A QUALITY IMPROVEMENT PROJECT TO IMPROVE SCREENING MAMMOGRAMS
AMONG OLDER HISPANIC WOMEN IN A PRIMARY CARE CLINIC

A Doctor of Nursing Practice Project Report

by

ROSA I. PEREZ

BSN, Texas A&M International University, 2004
MSN, Texas A&M International University, 2012

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This Doctor of Nursing Practice Project Report meets the standards for scope and quality of
Texas A&M University-Corpus Christi College of Nursing and Health Sciences and is hereby
approved.

Tammy Walker-Smith, DNP, MHA, APRN, FNP-C   Kyoung Eun Lee, PhD, WHCNP, RN
Chair   Project Advisor

Kimberly Reinhardt, PhD
Graduate Faculty Representative

August 2022

DEDICATION

I would like to dedicate this work to my loving family: my husband, Mario, for your unconditional source of support and for always believing in me; my three beautiful daughters, Krystal, Karyna, and Kaylee, who inspire me to be a better person every single day.

ACKNOWLEDGEMENTS

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ABSTRACT

Background: Breast cancer is a growing health care concern. Based on current incidence rates, 12.9% of women born in the United States today will develop breast cancer at some time during their lives (Howlader et al., 2020). Healthcare providers (HPS) play an important role in managing breast cancer screening mammograms in primary care. **Purpose:** To implement interventions guided by two evidence-based guidelines to improve health care providers' (HCP) management of predominantly Hispanic female patients between the ages of 40 and 74. **Methods:** A pre and post design was used to implement an educational intervention, based on the U. S. Preventive Services Task Force (USPSTF) clinical guidelines, which recommended that older women, ages forty and over, make personal decisions with their health care providers about breast cancer screening frequency. **Results:** This Quality Improvement (QI) project's findings reflect a 10% increase overall in a three-month period for mammogram completion rates (67%) compared to pre-intervention mammogram completion rate baseline data for 2019 (57%). **Implications:** This QI project demonstrated positive outcomes for increasing screening mammogram completion rates and potential early detection of breast cancer where treatment modalities may provide a higher survival rate where quality of life for patients and family members can be achieved with a greater chance for remission with early detection and treatment.

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A Quality Improvement Project to Improve Screening Mammograms Among Older Hispanic

Women in a Primary Care Clinic

INTRODUCTION

According to the World Health Organization (WHO), cancer is a leading cause of death

worldwide, accounting for 7.6 million deaths in 2008 (Brouwers et al., 2017). Breast cancer is

the most diagnosed cancer in women and the second leading cause of cancer-related deaths

among women in the United States (Lee, Chang & Hurley, 2019). From 2010 through 2015,

1,390,357 females were diagnosed with breast cancer and 246,671 females died from breast

cancer in the United States (Lee, Chang & Hurley, 2019). Since 2004, the overall, invasive breast

cancer incidence rate has risen by about 0.3 percent per year in the United States. In 2019,

approximately 268,600 new cases of invasive breast cancer and 48,100 cases of ductal carcinoma

in situ (DCIS) were diagnosed among American women (De Santis et al., 2019).

Background

In 2015, breast cancer was responsible for 41,523 new cancer deaths in the United States

(Jain, Guan, Faisaluddin, Manoucheri, & Fang, 2019). As of January 1, 2019, more than 3.8

million women with a history of breast cancer were living in the United States. This estimate

includes more than 150,000 women living with metastatic disease, three-quarters of whom were

originally diagnosed with stage I, II, or III breast cancer (De Santis et al., 2019). Breast cancer

disparities among racial and ethnic minorities and low-income women, including African

American, Latina, and Arab women, have been attributed to lower rates of breast cancer

screenings (Talley, Yang, & Williams, 2017). These cultural and racial disparities occur

primarily due to decreased breast cancer awareness, low social support system availability, and poor access to health care services (Talley et al., 2017).

Henderson et al. (2020) suggested that racial/ethnic disparities in breast cancer mortality rates are attributable to multilevel factors which include the following (1) higher likelihood of advanced-stage cancer diagnosis, (2) decreased access to quality breast care, (3) lower likelihood of standard medical treatment, (4) lower socioeconomic status, (5) perceived healthcare system access barriers for self-pay patients, (6) lack of patient education and awareness regarding the importance of breast cancer screening, (7) cultural beliefs/ stigma, (8) environmental factors, and (9) genetic factors (Henderson et al., 2020). Sociocultural factors, such as health insurance, income, education, and acculturation, have been shown to predict use of preventive services and cancer screening among U.S. Hispanics/ Latinas. Furthermore, approximately 37% of Hispanic /Latino adults lack health insurance and 28% do not have a usual or primary care provider, compared to only 13% and 16% of non-Hispanic/Latino whites, respectively (Moreno et al., 2019).

Review of Literature

One such qualitative study by Bea et al. (2020) found that among a Native American tribe, Navajo cancer survivors, that they too had similar disparities regarding access to care and a lack of understanding the importance of breast cancer screening. Interviews included questions related to perceptions of cancer causes, prevention, and treatment. A standardized discussion guide was used for all focus groups and individual interviews. A bilingual oncology nurse with experience in qualitative research conducted interviews in both Navajo and English for the study to ensure proper translation and communication was conveyed during the interview (Bea et al., 2020). Thirty-two cancer survivors participated in the focus groups and interviews, including

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thirteen males and nineteen females. The results of this study showed cancer-related education and interventions to promote healthy behaviors were desired by study participants. Such finding demonstrated the need for prevention and screening strategies to improve patient outcomes (Bea et al., 2020). Another qualitative study explored the challenges to survivorship care for rural Latina breast cancer (BC) patients and approaches to supporting survivorship care plans (SCP) from stakeholder's perspectives. (Ko et al., 2021). Themes related to the patient's SCP challenges included: (1) lack of knowledge of treatment information, (2) lack of proactive health behavior, (3) gaps in information for care coordination, and (4) difficulty retaining health information. The findings indicated the importance of addressing challenges for survivorship care on multiple dimensions: cognitive, behavioral, social, and structural (Ko et al., 2021).

A systematic review was used to assess the rigor of recently effective, evidence-based studies to test mammography screening educational interventions primarily involving Hispanic women in the United States (Luque et al., 2019). These meta-analysis reports combined findings from five rigorously designed intervention trials testing the effectiveness of mammography screening educational interventions using outcome data from a total of 2343 participants. The review included studies published between May 2003 and September 2017 with experimental and quasi-experimental interventions to increase mammography screenings (Luque et al., 2019).

A prospective randomized controlled design by Ishikawa et al. (2012) concluded that one of the effective evidence-based strategies were tailored interventions, which included individual assessments and tailored messages through print, by telephone and in person. The women selected for inclusion in the study met the following criteria (a) had no mammogram in the previous 24 months and (b) were over 51 years old. The 19.9% of women in the group who received reminders underwent a screening mammogram, while only 5.8% of women in the non-

tailored group completed their mammograms. This study concluded that a tailored reminder represented a useful and cost-effective strategy to improve breast cancer screening rates among non-adherent women (Ishikawa et al., 2012).

