap in cancer assessment and screening and with recommendations for the implementation of an educational program to aid in reducing the gap.

Haas et al. (2015) addressed changes in the breast cancer screening national guidelines by the U.S Preventive Services Task Force (USPSTF). USPSTF revised the ages for 50-year-old and revolutionized mammography guidelines in screening breast cancer. The study utilized a confidential web and mail survey on various attitudes on breast cancer screening. The criteria for participation were extensive as it covered different medical professions from different primary care facilities located in different U.S. cities. The study attracted 688 participants. The confidentiality and the comprehensive participation criteria add to the reliability of the article in the current practice change study. Haas et al. (2015) revealed that the leading causes of low efficacy of mammography were insufficient knowledge of its usage and a lack of proper understanding of the importance of the set guidelines of breast cancer screening. The article is relevant for this study as it identifies the education gap as one factor that diminishes the efficiency of breast cancer screening.

Magnus et al. (2011) performed a randomized control trial to evaluate the effectiveness of mammography in reducing breast cancer–related mortality in women of age 39-49 years. It involved reviewing meta-analyses of previously researched data from 9 published sources. The study revealed that the correct use of mammography could reduce the mortality rate of breast cancer by 17%. However, the study revealed that there are a high number of false-positive tests, biopsies that are not necessary, and follow-up of

USPSTF new guidelines for mammography usage. The gaps identified by the authors explain the relevance of this project. Moreover, RCTs offer a broad platform for picking up data hence reducing any biasing and ineffectiveness (Magnus et al., 2011).

A study by Monticciolo et al. (2017) reveals how breast cancer was a killer disease in the 1990s. However, early detection using mammography reduced the death rate by 38% by 2017. ACR breast cancer screening experts have reviewed data from RCTs, observational studies, US screening data, and other peer-reviewed literature on breast cancer screening using mammography, the authors identified a progressive increase in the effectiveness of breast cancer screening. The upward trend was also increased with the reformulation of breast cancer screening guidelines by relevant bodies. The study identifies the American College of Radiology (ACR) guidelines as one of the contributors to improved breast cancer screening. ACR guidelines are frequently updated with changes in mammographic technology. It ensures that radiographers and other healthcare professionals are acquitted with the changes to increase their effectiveness. Monticciolo, 2017 revealed that the more women were enlightened by the risks associated with mammography screening, the more their willingness to accept screening, unlike when they stick with stereotypes and myths about mammography screening. To achieve this, healthcare providers must be provided with correct and up-to-date evidence to improve their knowledge of breast cancer screening.

Madanat and Merrill (2012) conducted a study to examine the level of knowledge of breast cancer among Jordanian nurses and their proficiency in the early detection of cancer. They utilized a descriptive study model and selected nurses from both government and private sectors. They sampled 395 nurses of age between 21-and 51

years. The results revealed that nurses had a mean score below the average ($X = 51\%$, $SD = 19$), implying that most had little knowledge about breast cancer screening and assessment. A large sample of the nurses attained a below-average score in breast cancer knowledge, which calls for urgent intervention to improve nursing knowledge of breast cancer screening and assessment. Inadequate knowledge can lead to adverse outcomes because of faulty screening practices.

Project Implementation/Methodology

This quality improvement project regarding expanding health care providers' knowledge and compliance of breast cancer screenings was adherent to Mississippi University for Women's guidelines with approval from the Mississippi University for Women Institutional Review Board. Participants for the project were recruited by both personal request and email. Originally, the researcher's goal was to offer as many face-to-face encounters as possible, but due to COVID, the majority of the educational sessions were delivered digitally. Google Docs and YouTube were utilized for data collection and recording of the educational session.

A pretest was emailed to the participants explaining the purpose of the project and what to expect. A link to a recorded educational session was then emailed along with a PowerPoint file for the participants to take notes and use as a reference during everyday practice. Immediately following the educational session, a posttest was emailed to the participants. One month following the posttest, a self-report questionnaire was emailed to assess the provider's knowledge level and intent to change breast cancer screening practices based on information received.

