A DNP PROJECT

An Evaluation of Timing of Discharge Instruction and the Impact on Patient Satisfaction

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by

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Abstract

Ambulatory surgical patients face unique challenges with discharge instruction comprehension and retention. The volume of information provided to patients, frequently combined with sedatives and narcotics, leads to failure to retain this crucial information needed for home care. At one healthcare facility, this failure to retain was reflected in the Outpatient Ambulatory Surgery- Consumer Assessment of Healthcare Providers and Systems (OAS-CAHPS) survey scores which were below the facility goal of 75th percentile nationally. This project implemented a preoperative teaching intervention to provide written and verbal discharge instructions in the preoperative area prior to the administration of anesthetic agents to improve patient retention of information and improve percentile ranking on the OAS-CAHPS survey. The Model for Improvement provided conceptual framework and was supplemented by PDSA cycles. Nursing staff were educated on the intervention prior to implementation. The intervention period of three months was monitored for productivity impacts and patient satisfaction ranking. Data obtained during the period was analyzed for effect with the assistance of a statistician. While statistical analysis revealed significance only in some areas, patient and staff feedback demonstrated value to the intervention. Additionally, the stated goals of achieving the 75th percentile or better were met.

Keywords: preoperative, timing, education, postoperative, discharge, patient teaching, surgery

Problem Description

Patient education has long been in the scope of and a primary responsibility of nursing practice. Postoperative time spent on education is no different. Discharge education requires that patients and their caregivers learn new skills and gain new knowledge in a short period of time that will prepare them for home care after discharge (Krohn, 2008). Patient satisfaction scores in Outpatient Surgery as reported by the Press-Ganey organization using the Outpatient Ambulatory Surgery- Consumer Assessment of Healthcare Providers and Systems (OAS-CAHPS) for discharge instructions are competitive. These surveys are generally mailed to patients within 48-72 hours from their discharge after an outpatient procedure. The OAS-CAHPS survey contains 37 items designed for the patient to be able to rate all aspects of their care surrounding their procedure. This survey is a nationally standardized instrument and is administered to all hospital outpatient departments (HOPD) and all ambulatory surgery centers (ASC) nationwide that participate in Medicare. While an aggregate satisfaction score may be greater than 90%, it may still leave a facility in the bottom half or lower in national percentile rankings through Press-Ganey.

Patient satisfaction also has a basis as a quality indicator. Siegrist Jr (2013) reported that while patients may not understand the technicalities of the care they receive, their perceptions of care are still valuable and frequently accurate. Higher satisfaction is associated with lower emergency department use, lower expenditures on medications, and lower mortality. Higher satisfaction is also associated with higher adherence to clinical guidelines and lower readmission rates. Siegrist Jr (2013) also found that organizations with higher satisfaction also tend to be stronger financially and have less litigation related to patient care or quality concerns.

One northeast Florida multisite health system has strong quality goals. The facility where the project was implemented is "A" rated by the Leapfrog organization for patient safety and outcomes. The Outpatient Surgery Center (OSC) located on one of the campuses is an 18 bed, two operating room facility that performs outpatient surgical procedures exclusively. Senior administration at facility desired to have OAS-CAHPS satisfaction scores in the top decile nationally. The nurse manager, who is the doctoral student leading this project, had been given a set goal of increasing OAS-CAHPS satisfaction scores to greater than 75th percentile ranking nationally. The facility was not at this goal and is struggling to change percentile ranking without appreciable success. For the time period of September 21,2019 through December 14,2019, the facility's aggregate discharge domain score on the OAS-CAHPs showed 93.6% of respondents answering "Yes, definitely". However, this only corresponded to 13th percentile rank nationally.

The OAS-CAHPS scores are currently not a part of Value Based Purchasing (VBP) but are anticipated to become a part of each organization's Total Performance Score (TPS) in the near future. The TPS score determines the bonus or penalty from Centers for Medicare and Medicaid Services (CMS) that a facility will receive. VBP represents a shift in the U.S. healthcare system from fee-for-service to a performance -based reimbursement structure where quality is a driver of reimbursement. Many attempts to control cost and deliver quality have been attempted. The Hospital Inpatient Quality Reporting Program (HIQRP) was a pay-for-performance program started by CMS in 2003. In 2012 the Hospital VBP program was initiated, following in the footsteps of HIQRP. This program creates an incentive fund through a global reduction in Medicare reimbursement. Hospitals then receive an adjustment based on their TPS. This program allows for bonuses or penalties in reimbursement based on quality metrics. Each year, VBP goals change and the percentage of total VBP reimbursement tied to each specific

metric also changes. Performance measures are retired by CMS once most facilities are meeting the goal and new measures are added. These changes and their potential financial impact are not known until published by CMS. Unfortunately, this equates to being unable to calculate potential financial impact to the facility from this project as a component of TPS scores and VBP bonuses or penalties. However, this health system does provide care to a large number of Medicare and Medicaid recipients, so the loss of even a small percentage of the total VBP incentive would be significant. In 2016 it was estimated that approximately half of all hospitals would see minimal change in their reimbursement. The other 50% would either see penalties or bonuses. Penalties may be as severe as a facility not receiving back any of the withholding used to fund the incentive program for that year (Chee, Ryan, Wasfy, & Borden, 2016).

In addition to a strong desire by the health system and facility to perform at or above the 75th percentile as a quality goal, an additional future financial impact beyond the potential loss of patients who seek care elsewhere is expected if that goal is not met. In 2018, the OAS-CAHPS became a pay-for-participation measure with CMS as data collection began. Currently, facilities only need to participate in the survey to receive full Medicare reimbursement. Facilities who do not participate in the program are subject to penalties of two percent of their total Medicare reimbursement (Press Ganey, 2019). OAS-CAHPS is expected to become a pay-for-performance piece of Value Based Purchasing (VBP), although that date is currently unknown and will not be known until published in the federal register by CMS. Once this has been published and enacted, facilities that perform below annually established thresholds that have yet to be determined will be subject to VBP financial penalties while top performers will receive performance-based bonuses (Centers for Medicare and Medicaid Services, 2020). Loss of revenue can lead to loss of nursing hours or positions through budgetary constraints.

Facilities must contract with a CMS certified vendor for OAS-CAHPS survey administration. The health system has contracted with Press Ganey.

Press Ganey was founded in 1985 by two Notre Dame professors. In their first fifteen years, they began to demonstrate value to hospitals by tracking patient satisfaction and comparing it to other similar facilities. As others saw the business value in this, additional vendors such as Gallup and NRC entered the arena. Press Ganey works with over 60% of U. S. healthcare organizations and over 26,000 organizations worldwide as a vendor of surveys and improvement products (Press Ganey, 2019).

Prior to this project, patients received discharge instructions immediately before discharge. Postoperative education materials provided by the facility are from Krames, the StayWell Company, a nationwide vendor of patient education materials that is in use at other sites with higher satisfaction scores. Nevertheless, concerns persisted that the volume of information, typically 15 or more pages, could lead to a lack of ability to readily find needed information in the post discharge setting. In addition, the fact that patients had received anesthesia, narcotics and benzodiazepines in the operative course which further reduces their ability to retain critical information provided postoperatively. In response, the facility had implemented a cover letter with the manager's office number as an attempt to help improve satisfaction and inform patients beginning in 2018. This cover letter also emphasized that information regarding pain, nausea, bleeding, signs of infection, and home recovery is all contained in the packet. This intervention, while perceived as valuable, failed to have any appreciable impact on discharge satisfaction scores. The manager did receive regular phone calls with questions that were covered in postoperative discharge teaching. It appeared that failure to retain discharge education in the manner previously provided was an issue as evidenced by poor

percentile ranking on the OAS-CAHPS and the types of calls received by the manager. The volume of calls is highly variable and was not considered to be a reliable metric for this intervention.

Direct follow-up or knowledge of surgical outcomes related to wound infection, uncontrolled pain, uncontrolled nausea, or other recovery complications in patients who had procedures in the outpatient surgery center was difficult. Due to the short stay outpatient environment, the only follow-up on patients at this facility is a post-operative telephone call on the day after surgery, OAS-CAHPS survey comments, or the rare report from a surgeon's office of an unplanned outcome. Thus, this project was not able to measure patient outcomes related to pain, nausea, infection, or home recovery other than as assessed by the Press-Ganey survey. Although the ability to assess the effect of the intervention on unexpected outcomes was not possible, it was hoped that this QI intervention will increase the patient and their caregiver's likelihood of a complication-free recovery.

The purpose of this project was to improve patient's perception of their experience of outpatient ambulatory surgical care discharge information by implementing a process change intervention that provided written and verbal discharge instructions to the patient in the preoperative area prior to the administration of anesthetic agents for their surgery. The outcome of this process change could improve percentile ranking on the OAS-CAHPS survey satisfaction with discharge instructions to greater than or equal to the 75^{th} percentile ranking nationally. This was to be accomplished by adding a preoperative educational intervention for review of discharge instructions and provide the patient and caregiver with a written copy of their discharge instructions prior to the induction of anesthesia. This new process did allow the patient and home caregiver more time for an in-depth review and allowed for the information to be

repeated and reinforced prior to discharge. The goal of this project was for satisfaction scores to increase from the discharge domain baseline 13th percentile (93.6% responding "Yes, Definitely") to greater than or equal to the 75th percentile in the Press Ganey national database.

