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STREAMLINING THE POSTPARTUM EDUCATIONAL PROCESS

Streamlining the Postpartum Educational Process for Safe and Equitable Patient Care:

A Quality Improvement Initiative

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Abstract

BACKGROUND:

Postpartum discharge education is essential in the care of mothers, newborns, and their families as they transition from the hospital setting to home. The U.S Department of Health and Human Services has identified postpartum discharge education content as a public health priority to reduce physical and mood-related postpartum complications. Over half of all serious morbidity and mortality complications occur after a postpartum patient leaves the hospital. It is essential that hospitals utilize the best evidence-based practices to maximize the impact of patient education during maternity care in the hospital.

LOCAL PROBLEM:

Within the given microsystem there is a need to streamline and standardize the discharge process to ensure equity in the resources provided to patients to improve maternal and newborn health.

METHODS:

Using a two-phase Plan-Do-Study-Act model, a quality improvement project was developed to both streamline and standardize the current discharge process.

INTERVENTION:

Using data from a pre-intervention nursing staff survey, a new streamlined and standardized nursing process was developed. Intervention was studied using quantitative Likert style questions and qualitative free text survey questions.

RESULTS:

Before the implementation of standardization, 86% of nurses interviewed disagreed or strongly disagreed that it was easy to find appropriate discharge education, while after the intervention 0% of nurses disagreed or strongly disagreed with 87% of nurses agreeing or strongly agreeing that it was easy to find needed education material. Prior to the standardization and streamlining intervention, 82% of nurses expressed barriers, while after the intervention only 13% of nurses noted barriers in the discharge process.

CONCLUSION:

The quality improvement project resulted in better standardization and streamlining of the postpartum education process with more nurses finding the process more accessible to navigate. These changes can result in more productivity overall which will allow nurses to focus more on time spent with the patient during the education process. Standardization not only ensures equity but will allow nurses to become more familiar with the high-quality evidence-based materials they present to patients.

Keywords: Discharge, education, discharge process, postpartum education, standardization, streamline

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Introduction

Problem Description

The microsystem offers various prenatal education classes to prospective new parents, which cover topics including breastfeeding, newborn care, labor, and delivery. These classes are specifically marketed to expecting or current parents of infants. Since the pandemic, these classes are offered virtually except for a newborn nutrition support group, provided once a week to new mothers. Many topics covered in the prenatal classes are also reinforced during the hospital stay with handouts specifically given on safe sleep, purple crying, developmental milestones, and infant nutrition. Recently the hospital has adopted a new electronic medical administration record (EMAR) system and as a result, there is no more standardization in the printout education materials given to patients during discharge.

Both nurses and leadership in the microsystem have expressed specific frustration with the discharge process. Nurses cannot easily find appropriate patient-specific printed handouts to reinforce education instruction (K. Krausse, personal communication, February 6, 2023; K. Sylvester, personal communication, February 17, 2023) Previously materials were standardized and easily accessible. Often the patients who come in for perinatal tests, labs, or treatment (observation/OBED patients) only stay for a few hours. Due to the new EMAR are not given printed educational material. Nurses would like specific handouts on signs of labor, pregnancy complications, and infant movement or kick counts (K. Krausse, personal communication, February 6, 2023). A clear, standardized discharge education process should be developed with nurses to ensure patients have accurate access to important printed material to reference during their recovery and caring for their newborn.

Discharge education is essential in the care of mothers, newborns, and their families as they transition from the hospital setting to home. Postpartum discharge information content has

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been identified as a public health priority to reduce physical and mood-related postpartum complications (U.S. Department of Health and Human Services, 2020). In addition, discharge education is vital in helping reduce postpartum mortality. In the United States alone, 61% of women died postpartum, and researchers estimate that 40 to 50% of U.S. maternal deaths are preventable (McCarter et al., 2022). Therefore, hospitals must utilize best practices and up-to-date research to maximize the impact of patient education and discharge education during maternity care in the hospital.

