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Addition of a Preoperative Educational Video for Enhanced Recovery After Breast Cancer Surgery

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breast cancer surgery, enhanced recovery after surgery, eras, patient education, surgical expectations, patient engagement

Disciplines

Nursing

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Surgery

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Addition of a Preoperative Educational Video for Enhanced Recovery After Breast Cancer Surgery

Breast cancer is the most common cancer among American women regardless of race or ethnicity (Centers for Disease Control and Prevention [CDC], 2019). Mastectomy is the most common surgical treatment to manage breast cancer, allowing for removal and staging of cancer (American Cancer Society, 2017). Patients may also elect to have reconstructive surgery to help restore the look, feel, and shape of the breast following a mastectomy. Enhanced Recovery After Surgery (ERAS) protocols involve multidisciplinary interventions that span the perioperative continuum and aim to improve surgical patient outcomes (Offodile et al., 2018). There was a lack of standardized and comprehensive preoperative patient education regarding ERAS for women undergoing breast cancer surgery at an urban academic hospital in Philadelphia, Pennsylvania.

Background

Approximately one in eight women in the United States (U.S.) will develop invasive breast cancer in her lifetime and approximately 268,600 new cases of breast cancer will be diagnosed in American women in 2019 (Breastcancer.org, 2019). The rate of mastectomies increased from 66 to 90 per 100,000 women from 2005 to 2013, respectively, demonstrating a 36% increase in this procedure (Agency for Healthcare Research and Quality [AHRQ], 2016). Between 2009 and 2014, the prevalence rate of breast reconstruction after mastectomy increased from 21.7 to 35.1 women per 100,000, representing an overall 62% increase (Breastcancer.org, 2017).

Among Pennsylvanian women, the lifetime incidence of breast cancer is at an even higher rate of approximately one in seven (Pennsylvania Department of Health, 2019). In 2018,

11,549 breast cancer surgeries were performed in Pennsylvania (Pennsylvania Health Care Cost Containment Council, 2018). Breast cancer surgeries, such as lumpectomies and mastectomies, can be performed in an acute care hospital or ambulatory surgery center.

In the fiscal year 2018, 448 breast cancer surgeries were performed at an urban teaching hospital located in Philadelphia (Pennsylvania Health Care Cost Containment Council, 2018). In October 2017, an ERAS protocol was implemented for eligible breast cancer surgery patients at this healthcare setting. ERAS consists of management strategies that span the perioperative period aiming to improve patient outcomes. Components of ERAS include opioid-sparing pain management techniques, preoperative carbohydrate fluid loading, and early mobilization after surgery (Offodile et al., 2018).

In order to analyze the protocol's impact on breast cancer surgery patient outcomes at this institution, a retrospective chart review was conducted comparing one year prior to implementation to one year of data following ERAS incorporation. Statistical analysis demonstrated that participants receiving ERAS had significantly lower intraoperative morphine milligram equivalents (MMEs) than those who did not participate in ERAS (mean = 23 vs. mean = 35, respectively). Patients who received ERAS also experienced a shorter median length of hospitalization (mean = 31 hours vs. 54 hours, respectively, $p < 0.001$). Early successes with the implementation of the ERAS protocol for breast cancer surgery patients at this hospital encouraged investigation into how this population could be further optimized before the day of surgery. Furthermore, anecdotal evidence among healthcare providers indicated this cohort lacked a comprehensive understanding of the ERAS protocol intended to advance surgical recovery.

Significance

Optimal effectiveness of ERAS strategies necessitates substantial effort from the patient, the healthcare professionals, and the healthcare network (American Association of Nurse Anesthetists [AANA], 2017). Education before the day of surgery is crucial to improve health literacy and engage the patient as a contributor to care experience success. Understanding the components of ERAS may encourage the patient to modify behaviors, striving for optimal condition prior to surgery. Likewise, expectation management is critical in the establishment of realistic postoperative goals for pain, nutrition, mobilization, and anticipated hospital length of stay (AANA, 2017).

Patients are increasingly viewed as the primary decision maker regarding their health and as equal partners in healthcare choices (Desomer et al., 2018). Enhancing education empowers patients to actively participate in their health. Investing in patient engagement with standardized, comprehensive education ensures the ERAS initiative best achieves patient and stakeholder outcomes. The patient, the interdisciplinary care team, and the healthcare system are all committed to the improvement of healthcare delivery.

Available Knowledge

ERAS represents a shift from the traditional surgical care experience and integrates evidence-based multimodal and multidisciplinary strategies to shorten hospital length of stay and reduce morbidity (Offodile et al., 2018). Eighteen recommendations specific to ERAS for breast surgery were developed in a systematic review conducted by Temple-Oberle et al. (2017) to aid in rapid post-surgical recovery, lower complication rates, and decrease care time. A critical component of ERAS, and the first recommendation for perioperative care from this consensus

review, is that patients should receive detailed preoperative counseling (Temple-Oberle et al., 2017).