Available Knowledge

Search Process

The clinical question that provided the initial variables to guide the search strategy was: When adult patients receive discharge education pre-operatively on day of procedure in written and verbal format from a RN that provides patient teaching for their ambulatory surgery center post-operative course of recovery at home, and then again RN repeats standard instructions at discharge time, is there an increase in patient perception of their experience of ambulatory surgical care on the recovery domain of the OAS-CAHPS survey?

A search of the Cumulative Index of Nursing and Allied Health Literature (CINAHL) and Google Scholar databases was performed using open ended date ranges. An exhaustive search, with the assistance of a reference librarian, was performed. The goal of this search was to identify literature relevant to the phenomenon of providing postoperative teaching preoperatively. An additional goal of using Google Scholar was to help identify synonyms which could also be input into CINAHL. Articles not available in CINAHL were checked for availability using the availability function in CINAHL through the Jacksonville University library. Key terms included *preoperative, timing, education, postoperative, discharge*, *patient teaching*, and *surgery*. The Boolean term "AND" was used to further refine searches. A literature review matrix was compiled to assist in identifying key themes and sources of evidence.

Review of the Literature

Preoperative education is the process of providing teaching to patients to help them understand their procedure. It provides information about the procedure, experience, and outcomes. Preoperative education helps allow the patient to prepare for the procedure mentally and physically. This education and preparation is beneficial to the patient both mentally and in physical preparation for surgical procedures (Ramesh et al., 2017). Providing discharge education preoperatively has been shown to improve the patient's retention of the information and their satisfaction with those instructions on the OAS-CAHPS survey (Katsetos-Hensley, 2020). The literature suggested that education provided by the surgeon frequently does not meet the educational needs of patients and that patients may not be able to retain and recall crucial information provided to them preoperatively by their surgeon. Additional education improves the perioperative experience (van Eck, Toor, Banffy, & Gambardella, 2018). Guven, Ibrahimoglu, and Elbuken (2020) noted that even while the procedure and discharge happen on the same day, recovery does not. This requires that patients be educated on their home management and potential complications. Because these were same day surgeries, this also requires the patient and caregiver to learn much information in a short period of time.

In reviewing the literature, several themes related to preoperative education were identified. Cost and length of stay (LOS), complications and outcomes, patient satisfaction, anxiety, and pain were major themes. Each theme was explored as it related to preoperative education.

Effect of education on cost and length of stay

The literature review indicated that quality and safety programs involving educational interventions do have budgetary constraints but could have positive financial implications once

implemented. Funding is limited for these endeavors in the U. S. healthcare system, even as reimbursement is tied to quality and outcomes. Hovsepian, McGah, and O'Brien (2017) noted that additional nursing positions were required to provide appropriate education in their QI project. According to Bergin et al. (2014), this cost may be offset by other cost savings during the hospital course. This study found that adding 15 minutes of teaching for incentive spirometry onto the preoperative visit led to reduced daily hospital costs beginning on post-operative day one and continuing through to discharge. In addition to decreased cost per day, these patients also experienced shorter LOS for those who were admitted to the hospital.

Wongkietkachorn, Wongkietkachorn, and Rhunsiri (2018) also found that preoperative teaching led to reduced length of stay. That study found that needs-based education could shorten the amount of time required for education by tailoring the education to the needs of the patient. In the study, patients filled out a five-question survey regarding the level of information they wanted (none, concise, or detailed) regarding their disease information, procedural detail, complications, patient behavior, and pain. Participants could not opt out of receiving the minimum required information regarding complications of their procedure. The results were that not all patients wanted the depth of detail that was being delivered as the standard education. The provision of the requested amount of education increased patient satisfaction, reduced education time, and also served to lower anxiety, which will be discussed as a separate theme. Moulton, Evans, Starks, and Smith (2015) argued that the cost of education was offset by decreases in other costs. Eastwood et al. (2019) described education as low-cost with a low burden of administration that demonstrated a lower cost related to a lower number emergency department visits postoperatively.

Effect of education on complications and outcomes

Bergin et al. (2014) noted that postoperative pulmonary complications affect 25-50% of all postoperative patients. By adding preoperative teaching on incentive spirometry, the incidence of pulmonary and non-pulmonary complications was reduced. Due to sample size, the authors noted that the effects were not statistically significant. However, in the journey to zero the reduction of even one event is significant. Wunderle, Bena, and McClelland (2017) found that patients who received preoperative education made fewer postoperative telephone calls to providers with questions or problems. Feng, Novikov, Anoushiravani, and Schwarzkopf (2018) wrote that patients who had received preoperative education were less likely to experience a postoperative fall. Porras-González, Barón-López, García-Luque, and Morales-Gil (2015) found statistically significant decreases in surgical wound complications (13.9% vs. 5.5%, $p = .01$) in their intervention group that received preoperative education.

Patients who receive education are also more likely to identify and report side effects of medications. This allowed for early intervention leading to reduced complications such as nausea and vomiting or uncontrolled pain. Patients who received education on pain management strategies preoperatively may have better outcomes and have lower pain scores (Wilson, Watt-Watson, Hodnett, & Tranmer, 2016). Eastwood et al. (2019) wrote that patients who were given presurgical teaching self-report better outcomes. Moulton et al. (2015) concurred, noting that patients that received preoperative education had improved outcomes scores.

Effect of education on pain

Pain management for patients after a procedure is one of the greatest challenges that nurses face. Postoperative pain is also one of the greatest fears of patients undergoing surgery. It was estimated that between 30% to 50% of post-surgical patients will have moderate to severe

pain, which tended to lend credence to the patient's fears. (Porras-González et al., 2015). Once patients are discharged to home, these challenges are compounded. Inadequately managed pain led to decreased mobility, increased anxiety, and longer LOS thereby increasing complications, including venous thromboembolism, in the postoperative period. Pain also affected emotions and moods. The opportunity to improve pain management in the postoperative period was significant as there are over 48 million procedures annually in the U. S. (O'Donnell, 2018). Wongkietkachorn et al. (2018) noted that increased postoperative pain led to increased requirements for pain medications, lengthened LOS, and decreased patient satisfaction. Similarly, Wilson et al. (2016) found that untreated pain led to both psychological and physical complications and increased the risk to patients for complications. Eastwood et al. (2019) found that all patients in the intervention group receiving preoperative education had their pain management expectations met. Bergin et al. (2014) also found that patients receiving preoperative education demonstrated lower average pain scores.

Other studies indicated that patients who received education were more likely to use non-pharmacologic pain management strategies to assist in managing postoperative pain. Yajnik et al. (2019) buttressed this claim. In their study of the effects on preoperative education on the use of opioid pain medications by patients they found that patients who received education demonstrated decreased opioid use postoperatively. This was accomplished without loss of pain control and patients were still able to meet recovery and rehabilitation goals.

In their study of 380 patients, Porras-González et al. (2015) reported a significantly lower average pain score in their intervention group that received preoperative education provided by nurses. Ramesh et al. (2017) in a meta-analysis of four studies involving 704

patients noted that there was an effect on postoperative pain in patients provided preoperative education, but that those results were not statistically significant.

Effect of education on anxiety

Anxiety was one of the psychological issues in the surgical arena that those providing education must contend with. This anxiety initiated upon notification of the need for surgery and peaks at day of surgery arrival at the surgery center. This anxiety and manifestations of depression and negative thoughts were related to anticipated physiological changes as a result of the procedure. Fear and uncertainty about outcomes served to fuel this anxiety (Ramesh et al., 2017) Anxiety had a negative effect on a patient's safety and delayed postoperative healing and recovery (Amini, Alihossaini, & Ghahremani, 2019). Hovsepian et al. (2017) noted that anxiety can inhibit learning and found that although discharge instructions postoperatively were being given, patients had little to no recollection of those instructions leading to poor preparation for self-care in the home setting. The physiologic manifestations of anxiety included elevated cortisol, adrenaline, and noradrenaline levels. These elevated stress hormones increased pain levels and analgesic medication requirements postoperatively (Amini et al., 2019). Other physiologic manifestations of this stress were sleep disturbances, exacerbation of underlying medical conditions, prolonged recovery that ultimately had negative effects on quality of life after surgery (Ramesh et al., 2017).

This anxiety and its sequelae of physiologic manifestations may be partially mitigated through preoperative education. Education is frequently the primary intervention and plays a significant role in anxiety mitigation (Ramesh et al., 2017). Wongkietkachorn et al. (2018), in their study of needs-based education, found that delivering preoperative education in congruence with the self-identified needs of the patient reduced their anxiety. Approximately half of the

patients studied wanted concise information related to their disease information, complications, patient behavior, and pain. Nearly 75% wanted concise information related to the procedure as compared to receiving detailed information. Their study took into account adult learning theory as well as differing coping styles of the adult patients. Cole, Cotter, Wang, and Davey (2017) concurred, noting that serious discussions and use of medical language by the physician can be overwhelming and cause anxiety.