There is currently high satisfaction with nursing care and discharge education in the microsystem and macrosystem of hospitals in the United States. In 2022 Hospital Consumer Assessment of Healthcare Providers and Systems (HCHAPS) scores report that 84% of patients in the microsystem and 86% of patients nationwide receive discharge instructions. Despite these high satisfaction rates, women report specific gaps in education in the weeks following discharge. A recent scoping review identified that women often report needing additional education around infant care in retrospect after being discharged from the hospital (McCarter et al., 2022). Similarly, a quantitative-qualitative study identified specific gaps between the information desired and information received during the postpartum period and found that women desired more information about sexual and mental health (Guerra-Reyes et al., 2017). Most women only spend two to three sleepless nights at the hospital and cannot fully retain all the needed discharge education needed to care both for themselves and their newborns. Therefore, the microsystem must develop a streamlined approach that ensures that patients leave with printed material to reference during the weeks following discharge from the hospital.

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Available Knowledge

Discharge education is essential in the care of mothers, newborns, and their families as they transition from the hospital setting to home. Postpartum discharge information content has been identified as a public health priority to reduce physical and mood-related postpartum complications (U.S. Department of Health and Human Services, 2020). In addition, discharge education is vital in helping reduce postpartum mortality. In the United States alone, 61% of women died in the postpartum period and researchers estimate that 40 to 50% of U.S maternal deaths are preventable (McCarter et al., 2022). Therefore, hospitals must utilize best practices and up-to-date research to maximize the impact of patient education and discharge education during maternity care in the hospital.

The purpose of this literature review was to examine recent research and best practices related to standardizing the content of maternal perinatal education in the acute care setting. A systematic review was conducted utilizing CINAHL and Medline databases. Keywords in the advanced search included “discharge education” “patient education” and “patient satisfaction.” In addition to these keywords synonyms associated with the topics were added using the Boolean phrase “OR” to expand the search further.

After the initial database search, the reference sections of relevant included research were utilized to find additional sources of research that were included in the final review. Studies published after 2012 were excluded due to the content of maternal perinatal education changing with updates to best practices and new data to support changes in education to patients. Studies outside North America were excluded so that education content could be focused on the unique cultural considerations and possible perinatal complications specific to the geographic population of the population studied in the proposed intervention. Studies selected for review included those

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that specifically addressed the discharge material's content. This review excluded studies that focused on delivery interventions or new technologies to deliver educational material. Included studies must include patients receiving perinatal care in the acute care setting and research that discussed other populations such as cancer treatment or fertility treatment were excluded. Lastly, the final journals and reviews selected needed to have thorough explanations of interventions with data to support conclusions and recommendations. Published summaries were excluded from the review. 7 studies were selected for the literature review using this systematic approach. Studies ranged from 1 systematic review to 3 qualitative studies.

Figure 1

Prisma Flow Diagram

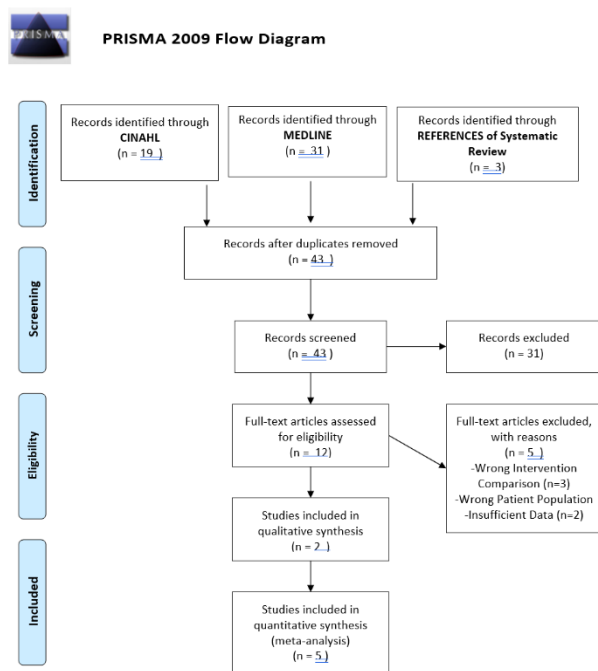
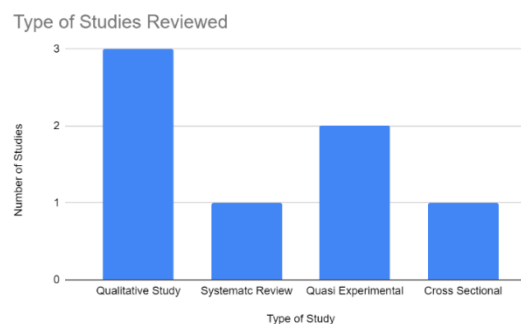