Bellhouse, McWilliams, Firth, and Yorke (2017) used a systematic review to identify the effectiveness of community-based health worker (CBHW) interventions for early detection of cancer. These researchers showed that patient behaviors negatively impact communication with healthcare providers. Barriers to attending screening or raising a cancer-related health concern with health care professionals remained, including language and cultural barriers, feeling of embarrassment and fear, and perceptions of wasting doctors' time (Bellhouse et al., 2017). Studies concluded that effective evidence-based strategies play a role in increasing screening mammograms. Primary care providers should identify barriers that may prevent Hispanic females from seeking cancer screenings. The discussion of breast cancer screening status between patients and providers can significantly increase compliance and screening rate (Jain et al., 2018).

Problem Description in the Setting

An organizational assessment was performed in a primary care clinic (PCC). After conducting measurements of the PCC's baseline mammogram completion rate, using the electronic health record for patient visits from January 1 thru December 31, 2019, it was concluded that 57% of women ($n = 203$) who received an order, had completed the screening mammogram. A total of 441 age qualifying females were seen in one year, of which 203 screening mammograms were ordered and provided the screening mammogram order to patients to schedule for completion. Out of 203 screening mammograms ordered, 116 were completed, which equated to a 57% completion rate. This reflected a 14% screening mammogram disparity

compared to the overall rate of 71% among Hispanic women in the United States for 2018 (American Cancer Society, 2018). These assessment findings indicated there was a need to implement a quality improvement program to improve the mammography completion rate for Hispanic female patients between the ages of 40 to 74 who qualified for screening mammograms. Retrospective chart reviews were conducted for patients aged 40 to 74 and who were seen between January through March 2019. The review explored women's wellness exams, including screening mammogram orders. This quality improvement project was perceived by the clinic to be an important project in improving the health of the clinic's predominantly Hispanic, underserved population

Project Purpose and Aims

The purpose of this quality improvement project was to determine if interventions guided by two evidence-based guidelines aimed at improving health care providers' (HCPs) management of predominantly Hispanic female patients between the ages of 40 and 74 years. The first one was the United States Preventive Service Task Force (USPSTF) (United States Preventive Service Task Force, 2016) screening mammogram clinical guidelines. The second evidence-based intervention was integrating the Behavioral Risk Factor Surveillance System (BRFSS) (BRFSS Statistical Brief on Breast Cancer Screening, 2019) to interview and identify women who are due for a screening mammogram to increase HCP orders and patient completion of screening mammograms. The clinical question guiding this quality improvement project is as follows: In a primary care clinic, does implementing an evidence-based clinical guideline, for a three-month period (January 2022 thru March 2022), improve initiation and completion of screening mammograms (for Hispanic women between the ages of 40 to 74. The specific aims of this project are to:

1. Improve screening mammogram completions for qualifying female patients between the ages of 40 to 74 as measured by maintaining a 5% increase in screening mammogram completions for qualifying female patients between the ages of 40 to 74 each month across the months of January, February, and March. Data generated using the EHR will be used to quantify mammogram completion per month.

2. To increase the clinical staff's knowledge of United States Preventive Service Task Force, 2016) clinical guidelines, which recommend (1) that women aged 40 to 49 make personal decisions with their health care providers regarding screening frequency and (2) that women aged 50 to 74 years screen biennially. The staff received education and guidance regarding the implementation of the clinical guidelines. The specific goal is to improve clinical staff's knowledge of United States Preventive Service Task Force, 2016) clinical guidelines as measured by comparing the change in the clinical staff's ($n = 2$) knowledge of breast cancer screening before and after the intervention.

This QI project aligned with DNP Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health. The project related to this essential because the DNP should be prepared to play a central role in the implementation of clinical prevention and population health activities and is central to achieving the national Healthy People 2030 (Objective C-5) to increase the number of women who are screened for breast cancer in the United States (USDHHS, 2020). This project focuses on health promotion and disease preventions; hence, it aligns with both Healthy People 2030 and the DNP Essential VII (Clinical Prevention and Population Health for Improving the Nation's Health) (American Association of Colleges of Nursing [AACN], 2006).

Guiding Frameworks

The Health Belief Model (HBM) is a theoretical framework which guided the approach to initiate interventions that encourage behavior changes in patients (see Figure 1).

Figure 1

Health Belief Model
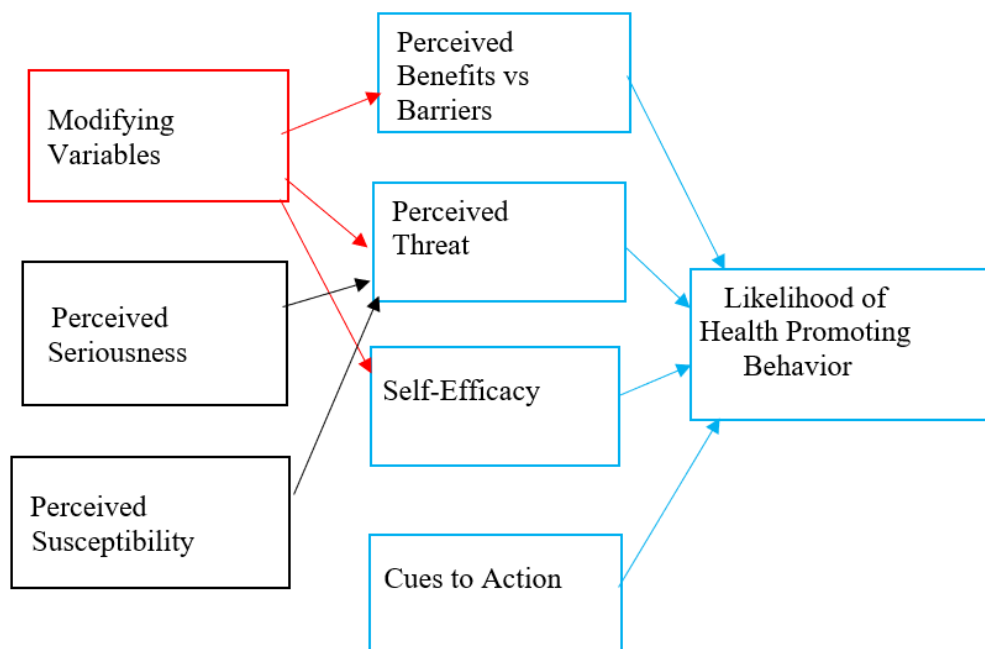
The (HBM) explains and predicts health behaviors which includes risk susceptibility, risk severity, benefits to action, barriers to action, self-efficacy, and cues to action (Jones et al., 2015). Barriers included language, cultural barriers, embarrassment, fear, and perceptions of wasting doctor's time when discussing screening mammograms or raising cancer-related health concerns with health care professionals (Bellhouse, McWilliams, Firth, Yorke, and French, 2017). This model aligns with the purpose of the quality improvement project, which included

addressing or eliminating barriers to screening mammograms, improving patient awareness of mammogram recommendations, and the increase of screening mammograms completed when notified they were due for their screening mammogram and the importance of early detection.

