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Improving postoperative breast augmentation patient education delivery.

Madison Callery

University of Louisville, madisonncallery@gmail.com

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Improving Postoperative Breast Augmentation Patient Education Delivery

by

Madison Callery

Paper submitted in partial fulfillment of the
requirements for the degree of

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July 21, 2023

Dr. Mary DeLetter
DNP Project Chair

July 21, 2023
Date

Dr. Ratchneewan Ross
DNP Project Committee Member

July 21, 2023
Date

Dr. Sara Robertson
Associate Dean DNP and APRN Programs

August 2, 2023
Date

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Abstract

Background: Effective patient education promotes successful postoperative outcomes. Nurses in an outpatient surgery center lacked consistent patient education practices and materials.

Purpose: The purpose of the project was to implement an evidence-based multimodal educational strategy for patients who undergo breast implant surgeries.

Methods: At an outpatient plastic surgery center, pre- and post-intervention phone calls were tracked; post-intervention education, documentation, and patient satisfaction data were recorded. Nurses were educated on the new materials, delivery procedures, and electronic health record (EHR) documentation. All patients undergoing breast implant surgery received multimodal education at each postoperative appointment. Outcomes included (1) the number of patient phone calls for additional postoperative education; (2) EHR documentation; and (3) patient satisfaction with educational content and delivery (Quality of Discharge Teaching Scale).

Intervention: At postoperative visits, nurses provided verbal and written education and QR code access to an online video and educational resources. Nurses documented the educational encounters in the newly established EHR patient education checklist.

Results: Patient phone calls improved by 28%. On a scale of 1-10, patients reported high levels of satisfaction with educational content (8.86 ± 1.42) and delivery (9.48 ± 1.07). Nurses' documentation of education provided improved by 178%.

Discussion: Nurses educated nearly 100% of patients and had 100% EHF documentation. Patients demonstrated a greater understanding of their postoperative self-care and expectations, with fewer phone calls. Patients reported a high level of satisfaction with educational content and delivery. The patient teaching is now incorporated into all breast surgery postoperative care.

Keywords: Patient Education, Surgical Recovery, Multimodal Intervention, Patient Satisfaction

Table of Contents

Acknowledgements.....	2
Abstract.....	3
Introduction.....	8
Background.....	9
Literature Review.....	11
Background/Problem	11
Intervention.....	14
Written Patient Education.....	14
Web-Based Patient Education.....	15
Video-Based Patient Education	16
Improving Nurse Patient Education Knowledge	17
Problem.....	18
Intervention.....	19
Summary and Justification.....	19
Rationale	19
Needs Assessment.....	19
Figure 1	21
Purpose and Specific Aims	21

Purpose.....	21
Specific Aims.....	21
Process Model.....	22
Figure 2	23
Methods.....	23
Design	23
Setting and Environment.....	23
Sample.....	24
Context.....	25
Ethical Considerations and Permissions	25
Intervention Implementation.....	26
Table 1	27
Budget.....	28
Table 2	29
Measures	30
Process Measures	30
Outcome Measures.....	30
Demographic Data	30
Patient Outcomes	30

Nursing Staff Outcomes.....	31
Instruments and Tools.....	31
Quality of Discharge Teaching Scale (QDTS)	31
Data Analysis	33
Results.....	33
Project Findings	33
Sample Description.....	33
Table 3	34
Patient Phone Call Findings.....	35
Table 4	36
Figure 3	37
Figure 4	37
Nurse Documentation of Education.....	38
Table 5	38
Figure 5	39
QDTS Findings	39
Discussion.....	39
Summary	39
Interpretation.....	40

Limitations	42
Conclusions.....	42
References.....	45
Appendix.....	48

Improving Postoperative Breast Augmentation Patient Education Delivery

Patient education is a key component to creating quality patient outcomes in nursing practice, especially related to postoperative care. Because nurses play a vital role in the delivery of patient education, it is imperative that nurses are prepared and confident in their knowledge of the educational material and patient education methods to provide effective teaching to diverse populations (Sherman, 2016). Failure to provide standardized and satisfactory instruction to patients results in increased medical expenses, low patient satisfaction, poor adherence to appropriate disease management, and ultimately, vastly contributes to negative patient outcomes and experiences (Jung et al., 2020). In the specialized surgical setting, discharge education and follow up instruction are considered critical as recovery self-care knowledge is necessary for successful patient outcomes (Kang et al., 2020).

Introduction

Located in a suburban area of Louisville, Kentucky, the comprehensive plastic surgery center employs a board-certified plastic surgeon who performs approximately 300 aesthetic breast surgeries with implants annually. Patients from across the United States are referred to the practice, leading to a diverse population with varying health profiles, health literary levels, and postoperative needs. Implant devices are used in multiple types of breast surgery including primary bilateral augmentation mammoplasty (BAM), augmentation mastopexy (breast lift with breast implants), and removal and replacement of implants. With the high volume of patients who undergo augmentation, clinic nurses stay fully scheduled with postoperative patients while providing patient education to guide recovery, providing incisional care instruction, and assessing postoperative patient progress, complications and concerns.

Throughout 2021 and into 2022, the nursing staff noticed an increase in patient phone calls concerning newly placed implants that required further discussion and review of prior education. On a weekly basis, 10 to 15 patients phone the nurses regarding their implant surgery; some of the patients require prompt immediate in-person appointments with a nurse. Because many patients pose similar questions about their postoperative care, a better approach to the patient education was warranted.

Background

The practice employs three nurses with over 10 years of employment, one nurse with 20 years of employment, and three nurses with two-to-five years of practice experience. As educational trends evolve, patient health technology advances, and patient volumes increase, even highly experienced nurses benefit from professional development focused on patient education. Health literacy is another factor that impacts patients' experiences and knowledge during the postoperative period. As patients' knowledge levels vary, best methods of learning may also differ, leading to dissimilar or potentially unsatisfactory educational experiences for some patients. An evaluation at the project site revealed that all educational materials for surgical patients are part of a large email file which compromises surgical consents, general postoperative care information, and numerous pages of preoperative instructions. However, once surgery takes place and recovery begins, many patients fail to refer to these documents which were provided several weeks prior.

Prior to project intervention, postoperative primary BAM patients received a written handout at the postoperative Day 7 (POD#7) follow-up appointment. These written handouts contained crucial instruction and pertinent healing information specific to BAM surgery and served as a reminder for patients and caregivers about incisional care, restrictions, and breast

massage. However, primary BAM patients were the only patient population to receive written education at postoperative appointments. Other surgical patients often had their caregivers take notes or simply attempt to memorize all teachings, contributing to misunderstandings and confusion.

With an immense amount of instruction and recovery information given at surgery discharge and during 30-minute follow-up appointments, which occur one day after surgery and weekly until three weeks, patients reported feeling overwhelmed and often searched for additional clarification through phone calls to nursing staff or even resorted to seeking advice from the internet, social media, friends, family, and other unregulated sources. In a qualitative study, Kang and colleagues (2020) found that postoperative clients often have a misunderstanding of self-care due to misinterpretation of their recovery instructions and care plan. At the project site, occasionally, patients reported that they did not receive written instructions, although nurses documented in the electronic health record (EHR) that the patient received verbal and written instructions during each follow-up appointment. This variance in educational delivery created problems for patients, contributing to confusion and putting patients at a higher risk for preventable complications, such as surgical site infections, hematomas, early capsular contractures, unexpected pain, and/or the need for urgent follow-up appointments. Subsequently, the unstandardized education delivery also created issues for clinic nurses as it required time from staff to provide patients with additional education through phone encounters.