Effect of education on patient satisfaction

When a patient perceived a lack of information, satisfaction levels with the surgeon and surgical experience decreased (van Eck et al., 2018). The OAS-CAHPS survey (Appendix A) questions relating to discharge rely on recall of information for a positive answer to the questions asked. Nurses cannot rely on physicians to provide the discharge education as studies have demonstrated that education provided by the surgeon is often insufficient for the patient to be able to retain or recall the relevant information needed (van Eck et al., 2018). Cole et al. (2017) agreed, stating that patients often presented with limited or inaccurate knowledge and they struggled to remember much of what they were told in the physician office.

Hovsepian et al. (2017) noted that the volume of information provided at discharge was overwhelming. In this study, patients were provided their discharge education prior to surgery and the information was repeated at discharge. Patients were then surveyed by telephone after their procedure. The authors found that by providing postoperative discharge instructions in written and verbal form preoperatively, patient satisfaction with their discharge instruction increased approximately seven percent. The patients described feeling more prepared for home care.

This finding appears to be replicated by Rice (2016) who found that implementing preoperative teaching about postoperative care improved national percentile ranking from 88th percentile to 99th percentile. Wilson et al. (2016) agreed, stating that pre-surgery education with written educational materials combined with verbal discussion and education was more effective than education delivered postoperatively.

Katsetos-Hensley (2020) noted that patients who received discharge education prior to their procedure were more likely to report feelings of being prepared for home care. These patients also reported an increased understanding of and satisfaction with discharge instructions. The patients also replied more favorably to the OAS-CAHPS survey questions in the discharge domain and the author noted an improvement in satisfaction scores during the intervention. After implementing a preoperative class providing discharge instructions, Bisbey et al. (2017) found that patients reported increased satisfaction, increased confidence for home care, and reduced anxiety.

Pieper et al. (2006) described evidence that a dual format education including verbal and written instructions has been shown to increase patient learning and satisfaction. This evidence was consistent with the delivery format used by Hovsepian et al. (2017) in their intervention. Tilbury et al. (2016), in a study of total knee arthroplasty and total hip arthroplasty patients, found that preoperative education helped patients in expectation setting for their procedure leading to increased satisfaction. This same finding of preoperative education to establish expectations leading to improved satisfaction was reported by the Eastwood et al. (2019) study of spine surgery patients. This study reported a statistically significant higher level of patient satisfaction in the intervention group that received preoperative education. Bergin et al. (2014) found that 84% of patients who received preoperative education regarding incentive spirometry

regarded the education as “helpful”. Porras-González et al. (2015) found a statistically significant increase in patient satisfaction when the patients were provided preoperative education (78.7% vs 87.1%, p = .041).

Summary and Recommendation of Findings

The volume and depth of information provided about the postoperative course provided during preoperative physician encounters appeared to be unsatisfactory. Additionally, the anxiety associated with the perioperative experience may have hindered satisfaction with education provided. Patient factors, including lack of medical knowledge compounded this issue. The evidence consistently demonstrated that preoperative education has shown to be beneficial in increasing patient satisfaction. It has also shown to have effects on decreasing anxiety, decreasing negative outcomes, decreasing wound complications, decreasing pain, and reducing cost. Although some studies demonstrating favorable effects of education were not statistically significant, those studies were bolstered by others that did rise to the level of statistical significance of the evidence presented. Projects by Hovsepian et al. (2017) and Katsetos-Hensley (2020) both demonstrated increased patient satisfaction with patient discharge instructions when the additional intervention of providing discharge instructions pre-procedure were implemented. Evidence in the literature supported the foundation of the QI project and appeared to recommend providing an identical discharge education session in the preoperative area in combination with the prior standard practice of providing that information in the post-procedure discharge area immediately prior to discharge. Based on the previous staffing model and structure of the surgery center, was expected that this process change could be implemented successfully. If additional nursing hours were to be required, those were to be provided on an as needed basis by the nurse manager of the facility. If this be insufficient, the manager had the authority to modify nursing

schedules to meet the demand created by the educational intervention. It was not expected that any other resource would be required. It was believed that the change would have a positive impact on patient satisfaction. It was unknown if the intervention would affect postoperative LOS, although it was reasonable to assume a decreased LOS as in-depth questions that patients and caregivers would ask postoperatively would be instead answered in the preoperative area, thus shortening the postoperative stay. Patients arrived two hours preoperatively and no additional time was expected to be added to this preoperative time.

Rationale

QI Model

The Agency for Healthcare Research and Quality (2013) (AHRQ) recommends the Model For Improvement (MFI) in healthcare. The model asks three essential questions:

- What is to be improved? For this project the improvement was needed in patient retention of discharge teaching information. A process change was implemented and shifted discharge teaching from post-surgical to pre-surgical teaching with reminder at discharge time. It was expected that this process change would impact patient perception of their experience of ambulatory surgical care on the recovery domain responses to the OAS-CAHPS survey. Departmental scores were not at facility goals. The score is a composite of several questions on the OAS-CAHPS which cover multiple aspects of patient discharge.
- How will we know an improvement has happened? It was expected to see an increased frequency of patients selecting “Yes, Definitely” on the questions

relating to discharge on the OAS-CAHPS with a corresponding rise in percentile ranking.

- What changes will be made to affect this improvement? Postoperative discharge instructions were provided to the preoperative process and provided to the patients and caregivers in the preoperative area in addition to repeating the standard instructions prior to discharge.

The AHRQ (2013) recommends the Plan-Do-Study-Act (PDSA) cycle as a complement to the MFI model for implementing change. This model and PDSA cycles need to be run in multiple cycles in most cases. This framework also appeared to best support this project as placement of the process changes was to be based upon nursing, patient, and family feedback and input into the model for repeated runs to examine for effect. PDSA cycles emphasize discipline in change management through systematic, data focused approaches to implementing, testing, and maintaining desired change. Both the MFI and the PDSA are described as simple approaches to help develop practice. When making this change, the goal was to hard wire the habit of providing the discharge instruction preoperatively. Repeating PDSA cycles helped to hardwire these approaches and shift thinking from an individual based focus to more of a process focus that emphasized outcomes.

The Institute for Healthcare Improvement (n. d.) provides guidance for the steps of the PDSA cycle. In the planning stage of the cycle the objective to be tested is identified. Predictions of what will occur are made, and a plan to test the change is developed. In the do stage, the test is carried out. Observations and unexpected findings are observed and documented, and data analysis begins. In the study stage, data analysis is completed, the analysis is compared to the

prediction made, and lessons learned are discovered and summarized. In the act stage, any modifications that need to be made occur and the next cycle is planned for.

Plan: In this project the issue identified that needed to change was the poor patient retention and recall of discharge instructions as reflected in the OAS-CAHPS survey reports needed to improve. The change that was made was to provide an additional education session with the peri-anesthesia nursing staff reviewing and implementing preoperatively delivered discharge teaching that were combined with the standard review of discharge instructions that was current practice. It was expected that with a teaching session prior to anesthesia and repeated prior to discharge would improve this retention and recall and OAS-CAHPS scores would improve. A statistician was consulted to formulate a data collection and analysis plan.

Do: In this project this consisted of the nursing staff providing the additional educational intervention. Staff adherence to the process change was monitored and evaluated. Challenges or successes were noted for future endeavors or expansion of the project at a later date. Data collection from the Press-Ganey website was utilized.

Study: In this project data analysis was conducted with the assistance of the consulted statistician. The analysis tested for statistical significance using the appropriate test(s). Analysis and findings were presented to JU faculty Doctor of Nursing practice chair for review. The data was evaluated as to whether the project had may have had any impact on OAS-CAHPS percentile rankings.

Act: Because the data demonstrated rises in the OAS-CAHPS scores, the project will be shared across the health system and will be implemented in all surgical areas of the facility.

Specific Aims

The specific aims of this project were:

- To increase percentage of the positive score associated with the response of "Yes, Definitely" and corresponding national percentile rank for the aggregate global discharge domain score on the OAS-CAHPS to equal to or greater than the 75th percentile nationally within three months from implementation
- To increase the percentage of the positive response score to each of the five questions on the OAS-CAHPS that comprise the global score to equal to or greater than the 75th percentile nationally within three months from the implementation date.

The surgery center RNs provided a second educational intervention on the day of surgery which consisted of duplicating the discharge education session in the preoperative area prior to administration of narcotics, benzodiazepines, or anesthetic agents. This intervention was an exact replication the education session currently provided at discharge. RN adherence with the new process was monitored through by 15 direct observations of discharge education being provided preoperatively. This observation consisted of the DNP student observing each of the surgery center peri-anesthesia RNs a minimum of one time until a total of 15 total observations had been completed. This observation occurred over multiple operational days to cover multiple distinct RNs delivering the intervention. As the surgery center patient population was greater than 90% orthopedic and podiatry all observations were completed on this population. The nurses were observed for provision of discharge instructions related to pain, nausea, home recovery, bleeding, and signs of infection.