Health care providers using current guidelines and providing education on preventive testing in clinical practice are key elements in the Awareness, Desire, Knowledge, Ability and Reinforcement (ADKAR) Change Model. Awareness, Desire, Knowledge, Ability and Reinforcement (ADKAR) is a research-based, individual change model that represents the five milestones an individual must achieve to change successfully (AlManei, Salonitis, & Tsinopoulos, 2018) (see Figure 2).

Figure 2

ADKAR Change Model
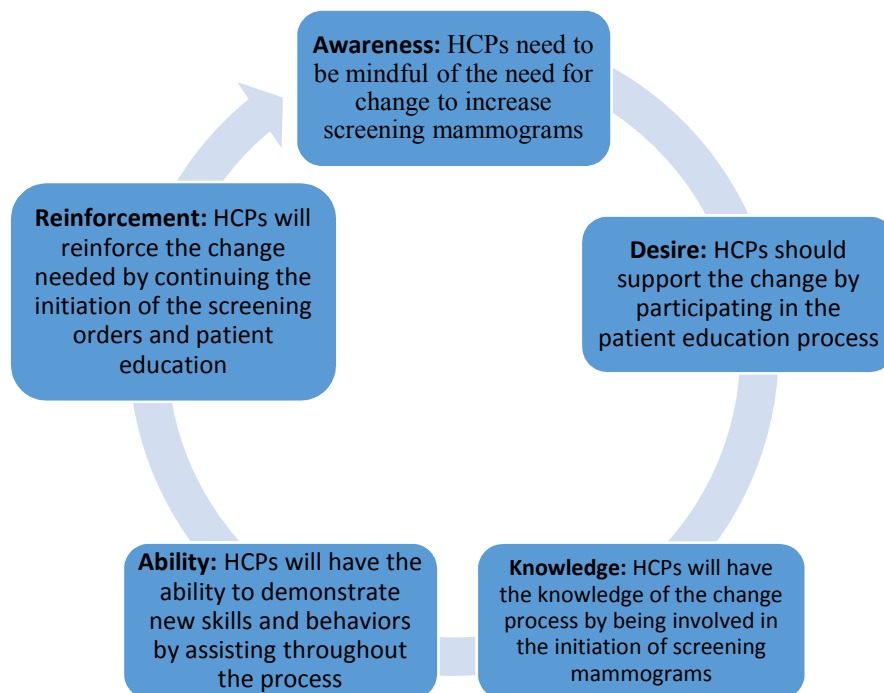
The five milestones are as follows: (A) HCPs need to be mindful of the need for change, increasing screening mammograms, ordered and completed, (D) HCPs should support the change by participating in the patient education process, (K) HCPs will have the knowledge of the change process by being involved in the initiation of the screening mammogram orders, (A) HCPs will have the ability to demonstrate new skills and behaviors by assisting in the implementation of the process to initiate the screening mammogram orders, and (R) HCPs will reinforce the change needed by continuing the initiation of the screening orders and conducting patient education.

METHODS

Ethical Considerations

This project was reviewed and determined to not meet the criteria for human subject's research by the TAMU-CC Institutional Review Board and approval was received to proceed (see Appendix A). Personal Health Information (PHI) was collected for project purposes, following the execution of a HIPPAA Confidentiality Agreement from the facility (see Appendix B). A letter of support was provided by the Administrator of the clinic agreeing to fully support the project (see Appendix C). To assure the protection of PHI, participants' medical records were secured by password electronic records and computer kept in a locked office.

Project Design

This QI project focused on delivering an educational intervention to clinic staff who in turn would provide education to Hispanic women aged 40 to 74, based on the USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines, which recommended that older women ages forty and over make personal decisions with their health care providers about breast

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cancer screening frequency. The project was conducted using a pre-and post-evaluation test to evaluate understanding of clinical guidelines for screening mammograms. The USPSTF (U. S. Preventive Services Task Force, 2016) screening guidelines provided evidence-based recommendations that the QI project implemented to increase identification and ordering of screening mammograms in Hispanic women aged 40 to 74 in a primary care clinic in South Texas. The clinical staff used the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) to identify qualifying women who were due for a screening mammogram and then initiate the process of HCPs ordering screening mammograms so that patients could complete their screenings at a higher rate than pre-intervention completion rates. This survey has been used extensively and shown to be valid and reliable by the Centers for Disease Control and Prevention (see Appendix D), which asks: (A) have you ever had a test (mammogram)? yes or no, and if yes, then (B) when was your last test (mammogram)?

This QI project was conducted in a PCC in Eagle Pass, Texas. The clinic sees an average of 17-22 patients per day and was managed by one family nurse practitioner, two medical assistants, two administrative assistants, and one phlebotomist. The facility used Athena as its electronic health record (EHR). Most patients were Hispanic, with commercial insurance, Medicare, and/or Medicaid coverage. Upon conducting an initial assessment of the screening mammogram ordering process, it was concluded that there was no standardized protocol in place. An educational activity was organized to educate HCPs on the implementation of the USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines and the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey.

The target population for this QI project was stratified to include only Hispanic females, between the ages of 40 to 74 years who have not had a screening mammogram within two years.

Patients ($n = 529$) were evaluated during visits to the clinic, including basic consultations and annual physical exams. Qualifying patients ($n = 112$) were issued an order for a screening mammogram. Exclusion criteria included females younger than 40 years of age or over 74 years of age and all males. Data were collected across three separate waves. In January, 190 patients were recruited for the study. In February, 167 patients were recruited for the study. In March, 172 patients were recruited for the QI project.

The clinic's desire to implement the USPSTF (U. S. Preventive Services Task Force, 2016) evidence-based guidelines and the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey, to improve provider knowledge, and subsequent referrals for screening mammograms, was considered a strength of the project. The barriers that affected the success of this QI project included: (A) Corona virus (COVID-19), which prevented patients from seeking preventive testing due to lack of access to radiology appointments being made in real time, (B) HCPs not consistently ordering screening mammograms for eligible patients due to scheduling barriers as a result of limited appointments with radiology sites, and (C) patients not completing mammograms orders due to lack of appointments available and fear of getting COVID-19. (D) Imaging department was without a Radiologist for two weeks due to COVID-19 infection in March 2022. These factors were mitigated by staff trainings offered by the project director, direct communication with radiology site director for ensuring a scheduling window of 3-4 weeks' time patient education regarding the benefits of mammograms, and explanation of the testing process, and promotion of COVID-19 prevention protocols to reduce infection rates. (See Table 1).