Tools/Instrumentation

A PowerPoint presentation entitled “Breast Cancer Screenings” developed by the researcher was utilized as the center point of reference for the educational session. A pretest, posttest, and self-report evaluation questionnaire were utilized to assess providers’ knowledge. The questionnaires utilized were developed by the researcher and therefore, only have face validity. Each questionnaire was reviewed by the project advisor before application for IRB approval. The pretest assessed providers’ knowledge of breast cancer and breast cancer screenings before the educational session. The posttest assessed what the provider had learned after the completion of the educational session. The self-report questionnaire evaluated knowledge the provider had taken from the educational session and implemented it into their practice.

Evaluation Methods

To determine the effectiveness of the project implementation, a statistical analysis was conducted. The data was stored in an Excel spreadsheet and sent to a professional statistician to assist in the analysis of the information. The project had two goals: to improve provider knowledge and compliance of breast cancer screenings with current guidelines and to prompt a change in clinical practice as evidenced by the self-reported practice change questionnaire.

Project Timeline

The original proposal was completed in the fall semester of 2020. The researcher continued to review the literature and develop questionnaires throughout the spring semester of 2021. The researcher then applied for approval from MUW IRB. Approval

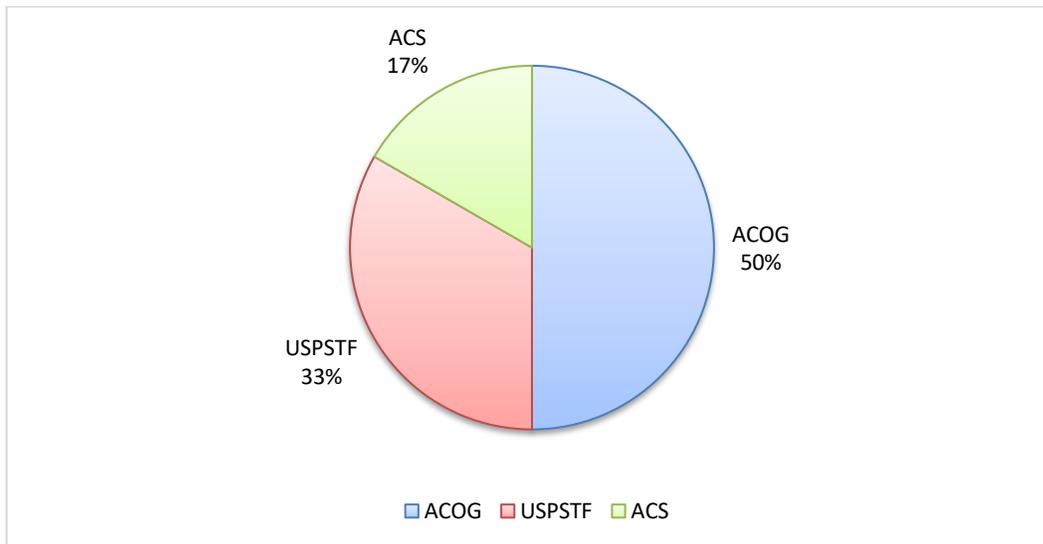
was granted, but shortly after an amendment to IRB and submitted, and the researcher was granted approval in Spring 2021. Following approval, the introduction of the project and the pretest were emailed to participants in fall 2021. Educational sessions took place throughout the last three months of 2021. Posttest immediately followed the sessions. The self-report practice change questionnaire was collected one to two months following sessions and posttests. After data collection was completed, the data was compiled into an Excel spreadsheet and sent to a statistician for interpretation of findings. Results were compiled in March 2022.

Results

This quality improvement project was conducted to increase confidence among healthcare providers regarding breast cancer screenings. Educational sessions were conducted with questionnaires administered before, immediately following, and one month later. Data was first compiled in Microsoft Excel. Data was collected from healthcare providers. Subsequent analyses were performed using IBM SPSS Statistics Software, v. 27.