Data was collected from the Press-Ganey database on patient responses to questions 13, 14, 15, 17, 19, and 21 and the global discharge domain scores of the OAS-CAHPS survey over a period of 12 weeks from September 21 through December 14, 2020 (Appendix A). Question 13, while feeding into the communication domain and not discharge domain, asks if the respondent

received written discharge instructions. This data was compared to the patient responses to the same questions over the same date range in the year prior to implementation. This longer look back to the last year's data rather than the most recent 3 months was due to the COVID-19 pandemic shutdown of elective cases in the state of Florida and because some nurses had knowledge of the planned project and prematurely incorporated the intervention into their practice prior to the start date. Responses to individual questions in the discharge domain were analyzed for effect as well as aggregate national percentile ranking for the discharge domain in OAS-CAHPS. In analyzing pre-intervention OAS-CAHPS data, it was noted that percentile rank of "Recommend the facility" and the global communication domain score were also below goal. This data was included for correlational effect analysis.

Context

This intervention consisted of providing the patient and home caregiver with verbal and written discharge instructions for their procedure in the pre-operative area, in addition to standard practice of receiving discharge instructions again in the discharge area. Intervention patients were surveyed to record their satisfaction with the discharge instructions randomly by the Press-Ganey company using the OAS-CAHPS survey in accordance with procedures already in place. Comparison data for the facility was be obtained from the Press Ganey database retrospectively for a 90-day period prior to project implementation to serve as a baseline for determining effect and statistical significance. This range had to be adjusted to the same date range the year prior due to data contamination and the global COVID-19 pandemic. Facility permission was obtained from the Director of Surgical Services in addition to the facility Vice President for Patient Care Services who volunteered to serve as the executive sponsor should one be required.

Specifics of Healthcare Setting and Population

The intervention occurred in a six-bay preoperative area located in a non-teaching community hospital owned outpatient surgery center that serves a primarily orthopedic/podiatry population with some otorhinolaryngology and minor gynecologic procedures also performed. The DNP student was also the nurse manager of the facility. Daily supervision of the staff RNs and implementation of evidence-based practice measures at the direction of the health system were a normal function of the DNP student's role as the nurse manager. The facility is part of a five-hospital health system. A key component of the health system's mission is to provide quality healthcare services. Patient satisfaction levels have been associated with the quality of care provided, aligning the project with the stated mission of the organization. The facility is on the hospital campus and is located inside of a medical office building. The unit is open Monday through Friday 0600 until the last patient is discharged. The unit consists of two operating rooms, six preoperative bays, six phase one recovery bays, five phase two discharge bays, and one all phase isolation room. The facility was projected to perform greater than 1,400 surgical cases in fiscal year 2020. Due to the COVID-19 pandemic national shutdown, the total case volume for FY 2020 was 1364 cases. This averaged out to 114 surgical cases per month.

The peri anesthesia areas were staffed by RNs exclusively. There were a total of two full time, four part time, and two PRN nurses who staffed the unit. Daily staffing levels were tailored to the number of patients and types of surgical cases that will be provided that day. This number typically varied between two to six RNs on duty at a time in the peri-anesthesia areas of the

surgery center. The level of education in the peri anesthesia RNs ranged from associate to master's prepared with 75% being prepared at the bachelor's level or above.

Patients were included for selection if they were 1.) 18 years or older, 2.) received general or monitored anesthesia care for their procedure, 3.) English speaking, 4.) met medical screening criteria for and are undergoing an outpatient surgical procedure in this facility, and 5.) were eligible to receive the OAS-CAHPS as determined by Press-Ganey.

No financial impact was expected from the project. Education is a normal part of the staff's daily patient care responsibilities. If additional assistance be needed, the manager was available to assist. As the manager is a salaried and not hourly position, financial impact was negligible. Very slight negative impact could have come from reprinting discharge instructions in the instances where the surgical procedure was altered, and discharge instructions changed as a result of the operative course. The student monitored daily productivity metrics where applicable to ensure that unanticipated financial impact did not occur. The surgery center did not exceed budgeted labor dollars during the intervention period.

Intervention Implementation

Before commencing the intervention, the DNP student, who is the nurse manager, obtained permission from the facility nurse executive, the director of surgical services, the Jacksonville University IRB and the healthcare system IRB. The Assistant Nurse Manager for the Outpatient Surgery Center (OSC) was verbally briefed on the project for input prior to setting a staff meeting with the affected RNs. Once the project was approved and explained, a date was set for a staff meeting with all peri-anesthesia RNs in the OSC. The intervention was discussed with the staff and input on perceived barriers and limitations were sought during a pre-

intervention staff meeting. Nurses were educated on the process change of providing verbal and written discharge instructions in the preoperative area in addition to reviewing those instructions at discharge. This meeting took approximately one hour and consisted of:

- Brief review of literature that supports the project.
- Review of the OAS-CAHPS questions relevant to the project.
- Review of current OAS-CAHPS scores and percentile rankings.
- Review of the components of discharge education.
- Solicitation of perceived barriers to successful implementation into practice.
- Discussion of solutions to perceived barriers to implementation.
- Question and answer period.

Any peri-anesthesia RN unable to attend the meeting was educated individually to allow for any expressions of concern or barriers. No significant barriers were determined to exist, and an implementation date was set. If significant barriers had been identified, those barriers were to be resolved, and a second staff meeting held to address those concerns and establish an implementation date. During week one of implementation, staffing was assessed daily to provide for necessary time with the patients for the additional intervention as the nurses adjusted to the new workflow. This staffing was also monitored retrospectively each day using DivePort analytics to ensure daily productivity metrics were met as expected. While the preop and postop staff could not be broken out individually from the surgery center daily budget for in depth monitoring of financial impacts, it was important to monitor manhour per unit-of-service trending for unforeseen negative effects. Based on the current average hourly rate for RNs in the OSC of $37 per hour, this educational intervention incurred a financial impact of $259 in educational costs. The OSC was under budget on educational expenditures for the fiscal year to

date, so no overage was incurred. These dollars are classified as “non-productive” in the DivePort analytics system and therefore did not impact daily productivity metrics.

Prior to the intervention, patient discharge education was provided in the patient discharge area after the patient has been released to the phase two recovery area from the phase one post anesthesia care unit (PACU). The RN would select the appropriate discharge education leaflets in the Krames educational system, add any special instructions or orders from the surgeon, then save the instructions to the EMR and print the instructions. Important information in the discharge packet was marked with a highlighter. The patient’s home caregiver was brought back to sit with the patient who was in a recliner at this point in their post anesthesia recovery. The discharge nurse reviewed the instructions with the patient and caregiver, and the discharge packet was provided to the patient and caregiver, allowing for questions to be answered. The time interval between instruction and discharge from the facility was typically very short due to the minor nature of the procedures performed and a more rapid recovery from anesthesia due to a healthier patient population with fewer comorbidities in the OSC. Depending on the surgical procedure, the entire recovery period could be less than one hour in duration. Longer procedures, such as complex orthopedics may require longer stays, but this is patient specific based on pain management needs. This time interval varied by patient but was usually less than a total of two hours of post anesthesia recovery time.

The intervention was provided in addition to the prior standard of care for discharge education. The intervention consisted of the pre-operative RN bringing the patient’s home caregiver back to the pre-operative bay after the patient was fully prepared for surgery as was current practice. At that time, the pre-operative nurse provided the appropriate discharge instructions based on the anticipated procedure to the patient and home caregiver. The patient’s

written discharge packet was created in the Krames educational system, saved in the EMR, printed, and marked with a highlighter practice to help distinguish critical information for the patient and caregiver. However, the packet was provided to the patient for review prior to surgery instead of immediately prior to discharge. The home caregiver was requested to read and review the packet while waiting during the time of the operative procedure. If no changes were required to the packet postoperatively, the nurse followed prior practice and reviewed the instructions again postoperatively with the patient and caregiver. If there were changes to the instructions based on the actual surgical procedure, a new discharge packet was generated, reviewed with, and highlighted for the patient and home caregiver. The incorrect packet was then retrieved from the patient or caregiver and placed in a secure shred bin to protect patient information.

No changes to nursing practice other than the described repetition of the discharge instructions occurred. This served to reduce confounding variables that might create undue bias and influence on results

Study of the Intervention

According to the Centers for Medicare and Medicaid Services (2020) (CMS) the OAS-CAHPS is a tool that collects patient experience data on when medically necessary and non-medically necessary outpatient surgical procedures are performed on those who are least 18 years of age and older. The survey asks questions about several aspects of the visit, including discharge and preparation for home recovery. The survey is administered nationally and is standardized. The purpose is to provide data that is statistically valid and allows cross sectional comparison. The Outpatient and Ambulatory CAHPS Survey (n. d.) states that instrument development began in 2012 and was designed following guidelines set forth by the AHRQ and

the Consumer Assessment of Healthcare Providers and Services Consortium. Patient interviews were conducted to evaluate the ability of patients to understand and answer the questions appropriately. It was field tested in 2014 at 18 hospital outpatient departments and 18 ambulatory surgery centers to confirm reliability and validity of the instrument. Based on the field test, revisions were made, and the survey finalized into a 37-question instrument. The survey was accredited in 2015 and published into the federal register by the CMS in 2016. The survey is designed to, among other goals, facilitate quality improvement in ambulatory surgery centers (ASCs). As this project is focusing on patient satisfaction with discharge instructions, only the questions relating to discharge instructions were included from the survey.