Figure 2

Number of Studies Reviewed



Topics of postpartum education are comprehensive and include topics specific to both the care of the newborn and the care of the mother. A recent scoping review of forty-six sources about postpartum discharge education specifically looked at what content was covered by nurses

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and the effectiveness of teaching (McCarter et al., 2022). The review concluded that breastfeeding was the most common topic addressed and included clear effectiveness measurements including rates of initiation, duration, exclusivity, knowledge, self-efficacy, support, problems, and satisfaction (McCarter et al., 2022). Infant care was covered frequently during hospital care with specific nurse emphasis on safe sleep and prevention of infant falls. However, the review identified that women often report needing additional education around infant care in retrospect after being discharged from the hospital (McCarter et al., 2022). Nurses also educate patients on recognizing symptoms and risk factors for postpartum mood disorders, but there is a lack of research to determine if this education improves maternal outcomes after discharge (McCarter et al., 2022). Overall, the study identified more research was needed to measure the effectiveness of interventions around discharge education.

In addition to the scoping review's inability to establish the effectiveness of discharge education, there were no reported conclusions on how effectiveness could be measured for accuracy or usefulness (McCarter et al., 2022). There was also no formal assessment of the quality of the studies reported and no intervention recommendations for nursing practice interventions. Despite these limitations, the review did report that women value postpartum support, especially surrounding breastfeeding, which contributes to patient satisfaction in the hospital (McCarter et al., 2022). The researchers suggest that women want more attention around self-care, including pain management, after cesarean birth (McCarter et al., 2022). Women identified more education around infant care and parenting, but hospitals continue to focus on infant safety such as safe sleep and fall prevention due to priorities established by the 2019 Joint Commission. Additionally, postpartum complications should become more standardized due to public health priorities (McCarter et al., 2022).

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The amount of information women are recommended to receive by regulatory agencies can be overwhelming in the brief transitional time at the hospital. A quasi-experimental study utilized data from a systematic review to create an educational booklet to enhance the quality and efficiency of the education process (Buchko et al., 2012). The systematic review echoed many common practices surrounding discharge education including assessing individual learning needs, reinforcing verbal instruction with supported written material, and providing individual time with a nurse was reported as beneficial by mothers (Buchko et al., 2012). The study was strengthened by its use of surveys with a reliability coefficient of (.85) and robust statistical analysis of results including an alpha of .05, indicating that the sample size was statistically large enough to conclude (Buchko et al., 2012). The intervention of the educational booklet made the biggest impact on the nurses, who reported a significant increase in availability ($t[30] = 6.400$, $p < .01$) and significant improvement in documentation of informal patient teaching ($t[30] = -3.236$, $p < .01$) (Buchko et al., 2012).

The intervention of the educational booklet did not impact mothers' overall perception of the quality of teaching which was high in both the preintervention (88%) and postintervention (86%) (Buchko et al., 2012). These findings are not surprising because other studies confirm that mothers are generally satisfied with postpartum teaching during the hospital stay (Ziabakhsh et al., 2018). These findings were limited by the small sample size with participants more well-educated and multiparous than most other populations. The study also failed to reveal any potential barriers in the implementation of the intervention with no cost-benefit analysis despite its conclusion that the booklet improved nurse efficiency. Despite the limitations, the study provides a possible intervention to improve discharge education through centrally located, portable, and consistent one-to-one interaction between nurse and patient.