Table 1

Risk Assessment Table

Risk	Impact	Countermeasure	Resources	Barriers
HCPs not consistent with ordering mammograms	Low percentage of completed mammograms	Education to HCP on clinical guidelines	USPSTF Clinical guidelines	Hesitancy from HCPs
Patients not going for the mammograms	Low percentage of completed mammograms	Adequate risk assessment/ promotion of mammograms	HCPs recommendations	Lack of knowledge
Covid-19	Low percentage of completed mammograms	Covid-19 vaccines	CDC guidelines	Fear from patients

Intervention

This QI project utilized USPSTF (U. S. Preventive Services Task Force, 2016) clinical

guidelines and the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey to

improve clinical staff assessment and management of the initiation of screening mammogram

orders. The use of current guidelines by HCPs and education on preventive testing in clinical

practice are two key elements of the project of the ADKAR Change Model. The five milestones

were completed as (A) HCPs acknowledged the need to improve consistency in ordering screening mammograms. (D) the clinic staff desired to improve health care outcomes by standardizing and implementing evidence-based screening tools to guide care, (K) HCPs acknowledged deficits of clinic staff on the USPSTF (U. S. Preventive Services Task Force, 2016) protocol and for patients on the importance of screening mammograms (A) HCPs demonstrated the ability to develop a process to screen patients, using the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey, and identified those who qualified for screening mammograms, which included educating patients on the importance of screening mammograms, (R) HCPs will continue to reinforce the process of initiating mammogram orders, evaluating what went well, and what barriers remained for increasing appropriate ordering and completion rates for mammograms.

One week before recruitment, the project director, educated the clinical staff on the use and implementation of the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey and the USPSTF (U. S. Preventive Services Task Force, 2016) guidelines, which have been used to assess preventive measures, and assists with health behaviors. The project director scheduled thirty-minute educational sessions every day during lunch breaks by presenting the information using a Power Point presentation of the USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines and the review of the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey question. The educational sessions were implemented to both medical assistants, and a pre-and post- knowledge evaluation was performed to measure the knowledge of the clinical guidelines During consultations and wellness exams, the clinical staff interviewed patients and flagged the HCP in the EHR for patients due for screening mammograms following USPSTF (U. S. Preventive Services Task Force, 2016) clinical

guidelines and by asking the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey question of: have you ever had a test (mammogram)? yes or no, if yes, then when was your last test. The HCP initiated the screening mammogram order, patients received the order and scheduled their mammograms at the local hospital and completed said exams within a two to four-week span. The mammogram results were sent electronically to the EHR by the hospital and subsequently reviewed by the HCP.

Data Collection

Chart reviews were performed to evaluate descriptive data and measure how many qualifying patients received the screening mammogram orders and how many completed the testing from January through March 2022. As part of the chart review, additional data elements were collected, including the (age, ethnicity) documentation, and flagging of qualifying patients in the EHR by clinical staff to determine compliance with the proposed practice. The analysis of the data collection was completed late May 2022 (see Table 2).

Table 2

Project Timeline

Phase	Original Plan	Issue Encountered	Revised Plan	Completion Date
	IRB reviewed and submitted	No issues	No need for a revised plan	November 2021
January 2022	Initiate chart review, data	No issues	No need for a revised plan	January 2022

	collection, staff trainings			
January 2022	Initiate patient interventions	No issues	No need for a revised plan	January 2022
February 2022	Continue staff trainings, chart reviews,	No issues	No need for a revised plan	February 2022
March 2022	Completion of staff trainings, chart reviews, data collections	Covid-19 Imaging staff Shortage Delay in hospital appointments	Staff training completed, data collection continues	March 2022
May 2022	Completion of data, finalize data analysis	Covid-19 Imaging staff Shortage Delay in hospital appointments	No need for a revised plan	May 2022

July 2022	Presentation of QI project	Covid-19 Imaging staff Shortage Delayed appointments	No need for a revised plan	July 2022

Measurement Tools

Clinical staff implemented the Behavioral Risk Factor Surveillance System, BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey to initiate the process of qualifying patients for screening mammograms. The 2016 BRFSS is a state-based national survey of noninstitutionalized United States adults, it is the largest continuously conducted health survey in the world and contains information regarding health behaviors, the presence of common diseases, and the use of preventive services (Miles et al., 2019). This survey asks, have you ever had a (test) mammogram)? yes or no, if yes, then when was your last test (mammogram)? (See Appendix D). Education was based on the USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines (see Appendix E), which recommends that women aged 40 and over make personal decisions with their health care providers about screening frequency, and women aged 50 to 74 years screen biennially. Demographic data was collected from the EMR, protecting patient confidentiality.

Data Analysis

Data were managed and captured using Microsoft Excel spreadsheets, and SPSS 27.0 was then used to analyze data. **Aim 1:** From January through March 2022, every age qualifying Hispanic females aged 40 through 74, received a screening mammogram order. Data was

collected by chart review at the end of the three-month project of all mammograms completed, with the focus question if the patient completed the mammogram, yes or no. **Aim 2:** The clinical staff which consists of 2 medical assistants received training on the USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines before the project initiated and reviewed the BRFSS survey. The Nurse Practitioner reviewed the clinical guidelines by testing the clinical staff's knowledge by providing them with a question/ response to assist in the initiation of the screening mammograms. Responses to the two-questions were tabulated (correct/incorrect) regarding the USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines and converted into percentages, the change in percentage of correct responses were then compared before and after the intervention.

<div align="center">RESULTS</div>

Implementation

This quality initiative project is conducted at a primary care clinic (PCC) located in Eagle Pass, Texas, which sees an average of 17 to 22 patients per day. The PCC is managed by one family nurse practitioner who is also the project director, two medical assistants, two administrative assistants, and one phlebotomist. The facility uses Athena, an electronic health record (EHR). Patients are primarily Hispanics who possess commercial insurance, Medicare, and Medicaid coverage. Before this project began, the clinic did not have a standardized protocol for ordering screening mammograms. Using the electronic health record for patient visits from January 1 thru December 31, 2019, the PCCs baseline mammogram completion rate indicated 57% of women patients who received an order completed a screening mammogram.

The project was initiated by screening every age qualified Hispanic female that was seen in the clinic for a wellness exam or a regular consult by implementing both the USPSTF (U. S.

Preventive Services Task Force, 2016) guidelines and the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey. The two medical assistants, which had received the pre- and post-training on the clinical guidelines, initiated the process by interviewing all the patients and flagging their electronic health records, to identify those who qualified for a screening mammogram order. The Nurse Practitioner was responsible in discussing with more detail the importance of them completing their mammograms during the consultation. Over the course of the three-month project, 529 patients were seen in the clinic of ages 40 through 74, in which 112 qualified for mammogram orders and all 112 received their orders.

One major issue encountered during project initiation in January 2022 concerned the increase of COVID-19 Omicron cases. The local hospital contains the sole mammography imaging center, and an influx of COVID-19 hospital admissions adversely affected potential mammography patients because they stated that they feared contracting the virus in the hospital setting. Another issue involved an increase in positive Covid cases among hospital workers, which caused a staffing shortage that further delayed mammogram appointments which was voiced by the patients and the radiology director when asked. Although the hospital imaging director made as many accommodations as possible to keep the project on track, a delay in data retrieval on completed mammograms affected the original timeline. Another issue encountered was hesitancy shown by some patients, they stated fear of feeling pain while getting the mammogram and voiced they felt they did not need the mammogram.