This DNP project setting is part of a multisite hospital system that has chosen to sample the patients through both written and internet-based surveys using the Press-Ganey organization. Surveys are generally sent out no later than 72 hours from discharge. Survey inclusion is random and determined by the Press-Ganey organization independent of the health system. Completed surveys are then returned by the patient to the Press-Ganey organization either by mail or through the internet depending on the method of survey administration. Survey results are then blinded, aggregated, and placed on the Press-Ganey portal. No individual patient data is accessible from the surveys. No additional permissions were obtained as this data fell under the purview and responsibilities of the student's current role.

Measures

The measures for this project were the patient responses to the questions in Appendix A in the Press-Ganey OAS-CAHPS survey and the global discharge domain aggregate. These questions specifically explore the patient's perception of the discharge instructions provided and

are directly related to patient satisfaction with their discharge instructions. Patient responses to these questions provided the needed input to determine project efficacy.

The OAS-CAHPS survey is designed to measure the patient's perception of their visit to a Medicare certified hospital outpatient department (HOPD) or ambulatory surgery center (ASC). It also asks questions about specific patient outcomes. It contains 37 questions which ask about the facility, staff, communication regarding the procedure, preparation for discharge and recovery, an overall rating, and a willingness to recommend. It is given to patients who have specific procedures or surgery such as carpal tunnel, shoulder arthroscopy, bunion repair, endoscopic sinus surgery, and knee arthroscopy. Patients who have procedures with CPT codes on the eligible list as determined by CMS are eligible to receive the survey. CMS requires that at least 300 patients are surveyed each year.

Prior to the implementation of OAS-CAHPS in 2016, patient satisfaction data related to outpatient surgery was proprietary. Organizations collected their own information through surveys that were only reported internally. Consumers were not privy to the quality of care delivered by healthcare providers or other consumer's perceptions. With the advent of OAS-CAHPS in 2018, nationally benchmarked and standardized satisfaction and quality data began to be publicly reported. With increased transparency through public reporting now in place, consumers are able to view satisfaction and quality data reported by patients on a standardized survey (van Eck et al., 2018). This survey is administered nationally to all facilities who perform outpatient surgical procedures and who participate in the Medicare program administered by the Centers for Medicare and Medicaid Services. In 2012 this equated to 5,357 ambulatory surgery centers and 3,360 hospital outpatient departments (Centers for Medicare and Medicaid Services, 2020). Consumers can now compare thousands of facilities directly against each other by using

this standardized tool. They are also able to use this data to determine where to seek care (van Eck et al., 2018). Poor OAS-CAHPS results may have negative financial impact on the organization as consumers may seek to have care delivered elsewhere.

The timeline for the project was as follows: months one, two, and three were gaining approval from JU faculty chair and QI approval from the JU IRB. Month four was obtaining health system IRB and obtaining final stakeholder approval. During month five, staff education was rolled out and a final implementation date was established. Months six, seven, and eight were spent on the actual intervention implementation. Month nine was spent on data collection and analysis. Months ten through twelve were spent on final writeup and editing of the project manuscript.

A stakeholder assessment was performed to identify essential individuals for this project. Key stakeholders included the physician quality champion for the facility who was also a practicing surgeon in the outpatient surgery center, CNO of the facility, Director of Surgery, ANM of the surgery center, Surgery Center RNs who would be performing the intervention, and the System Director of Clinical Practice. Preliminary discussions with all stakeholders resulted in positive feedback. The CNO volunteered to be an executive sponsor should one be required. Strong emphasis on meeting goals has been placed by the facility president. There was a quality goal for patient satisfaction with discharge instructions to be at or above the 75th percentile nationally, with the ultimate goal of top decile. No barriers or opposition was received from any of the stakeholders.

Analysis

Evaluation compared pre intervention and post intervention favorable patient responses to the Press Ganey questions listed in Appendix A and their corresponding percentile ranks to

measure progress to the goal of greater than or equal to 75th percentile ranking nationally. The range of responses is three level Likert scales of responses to each question which are: Yes-Definitely, Yes-Somewhat, and No. The OAS-CAHPS only counts "Yes-Definitely" as a favorable response. These answers provide nominal or lower level ordinal data for analysis. The corresponding percentages of favorable answers and national percentile rankling are continuous variables. For each question, Press Ganey reports out the n for each level of response, the percentage of favorable responses, as well as the corresponding national percentile ranking that percentage favorable corresponds to. An overall frequency, percentage for each level of response, and national percentile ranking for each domain is also provided. In addition, the questions on the OAS-CAHPS survey are assigned to one of five domains. Those domains are (1) before your procedure, (2) about the facility and staff, (3) communication about the procedure, (4) your recovery, and (5) your overall experience. For this project, only the questions that are included in the recovery domain were examined. The questions that are included the recovery domain are listed in Appendix A and focus on preparation for discharge and discharge instructions. Press Ganey reports the recovery domain out to organizations as "discharge". For the purposes of this project, "recovery" and "discharge" are synonymous. The aggregate number of patient responses at each level for each of the five questions was analyzed using Wilcoxon rank sum test and Fisher exact test to assess for changes in the independent samples of patient satisfaction response. The student had access to the N for each level of response, the percentage of each level of response, and the national percentile ranking for each level of response to each question and the global domain score. The responses to these questions were aggregated by the Press-Ganey organization to produce national percentile ranking individually for each question

as well as the global discharge domain. Changes in percentile ranking were identified and reported.

At the beginning of the intervention, data was to be collected from the Press-Ganey site retrospectively for a three date range the year prior to establish a baseline for comparison. Unfortunately, data contamination was discovered in the immediate three-month time period prior to the intervention. In order to match similar surgical volume characteristics (baseline n = 361, intervention n = 392) and because of the shutdown of elective surgeries due to the global COVID-19 pandemic, data was collected for the exact same date range in the year prior. Data was collected again at three months into the intervention. This is discussed in the limitations of the project. All data retrieved from the ID and password protected Press Ganey internet site was stored on the DNP student's work virtual drive that is encrypted and is protected by user ID and password. No removable media in any form was be used. Communication and data sharing with all JU faculty was through the student's Jacksonville University email account, which is password protected and encrypted.

Data Analysis

Data Variables

The response variables to be analyzed were the survey questions regarding discharge instructions. Only the univariate frequencies are available for these variables, the individual surveys are not available.

The percentiles compared to other institutions, reported on the Press Ganey summary, were used in the statistical analysis only for descriptive purposes. Tail-percentiles are extremely unstable. It is even possible for BMCS to improve its distribution, but still fall in its percentile

ranking. However, the before and after-implementation percentile ranks were reported for each variable as descriptive information.

The data was be prepared as an Excel spreadsheet, and then imported into The SAS System for statistical analysis (D. Mohr, personal communication, July 7, 2020).

Statistical Methods

Since the variables are on a categorical scale, the distributions before and after-implementation were compared using the Wilcoxon rank sum test (equivalent to a Mann-Whitney test). The Wilcoxon rank sum test is appropriate when demonstrating a difference between independent groups. It is a non-parametric test that was used on variables that are ordinal, interval, or ratio such as the data that will be collected for this project. For this test, data must not follow a normal distribution. The data does not follow a normal distribution historically, so this requirement is expected to be met. This test is used to show a difference between two groups. The test assumes that the two groups are independent, as is the case in this project (McIntosh, Sharpe, & Lawrie, 2010).

Since the data is almost all tied values, the *p* values for the tests will be computed using the Fisher exact procedure rather than an asymptotic approximation. These exact values are available using the computing power of The SAS System statistical package.

It was expected that most of the variables have 90% or more values at the highest level even in the before-implementation period. It will be difficult to achieve statistical significance at the usual 5% level. For example, if a variable had a before-implementation distribution of

No: 2 Yes/maybe: 3 Yes/definitely 120,

then even a shift to a ‘perfect’ distribution

No: 0 Yes/maybe: 0 Yes/definitely 125

will only have a *p* value of 0.06.

In addition to the before and after-implementation comparison, the distributions for the surgery center was compared to the distributions for the Press Ganey reporting group during the same time period. This analysis used the Wilcoxon rank sum test with exact *p* values. This analysis was intended to place the percentile rankings in context. For example, if the surgery center has a very low percentile ranking on a question, but its distribution does not differ significantly from that of the independent comparison group, then the low ranking is potentially a simple random sampling phenomenon. However, if the surgery center does have a significantly different distribution, this may indicate an area for improvement (D. Mohr, personal communication, July 7, 2020).