At a local and agency level, patients have reported unsatisfactory experiences during follow-up appointments including preventable complications such as hematoma and infections, confusion about post-operative care, and altered perceptions related to breast implant surgery. Altered perceptions include the rate at which breast implants settle into the breast pocket

(considered a patient's ultimate outcome), the expectation of immediate breast implant appearance (though this may be preceded by asymmetric tightness and swelling to the breasts and axilla), the timeline of breast implant surgery healing, and the way in which breast implants may affect future health screenings, (e.g., mammograms), and procedures, (e.g., dental cleanings). Many patients were relying on educational materials retrieved from the practice's website, which may not have directly address their surgical questions or concerns.

The population affected by the need for improved educational strategies included all patients undergoing breast implant surgery with implant devices. Firstly, patients experienced distress and/or potential complications when their postoperative education is inconsistent or required additional clarification. Secondly, nurses sometimes reported inadequate knowledge on education delivery due to everchanging patient populations and are affected by the time-consuming repeat of educational discussions with patients.

Literature Review

Background/Problem

From August 1 to November 1, 2022, 44 patients had surgery involving implants at the project site. Of 44 surgical patients, 70 breast implant patient phone calls needing nurse attention were documented. Patient phone calls included in this data are limited to those who underwent surgery from August 1 to November 1 and include all patient phone call encounters within eight weeks following surgery. Data frequencies report that 35 patients made at least one phone call while one patient called six times requesting to speak to a nurse. Of the 70 documented phone calls, 22 patients requested to speak to a nurse regarding postoperative concerns (pain, swelling, bruising, discoloration), 11 patients requested additional information concerning restrictions (sports bra wear, heavy lifting, strenuous exercise), nine patients reported confusion on

performing breast implant massage, eight patients voiced concern appearance expectations (high implants, tight appearance, or asymmetry), eight patients inquired about superficial dissolvable sutures, six patients voiced questions of incisional care, and six patients called about medication confusion, concerns, or refills.

On average, nursing staff at the project site reported caring for seven patients on a daily schedule. Many of these appointments are prescheduled for postoperative day one (POD#1) and postoperative day seven (POD#7) and occasionally included seeing patients for other concerns or complication monitoring. Two to three weeks after surgery, patients meet with the surgeon to assess recovery progress and to address patient concerns (PODMD). Nurses assist the surgeon during these appointments, which occur two days during the week.

A review of the current literature identified ways in which patients in same-day surgery facilities perceived postoperative recovery in relation to their educational needs and comprehension of the recovery period (Nilsson et al., 2020). The researchers found that lack of information, or misinformation regarding expectations of the recovery process led to many frustrations in patients and often, patients were left with many questions regarding their postoperative care, increasing worries and creating psychosocial and emotional concerns.

Niksadat et al. (2019) revealed substantial gaps related to nurse-delivered patient education effectiveness, nurse understanding of patient educational needs, standardization of evidence-based teaching strategies, and the significant impact on patient consequences. Although there has been an observable increase in the patient-centered care model implementation across healthcare institutions, discrepancies still exist across multiple healthcare organizations warranting a need for meaningful staff learning implementation (Mayer, 2010).

Mitchell (2016) reported that significant time restraints are seen in day surgery clinics, severely limiting the time for busy nurses to provide adequate and effective patient education in a way patients can sufficiently comprehend. In this report, 80% of nurses confirmed that the information they provided to patients was inadequate due to staffing needs, lack of time to know patients, lack of self-knowledge, and again, not enough time to administer instruction due to education not being a primary task during appointment (Mitchell, 2016). Mitchell concluded that nurses often needed to undergo continuing education programs regarding patient education administration skills to effectively deliver detailed information and answer patient questions.

Blondal et al. (2022) conducted a descriptive, longitudinal survey study in two centers to explore educational expectations and experiences of surgical patients from discharge up to six months after surgery. Blondal et al. (2022) evaluated the relationships between patients' expectations of recovery and (a) perceived usefulness of education, and (b) perceived satisfaction with education. Patients from three different hospitals (N=632) were given questionnaires at three time points: (a) before surgical discharge, (b) six weeks post-surgery, and (c) six months post-surgery. To assess patients' experience of the education, the surgical discharge questionnaire contained items to determine whether patients were given any pre-operative information concerning their post-operative recovery expectations. The questionnaires delivered at six weeks and six months assessed whether educational content had been delivered in the postoperative clinic setting and if the patients' recovery had been what they expected.

At six weeks post-surgery, a majority of patients reported concerning findings, such as no education on changes in urination after surgery (n=285, 55%), lack of stamina (n=259, 50%), sleep disturbances (n=231, 44.8%), and possible side effects of pain medication (n=223, 43%) (Blondal et al., 2022). Additionally, at six weeks post-surgery, patients requested more education

about multiple topics, including expected recovery time (33%), lack of stamina (25.5%), and pain after surgery (18.7%) and at six months, requested more information on the same topics in addition to when to resume work (11.1%).

Finally, at six months, significantly more patients (n=298, 67.3%) found recovery education useful as compared to those who did not find the recovery as expected (n=61 (13.8%); Fisher exact test; $p < .01$). Significantly more patients (n=350, 63.3%) who found their recovery as expected six weeks after surgery reported feeling satisfied with education as compared to those who did not find their recovery as expected (n=45 (8.2%); Fisher exact test; $p < .001$). The investigators suggested improvement in patient education concerning postoperative recovery, as educational expectations and educational planning is important to patient satisfaction.

Intervention

Written Patient Education

Felley et al. (2008) evaluated the effects of verbal versus written education provided to 577 patients undergoing endoscopy procedures. The prospective study assessed the level of anxiety after receiving pre-operative education in the form of oral communication or written leaflets in an inpatient and outpatient setting. Using chi-square and Mann-Whitney U analyses, results indicated that patients who received written instruction along with verbal education rated the quality of education significantly higher than those who received verbal only information ($p < 0.001$) and felt more prepared for their procedure. Ultimately, Felley and colleagues concluded that written information was more favorable to patients undergoing endoscopies and may serve as a beneficial component to the patient education process.

Web-Based Patient Education

A prospective, two-arm, randomized control trial pilot assessed the feasibility of implementing a web-based discharge education program for general surgery patients both prior to and following hospital discharge (Kang et al., 2022). The intervention was given to 85 randomized patients and comprised three components to improve patients' knowledge, confidence and skills to improve self-care, and the ability to detect postoperative complications that may occur after discharge from the hospital (Kang et al., 2022). Outcomes included intervention delivery, patient adherence, and patient satisfaction while secondary outcomes were patient activation, self-care ability, and unplanned healthcare utilization (Kang et al., 2022).