Implementing effective preoperative instructions is vital. Timely patient education may increase health literacy, understanding, and engagement to promote ERAS pathway success. Thorough education is a critical facet of patient care and has been proven to be notably meaningful among breast cancer patients. Education has been found to reduce fear and anxiety. Patient satisfaction increases when patients receive appropriate education before decision making (Temple-Oberle et al., 2017). Cavallaro et al. (2018) found the addition of preoperative education further reduced the length of stay and surgical site infections, with no difference in 30-day readmission rates, in an existing ERAS protocol. If replicable, the demonstrated reductions in hospital stay expenditures could translate to a significant opportunity for cost savings. Education regarding the pathway promotes patient adherence and compliance to ERAS, thereby optimizing surgical recovery.

Understanding and building on the perspectives of the healthcare recipient are essential. Effective preoperative education may lead to psychological benefits that positively impact a patient's experience (Causarano et al., 2015). Patient-reported outcome measures (PROMs) and patient-reported experience measures (PREMs) improve the quality of healthcare services. PROMs report the status of the patient's health conditions and PREMs measure patient perceptions of the experience of care rather than the outcome of care. The use of PREMs and PROMs encourages patient participation, patient-centered care, and patient empowerment (Desomer et al., 2018).

Temple-Oberle et al. (2014) concluded providing breast cancer surgery patients with adequate information and patient-specific plans using a person-centered approach achieves

patient satisfaction. Optimizing preoperative education among breast cancer surgery patients leads to improved patient outcomes, decreased anxiety, improved satisfaction, and empowerment of this unique cohort. Ensuring breast cancer surgery patients are provided with relevant, uniform, and easily comprehensible information regarding the ERAS protocol is meaningful. As an essential member of the interdisciplinary care team, the anesthesia provider is well-positioned to facilitate improved outcomes in patients undergoing surgery.

Current literature recommends preoperative patient education to be implemented into clinical practice (Temple-Oberle et al., 2017). Educational intervention strategies include, but are not limited to, paper handouts, online learning, and didactic approaches. A video-based modality for the delivery of the preoperative patient education regarding ERAS was chosen to effectively deliver the information in this quality improvement (QI) project. The literature delineates several reasons for adopting a video-based education approach. A video leads to the standardization of information improving consistency, as all users receive an identical educational session. A multimedia approach appeals to those who learn in different way by offering a superior learning experience as information is provided in a richer format. Videos also offer enhanced feasibility by reducing provider time, delivering the same amount of information in a shorter time frame (Aria & Archer, 2018). A video eliminates the need for additional staff and minimizes the issue of sustainability upon project conclusion. Lastly, the video modality offers the patient the unique ability to control the amount of information received. In the movement towards patient-centered care, videos enable optimal control for the learner. Patients may elect to not view the video altogether, or alternatively, they may access and view the video repeatedly at their convenience and share the video with their support system.

Aims

The aims of this project include:

1. 50% of survey participants will report the preoperative video explained what to expect during the recovery period.
2. 50% of survey participants will report feeling calmer and more relaxed after viewing the preoperative video education.

Methods

Before the implementation of the educational video intervention, the preoperative patient experience consisted of a consult visit at the surgical oncology breast surgeon's outpatient office. This visit includes discussing the diagnosis of breast cancer and determining if surgical intervention is an appropriate treatment. If the patient chooses to schedule surgery at this time, preoperative information, consisting of paper handouts, is given by the administrative assistant. Additional instructions are electronically sent to the patient a few days before surgery through an online portal. Additionally, the patient may have a separate preoperative visit at the plastic surgeon's office if she desires breast reconstructive surgery. If surgery was not scheduled at the time of the visit with the surgical oncology office, there was a potential gap for patient education.

An educational, animated video was created using Vyond™, an online video creation website. The script was created in collaboration with stakeholders prioritizing ease of patient understanding and expectation management of the perioperative continuum. The script and video both underwent several rounds of editing and recording. Components of the ERAS protocol were explained in this video and patients were explicitly taught two potentially unfamiliar concepts: regional anesthesia and multimodal analgesia. Sayin & Aksoy (2012) found patients undergoing breast surgery with analgesic education had lower average levels of

postoperative pain, and mobilization with the first six hours after surgery was increased to 73.8%. The final version of the video is just over six minutes in length and was completed in the Spring of 2019. Before video distribution, Institutional Review Board (IRB) approval was obtained. This intervention was deemed a QI project. Additionally, there were no unique ethical scenarios or contextual elements requiring further considerations before, during, or after the project intervention period.