Ethical Considerations

Upon approval from the Faculty Chair and any associated committees, this project was submitted to the Jacksonville University (JU) Institutional Review Board (IRB). This Quality Improvement project was reviewed by the Jacksonville University Institutional Review Board. Once approved by the JU IRB, this project was submitted to the health system (BH) IRB. This project received Quality Improvement status from both IRBs as no individually identifiable patient data was collected. The only data available to the DNP student from the Press Ganey site was data that had been previously de-identified. Because no individually identifiable information was to be reviewed or collected, no patient consents were required.

According to Loe, Winkelman, and Robertson (2016) normal educational practices in commonly accepted educational settings is classified as IRB exempt under the Common Rule. In nursing, it is a commonly accepted practice to provide patient education in an outpatient surgical

facility on the day of surgery. No nurse consents were required because the intervention was conducted as a routine part of ongoing professional development regarding best practices. This continuing development is a normal and expected requirement of nursing job descriptions and duties. The OAS-CAHPS instrument that will be used to assess outcomes will also qualify exempt under the Common Rule as it is a survey procedure where information is not identifiable or damaging.

Patients were protected by:

- There was not individually identifiable or potentially damaging information available to the student.
- It was expected that the risk to the patient of providing an additional teaching session will be extremely remote.
- Staff had demonstrated competency are already providing this discharge teaching in a single session format without demonstrated patient harm.
- All staff have signed patient confidentiality agreements with the facility and are held to patient privacy standards by organizational policy.
- Educational materials have been validated through a national vendor.
- There was no degradation of the prior practice that met organizational standards. This intervention was in addition to current practice.

Findings and Interpretation

This QI project was to evaluate the effect of adding preoperative discharge education to the standard process of providing the education after the surgical procedure on the distribution of patient responses to the OAS-CAHPS and the corresponding percentile ranking of the facility.

The first aim was to increase the percentage of the positive response score to each of the five questions on the OAS-CAHPS that comprise the global score to a level equal to or greater than the 75th percentile nationally within three months from the implementation date. This was accomplished by shifting the distribution of responses to each question thereby increasing the percentage who responded “Yes-Definitely” to the discharge questions on the OAS-CAHPS. Distribution of responses did change to a more favorable distribution during the intervention period. The change in distribution for the individual questions is displayed in Table 1.

Table 1

Comparison of Distributions in Pre- and Post-Intervention Time Periods

Question 14 – Information on Home Recovery

Patient response	Pre	Post
Yes-Definitely	45 (80.4%)	103 (89.6%)
Yes-Somewhat	9 (16.1%)	9 (7.8%)
No	2 (3.6%)	3 (2.6%)
N	56	115
Wilcoxon	$z = 1.62$, $p = 0.132$	
Fisher Exact Test	$p = 0.150$	

Question 15-Information on Pain

Patient response	Pre	Post
Yes-Definitely	51 (94.4%)	110 (96.5%)
Yes-Somewhat	2 (3.7%)	3 (2.6%)
No	1 (1.9%)	1 (0.9%)
N	54	114
Wilcoxon	$z = 0.62$, $p = 0.610$	
Fisher Exact Test	$p = 0.682$	

Question 17 – Information on Nausea

Patient response	Pre	Post
Yes-Definitely	40 (95.2%)	99 (99.0%)
Yes-Somewhat	0 (0.0%)	1 (1.0%)
No	2 (4.8%)	0 (0.0%)
N	42	100
Wilcoxon	$z = 1.43$, $p = 0.080$	
Fisher Exact Test	$p = 0.209$	

Question 19- Information on Bleeding

Patient response	Pre	Post
Yes-Definitely	46 (95.8%)	103 (97.2%)
Yes-Somewhat	0 (0.0%)	3 (2.8%)
No	2 (4.8%)	0 (0.0%)
N	48	106
Wilcoxon	$z = 0.46$, $p = 0.710$	
Fisher Exact Test	$p = 0.647$	

Question 21- Information on Infection

Patient response	Pre	Post
Yes-Definitely	48 (96.0%)	107 (100.0%)
Yes-Somewhat	0 (0.0%)	0 (0.0%)
No	2 (4.0%)	0 (0.0%)
N	48	107
Wilcoxon	$z = 2.07$, $p = 0.100$	
Fisher Exact Test	$p = 0.100$	

Discharge Domain Score

Patient response	Pre	Post
Yes-Definitely	52 (93.6%)	111 (96.9)
Yes-Somewhat	2 (3.3%)	3 (2.4%)
No	2 (3.1%)	1 (0.7%)
N	56	115
Wilcoxon	$z = 1.08$, $p = 0.358$	
Fisher Exact Test	$p = 0.441$	

Received Written Instruction

Patient response	Pre	Post
Yes Definitely	56 (100.0%)	114
Yes Probably		
No Probably		
No Definitely	0 (0.0%)	1
N	56	115
Wilcoxon	NA	
Fisher Exact Test	$p = 1.00$	

The distribution changes in the individual discharge questions only partially met the project goal of being at or above the 75th percentile on all questions in the discharge domain. Two questions did not meet the overall goal of the 75th percentile. The distribution changes in questions 14-Pain, 17- Nausea, and 21- Signs of infection all corresponded to a rise to above the 75th percentile. Question 15-Pain improved from the 35th percentile to the 72nd, nearly meeting the goal. The change for question 19-Bleeding was more modest. This question rose in percentile ranking from 21st to 46th. It is unknown why this specific measure lagged so far behind others. Nevertheless, it did improve and further investigation into the phenomena is warranted. Additional emphasis on bleeding management should be placed during discharge educational sessions. In the surgery center most of the orthopedic cases are performed arthroscopically and typically minimal to no bleeding occurs. This could potentially have lowered the level of emphasis on that specific topic when education was provided. The question about bleeding on the OAS-CAHPS nonetheless asks specifically if the patient was instructed on what to do for bleeding at home. In observation, bleeding was covered in 93.33% of observed educational sessions. Since this is a part of the OAS-CAHPS survey, this should have been covered in 100% of educational sessions. In observations, the only other question that was not covered 100% was question 17 relating to nausea management. However, the percentile rank for question 17 did increase to above goal. The change in percentile ranking is demonstrated in Table 2.

Table 2

Changes in Percentile Ranking (pre vs. post) for Individual Question and Global Domain Scores

Question	Pre Percentile Rank	Post Percentile Rank	Change in Percentile Rank
Q14- Home Recovery	7	77	70
Q15- Pain	35	72	37
Q17- Nausea	18	84	66
Q19- Bleeding	21	46	25
Q21- Infection	2	99	97
Discharge domain score	13	83	70
Communication Domain Score	43	92	49
Recommend the Facility	68	98	30
Received Written Instructions	99	84	-15
Sample mean	34.0	81.7	47.7
Std. Deviation	31.8	16.1	32.9
Paired t-test			$t(8) = 4.35$, $p=0.0024$

One observation noticed during the intervention was that while all the nurses did provide the proper education, their education was not scripted and there was variation between individual nurses in the order in which the education was provided. Although all aspects of the education were covered by each, this variation could have led to the variation in percentile rank changes. Control of variation in educational discussions should be evaluated for effect.

The second aim was to increase percentage positive score associated with the response of "Yes, Definitely" and corresponding national percentile rank for the aggregate global discharge domain score on the OAS-CAHPS to equal to or greater than the 75th percentile nationally within three months from implementation. The questions ask directly whether or not the patient received written instructions, information on pain management, information on home recovery, information on nausea management, information on bleeding management, and information on

signs of infection. Responses other than "Yes-Definitely" are interpreted as either the patient did not receive the information, or the patient does not recall receiving the information. This change was accomplished by changing the distribution of responses to all questions that aggregate into the domain. The global domain distribution is also in Table 1. The percentage of respondents answering "Yes, Definitely" rose from 93.6% to 96.9% with a corresponding rise in percentile rank from 13th percentile to 83rd. This increase to the 83rd percentile ranking did meet the stated project goal of being at or above the 75th percentile and was statistically significant in the change (p=0.0024). The change in percentile ranking is also displayed in Table 2.

To evaluate the distribution of responses a Wilcoxon Rank Sum Test was utilized to compare the distribution of the responses in the pre and post period. A significant result (small p-value) indicates a shift in the distribution without specifying the nature of the shift. While a z-statistic is reported (with positive values indicating improvement), the p-value is taken from an exact computation based on a permutation test (SAS System's Proc NPAR1WAY) rather than a table of the standard normal distribution.

The Fisher Exact Test for proportions was utilized to focus only on the proportion of respondents answering 'Yes-Definitely'. It is preferable to the z-test for proportions when counts are small in some categories. The p-value is for a two-tailed test, that is, the test will detect both increases and decreases in the proportion answering Yes-Definitely.