Outcomes

Aim 1: improve screening mammogram completions for qualifying female patients between the ages of 40 to 74 as measured by maintaining a 5% increase in screening

mammogram completions for qualifying female patients between the ages of 40 to 74 each

month across the months of January, February, and March.

Out of the total 529 patients seen in the clinic during the project enrollment, 112 qualified

for screening mammograms and 100% of qualified patients received mammogram orders. Of the

112 patients who received mammogram orders, 75 (67%) completed their mammograms,

compared to 57 % of women (n=203) completion rate baseline. The aim to improve screening

mammogram completion rates by 15% in three months was not met, since there was a 67%

completion rate, resulting in a 10% increase from the baseline completion rate of 57%. The post-

intervention completion rate brought the national average from a 14% disparity rate for this

clinic's population to just 4% below the national average in a 3-month period. Each of the three

months are broken down into monthly screening mammogram completion rate improvements.

Two of the three months, January, and February were consistently above the stated goal of 5%

increase per month with March being the month which did not meet the additional 5% increase

to achieve the 15% improvement rate per Aim 1 (see Figures 3 and 4).

Figure 3

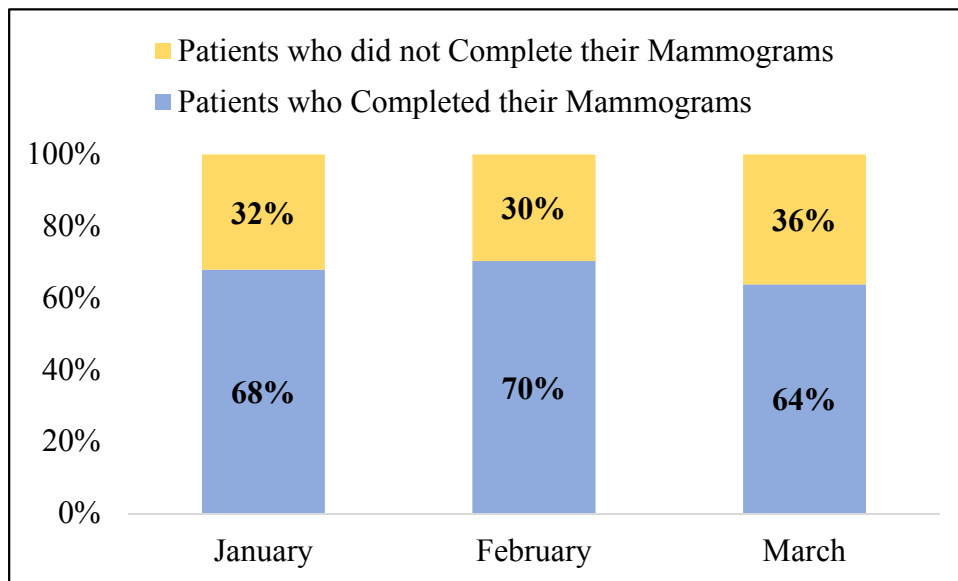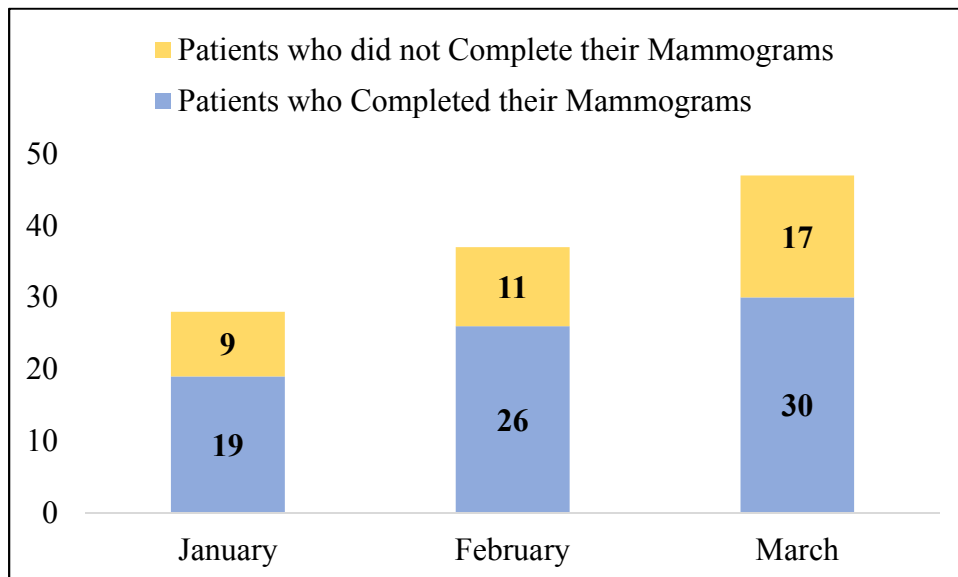*Percentages of Completed and not Completed Mammograms*

Figure 4

Count of Patients who Completed and not Completed Mammograms

There were 190 patients seen in the PCC for the month of January 2022, where 28 (15%) females qualified for screening mammograms and received the mammogram orders. Of the twenty-eight patients who received mammogram orders, 19 (68%) completed their mammograms compared to 9 (32%) who did not complete their mammograms. There was an increase of 11% above the baseline mammogram completion rate of female patients who received an order and completed a screening mammogram.

In February, 167 patients were seen, with 37 (22%) qualifying for screening mammograms and receiving mammogram orders. Of the thirty-seven patients who received mammogram orders, 26 (70%) completed their mammograms compared to 11 (30%) who did not complete their mammograms: an increase of 13% above the baseline mammogram completion rate of female patients who received an order and completed a screening mammogram.

In March, 172 patients were seen, with 47 (27%) qualifying for screening mammograms and receiving mammogram orders. Of the forty-seven patients who received mammogram orders, 30 (64%) completed their mammograms compared to 17 (36%) who did not complete their mammograms: an increase of 7% above the baseline mammogram completion rate of female patients who received an order and completed a screening mammogram. The implementation of the QI project was determined to be more effective than compared to pre-intervention mammogram completion rate baseline data for 2019 (57%) but not to the overall rate of (71%) among Hispanic women in the United States for 2018 (American Cancer Society, 2018) (see Table 3).

Table 3

Aggregate Counts and Percentages of Patients Screening Mammograms

Month of Assessment	Initial N	Patients who Qualified for screening Mammograms & Received Mammogram Orders	Patients who Completed their Mammograms	Patients who did not Complete their Mammograms
January	190	28 (15%)	19 (68%)	9 (32%)
February	167	37 (22%)	26 (70%)	11 (30%)
March 172	172	47 (27%)	30 (64%)	17 (36%)

Additional data showed that patients who completed their mammograms were, on average, slightly older ($M = 55.55$, $SD = 10.24$) compared to patients who did not complete their mammograms ($M = 52.70$, $SD = 8.47$), $p > .05$ (see Table 4).