The impact of the ERAS educational video was evaluated with an adapted Consumer Assessment of Healthcare Providers and Systems (CAHPS) Surgical Care Survey. This survey is a valid, reliable tool developed by the Agency for Healthcare Research and Quality (AHRQ) that measures the patient's surgical care experience. The primary purpose of the 15 question, multiple-choice survey was to measure the aforementioned aims, gauging if the video explained what to expect during the recovery period and if participants felt more calm and relaxed after viewing the video intervention. The survey also collected respondent demographics, including age, gender, level of education, and race (See Appendix). Two questions were adjusted to reflect that the intervention was a video. Permission to make minor modifications to the survey was approved by the AHRQ's manager of copyrights and permissions (Agency for Healthcare Research and Quality [AHRQ], 2018).

Video distribution was initially planned to take place in the oncology office during surgery scheduling with paper handouts including links to the education and survey. The primary investigators shadowed a small sample of breast cancer patients through their preoperative visits, and most women observed did not schedule their surgery during this encounter. Following meetings with stakeholders, the distribution phase was modified to send the survey and the video to patients via an electronic message. After patient enrollment, the

message was sent through a secure, online service. This online patient portal allows enrollees to schedule visits, view lab results, or, in this case, communicate and receive messages from their healthcare team. The outpatient office staff sent the message containing the link to the video and associated survey preoperatively to breast cancer surgery patients receiving ERAS. To ensure standardization of the message received, a “smart phrase” was created through the electronic health system and shared with outpatient office staff responsible for message distribution. This phrase contained a pre-populated message with embedded links to both the video and the associated survey. This distribution method was chosen as it required minimal disruption in office workflow, as staff was already sending electronic messages to patients using this modality. All the patients who received the message are female, at least the age of 18, and underwent breast cancer or reconstructive surgery with ERAS at the hospital.

No pre-intervention data was collected. Study participants completed the post-intervention survey after watching the educational video. Responses were collected through Qualtrics®, a web-based survey platform that allows data to be gathered anonymously. The data capture period began at the end of July 2019 and lasted through the end of October 2019. A total of 18 survey responses were obtained using convenience sampling. Three of the surveys collected had only the first question answered and were subsequently excluded from the analysis. In total, 15 fully completed surveys were evaluated.

The quantitative information obtained from the survey was analyzed with RStudio software (2019). As survey results were nominal, data analysis is expressed in frequencies and percentages. Fisher’s exact test was conducted to examine the statistical relationship between the demographic data and the two primary outcomes. A value of $p=0.05$ was used to determine statistical significance.

Results

Participant characteristics were collected and analyzed (See Table 1). Overall, 100% (n=15) of survey participants responded either “yes, definitely” or “yes, somewhat” that the video explained what to expect during the recovery period (See Table 2). One participant responded “no,” that the video did not make her feel more calm or relaxed, resulting in 93% of participants (n=14) reporting they felt more calm and relaxed directly after this video intervention. The results exceeded the aims of the QI project. Fisher’s exact test demonstrated no statistically significant associations between age or level of education and the two primary outcomes. A statistically significant association was found between having more office visits before surgery and the video “yes, definitely” versus “yes somewhat” explaining what to expect during the recovery period ($p=0.043$) (See Table 3). However, this finding can be attributed to confounding, as it may be due to the patient having more visits with a healthcare provider and not from the video intervention.

In summary, the video intervention for this cohort was well-received, supporting current knowledge that a video modality is an effective method for the delivery of patient education. The strengths of the QI project include ease of distribution, low cost, and high sustainability. The video was sent without the need for additional staff members. The expense of the video creation software equaled less than \$100 in U.S. currency, and no further costs were incurred. The video format is a highly sustainable choice, as it remains accessible to provide continuing education for patients after project conclusion.

This QI project faced several limitations. The educational video received disproportionately larger viewership than fully completed patient survey responses. To address the data collection challenges, modifications were made halfway through the distribution period.

If an eligible patient had viewed the video, one of the principal investigators offered participation in the survey the day of surgery if not previously completed. This adaptation in data retrieval was approved by the IRB but may have introduced bias into the survey results. As the survey data is entirely anonymous, it is impossible to differentiate between responses collected on the day of surgery and responses from patients at another time. Relating to the challenges with data collection, the sample size obtained was small and only contained participants from one hospital. For these reasons, the results from this QI project are not generalizable without further study.

Discussion

This QI project was successful based on the statistical analysis of survey results as well as anecdotes from patients, stakeholders, and healthcare staff. When the primary investigators interacted with eligible patients on the day of surgery, patients expressed the perceived usefulness of the video in preparation for their surgery. More than one patient highlighted how the video format allowed information sharing with their support system.

The primary investigators partnered with a clinical data analyst in the health system to host the video in an online, easily accessible location for patients to promote the sustainability of the intervention. As a result of this collaboration, a specific breast surgery webpage was created on the health system's engaged recovery website. Additionally, the primary investigators partnered with surgeons and nurse practitioners to create resources for patients, compiling patient information on this breast surgery webpage. The newly developed resources and the educational video are publicly available to view at any time.