Both the Wilcoxon Rank Sum Test and the Fisher Exact Test require counts in each category. For the aggregate questions, counts were estimated by multiplying the given percentages times the sample sizes and rounding to the nearest integers. While improvement in distribution is demonstrated, none rise to the level of statistical significance. These calculated values are shown in the table. A large difference in frequency of returned surveys exists in the

with more than twice the frequency in the post – intervention period being reported than in the pre-intervention period. The reason for this discrepancy is unknown given that the same number of surveys were sent out by Press Ganey and the surgical case volume was nearly identical. The results of these are shown earlier in Table 1.

Both aims had the goal of increasing the corresponding national percentile rank for the distributions of the individual questions comprising the global discharge domain score and the aggregate global discharge domain score on the OAS-CAHPS to equal to or greater than the 75th percentile nationally within three months from the implementation date.

This second analysis compared percentile scores across all questions. Percentile are a very unstable response. For example, the percentile rank for Question 21 went from 2 (pre-intervention) to 84 (post-intervention) based on an extremely small change in the distribution at the surgery center and an unknown change in the distributions of the independent comparison group. Since the distributions in the comparison group can affect the percentile ranking of the surgery center even while the surgery center has no change in distribution, the statistical significance can be affected not by the performance of the surgery center but instead by increases or decreases in the performance of other comparison organizations. While statistical significance at $\alpha < .05$ ($t(8) = 4.35$, $p = 0.0024$) is demonstrated, it is unknown if the change is demonstrated by the surgery center or by the comparison group. Nevertheless, the general pattern seems to be that the surgery center tended to improve its rankings.

Observations

Patients and nurses appeared to prefer this duplicate format. RNs noted that patients were capitalizing on the opportunity to ask surgeons additional questions. The RNs also noted that

discharges appeared to go faster and easier. No solicitation of patient feedback during the intervention was performed

. However, patients did make comments. Most notable was one female patient who stated that she had never been given information like that before. She stated it made us better than the others and better than her other outpatient surgery experiences. The RNs did notice that on days when the procedures were of short duration, the pace of patient preop and recovery made this intervention challenging to perform. Some nursing shifts were moved to earlier start times with corresponding earlier end times to help mitigate this issue. This front loading of nursing hours did not increase worked hours and no budgetary impact was appreciated. Based on nursing feedback, this shift in start times did appear to be successful.

Unintended Consequences

One unintended consequence was noted. The discharge packet prints as an "all or none". A single page could not be modified and reprinted to be added to the packet. This presented a problem when discharge activity was modified from the planned activity level due to the actual procedure performed by sports medicine orthopedic surgeons who may have had to alter the planned procedure to complete the needed repair. By week four, this had happened on several occasions and had caused some confusion in the discharge area that took additional time to rectify. The intervention was modified so that these patients did not receive their packet until after their operative procedure. All instructions continued to be verbally discussed prior to the procedure with the exception of home activity restrictions. Other surgeons who were more "cookbook" with procedures such as bunionectomies and carpal tunnel releases did not change the anticipated activity. Those patients did continue to receive the packet. The nursing staff did note that it was unlikely for the patients who received the packet to read it prior to the procedure

and most simply placed it in their belongings bag. This calls into question the patient perceived value of that specific piece of the intervention. Based on the frequency in which patients did not review their printed packets, it appears as though the verbal discussion of the instructions with the patient prior to surgery may be of greatest benefit. A printed packet may be counterproductive.

Dissemination of Findings Plan

Findings of the project will be disseminated to the facility endoscopy department as well as the main operating room peri-anesthesia departments. This doctoral student has direct supervision over the main operating room peri-anesthesia departments and will implement this process throughout that department based upon the findings of this project using a process similar to outlined previously. There is a larger number of staff and more than one group educational session will be required prior to implementation. Due to the more varied patient population in the main OR, there will also be a higher risk for anticipated discharge activity to change as a result of the operative procedure. Providing written discharge instructions prior to the procedure could cause confusion similar to what was noted during this project when home activity changed. For this reason, to implement in the main OR, all steps will be followed with the exception of discussing home activity levels and providing written instructions before the procedure. In depth discussion and education on pain management, nausea management, what to do for bleeding, and signs of infection will all be covered in the preoperative discharge educational session. Additionally, surgical leadership will work to facilitate the project in the endoscopy department. A repeat of data collection will be performed to validate the effect on a larger scale for internal use at the health system. Those findings will be provided to the system Surgical Services Council for implementation at the respective facilities. The abstract of the final

project will be submitted for review at the annual American Nurses Association Magnet Conference for poster or podium presentation. The final report of the original project will also be uploaded into the Sigma Theta Tau Virginia Henderson Repository for additional dissemination into the body of nursing knowledge.

Summary

Lessons Learned

While it is not directly possible to measure patient retention of discharge instructions after discharge to home, the OAS-CAHPS survey does examine the patient's perception as to whether they received discharge education. If the patient perceived that no education or poor education was provided, it would be reasonable to assume they would respond unfavorably on the OAS-CAHPS. By placing a focus on discharge education at the surgery center, this project was able to demonstrate an increase in the positive perceptions of discharge education. Providing regular verbal staff feedback as to the trending of scores during the intervention was observed to be encouraging to the RNs. Printed colorful and visually appealing dashboards could be used to demonstrate this trending and provide feedback and encouragement in a future project

Recommendations

The results of this project tend to suggest that implementation of a pre-operative discharge education intervention does improve the distribution of responses to the OAS-CAHPS and improve percentile ranking in the peer group. While the change in the distribution of responses to the OAS-CAHPS survey questions and overall discharge domain distribution were not statistically significant, Question 17- Nausea did approach statistical significance ($p = 0.08$).

The corresponding change in percentile ranking associated with the changes in the distribution of responses did reach statistical significance ($p = 0.0024$). This rise to greater than the 75th percentile was in comparison to a peer group of 2,880 facilities. This rise also met the stated goals of this project which were to achieve at or above 75th percentile ranking in the on the individual questions feeding into the discharge domain score and the global discharge domain score on the OAS-CAHPS.

Unsolicited patient comments to the nursing staff and staff observations during the intervention serve to further underscore the value of providing discharge education prior to the induction of anesthesia. It should be noted that while this was not perceived to be a trackable metric, anecdotally the volume of calls with postoperative questions to the surgery center did appear to fall during the intervention period.

Strengths of this project include its reproducibility and ease of implementation. Minimal to no financial impact should be expected and no increase of nursing hours should be required to implement this project in another similar setting.

Limitations

This project was conducted in a small, community-based outpatient surgery center with a patient population that is primarily orthopedic. The patients are medically screened for appropriateness for an outpatient setting. Patients who did not meet criteria for the surgery center were excluded from this project. It is unknown the effects the intervention will have on patients who are having procedures other than minor outpatient orthopedic, gynecologic, or ear-nose-throat. It is also unknown how the effects on patients who have higher levels of comorbidities that preclude them from this setting. This project also took place during the global COVID-19 pandemic and it is unknown how interventions to mitigate viral spread may have

influenced patient perceptions of their discharge experience and education. Some staff had prior knowledge of the project and unbeknownst to the nurse manager had incorporated this into practice prior to the official start of the intervention. This tainted the planned data collection from the 12-week period prior to the intervention. The outpatient surgery center was also closed due to executive order of the Governor of the State of Florida during the pandemic. This shutdown happened in the time period immediately prior to staff beginning to perform the intervention prematurely. Based on consultation with the doctoral chair, it was decided to utilize the data from the exact same date range in 2019 as a representative sample. No interventions to improve discharge scores did occur between 2019 and 2020 except for this project.

Conclusions

A key quality focus and system effort has been centered on patient satisfaction. While this project did not rise to statistical significance, patients and staff found the intervention helpful and useful. Satisfied patients return for services and refer others for services creating positive financial impact. Since this project did elicit a favorable response in the OAS-CAHPS survey, sustainability will center around surgical services nursing leadership continuing to emphasize the benefits of providing discharge education preoperatively and visually auditing to ensure the process remains in effect. This project appears to be well suited for expansion to the main hospital Ambulatory Surgery Unit and to the Endoscopy unit. The intervention did necessitate a change in the scheduled shifts in the unit to allow for more front-end teaching. Shifts were moved to earlier start times. Shift duration was not altered. The staff RNs felt this was successful due to reduced workload in the discharge phase of the shift. Challenges with changes in discharge instructions will need to be controlled for and it is recommended that home activity not

be discussed preoperatively in patients subject to those changes, particularly in the orthopedic surgery population.

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References

Agency for Healthcare Research and Quality. (2013). Practice foundation handbook. Module 4. Approach to quality improvement. Retrieved from https://www.ahrq.gov/professionals/prevention-chronic-care/improve/system/pfhandbook/mod4.html

Amini, K., Alihossaini, Z., & Ghahremani, Z. (2019). Randomized clinical trial comparison of the effect of verbal education and education booklet on preoperative anxiety. *Journal of PeriAnesthesia Nursing, 34*(2), 289-296.