Table 4

Descriptive Statistics of Patient's Ages

Patients who did not Complete their Mammograms		Patients who Completed their Mammograms	
N	37	N	75
Mean	53	Mean	56
Median	50	Median	54
Mode	47	Mode	51

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Range	30	Range	34
Minimum	40	Minimum	40
Maximum	70	Maximum	74

Note: There was not a statistically significant difference in the average ages between both groups, $p = .147$.

The oldest patients who completed their mammograms were seventy-four compared to seventy, the oldest patients who did not complete their mammograms. The most compliant age of females that completed the mammograms were 51-year-old compared to the 47-year-old who were the most non-compliant age group (see Figure 5).

Figure 5

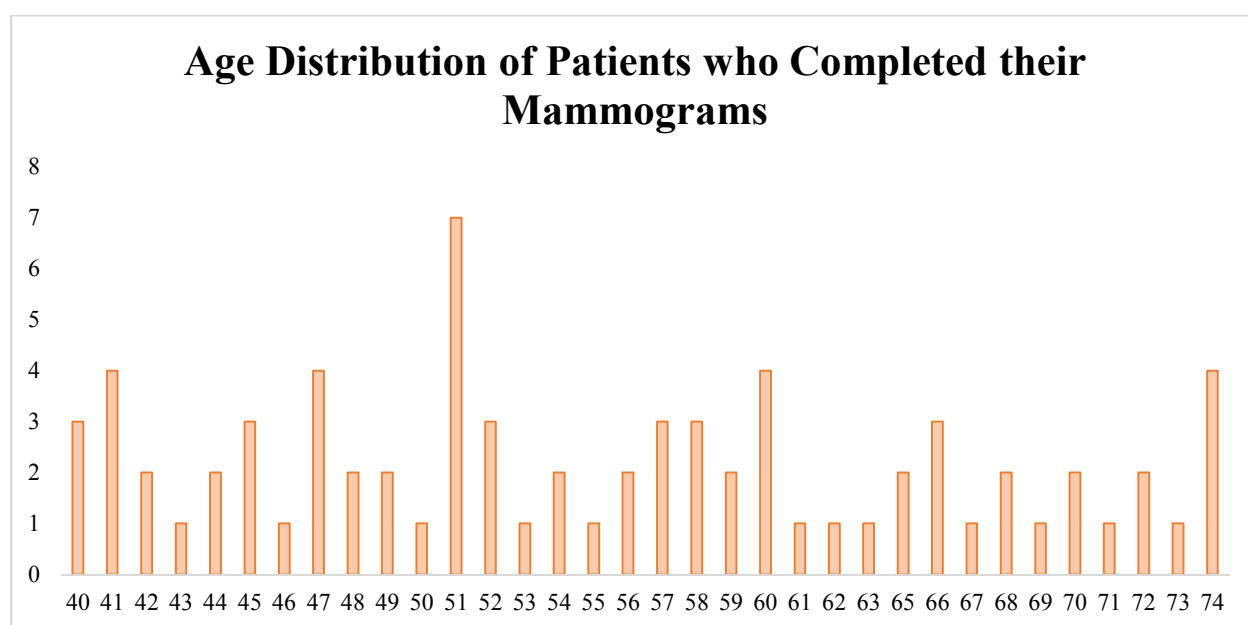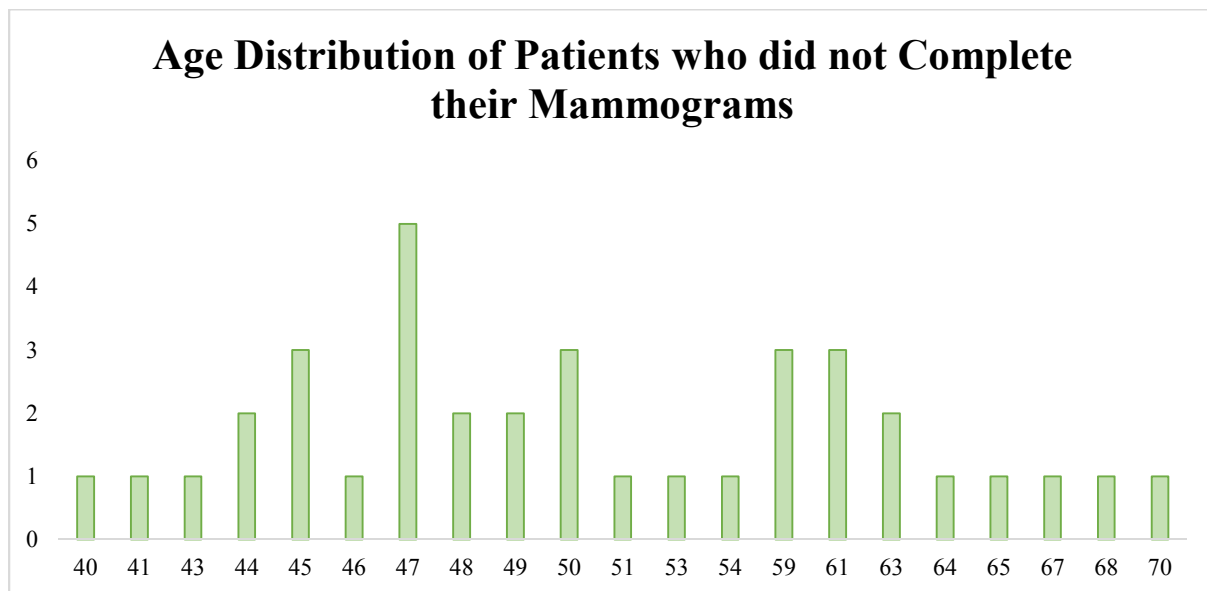*Age Distribution of Completed Mammograms*

Figure 5

Age Distribution of not Completed Mammograms

Age Distribution of Patients who did not Complete their Mammograms

Aim 2: increase the clinical staff's knowledge of United States Preventive Service Task increase the clinical staff's knowledge of USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines, which recommend (1) that women aged 40 to 49 make personal decisions with their health care providers regarding screening frequency and (2) that women aged 50 to 74 years screen biennially. The staff received education and guidance regarding the implementation of USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines. The specific goal was to improve clinical staff's knowledge of USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines as measured by comparing the change in the clinical staff's ($n = 2$) knowledge of breast cancer screening before and after the intervention. The clinical staff's pre-training test revealed a need for greater understanding of clinical guidelines for screening mammograms; whereas the post-training test findings showed an increase in test scores where

one of the two staff went from answering 50% correct to answering 100% correct and the second staff member maintained a 100% average pre and post education.

The improved post-test scores are limited due to the small number of staff and the questionnaire being only two questions, thus the results may seem skewed as a result. At the aggregate level, pre-intervention results were at 75%, with an increase to 100% at post-intervention. At the individual level, pre-intervention, one clinical staff answered 2/2 questions of breast cancer screening correctly (100%): the other clinical staff answered 1/2 questions of breast cancer screening correctly (50%). Post-intervention, both clinical staff answered 2/2 questions of breast cancer screening correctly (100%).