The control group received standard discharge instructions while the web-based education program consisted of post-surgical warning signs, post-surgical care instructions, including a 'do's' and 'don'ts' section, and a video on surgical wound care and signs of wound complications and was given to 43 patients before being discharged to home (Kang et al., 2022). All information in the web-based program was prepared by stakeholders and clinicians in a simple, color-coordinated manner geared to support patient knowledge in the postoperative period. The investigators found that 97% of patients who received the web-based intervention reported all content was 'easy to very easy to understand' and 86% reported the content 'useful to very useful'. To determine change in patient activation, the two-way mixed ANOVA demonstrated a significant interaction between the intervention and the time on patient activation, measured by the amount of time spent visiting the website ($F(1,60)=9.347, p=0.003$, partial $\eta^2=0.135$). At two weeks post-discharge, mean patient activation scores were significantly higher in the intervention group ($8.056, \pm 3.90, p=0.043$) as compared to the standard education group, which demonstrated a decline in mean activation score ($-6.84, \pm 2.42$,

$p=0.008$) (Kang et al., 2022). Furthermore, piloting the feasibility of implementing web-based discharge patient education for surgical patients.

Rackerseder et al. (2022) sought to improve digital patient education as more patients reported choosing the internet for available healthcare information versus requesting individualized information from their providers due to lacking communication accessibility. The investigators' primary aim was to develop a patient-friendly website compiled with patient education needs and determine how the final version was evaluated by its end users (new cancer patients). Website creation was developed through professional interviews with providers working in adult oncology, case managers, and multiple focus groups with end users. The study found that a well-designed website could serve as the final missing component of patient education and suggested that website development is crucial for enhancing patients understanding, serves as a needed digital form for newly diagnosed cancer patients, and augments the process of providing patient information in a user-friendly fashion.

Video-Based Patient Education

Wray et al. (2021) examined the effectiveness of video education after discharge from the emergency department and its impact on patient understanding of discharge teaching. The investigators' found that only 45-50% of patients or caregivers understood their discharge instructions, which contributed to decreased compliance, inadequate follow-up, increased readmission, and low patient satisfaction rates. The researchers completed their pre-and-post-intervention study at a single-center, academic tertiary emergency department and included a total of 240 patients with five common discharge diagnoses. The pre-intervention and post-intervention group completed post-surveys regarding education comprehension.

The pre-intervention group (n= 120) received only standard (written) discharge instructions (SDI) while the post-intervention group (n=120) received video discharge instruction (VDI). Each set of instructions was formulated to diagnosis-specific information. Researchers used *t*-test to compare survey mean scores between groups and found significant differences in outcomes of patients diagnosed with closed head injury (27% SDI vs 46% VDI, $p=0.003$), upper respiratory infection (28% SDI vs 64%VDI, $p<0.0001$), and vaginal bleeding in early pregnancy (20% SDI vs 60% VDI, $p<0.0001$). Ultimately, Wray et al. (2021) concluded that discharge education in multimedia format, such as video, provides patients with a multidimensional approach to learning that is appropriate for multiple learning styles and health literacy levels.

Improving Nurse Patient Education Knowledge

Jones et al. (2010) evaluated the relevance of the *Maximizing your Patient Education Skills* (MPES) course (N=130) to understand the correlation between health care providers delivery of patient education and its effectiveness. The investigators speculated that while providers are usually well-versed in providing patient education, many have not been trained to provide information, resulting in a lack of standardized practice. To understand how patient education may be delivered more effectively, the Maximizing your Patient Education Skills (MPES) course was provided to 20 providers at seven different practice locations. Each MPES course comprised evidence-based practice (EBP) principles of adult education, review of various learning styles, four standardized patient (SP) case studies, interviewing techniques, and a review of on-site educational resources (Jones et al., 2010). Prior to the four-hour course, providers completed a baseline survey to assess knowledge level of providing patient education and immediately following the course, submitted a course evaluation to assess satisfaction with

course materials and methods, and finally, three-months later, completed a post-assessment by mail to determine effectiveness of MPES participation (Jones et al., 2010).

Jones and colleagues (2010) concluded that participants expressed significant levels of satisfaction with the course, its job relevance, and felt the course met their expectations (Jones et al., 2010). Patient education was also found to improve significantly as pre-and post-knowledge scores were compared using statistical *t*-tests, resulting in an average of a 1.4-point increase (95% CI 1.1-1.7) after intervention. Post-survey scores indicated significant in self- assessed competency ($t(95)=8.13, p<0.001$). With approximately 40% of providers reflecting improved patient education competency skills and most participants expressing high satisfaction with the educational course, authors share that participation in interactive workshops can be a highly effective tool for improving practice processes and outcomes (Jones et al., 2010).

Problem

The problem identified at the project site was a lack of consistent patient education practices in the postoperative setting. Both patient education delivery methods from nursing staff and insufficient patient education resources contributed to this problem. This problem was identified through observation of the volume of patient phone calls regarding patient concerns (pain, swelling, bruising, hematoma, infection, exposed implant, capsular contracture), postoperative restrictions (heavy lifting, strenuous exercise, sports bra wear), implant massage, sutures, postoperative expectations and appearance, incisional care, medications, and need for urgent in-patient appointments to address patient concerns.

Patient phone calls arise from patient confusion or low retention of nurse-delivered education. With numerous phone calls requiring nurse response, nurses reported spending increased time with calls that crowded their time for patient care responsibilities. This situation

increased nurses' stress, created scheduling conflicts, and added overtime nursing pay to the center.

Intervention

The project intervention included one educational session for nursing staff purposed to increase nurses' knowledge of patient education delivery and updated patient educational resources. Educational resources, as supported through literature, were multimodal in the form of verbal, written, and online components (visual and audio-visual components). The improved educational resources were provided to all breast implant surgery patients at every follow-up appointment with nursing staff to increase the patients' self-care knowledge during recovery.

Summary and Justification

The review of the current literature supported the improvement of patient education resources in the form of written, online, and video modalities to increase patients' understanding and confidence of self-care (Felley et al., 2008; Kang et al., 2022; Rackerseder et al., 2022; Wray et al., 2021). The literature also supported educational sessions aimed to improve nurses' patient education skills have been successful (Jones et al., 2010).

Rationale

Needs Assessment

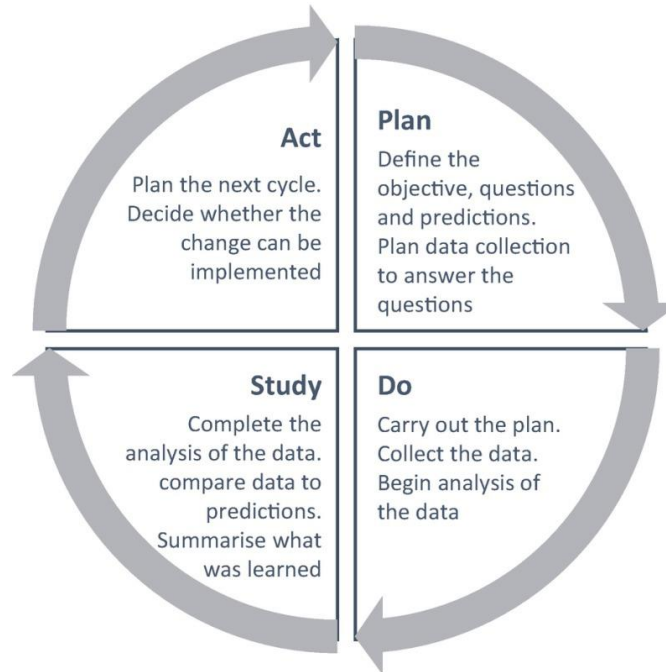
Formal needs assessment meetings were held with key stakeholders at the project site in November, 2021 and January, 2022 to identify areas for improvement within the healthcare organization. Attendees included the lead surgeon, chief operating officer, nurse manager, PACU manager, seven clinic nurses, two surgical coordinator, IT support coordinator, and one secretary. After problem identification, a thorough discussion of evidence-based patient education resources guided this DNP project, aligned with the practice and organizational values

and missions. After further evaluation, the need for improved patient education became well supported by analyzing patient phone calls concerning postoperative care as well as feedback provided from nursing staff regarding time constraints.