Bergin, C., Speroni, K. G., Travis, T., Bergin, J., Sheridan, M. J., Kelly, K., & Daniel, M. G. (2014). Effect of preoperative incentive spirometry patient education on patient outcomes in the knee and hip joint replacement population. *Journal of PeriAnesthesia Nursing, 29*(1), 20-27. doi:10.1016/j.jopan.2013.01.009

Bisbey, C. C., Ristau, T. A., Johnson, M. D., Streed, M. M., Bursiek, A. A., & Grubbs, P. L. (2017). The power of education: Preoperative class reduces anxiety and improves confidence. *MEDSURG Nursing, 26*(5), 324-326. Retrieved from https://ju.idm.oclc.org/login?url=https://search.ebscohost.com/login.aspx?direct=true&db=ccm&AN=125833262&site=ehost-live

Centers for Medicare and Medicaid Services. (2020). *Outpatient and ambulatory surgery CAHPS (OAS-CAHPS)*. Retrieved from https://www.cms.gov/Research-Statistics-Data-and-Systems/Research/CAHPS/OAS-CAHPS

Chee, T. T., Ryan, A. M., Wasfy, J. H., & Borden, W. B. (2016). Current state of value-based purchasing programs. *Circulation, 133*(22), 2197-2205.

Cole, B. J., Cotter, E. J., Wang, K. C., & Davey, A. (2017). Patient understanding, expectations, and satisfaction regarding rotator cuff injuries and surgical management. *Arthroscopy: The Journal of Arthroscopic & Related Surgery, 33*(8), 1603-1606.

Eastwood, D., Manson, N., Bigney, E., Darling, M., Richardson, E., Paixao, R., . . . Abraham, E. (2019). Improving postoperative patient reported benefits and satisfaction following spinal fusion with a single preoperative education session. *Spine Journal, 19*(5), 840-845. doi:10.1016/j.spinee.2018.11.010

Feng, J. E., Novikov, D., Anoushiravani, A. A., & Schwarzkopf, R. (2018). Total knee arthroplasty: improving outcomes with a multidisciplinary approach. *Journal of Multidisciplinary Healthcare, 11*, 63.

Guven, B., Ibrahimoglu, O., & Elbuken, B. (2020). Learning needs of patients and their caregivers after ambulatory surgery. *Journal of PeriAnesthesia Nursing, 35*(3), 283-287. doi:10.1016/j.jopan.2019.10.012

Hovsepian, J., McGah, C., & O'Brien, C. (2017). Postoperative instructions preoperatively—Evaluating the effectiveness of a teaching model on patient satisfaction regarding instructions for home care. *Journal of PeriAnesthesia Nursing, 32*(3), 231-237. doi:10.1016/j.jopan.2015.12.014

Institute for Healthcare Improvement. (n. d.). *Science of improvement: Testing changes*. Retrieved from http://www.ihi.org/resources/Pages/HowtoImprove/ScienceofImprovementTestingChanges.aspx

Katsetos-Hensley, M. K. (2020). *Preoperative endoscopy discharge instructions* (Doctoral dissertation, Mount St. Joseph University), Retrieved from

https://etd.ohiolink.edu/!etd.send_file?accession=msjdn1587965030069484&disposition=inline

Krohn, D. A. (2008). Discharge instructions in the outpatient setting: nursing considerations. *Journal of Radiology Nursing, 27*(1), 29-33.

Loe, J. D., Winkelman, D. A., & Robertson, C. T. (2016). An assessment of the human subjects protection review process for exempt research. *Journal of Law, Medicine & Ethics, 44*(3), 481-491. doi:10.1177/1073110516667944

McIntosh, A. M., Sharpe, M., & Lawrie, S. M. (2010). 9 - Research methods, statistics and evidence-based practice. In E. C. Johnstone, D. C. Owens, S. M. Lawrie, A. M. McIntosh, & M. Sharpe (Eds.), *Companion to Psychiatric Studies (Eighth Edition)* (pp. 157-198). St. Louis: Churchill Livingstone.

Moulton, L. S., Evans, P. A., Starks, I., & Smith, T. (2015). Pre-operative education prior to elective hip arthroplasty surgery improves postoperative outcome. *International orthopaedics, 39*(8), 1483-1486.

O'Donnell, K. F. (2018). Preoperative pain management education: An evidence-based practice project. *Journal of PeriAnesthesia Nursing, 33*(6), 956-963. doi:10.1016/j.jopan.2017.11.001

Outpatient and Ambulatory CAHPS Survey. (n. d.). Overview. Retrieved from https://oascahps.org/General-Information/About-OAS-CAHPS-Survey

Pieper, B., Sieggreen, M., Freeland, B., Kulwicki, P., Frattaroli, M., Sidor, D., . . . Garretson, B. (2006). Discharge information needs of patients after surgery. *Journal of Wound, Ostomy & Continence Nursing, 33*(3), 281-291.

Porras-González, M. H., Barón-López, F. J., García-Luque, M. J., & Morales-Gil, I. M. (2015). Effectiveness of the nursing methodology in pain management after major ambulatory surgery. *Pain Management Nursing, 16*(4), 520-525. doi:10.1016/j.pmn.2014.09.013

Press Ganey. (2019). OAS-CAHPS frequently asked questions. Retrieved from https://www.pressganey.com/docs/default-source/default-document-library/oas-cahps-faq-080819.pdf?sfvrsn=4#:~:text=(OAS%20CAHPS)%20survey%20tool%20is,understand%20patient%2D%20reported%20health%20outcomes.

Ramesh, C., Nayak, B. S., Pai, V. B., Patil, N. T., George, A., George, L. S., & Devi, E. S. (2017). Effect of preoperative education on postoperative outcomes among patients undergoing cardiac surgery: A systematic review and meta-analysis. *Journal of PeriAnesthesia Nursing, 32*(6), 518-529.e512. doi:10.1016/j.jopan.2016.11.011

Rice, J. D. (2016). A time to teach: Would giving discharge instructions preoperatively improve patient satisfaction in outpatient surgery? *Journal of PeriAnesthesia Nursing, 31*(4), e55-e56. doi:10.1016/j.jopan.2016.04.127

Siegrist Jr, R. B. (2013). Patient satisfaction: history, myths, and misperceptions. *AMA Journal of Ethics, 15*(11), 982-987. Retrieved from https://journalofethics.ama-assn.org/article/patient-satisfaction-history-myths-and-misperceptions/2013-11

Tilbury, C., Haanstra, T. M., Leichtenberg, C. S., Verdegaal, S. H. M., Ostelo, R. W., de Vet, H. C. W., . . . Vliet Vlieland, T. P. M. (2016). Unfulfilled expectations after total hip and knee arthroplasty surgery: There is a need for better preoperative patient information and education. *Journal of Arthroplasty, 31*(10), 2139-2145. doi:10.1016/j.arth.2016.02.061

van Eck, C. F., Toor, A., Banffy, M. B., & Gambardella, R. A. (2018). Web-based education prior to outpatient orthopaedic surgery enhances early patient satisfaction scores: A prospective randomized controlled study. *Orthopaedic Journal of Sports Medicine, 6*(1), 1-1. doi:10.1177/2325967117751418

Wilson, R. A., Watt-Watson, J., Hodnett, E., & Tranmer, J. (2016). A randomized controlled trial of an individualized preoperative education intervention for symptom management after total knee arthroplasty. *Orthopaedic Nursing, 35*(1), 20-29. doi:10.1097/NOR.0000000000000210

Wongkietkachorn, A., Wongkietkachorn, N., & Rhunsiri, P. (2018). Preoperative needs-based education to reduce anxiety, increase satisfaction, and decrease time spent in day surgery: a randomized controlled trial. *World journal of surgery, 42*(3), 666-674.

Wunderle, A., Bena, J., & McClelland, M. (2017). The effects of tailored preoperative education on organizational efficiency. *Insight: The Journal of the American Society of Ophthalmic Registered Nurses, 42*(4), 26-29.

Yajnik, M., Hill, J. N., Hunter, O. O., Howard, S. K., Kim, T. E., Harrison, T. K., & Mariano, E. R. (2019). Patient education and engagement in postoperative pain management decreases opioid use following knee replacement surgery. *Patient Education & Counseling, 102*(2), 383-387. doi:10.1016/j.pec.2018.09.001

Appendix A

Included Questions from the OAS-CAHPS

OAS CAHPS Question Number	Question Text
13	Discharge instructions include things like symptoms you should watch for after your procedure, instructions about medicines, and home care. Before you left the facility, did you get written discharge instructions?
14	Did your doctor or anyone from the facility prepare you for what to expect during your recovery?
15	Some ways to control pain include prescription medicine, over-the-counter pain relievers or ice packs. Did your doctor or anyone from the facility give you information about what to do if you had pain as a result of your procedure?
17	Before you left the facility, did your doctor or anyone from the facility give you information about what to do if you had nausea or vomiting?
19	Before you left the facility, did your doctor or anyone from the facility give you information about what to do if you had bleeding as a result of your procedure?
21	Possible signs of infection include fever, swelling, heat, drainage or redness. Before you left the facility, did your doctor or anyone from the facility give you information about what to do if you had possible signs of infection?