DISCUSSION

The purpose of this quality improvement project was to determine if an intervention guided by the USPSTF (U. S. Preventive Services Task Force, 2016) guidelines recommendations and the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey that is aimed at improving HCPs management of predominantly Hispanic female patients between the ages of 40 and 74 years will result in an increase in: (A) identification of women due for a screening mammogram, (B) the initiation of mammogram orders, and (C) the completion of screening mammograms. Regarding aim 1, findings from this QI project suggest that implementing an evidence-based clinical guideline and survey tool did improve HCPs identification of women due for a screening mammogram which resulted in an increase in the screening mammogram completion rate (67%) compared to the baseline completion rate (57%), despite not meeting the projected 15 % increase. The evidence-based interventions and processes improved the process of breast cancer screening in the primary care clinic with a 10% increase over a 3-month period. Aim 2 was met by an increase in the clinical staff's post-test scores

(100%) compared to the pre-test scores (75%) regarding the understanding of the USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines. In the unexpected findings, it was determined that there was no significant difference in mean age of females who completed their mammograms compared to those who did not complete, but there is a significant increase in the proportion of Hispanic females' completion rates after QI project interventions than to baseline completion rate. The completion rate percentages were as follows: (a) January= 68 percent (increased 11 percent), (b) February= 70 percent (increased 2 percent, and March= 64 percent (decreased 6 percent).

Due to setbacks encountered in this QI project, caused by the pandemic, data was collected until the end of May 2022. Patients were not coming into the clinic for their wellness exams, and many refused to go to the local hospital for imaging out of fear of contracting COVID-19 virus. The increase in positive COVID-19 cases affected hospital staff and created a shortage of imaging technicians. Appointment times were impacted, and many patients reported as much as a four-week delay in screening.

Staff education regarding implementation of clinical guidelines to qualifying patients was reflected within the clinic's daily process, and changes were noted in patient charts. Staff contacted patients by telephone who had not performed their mammograms, including patients who voiced fear of getting infected with Covid-19 within the hospital setting. Of the 190 patients between the ages of 40 and 74 seen in January 2022, 28 qualified for screening mammograms and received their mammogram orders. Of those twenty-eight patients, nineteen patients (68 %) completed their mammograms, and nine patients (32 %) did not. Of the 167 patients between the ages of 40 and 74 seen in February 2022, 37 qualified for screening mammograms and received their mammogram orders. Of those thirty-seven patients, twenty-six patients (70%) completed

their mammograms, and eleven patients (30%) did not. Finally, of the 172 patients between the ages of 40 and 74 seen in March 2022, 47 qualified for screening mammograms and received their mammogram orders, thirty patients (64%) have completed their mammograms and seventeen patients (36%) did not. This QI project's evidence-based interventions improved screening mammogram completion rates and continue to have a positive impact in the clinic for all age qualifying females.

Studies suggest racial and ethnic disparities in breast cancer mortality rates are attributable to multilevel factors which include the following: (1) higher likelihood of advanced-stage cancer diagnosis, (2) decreased access to quality breast care, (3) lower likelihood of standard medical treatment, (4) lower socioeconomic status, (5) perceived healthcare system access barriers for self-pay patients, (6) lack of patient education and awareness regarding the importance of breast cancer screening, (7) cultural beliefs/stigmas, (8) environmental factors, and (9) genetic factors (Henderson et al., 2020). In a qualitative study conducted in Oregon, women refrained from engaging in breast cancer mammogram screenings due to lack of knowledge regarding the risks of breast cancer. Education is a commonly used proxy variable for socioeconomic status (SES). Other SES factors in this study, including occupational status and health insurance coverage, significantly correlated with education, and suggested additional significant disparities in timely use of mammogram screening (Zhang et al., 2022). From the perspective of healthcare providers, strategies for supporting and engaging women with lower educational attainment should be emphasized and implemented broadly in the healthcare setting to reduce harmful yet unintended stigmatization by healthcare providers that leads to less preventive care participation (Zhang et al., 2022). These strategies include but are not limited to using nonjudgmental vocabulary and avoiding shame, blame or guilt. (Zhang et al., 2022).

Barriers to quality healthcare faced by rural populations suggest interventions designed to address the specific needs of rural women, such as access to routine and specialty care. These barriers may compound racial and ethnic minorities' access to breast cancer screening services (Atere-Roberts, Lee-Smith, & Hall, 2020). In a systemic scoping review, interventions to increase screening for breast cancer recommended approach of increasing community demand. One-on-one educational programs and group education were found to increase breast cancer screening in rural populations (Altere-Roberts, Lee-Smith, & Hall, 2020).

In another randomized controlled trial, tailored interventions significantly improved breast cancer screening rates. The tailored messages supporting the interventions were developed based on the Theory of Planned Behavior, Health Belief Model, and Transtheoretical Model, which identified demographic variables, knowledge and beliefs, and past experiences to predict behavior change (Champion et al., 2020). The web-based program was built to provide tailored messages based on an individual's knowledge; perceived and actual risk of breast cancer; and benefits, barriers, and self-efficacy for breast cancer screening (Champion et al., 2020). Studies conclude that effective evidence-based strategies play a role in increasing screening mammograms. Primary care providers are integral in identifying barriers that may prevent Hispanic females from seeking cancer screenings. A discussion between providers and patients about screening status can significantly increase compliance and screening rates (Jain et al., 2018).

Limitations

The findings of this QI project are limited due to several factors. First, the duration of the intervention is limited to three months. Results may be different if the duration of the project was longer. The QI project was impacted by the increase of positive Covid-19 cases, which had

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multiple negative effects. Patients were not coming into the primary care clinic for their wellness exams at the beginning of the year due to fear of infection within clinic and hospital settings. Infected hospital workers caused a sudden staff shortage, which delayed screening appointments by four to six weeks. The imaging center reported not having a Radiologist on site for two weeks. Additionally, some patients who did not complete their mammograms reported conflict with their work schedule, some were educators and were planning on scheduling them until the summer. Others reported transportation issues, time management conflicts and a few reported fears of feeling pain. Additionally, changes that may weaken over time include staff engagement and the re-educating of new staff members. Annual staff re-education could minimize those barriers and assist the continuation of implementation of this QI project.

Interpretation

The Change model for this QI project provided a foundation for the interventions that encompass key elements to achieve increased screening mammogram completion rates through: Awareness, Desire, Knowledge, Ability, and Reinforcement (ADKAR) where individuals change their behavior-based learning the importance of screening mammograms and how early detection of breast cancer equates to better survival rates (AlManei, Salonitis, & Tsinopoulos, 2018). The five milestones that provided this healthy environment that encouraged completion of screening mammograms included HCPs: (A) mindful of the need for change (D) participate in the patient education process, (K) improved initiation of screening mammogram orders, (A) implementation of new processes for greater awareness of patients due for screening mammograms, and (R) reinforce necessary changes through education of staff and patients.

The implementation of USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines and a screening survey to identify patients due for a screening mammogram is a

simple but effective strategy to provide effective patient education, improved screening tools, and improved access to care for this clinic's primarily Hispanic population. Building protocols, processes, and staff / HCP understanding of breast cancer screening recommendations benefits, the patients, their family members, and the overall health of the community.