Participants

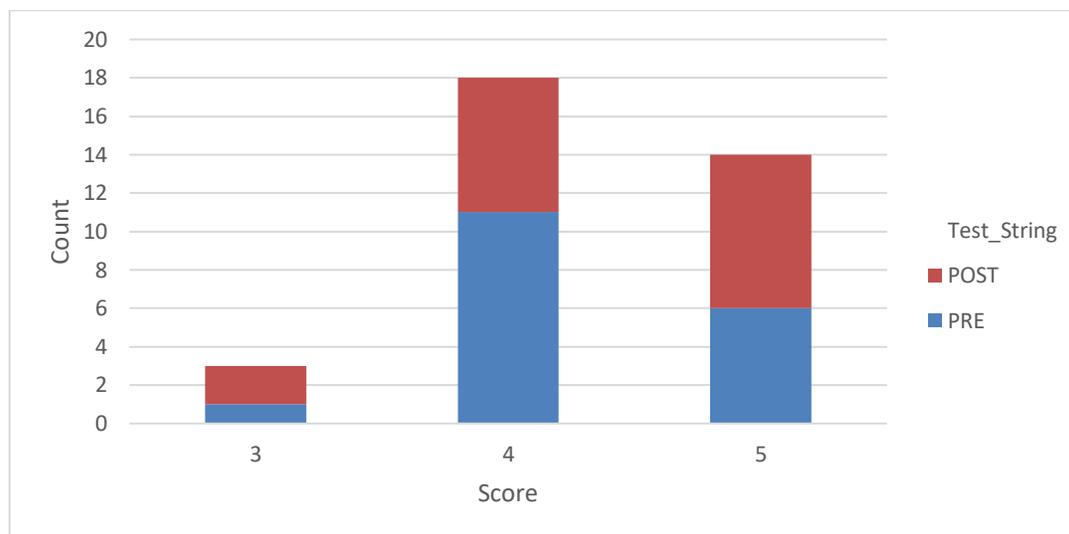
Three questionnaires were given: pretest, posttest, and one-month follow-up. A total of 18 participants completed the pretest, 17 completed the posttest, and 10 completed the one-month follow-up questionnaire. Participants were asked which guidelines they utilized in their day-to-day clinical practice when screening for breast cancer. As shown in Figure 1, the most common guidelines followed were ACOG, followed by USPSTF, and ACS.

Figure 1*Guideline Comparison*

Note. Guidelines used by participants for breast cancer screening

Pretest versus Posttest

The pretest and posttest questionnaires were scored based on correct answers provided by the student researcher. Each questionnaire had a total possible score of five points. The distribution of scores from the returned surveys is shown in Figure 2. The scores on the pre-test ranged from 3 to 5, with an average score of 4.28 and a standard deviation of 0.58. The scores on the post-test ranged from 3 to 5, with an average score of 4.35 and a standard deviation of 0.70.

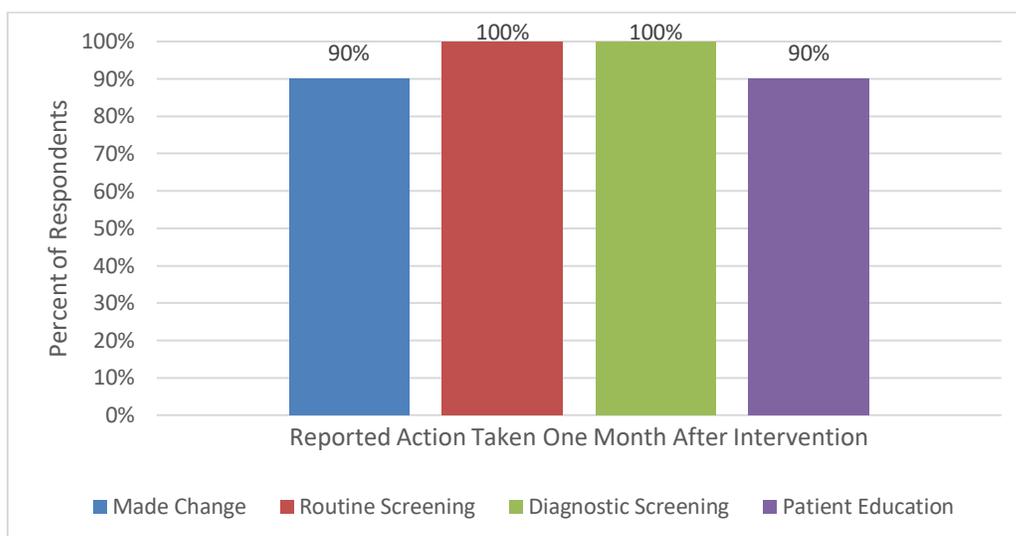
Figure 2*Pretest versus Posttest Score*

Note. Score distribution of pretest and posttest questionnaire, where a maximum score is five points