The feasibility of implementing the proposed quality improvement project at the selected site was deemed high because of the projected low burden on staff and patients and low budget required for implementation. Patient education material development, data collection, and process auditing were performed by the project leader, allowing nursing staff and important stakeholders time to complete their normal job responsibilities.

Sustainability of the proposed practice change was highly likely based on support from nursing staff, the chief operating officer (COO), lead surgeon, clerical staff, and patients. According to the COO and lead surgeon, updated patient education resources and nursing staff education processes would continue at the project site following the proposed project completion. The high-level of support shown by the nursing staff, COO, lead surgeon, clerical staff, the potential for high patient and nurse satisfaction, the minimal budgetary requirements, the minimal burden on nursing staff, and the high impact on patients support the sustainability of the educational intervention and its outcomes well beyond the project completion.

Although budget analysis reports higher cost of nursing staff time to implement patient education delivery at follow-up appointments versus a lower cost of nursing staff time to return patient phone calls, the project, guided by the Institute for Healthcare Improvement IHI (2016) Plan-Do-Study-Act (PDSA) Cycle, remains highly sustainable (Figure 1). The difference in cost of nursing staff time does not alter the sustainability of the proposed project because of the proposed interventions' effect on decreasing burden and emotional distress for patients and nursing staff, decreasing nurse interruption, and increasing quality of nursing care.

Figure 1*Plan-Do-Study-Act (PDSA) Cycle***Purpose and Specific Aims****Purpose**

The purpose of this project was to implement an evidence-based, multimodal educational strategy for patients who undergo breast implant surgeries.

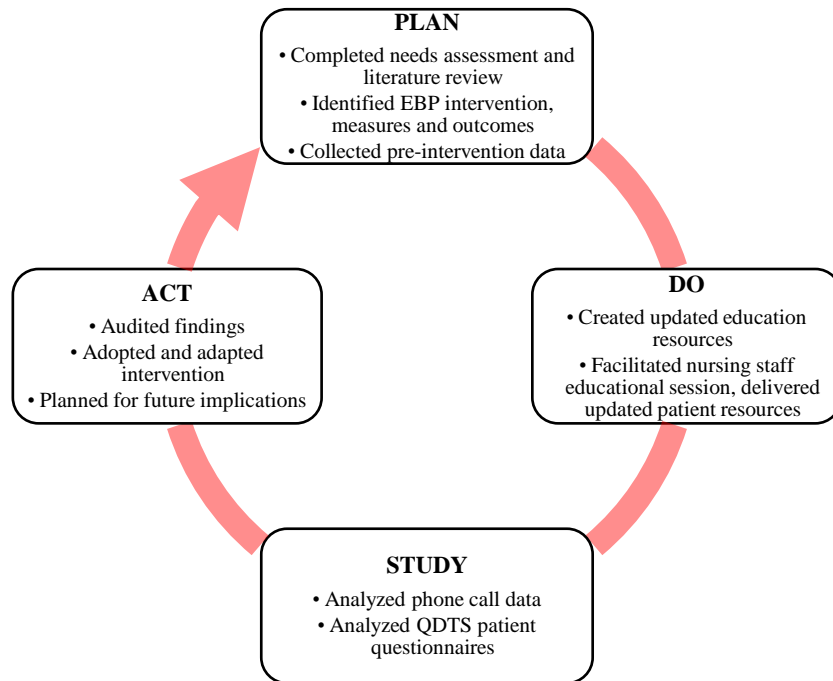
Specific Aims

This project included four specific aims: (1) Provide consistent, updated educational materials to be delivered to patients at each follow-up appointment and through the practice website; (2) Reduce the number of post-operative phone calls for additional education; (3) Improve the rate of educational documentation in the EHR; and (4) Document patient satisfaction with educational content and delivery.

Process Model

The Model for Improvement is a tool used to accelerate improvement within an organization (Institute for Healthcare Improvement [IHI], 2016). The Model for Improvement is not meant to be replace preexisting models that may already be used, but to accelerate improvement in healthcare processes and outcomes. The two-part model includes three crucial questions to guide specific aims, establish measures, and brainstorm select changes followed by the Plan-Do-Study-Act (PDSA) cycle (Figure 1) to plan, implement, test, and assess changes in workplace environments.

The PDSA cycle (IHI, 2016) is used for testing changes in real work settings and involves planning for change, attempting the change, observing the results, and acting on the insight gained from the experience. The Model for Improvement accompanied with the PSDA cycle guided this DNP project as it provides useful tools for facilitating change, applies to various healthcare settings, including surgical clinics, and promotes continuous evaluation and action towards creating meaningful, lasting change (Figure 2). The plan phase of the PDSA cycle included the project site needs assessment, an extensive literature review to support evidence-based practice interventions, and useful instrument tools for measurement. The do phase involved creation of updated patient education resources, nursing staff educational sessions, and implementation of nurse-delivered patient education. Data collection of EHR charting and phone calls rates were collected through weekly audit and patient survey results were collected during the study phase. Lastly, the act phase of the PDSA cycle included an analysis of data findings, changes to current intervention, and plan for future implementation and change.

Figure 2*Project-Focused Plan-Do-Study-Act (PDSA) Cycle***Methods****Design**

This quality improvement project was a single-arm, pre-and post-intervention design. This type of project design aligned with the project purpose to evaluate for change following the intervention and provided project direction for the improvement of the patient education process.

Setting and Environment

The project site was an outpatient surgery center and clinic with two on-site operating rooms, one surgeon, one surgeon fellow, eight clinic nurses, four post-anesthesia care nurses, two pre-admission testing RNs, two medical assistants, five surgical coordinators and secretaries, and eight clinic examination rooms. Additionally, the main project site manages an office that operates in a nearby city, which employs one nurse and one nurse practitioner, whom

occasionally care for out-of-town postoperative patients to improve patient convenience. This site was later added as an amendment to the initial IRB application and was subsequently approved. Both sites served women aged 18-75 years.

Sample

The population relevant to the DNP project included any female aged 18 and older undergoing breast implant surgery in the United States. The sample included in this project were female patients undergoing aesthetic breast surgery with breast implant devices at the project location, as well as those cared for at the satellite office. Surgical procedures that met criteria for participation included primary bilateral augmentation mammoplasty (BAM), augmentation mastopexy (breast lift with implants), removal and replacement of breast implants, and removal and replacement of implants with mastopexy. Patients recovering from other procedures in addition to breast implant surgery and those participating in telehealth appointments were included. Data collection was not performed for the patients of the current fellow due to variability in the fellow surgeon's follow up schedules, however, all patients undergoing breast implant surgery at the project site received updated patient education. There were no exclusion criteria that prevented patients from receiving proper postoperative education.

The pre-intervention project sample included 44 patients who had breast implant surgery from August 1st, 2022 through October 31st, 2022. The post-intervention project sample included 58 patients who had breast implant surgery from February 6th, 2023 through May 5th, 2023. All patients in the pre-and post-intervention samples met the inclusion criteria (over the age of 18 who underwent BAM, Augment Mastopexy, Removal and Replacement of Implants, and Removal and Replacement of Implants with Mastopexy).