This QI project was impacted by COVID-19 pandemic, causing a delay in data collection and the resistance from patients coming into the clinic and going to the local hospital for the mammogram with the fear of getting infected with the virus. The hospital setting was also impacted when staff was out sick with the omicron virus, delaying appointments for the mammograms. The hospital shortage not only includes the imaging staff but also radiologists, who are responsible for the interpretation of the screening mammograms. Data was delayed until late May versus early April. The implementation of this QI project will continue to be a process in the primary clinic since it has shown an improvement in screening our patients. The outcomes have shown an increase in the initiating screening mammogram orders and the completion rates compared to the baseline.

Conclusion

This QI project is intended to improve HCPs management of screening mammograms through implementation of current evidence-based clinical guidelines. The USPSTF (U. S. Preventive Services Task Force, 2016) clinical guidelines and the BRFSS (BRFSS Statistical Brief on Breast Cancer Screening, 2019) survey support the improvement of screening mammogram completion rates through education of HCPs and patients. Breast cancer is on the rise and represents the second-leading cause of cancer death in the U.S. (CDC, 2019). In 2019, the Centers for Disease Control and Prevention (CDC) reported that female breast cancer has the highest rate of new cancer cases (CDC, 2019). Providers need to advocate for preventive testing

and implement best practices to provide excellent quality healthcare to patients and ensure

improved patient outcomes. The findings of this quality improvement project reveal the

importance of evidence-based clinical guideline implementation, in which this process can be

applied to other primary care clinics for improvement of screening mammograms. Going

forward, the evidence-based interventions utilized in this QI project will be part of daily

screening protocols in this clinic. Closing the gap of breast cancer screening disparities for

minority populations is an ethical and moral responsibility for all HCPs to strive to achieve.

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LIST OF APPENDICES

APPENDIX A: Letter of TAMUCC-CC Institutional Review Board

Activities meeting the DHHS definition of research or the FDA definition of clinical investigation and involve human subjects are subject to IRB review and approval.

On 12/07/2021, the Office of Research Compliance reviewed the project below and determined that the proposed activity does not meet the FDA definition of a clinical investigation or DHHS definition of research.

Type of Review: Review Board Response Review Submission form
Title of Study: My project title: A Quality Improvement Initiative: Improve Screening Mammograms among Hispanic Women between ages of 40 and 74 in a Primary Care Clinic
Principal Investigator: Tammy Walker-Smith
IRB Number: TAMU-CC-IRB-2021-0326
Submission Action: IRB Review not Required for projects not meeting the definition of research

Therefore, this project does not require IRB review and you may proceed. This IRB Declaration is in effect from 12/07/2021 and does not expire.

Limits to this determination:

1. This determination corresponds with the versions of the application and attachments in the electronic system most recently approved as of the date of this letter. This determination is issued with the understanding the data collected will be used internally by the organization and will not be shared or generalized beyond this one organization. Any planned changes require submission to the IRB to ensure that the research continues to meet the criteria for a non-human subject research determination.
2. This project may NOT be referenced as "IRB approved" or "research".

The following statement can be included in the manuscript: "This project was reviewed and determined to not meet the definition of research involving human subjects by the Texas A&M University IRB - Corpus Christi Institutional Review Board."

Please do not hesitate to contact the Office of Research Compliance with any questions at irb@tamucc.edu.

Sincerely,

Rebecca Ballard, JD
Office of Research Compliance
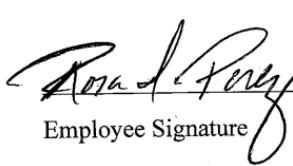
APPENDIX B: HIPPA/ Confidentiality Agreement

Perez Family Practice Clinic

CONFIDENTIALITY AGREEMENT

As an employee of Perez Family Practice Clinic, PLLC, I acknowledge and agree to abide by the following regulation:

Any and all information given, being written or verbal, by any patient while in the clinic shall be held in strictest confidence.

Any breach of this confidentiality is grounds for immediate disciplinary action, may include dismissal.

Rosa J. Perez, FNP-BC
Employee Signature
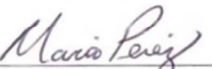
_10/27/2021_
Date

Perez Family Practice, PLLC

Dear Texas A&M University, Corpus Christi- IRB,

The purpose of this letter is to provide Rosa I. Perez, a Doctor of Nursing Practice student at Texas A&M University College of Nursing and Health Sciences, under the supervision of Dr. Tammy Walker-Smith, support in conducting a quality improvement project at Perez Family Practice Clinic. The study focuses on improving breast cancer screening mammograms by following evidence-based United States Preventive Service Task Force clinical guidelines.

I, Mario Perez, Administrator, at Perez Family Practice Clinic, do hereby fully support Rosa I. Perez, APRN, FNP-BC in the conduct of this quality improvement project, at Perez Family Practice Clinic.

I also approve Rosa I. Perez, APRN, FNP-BC to access protected health information (PHI) for purposes of conducting this quality improvement project. She has signed a HIPPA release form.

Sincerely,

Mario Perez, Administrator

APPENDIX D: Behavioral Risk Factor Surveillance System
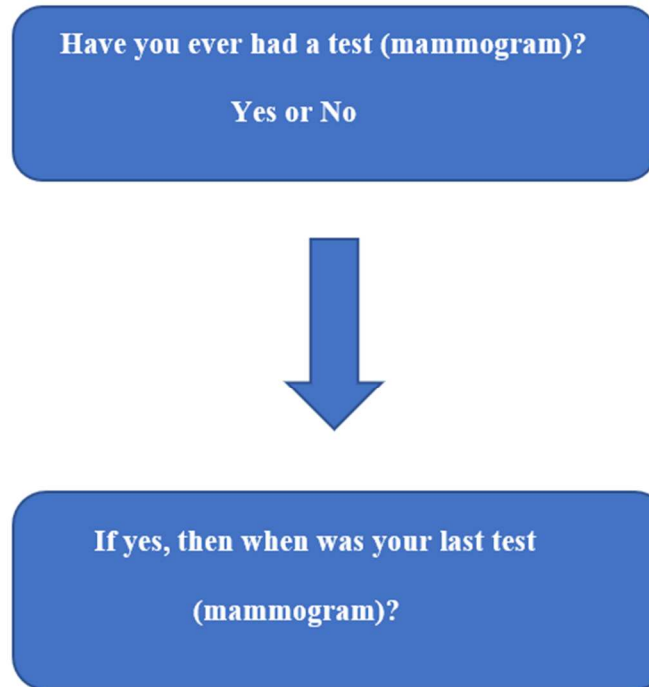
APPENDIX E: United States Preventive Service Task Force: Breast Cancer Screening

Screening for breast cancer	Screening for breast cancer by mammography in average-risk women no earlier than age 40 and no later than age 50. Screening should continue through at least age 74 and age alone should not be the basis to discontinue screening.	Screening mammography should occur at least biennially and as frequently as annually.