A one-way ANOVA (analysis of variance) was conducted to determine if there was a significant difference in scores between the pre-test and post-test questionnaires. ANOVA results showed no statistical difference between the scores of the two questionnaires ($F(1, 33) = .121, p = .730$). While the average score improved by 0.07 points, the difference is not statistically significant and may have been due to chance.

One-Month Follow-Up

Participants were invited to complete a self-evaluation one month after the educational session. The results of the self-evaluation are shown in Figure 3. The data shown in the figure is the percentage of respondents indicating yes to the behavior listed on that survey item. All four survey items had a majority of respondents indicating that they were performing the recommended behavior.

Figure 3.*Self-Evaluation*

Note. Participant's one-month self-evaluation results

Outcomes

Cancer is one of the most impactful diseases and is among the leading diseases in terms of morbidity and mortality. One of the most common types of cancer is breast cancer, which has been described as the second most common type of cancer only after lung cancer worldwide (Ghoncheh et al., 2016). Breast cancer is the most prevalent form of cancer among women. The Centers for Disease Control and Prevention statistics on breast cancer are alarming. In the United States, an estimated average of 250,000 women and 2,300 men are diagnosed with breast cancer annually. An estimated 42,000 women and 510 men succumb to breast cancer annually (Centers for Disease Control and Prevention, 2020). The statistics on breast cancer indicate a major healthcare problem that calls for urgent intervention.

The pretest questionnaire was administered before the start of the educational presentation. Question one of the pretest asked at what age is it recommended that a patient should have their first mammogram. Options ranged from age 30 to 50, 80% of the participants answered correctly with 40 being the correct answer. Question two assessed which guideline the participant used when screening patients for breast cancer. As shown in Figure 1, 50% of the participants indicated that they use ACOG. Question three asked, “How often, if at all should women check their breasts for possible signs and symptoms of breast cancer”? 100% of participants answered “At least once a month. Question four asked what are known risk factors for developing breast cancer, only 45% of participants answered that all choices were risk factors. Question five asked whether a mammogram was needed after menopause. Only one participant answered “No”. Question six asked, “Can men get breast cancer”? All participants (100%) answered “yes”.

The post-implementation was provided immediately following the educational session. The post test was to evaluate what the participants had learned from the educational session. One of the main topics discussed in the educational lecture was available imaging tests to assess for breast cancer. The majority of the participants (88%) responded “all of the above”. Answered varied on question four. The question asked, “What is the difference between screening mammography and diagnostic mammography”? All participants (100%) indicated they would make a practice change based on the educational sessions.

One month later participants were emailed a self-report evaluation. When asked had there been a practice change made, the majority of the participants (90%) reported

they had. All participants indicated they ordered routine screening mammograms on patients of the correct age per the guidelines they followed. All participants answered “yes” indicating that they ordered a diagnostic mammogram or another imaging study if a patient had a breast complaint. Only one participant responded that they did not educate patients on monthly self-conducted breast exams.

When reviewing the overall project outcomes, the researcher considered the project goals to be met. Breast cancer and breast cancer screenings are common topics and healthcare providers are familiar with screening guidelines. Results showed a slight increase in provider knowledge as evidenced by a higher average score on the posttest. Results also indicated that the majority of providers reported making a practice change in their routine practice.

Project Limitations

When considering the implementation of this project, several limitations were noted. First, the researcher could not offer many face-to-face sessions due to COVID and restrictions on the social gathering. Another limitation was the sample size, despite multiple recruitment efforts. Lastly, the number of respondents for the posttest was less than that for the pretest.