Furthermore, teaming with the data analyst, a text messaging pilot program was developed. Patients who elect to engage with this service will receive text messages starting three days preoperatively up until the day of surgery. The communications will encompass the

components of procedure preparation including reminders regarding the patient's responsibilities in successful ERAS participation. One example is the included message prompting the patient to buy and drink a carbohydrate-rich beverage before arriving on the morning of surgery. A link to the educational video intervention is also included in this platform as another avenue for patients to access to the intervention.

The results from this QI project indicate educating patients establishes expectations during the recovery period and makes them feel calmer and more relaxed. Patient engagement with a preoperative educational video intervention has been proven beneficial and will enable the patient to be an active participant in her care. As ERAS protocols increasingly become a standard of care for surgical patients, uniform and comprehensive education can make a positive impact on this special patient population.

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Table 1

Participant Characteristics

| Characteristic | | Frequency (n=15) | Percentage |
|---|------------------------------------|---------------------|------------|
| Age in years | 35-54 | 8 | 53.3 |
| | 55-74 | 7 | 46.7 |
| Gender | Female | 15 | 100 |
| | Male | 0 | 0 |
| Race | White | 13 | 86.7 |
| | Race other than white | 2 | 13.3 |
| Hispanic or Latino origin or descent | Yes | 0 | 0 |
| | No | 100 | 100 |
| Level of education | Some college or 2-year degree | 5 | 33.3 |
| | 4-year college degree | 5 | 33.3 |
| | More than 4-year college degree | 5 | 33.3 |

Table 1

Participant Characteristics

| Characteristic | | Frequency (n=15) | Percentage |
|--------------------------------|------------------|------------------|------------|
| Office visits prior to surgery | 1 visit | 6 | 40 |
| | 2 or more visits | 9 | 60 |

Table 2

Primary Outcome Survey Results

| Question | | Frequency | Percentage |
|--|-----------------|-----------|------------|
| Did this video explain what to expect during your recovery period? | Yes, definitely | 12 | 80 |
| | Yes, somewhat | 3 | 20 |
| | No | 0 | 0 |
| Did this video make you feel more calm and relaxed? | Yes, definitely | 6 | 40 |
| | Yes, somewhat | 8 | 53.3 |
| | No | 1 | 6.7 |

Table 3

Results of Fisher's Exact Test

Is there an association between age and respondents reporting that the video explained what to expect during the recovery period?

| | Age 35 to 54 | Age 55 to 75 |
|---------------------|--------------|--------------|
| Yes, definitely | 0 | 2 |
| Yes, somewhat | 8 | 6 |
| Fisher's exact test | $p=0.43$ | |

Appendix

Adapted CAHPS Surgical Care Survey

1. Before your surgery, how many office visits did you have with this surgeon?

- None
- 1 visit
- 2 visits
- 3 visits
- 4 to 6 visits
- 7 or more visits

2. A health provider could be a doctor, nurse, or anyone else you would see for health care. Before your surgery, did anyone in this surgeon's office give you all the information you needed about your surgery?

- Yes, definitely
- Yes, somewhat
- No

3. Before your surgery, did anyone in this surgeon's office give you easy to understand instructions about getting ready for your surgery?

- Yes, definitely
- Yes, somewhat
- No

4. During your office visits before your surgery, did anyone in this surgeon's office use pictures, drawings, models or videos to help explain things to you?

- Yes
- No

5. Did these pictures, drawings, models, or videos help you better understand your condition and its treatment?

- Yes, definitely

- Yes, somewhat
- No

6. Did this video make you feel more calm and relaxed?

- Yes, definitely
- Yes, somewhat
- No

7. Did this video explain what to expect during your recovery period?

- Yes, definitely
- Yes, somewhat
- No

8. What is your age?

- 18 to 24 years
- 25 to 34 years
- 35 to 44 years
- 45 to 54 years
- 55 to 64 years
- 65 to 74 years
- 75 years or older

9. Are you male or female?

- Male
- Female

10. What is the highest grade or level of school that you have completed?

- 8th grade or less
- Some high school, but did not graduate
- High school graduate or GED
- Some college or 2-year degree
- 4-year college graduate

- More than 4-year college degree

11. Are you of Hispanic or Latino origin or descent?

- Yes, Hispanic or Latino
- No, not Hispanic or Latino

12. What is your race? Please mark one or more.

- White
- Black or African American
- Asian
- Native Hawaiian or Other Pacific Islander
- American Indian or Alaska Native
- Other

13. Did someone help you complete this survey?

- Yes
- No

14. How did that person help you? Mark all that apply.

- Read the questions to me
- Wrote down the answers I gave
- Answered the questions for me
- Translated the questions into my language
- Helped in some other way