Demographic data, phone call data and nurse EHR educational documentation were for the pre-intervention group collected via EHR audit. Similar data were collected for the post-intervention group, along with surgical information.

Context

The root cause of increased phone calls from patients concerning postoperative instructions and information was deemed to be a lack of patient education resources and consistent patient education delivery. The key stakeholders in this project were the lead surgeon, nursing staff, nurse manager, patients, patient caregivers, and chief operating officer. This project aligned with the mission statement and goals of the site by proposing to improve patient's knowledge, improve patient outcomes, and increase patient satisfaction.

The project site staff embraced patient satisfaction and patient safety but were hesitant about implementing the new educational practices. Though initially skeptical of the new practices, after just two weeks, the nursing staff reported that the intervention was simple.

Facilitators for project implementation included the shared goal of reducing patient phone calls, an outcome that would free time of nursing staff. The surgeon and chief operating officer were also facilitators of the project, as implementation was proposed to increase patient satisfaction with learning and added educational advances to the practice reputation.

Ethical Considerations and Permissions

The project proposal was approved by the University of Louisville for IRB. An amendment to the initial IRB application was approved to add the satellite office in a nearby city. The project site Chief Operating Officer and leading surgeon also granted project approval.

Intervention Implementation

All educational resources previously used at the project site were reviewed by project leader and clinic nurse manager to assess for accuracy, currency, and thoroughness of information. The project leader took responsibility for updating all educational resources. Educational resources designed for knowledge improvement included patient-specific written instructions (given at each postoperative appointment) and an agency website information page (frequently asked questions, visual timeline of restrictions and recovery, implant specific information). In addition, QR codes were created for patients to access secured educational information. Lastly, a breast implant massage demonstration video created at the project site by the project leader, COO, nurse manager and a patient volunteer were edited and made available for patients' use.

One week prior to implementation of the updated patient educational resources, the project leader conducted an educational session for the nursing staff at the project site. To ensure all clinic nursing staff were in attendance, invitations were sent to nurse emails two weeks prior to planned date. The educational session included a review of current evidence-based patient education practices and methods of increasing nursing knowledge of education delivery. All eight nurses were present at the educational session.

During the approximately 50-minute session, improved educational resources for patients were introduced, including updated patient-specific written instructions, updated website components (e.g., frequently asked questions, visual recovery timeline, implant specific information), and breast implant massage demonstration video. Nursing staff at the main and satellite sites were trained regarding appropriate delivery of patient education resources and accurate EHR documentation of patient education delivery. Patient EHRs were flagged with a

pop-up reading “*Improving patient education: Please provide all relevant updated patient educational resources*” to assist nursing staff in appropriately delivering intervention.

Educational materials were provided in each exam room to ensure nursing staff convenience when delivering patient education. Weekly emails were sent to nursing staff (at both sites) with patient education reminders and notice of the project leader’s availability to answer questions.

Project intervention implementation began on February 7, 2023 and was complete on May 5, 2023. The activities at each visit are illustrated in Table 1.

Table 1

Educational Activities at Participants’ Post-operative Visits

POD #1	POD #7	PODMD (12-21 days)
Focus: Incisional care and restrictions <ul style="list-style-type: none"> • Verbal teaching • Updated written instructions • QR code for online frequently asked questions (FAQs) and information regarding possible complications 	Focus: Self-care and breast massage <ul style="list-style-type: none"> • Verbal teaching • Updated written instructions • QR code for breast massage video and FAQs 	Focus: Surgical site assessment, restrictions timeline, expectations, and scarring <ul style="list-style-type: none"> • Verbal teaching • Updated written instructions • QR code for online recovery timeline and implant manufacture information

During the PODMD, patients were given the patient satisfaction survey to assess satisfaction with nurse-delivered patient education practices and content. Patient responses were anonymous; no identifying information was collected. All post-operative patient phone calls were monitored through the EHR system to track deidentified patient encounters concerning postoperative instructions. All reports were audited weekly by the project lead to ensure all patient phone calls met criteria for measurement using a codebook that was developed by the project leader.

Data were collected in an Excel file and participant identifiers were maintained separately from data. The file was kept on a locked, password-protected laptop computer at all times. Data

backup was held at the project site in a locked file cabinet in the nurse's station. Staff did not have access to the project data.

Budget

The project budget (Table 1) reflects costs for the multiple in-kind services such as: breast implant massage video creation, website editing, EHR capability printing, and nursing staff educational time. The few required purchases were provided by the project leader.

Measures

Process Measures

To evaluate the intervention implementation process, the project leader was available to monitor the nursing staff and was able to answer questions on-site during working hours on most days of the week. Nursing staff participation in the pre-intervention education session was measured by percentage of nursing staff who participated in the education. Weekly chart audits were performed to track patient phone calls and EHR educational documentation.

Surgeon availability affected the sample size for project evaluation, as the surgeon was out of office on four separate accounts with duration ranging two to five days, limiting the number of operating days during the evaluation period. On days the project leader was not present at the project site, patient questionnaires were prepared in advance and kept in a locked filing cabinet within the nurses' station for clear direction. All external influences on the intervention implementation and evaluation were recorded.

Outcome Measures

Demographic Data

Self-reported patient demographic data were collected during the PODMD appointment. See Appendix for additional information.

Patient Outcomes

A retrospective chart review was performed to record the age, race, surgical history, type of breast implant procedure performed, and number of phone calls from pre-intervention breast implant patients. Phone calls met inclusion criteria when they were documented within eight weeks of the surgery. Patient satisfaction with delivery of updated patient education and

educational resources was assessed during a three-month post-intervention period using the Quality of Discharge Teaching Scale (QDTS) (Weiss et al., 2017).

Nursing Staff Outcomes

A retrospective chart review was completed on all patients meeting inclusion criteria during three-month pre- and post-intervention periods to assess the rates of documented education delivery from nursing staff. Immediately following IRB proposal approval, pre-intervention data was collected from the EHR retrospectively for the months August-October 2022. The time frame was selected for pre-intervention data collection because of high nursing staff attendance and high number of patients seen for follow-up. Post-intervention data was collected immediately following the nursing staff education session and continued over three months to assess for change. Feedback from the nursing staff was documented throughout the project implementation.

Instruments and Tools

Quality of Discharge Teaching Scale (QDTS)

The QDTS was developed by Weiss et al. (2008) to measure patients' perception of the quality of discharge teaching. The self-report questionnaire was used in its short-form and contains 11-items in which patients rate the quality of teaching provided on two subscales, content (6 items) and quality of teaching delivery (5 items). The content subscale includes the amount of education content and six domains: (a) information about care at home; (b) knowledge about medical care treatments and medications; (c) practice with medical care treatments and medications; (d) knowledge about when to call provider; (e) expected emotions; and (f) patient and caregiver learning needs (Weiss et al., 2017). The quality of teaching delivery subscale measures perception of the skills of the nursing staff as educators, being sensitive to personal

beliefs and values, teaching in a way that the patient can understand, providing consistent information, promoting confidence in the patient's ability to care for themselves, decreasing patient anxiety about home care, and providing teaching at times that were appropriate for patients and caregivers (Weiss et al., 2017).