Project Significance

Early detection is vital for the effective treatment and management of breast cancer. Screening for breast cancer has become a public health undertaking for early diagnosis and is cost-effective for cancer management. The United States Preventive Services Task Force (USPSTF) currently recommends mammography screening for

females starting at age 50 and continuing until age 74 (Siu, 2016). For women ages 40 to 49, the USPSTF recommends selective screening based on individual factors, given a lower net benefit of avoiding breast cancer deaths than harm. In contrast, the National Comprehensive Cancer Network (NCCN) and American College of Radiology (ACR) recommend annual mammogram screening to start at age 40 with discontinuation dependent upon limited life expectancy (from factors such as co-morbidities, age) determined by provider discretion and if no further interventions (i.e., additional imaging, biopsies, breast cancer treatment) were to be pursued regardless of mammogram imaging results (Bevers et al., 2018). This project has the potential to be largely significant in expanding the standards of care to improve provider adherence to breast screening practices while emphasizing efforts to close the gaps associated with conceivable barriers. This project provides meaningful evidence and recommends specific changes that may be considered to increase provider use of recommended breast cancer screening guidelines. In addition, the providers can gain an understanding of using current breast screening recommendations.

Implications and Recommendations

Although the sample size was small, the results of this project were statistically significant in several areas. Some implications and recommendations are easily drawn from this small quality improvement project. The implications for nursing, nursing research, nursing education, and the community will be further discussed.

Nursing

This project revealed that the dissemination of educational sessions leads to an increase in provider knowledge of breast cancer screenings and prompted a self-report practice change in their clinical practice. It is recommended that all healthcare providers continue to follow their guidelines of choice to aid in compliance with the evidence-based recommendations.

Nursing Research

This study could be used for future research. It is recommended that future studies obtain a larger sample size, as well as continue educational sessions and add in algorithms. Also, future studies could address the limitations of the current studies. Re-assessing and expanding on the framework used to guide the current study can be utilized for future studies. Healthcare is always changing; therefore, future studies will need to stay up to date with current guidelines and recommendations.

Nursing Education

The results of this study indicated that exposure to the guidelines through an educational session led to increased provider knowledge and increased self-reported compliance with recommendations. It is recommended by the researcher that these guidelines be implemented as a part of the routine curriculum for all nurse practitioner programs and other graduate-level nursing education programs. Evidence to support this could be gathered by future research on this topic.

Community

Although breast cancer is not entirely preventable, its screening promotes a longer and better lifestyle, and cancer patients evade premature deaths. It is worth noting that the decision to start screening with mammography should be individual. Therefore, the project strived to encourage health care providers to screen patients, especially those with known risk factors. The project also created awareness that screening is essential but does not reduce breast cancer mortality. Educating providers and encouraging them to educate their patients could increase patients' knowledge about breast cancer symptoms. This could be done by providing written booklets with brief information about the disease. In return, this may help all women to be aware of the impending danger of breast cancer and the necessity of screening. Similarly, information about age-related risks can be shared in leaflets, booklets, or brochures and distributed to all women in the communities.

Budget/Cost

This project had minimal cost aside from time taken off from work, without pay, dedicated to its completion. The research was conducted for academic purposes, and the researcher was not reimbursed for time spent on the project. Additionally, all materials for the project were created and disbursed to participants electronically so there was no money spent on the material. The gross estimate for the time the researcher for time missed from work is calculated below.

Expense	Estimated Cost
4 missed days of work; 8 hours each day	\$1504.00
Total	\$1504.00

Conclusion

This quality improvement project was completed to determine if educational sessions regarding breast cancer screenings would improve healthcare provider knowledge and lead to a practice change. There is a huge knowledge deficit in breast cancer screening guidelines among healthcare providers. As a result, several errors often result in misdiagnosis or failure to identify breast cancer at an early stage. In most cases, the outcome of this is detrimental. This provides the rationale for the need to eliminate the knowledge gap through the implementation of educational sessions for healthcare providers. Research has indicated that this is a feasible and effective intervention. It was determined that the project goals were met. The majority (90%) of participants reported making a change to their routine clinical practice. The framework selected for implementation is the Six Sigma DMAIC framework. The approach gives room for evidence-based practice to guarantee continuous performance improvement.