The QDTS is rated on a scale of '0' (none or not at all) to '10' (a great deal or always) with higher scores indicating higher quality of teaching. The QDTS is scored using the subscales, "content received" (1-6; 6 questions) and "delivery" (8-17; 4 questions), separately as they have different predictive relationships and are scored using the mean of item scores. Scoring of QDTS item 7, which pertains to "content needed" was instructed by authors to be either included with the 'content received' subscale for a total content summary score or not at all, as the question relates to what content is additionally needed, opposed to what was delivered, during patient education practice (Weiss et al., 2017).

In previous use, reliability of the QDTS was high, with Cronbach's alpha of .89 and principal components exploratory factor analysis identifying a two-factor structure accounting for 54% of scale variance (Weiss et al., 2008). Permission to use the instrument was not required; however, Dr. Weiss was contacted for more information and subsequently granted permission to use the QDTS for the DNP project. Historically, the QDTS has been broadly used to assess parent satisfaction with discharge teaching for pediatric patients and has guided educational quality improvement programs (Weiss et al., 2017). The QDTS was appropriate for use in the current DNP project to assess the quality of nurse-led patient education practices in the postoperative setting. For the current sample, the Cronbach's Alphas for the QDTS content and delivery subscales were .85 and .94, respectively.

Data Analysis

Data analysis was completed using SPSS version 25. Demographic data were reported using descriptive statistics, including frequencies and measures of central tendency. Content and delivery subscale summary scores of the QDTS items were calculated and reported using means and standard deviations. For the purpose of accurate depiction of QDTS results, the content subscale was calculated with and without the inclusion of item 7 (content needed). Percent change was used to determine improvement between pre-and post-intervention phone call rates. A percent change calculation was conducted to determine differences in pre-and post-intervention documentation of delivery of patient education.

Evaluation of the data collection process was reflected through nursing staff feedback and completion of patient questionnaires.

Results**Project Findings****Sample Description**

The pre-intervention audit period included 44 patients who underwent breast implant surgery from August 1, 2022 to October 31, 2022. The post-intervention period included 58 patients. Age, race, educational level, number of previous surgical encounters, and specific type of breast implant surgical procedure performed for these patients are provided in Table 3.

Table 3*Demographic Characteristics of the Pre- and Post-Intervention Groups*

Characteristics	Pre-intervention (N=44)	Post-intervention (N=58)
Mean Age	42.36 ± 10.90	37.07 ± 9.71
Race		
• African American	5 (11%)	--
• Hispanic	1 (2%)	--
• Caucasian	36 (82%)	53 (91%)
• Asian	2 (5%)	3 (5%)
• Other	--	2 (4%)
Education (highest level)		
• High School	--	9 (16%)
• Associate Degree	--	14 (25%)
• Bachelor's Degree	--	23 (41%)
• Master's Degree	--	8 (14%)
• Doctoral Degree	--	2 (3%)
• Missing Information	--	2 (3%)
Previous Number of Surgery Encounters		
• None	4 (9%)	10 (17%)
• 1-2	16 (36%)	27 (47%)
• 3-4	16 (37%)	11 (19%)
• 5-8	8 (18%)	10 (17%)
Type of Breast Implant Surgical Procedure Performed:		
• Bilateral Augmentation Mammoplasty	11 (25%)	25 (43%)
• Augmentation Mastopexy	9 (21%)	15 (26%)
• Removal and Replacement of Implants	15 (34%)	12 (21%)
• Removal and Replacement of Implants with Mastopexy	9 (21%)	6 (10%)

To compare pre- and post-intervention age characteristics, an independent t-test was performed. There was an approximated 5-year difference in the mean ages of the two age groups. There was significant difference in mean age between the pre-intervention (42.36 ± 10.90) and post-intervention group (37.07 ± 9.71); $t(90.775)=2.667, p=.009$. Though the post-intervention group was slightly younger, the mean of both samples fell within a similar developmental age range. The difference in age is not believed to contribute to the differences in project outcomes.

In both samples, the majority of women were Caucasian. Educational status information was not available for the pre-intervention group; however, the majority of women in the post-intervention group (81%) had greater than a high school education; several had earned graduate degrees. Both groups had homogeneous characteristics in that the women self-selected the surgical procedures and use private pay rather than insurance benefits.

In the pre-intervention group, patient-reported number of total previous surgeries ranged from zero (n=4, 9%) to eight (n= 1, 2%) with a mean number of previous surgeries of 2.82 ± 1.83 . In the post-intervention group, patient-reported number of total previous surgeries ranged from zero (n=10, 17%) to eight (n= 2, 3%) with a slightly lower mean number of previous surgeries of 2.47 ± 2.13 . The types of surgical breast implant procedures performed during project implementation are presented in Table 4.

Patient Phone Call Findings

In the pre-intervention period, 35 of 44 patients (80%) made 73 phone calls. Of the patients who called, the number of calls per patient ranged from one (n=17) to six (n=2). In the post-intervention period, 30 of 58 patients (52%) made 52 phone calls. Of the patients who called, the number of calls per patient ranged from one (n=17) to five (n=1). Following the intervention, the percent of patients who made phone calls decreased by 28%.

In the pre-intervention group, patients recovering from Removal and Replacement of Implants with Mastopexy had 23 reported phone calls to nursing staff, the highest of the four surgical categories. There were 17 phone calls from patients recovering from both Removal and Replacement of Implants and BAM, followed by 16 phone calls from Augmentation Mastopexy patients.

In the post-intervention group, patients recovering from Removal and Replacement of Implants had 20 reported phone calls to nursing staff, the highest number of the four surgical categories. There were 14 phone calls reported from patients recovering from both BAM and Augmentation Mastopexy groups. Patients recovering from Removal and Replacement with Mastopexy had four reported phone calls to nursing staff.

Table 4

Comparison of Pre- and Post-intervention phone calls

	Pre-intervention (N=44)	Post-intervention (N=58)
# Phone Calls	73	52
# Patients with Calls	35 (80%)	30 (52%)
Phone Call Reasons		
• Postoperative concerns	22 (30%)	18 (34%)
• Postoperative restrictions	12 (16%)	14 (27%)
• Incisional care/sutures	14 (19%)	5 (10%)
• Breast implant massage instruction	11 (15%)	1 (2%)
• Postoperative recovery expectations and appearance	8 (12%)	3 (6%)
• Medications	6 (8%)	11 (21%)