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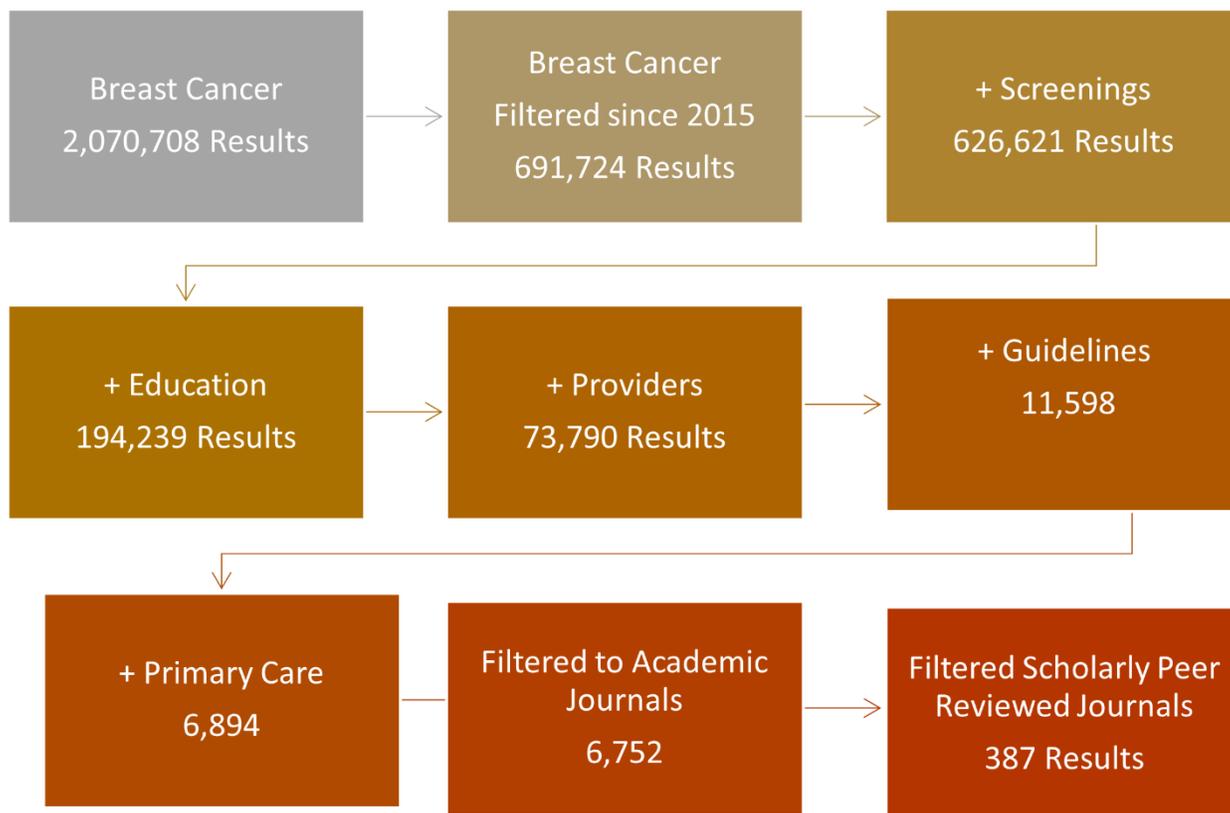
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Appendix A

Search Strategy Key Terms and Map



Appendix B

IRB Approval



March 26, 2021

aalester@muw.edu

Dear Dr. Lester:

I am pleased to inform you that the members of the Institutional Review Board (IRB) have reviewed the following proposed research and have approved it as submitted:

Name of Study:	Improving health care provider knowledge and compliance of breast cancer screenings
Research Faculty/Advisor:	Alena Lester
Investigators:	Jalisha Brown

I wish you much success in your research.