Figure 3

Pre-Intervention: Reason for Patient Phone Call

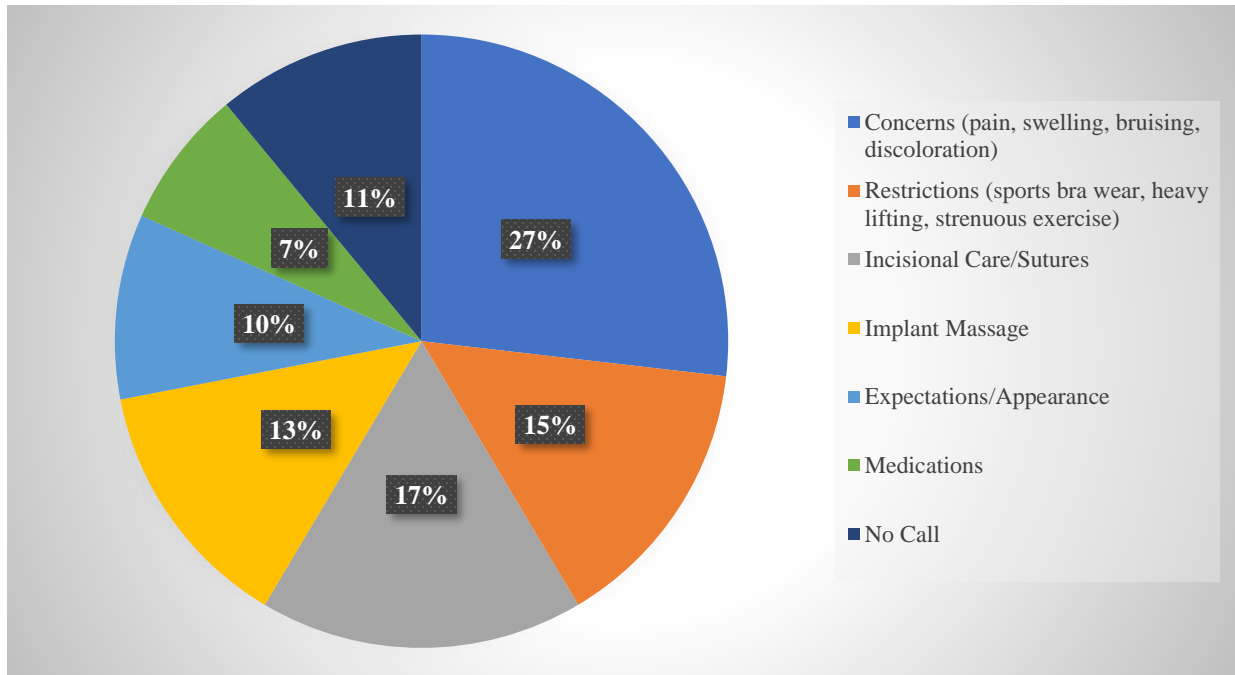
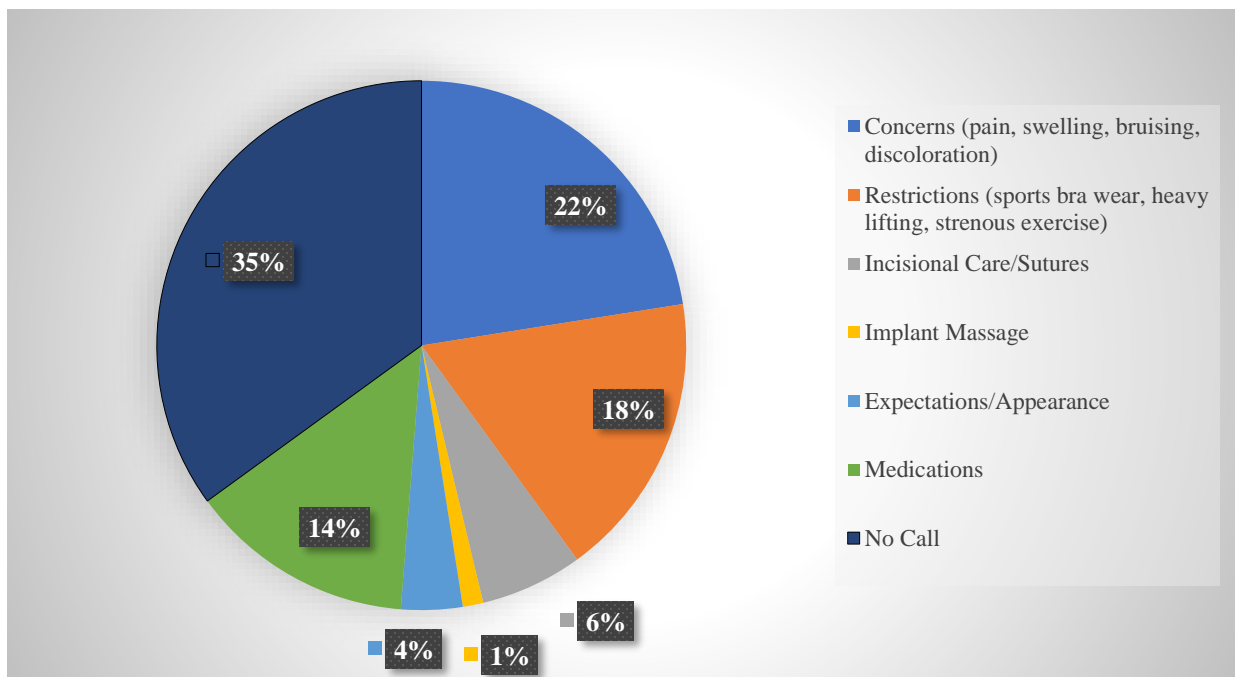


Figure 4

Post-Intervention: Reason for Patient Phone Call



Nurse Documentation of Education

In both the pre- and post-intervention groups, some patients were not scheduled for a POD#1 visit based on the type of surgical procedure. All patients were scheduled for a POD#7 appointment and an appointment with the surgeon that occurred between 21 and 28 days post-operatively (PODMD). A review of the educational documentation is provided in Table 9. In both the POD#1 and PODMD visits, the educational documentation changed from 0% to 100%. During the POD#7 visit, the documentation changed from 36% to 100%, a 178% improvement.

Table 5

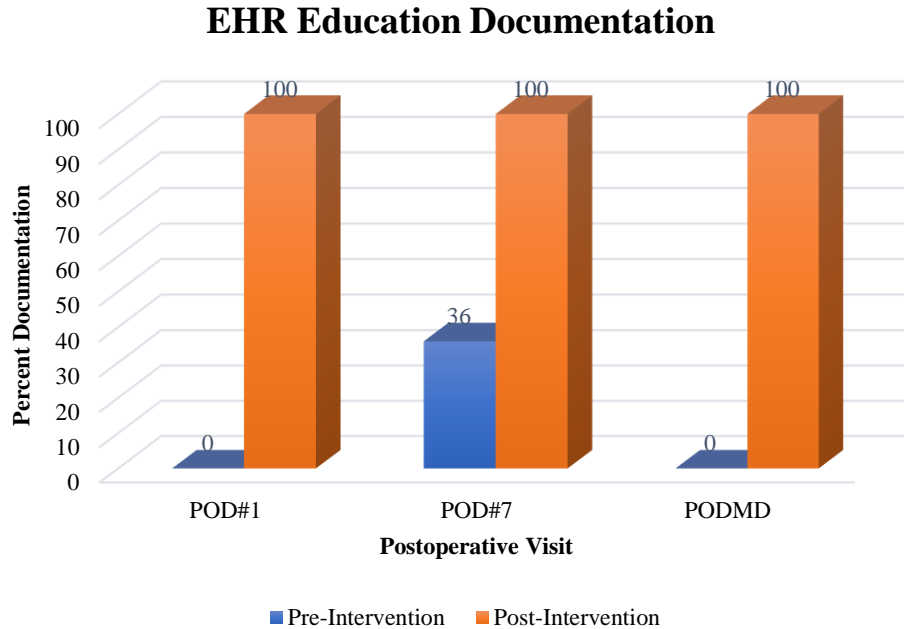
EHR Education Documentation

	Pre-intervention (N=44)			Post-intervention (N=58)			Percent Change
	Number of Patients	Documented Education		Number of Patients	Documented Education		
		n	%		n	%	
POD #1	33	0	0%	29	29	100%	--
POD#7	44	16	36%	58	58	100%	178%
PODMD	44	0	0	58	58	100%	--

Following project intervention, all 58 patients (100%) had appropriate EHR nurse documentation of patient education provided on POD#7 and PODMD in verbal, written, and QR code forms. On POD#1, 27 patients did not have appointments due to their surgery criteria. However, 100% of patients seen on POD#1 (n=29) had appropriate nurse documentation within the EHR of patient education provided in verbal, written, and QR code forms.