Sincerely,

Scott Tollison, Ph.D.
Provost and Vice President for Academic Affairs

ST/tc

pc: Irene Pintado, Institutional Review Board Chairman

Appendix C

**IMPROVING HEALTH CARE PROVIDER KNOWLEDGE AND COMPLIANCE
OF BREAST CANCER SCREENINGS**

Pre-Test

Introduction

Dear participant,

My name is Jalisha Brown. I am a DNP (Doctor of Nursing Practice) student at The Mississippi University for Women, and I invite you to participate in my practice improvement project. Participation is strictly voluntary. Completion and submission of the pretest imply consent to participate in the study. The purpose of this pretest is to evaluate your knowledge of breast cancer screenings. All submissions will be anonymous. Results of this pretest will be utilized to determine health care providers' current knowledge base of breast cancer screenings. This pretest will be followed by either an in-person educational session or a recorded zoom video, an educational PowerPoint, a posttest immediately following the educational session, and a self-report practice change questionnaire in one month. Thank you for your participation.

Pre-test

1. It is recommended that a patient should have their first mammogram at age.
 - a) 30
 - b) 40
 - c) 50
 - d) 35

2. What guidelines do you use in your day-to-day clinical practice when screening for breast cancer?
 - a) ACOG
 - b) USPSTF
 - c) ACS
 - d) NCCN

3. How often, if at all, should women check their breasts for possible signs and symptoms of breast cancer?

- a) At least once a month
 - b) Everyday
 - c) Once a year
 - d) Once every six months
4. What are known risk factors for developing breast cancer? (Select all that apply)
- a) Age
 - b) Genetics
 - c) Drinking alcohol
 - d) Radiation to Chest or Face Before Age 30
5. Are mammograms still needed after menopause?
- a) Yes
 - b) No
6. Can men get breast cancer?
- a) Yes
 - b) No

Appendix D

**IMPROVING HEALTH CARE PROVIDER KNOWLEDGE AND COMPLIANCE
OF BREAST CANCER SCREENINGS**

Post-Test

Introduction

Dear Participant,

My name is Jalisha Brown, I am a DNP student at The Mississippi University for Women. By now you should have taken the pretest, watched the record educational session, received the educational PowerPoint to go along with the presentation, and have to refer back to in your clinical practice. Please complete this posttest after you watch the presentation and in one month, I will be sending out a self-report practice change questionnaire. Thank you for participating.

Post-Test

1. How many women in the United States will develop breast cancer in their lifetime
 - a) 17%
 - b) 24%
 - c) 50%
 - d) 13%

2. A patient presents to the clinic with a history of breast cancer, what diagnostics should be considered when screening this patient?
 - a) Diagnostic Mammogram
 - b) Breast Ultrasound
 - c) Breast MRI
 - d) All the Above

3. What screening tests are available to men with suspected breast cancer?
 - a) Ultrasound
 - b) Mammogram
 - c) Biopsy
 - d) All the Above
4. What is the difference between screening mammography and diagnostic mammography?
5. Do you plan to make a practice change for screenings of breast cancer based on the presentation?

Appendix E

**IMPROVING HEALTH CARE PROVIDER KNOWLEDGE AND COMPLIANCE
OF BREAST CANCER SCREENINGS**

Self-report Evaluation

Introduction

Dear Participant,

This questionnaire is to evaluate whether you applied your knowledge of breast cancer screening to your everyday practice after the educational session that you participated in 1 month ago. Responses to this questionnaire will be utilized to determine the effectiveness of a practice improvement project for completion of my Doctor of Nursing Practice (DNP) degree. Participation is strictly voluntary. Completion and submission of this questionnaire imply consent to participate in the study. You may choose to withdraw from the study at any time before submission. All submissions will be anonymous. Thank you for your participation.

Evaluation

1. Have you made a practice change regarding breast cancer screening since the presentation?
 - a) Yes
 - b) No

2. I ordered routine mammograms on patients of the correct age per the guideline that I follow.
 - a) Yes
 - b) No

3. I ordered a diagnostic mammogram or another imaging study of the breast when a patient had a breast complaint or abnormal screening mammogram?
 - a) Yes
 - b) No

4. I educated patients on the importance of monthly self-breast exams.
 - a) Yes

b) No

5. What changes have you made in your practice regarding screening for breast cancer?