Figure 5

EHR Documentation Percent



QDTS Findings

The QDTS patient questionnaire was completed by 56 patients. The mean content subscale rating was 8.86 ± 1.42 and the mean Delivery subscale rating was 9.48 ± 1.07 . When item seven, content needed, was included in the calculation of the total content subscale score, the mean summary score increased slightly to 8.96 ± 1.34 .

Discussion

Summary

The purpose of this project was to implement an evidence-based multimodal educational strategy for patients who undergo breast implant surgeries. The project was driven by the identification of a high number of patient phone calls regarding postoperative follow up instructions and care, which indicated a lack of patient understanding and imposed on nursing staff work-day responsibilities.

Proper patient educational content and delivery is essential during the recovery phase following breast implant surgery. Providing thorough and relevant patient education in a multimodal format is imperative for patient understanding and limits unnecessary confusion regarding postoperative instructions. This manuscript documents implementation of an evidence-based multi-modal patient education protocol that resulted in decreased post-operative phone calls, high patient-reported satisfaction, and increased EHR documentation of the patient education.

The nursing staff educational session provided nurses with the knowledge and resources needed to improve postoperative care instruction, and ultimately, improve patient understanding and self-care. The updated patient educational materials provided patients with ongoing access to resources that was accompanied by greater understanding of their postoperative self-care and expectations, evidenced by fewer phone calls

Interpretation

The patient education intervention implemented in this project consistently demonstrated positive outcomes that were congruent with the literature. Nursing staff responded well to teaching that was provided during the educational session which was followed by a marked improvement in both patient teaching and EHR documentation, similar to findings published by Jones et al. (2010).

Equally, the updated, multimodal patient educational materials used in this project demonstrated efficacy, reflected by the decrease of patient phone calls to nursing staff. Multiple authors have demonstrated the value of multimodal educational materials that were ultimately consistent with the findings of this project (Felley et al., 2008; Kang et al., 2022; Rackerseder et al., 2022; Wray et al., 2021).

Finally, patients who received the multimodal education intervention displayed high satisfaction through the QDTS with both content and delivery, congruent with supporting literature (Felley et al., 2008; Kang et al., 2022; Rackerseder et al., 2022; Wray et al., 2021). This congruence supports the validity of the education in the project site and supports sustainability.

When Item 7 of the QDTS, “content needed,” was added to the content subscale summary score calculation, there was a slight elevation in the total content subscale score, indicating that educational content was satisfactory and patients did not require additional content that was not provided. QDTS item 2a (emotional support) had the lowest mean score of $7.25 \pm SD$. Although the mean score was still well above average, this has been identified as a topic for improvement with future patient teaching.

The pre-intervention group had fewer patients however, a larger number of phone call encounters than the post-intervention group. Although patient phone call rates improved with the intervention, the ‘Restrictions’ and ‘Medications’ categories showed the lowest improvement. This was most likely due to patient outliers in the post-intervention group. Two patients made two phone calls each related to confusion of when to discontinue pain medication. Two additional patients each called twice with questions about possible side effects or adverse reactions from postoperative medications.

Specific to the project intervention, patient phone calls regarding breast implant massage noticeably decreased following implementation. The availability of the implant massage video is likely responsible for the notable reduction in phone calls regarding breast implant massage and was often reinforced with positive patient feedback during the implementation.

There were positive experiences during the intervention. First, nurses reported feeling more prepared when providing patient education by having multiple forms of patient educational

materials, including those that patients could readily access online. Secondly, the QDTS identified areas of improvement for future patient education protocols at the project site and facilitated motivation from nursing staff to improve their personal educational practices.

Limitations

The first limitation of this project was the significant difference in patient age between pre-intervention (42.36 ± 10.90) and post-intervention groups (37.07 ± 9.71). In some situations, this variance could confound the intervention outcomes. However, there were no identifiable factors that affected the patients' ability to understand the education intervention. Secondly, implementation took place in a small suburban clinic site, resulting in a small sample of homogeneous participants. Thus, replication of the educational intervention may not yield similar results in another setting.

Another identified limitation of the project was that the project leader absence during QDTS questionnaire distribution on PODMD initially led to missed administration. However, this was corrected and was not a problem throughout the rest of the project. The lack of QDTS data from the pre-implementation group prohibited the ability to compare patient satisfaction levels before and after the education protocol revision.

Conclusions

Sustainability of this project is dependent on successful implementation of patient education practices long-term. Overall, the project intervention is deemed to have high sustainability as the project site nursing staff plan to continue all aspects of the educational protocol except the continuous QDTS data collection. This project demonstrated a cost-effective approach to improve the patient education delivery process in postoperative breast implant patients and may serve as a model for educational improvement in other areas of nursing.

The results of this project suggests that in the targeted outpatient plastic surgery practice, evidence-based patient education practices, especially those in a multimodal format, were effective in increasing patient understanding of postoperative self-care and decreasing patient phone calls requiring nursing staff response. Additionally, this project served as a foundation to renew and update the project site's entire patient education program. The project site stakeholders expressed interests furthering the projects' success in other contexts, including preparing nursing staff during employment orientation for the particular style of patient education delivery along the postoperative recovery timeline. Not only would nursing staff participate in educational sessions regarding patient education, similar to the one used in this project, but educational resources for all surgical procedures would be updated.

Patient education is an essential component of the postoperative period. The value of patient education in its different forms has been demonstrated to increase patient satisfaction with care and ultimately has been associated with improved patient outcomes (Felley et al., 2008; Kang et al., 2022; Rackerseder et al., 2022; Wray et al., 2021). Outcomes from this quality improvement project were similar to those in recent literature, supporting the practice change for patient education content and delivery methods in postoperative breast implant patients. This project affirmed that an evidence-based approach to implement a multimodal patient education strategy was both feasible and successful in improving the patients' understanding of postoperative care and ultimately, delivered a satisfactory patient experience.

To disseminate findings, an executive summary was reported to project site surgeon, chief operating officer, clinical nurse manager, and nursing staff. As requested, all patient QDTS data were reported to Dr. Weiss. The results of the project were disseminated in poster format at

the DNP Student Poster session in summer of 2023. The final manuscript of the project final report was submitted to the Journal of Nursing Education.

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Appendix*Demographic Data Questionnaire***Patient Demographic Questionnaire**

Age: _____

Ethnicity/race:

 African American Hispanic Caucasian Asian

Other (please specify): _____

Highest level of education earned:

 High school Associates (2-year) Bachelors Masters Doctoral

Other (please specify) _____

Type of procedure:

 Breast Augmentation Mammoplasty Augment-Mastopexy (breast lift AND implant augmentation) Removal and Replacement of Breast Implants

Number of previous surgical procedures (please include any procedures that required anesthesia of any kind):

Number of previous surgical breast procedures (please include any procedures that have been performed to the breast(s)):