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Before birth, many women and their partners take education classes in a group setting. These classes have been shown to increase the knowledge and skill of parents before birth and increase feelings of self-efficacy (Wagner & Washington, 2016). A quasi-experimental post-test survey aimed to study the different methods to provide postpartum teaching. The two methods used by nurses were a traditional method, defined as one-to-one teaching between the nurse and new mother, and a group discharge class, defined as three or more new mothers taught by an experienced mother-baby nurse (Wagner & Washington, 2016). The study utilized a version of the Client Satisfaction Tool modified for the obstetric setting with an internal consistency reliability of an alpha score of .983 (Wagner & Washington, 2016). In both the one-to-one teaching group (4.92 Likert score) and group class women reported high satisfaction (4.79 Likert score) (Wagner & Washington, 2016). The survey did reveal that women in the one-to-one group were more likely to indicate “strongly agree” to statements about decisional control and health information items. In addition, this group with one-to-one teaching was also more likely to mark strongly agree that “overall, I was satisfied with my discharge teaching (Wagner & Washington, 2016).

Similar to other intervention studies, the Wagner & Washington (2016) study was limited by both a small sample size and a lack of diversity in the sample. The small sample could have contributed to the failure to detect significant differences between the two tested groups. The study also failed to ask participants to complete a pretest which would have revealed how significant the nurse education was in patient overall satisfaction. The study implies that there should be more autonomy given to patients in assisting with topics covered in group and individual settings (Wagner & Washington, 2016). The study also connects patient education with higher satisfaction rates which benefit the financial well-being of a hospital (Wagner &

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Washington, 2016). Improvement in the education of post-partum women is not only necessary for the well-being of the mother and infant but also can improve the financial health of the hospital.

Maternal morbidity and morbidity rates, in addition to the high rates (40%) of women that do not attend follow-up postpartum healthcare visits support the need for research that assesses the education women receive in the hospital about post-birth warning signs of potential complications (Suplee et al., 2017). An exploratory qualitative study of six focus groups in New Jersey and Georgia explored what types of educational materials and discharge information are currently being used by postpartum nurses to educate women about postpartum complications (Suplee et al., 2017). The majority of the 52 nurses who participated reported individualized and ongoing teaching throughout the hospital stay with stated practices of “teachable moments,” “teach-backs”, and repetition to reinforce learning (Suplee et al., 2017). Despite these practices, nurses did not emphasize teaching how to recognize warning signs of potential complications and there were often discrepancies related to how nurses described signs and symptoms (Suplee et al., 2017). 25% of participants could not name the five leading causes of maternal morbidity (Suplee et al., 2017).

The Suplee et al. (2016) study was limited by only a small sample size and reliance on qualitative data. The use of focus groups can lead to recruitment bias and participants can be influenced by others or choose not to participate at all. The study fails to suggest or test a clear intervention to help better-educated patients on warning signs during the postpartum period. Despite these limitations, the research points to the need to assess and provide nurse education around post-birth maternal morbidity (Suplee et al., 2017). The study also suggests that postpartum nurses could benefit from group discussions about how they provide postpartum

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discharge education. Through the studies' focus groups, nurses discovered how they differed in the content surrounding these postpartum complications (Suplee et al., 2017). Before interventions around patient education occur, it is vital to assess nurse education around the subject to ensure accuracy and standardization in the discharge information.

In addition to the initial survey of postpartum education, Suplee et al. (2017) also published a pilot project that sought to increase women's access to quality information about risks for post birth complications before discharge from the hospital (Suplee et al., 2017). Through clear education material provided to nursing leaders, nurses, and patients the project aimed to better equip all women with tools to recognize health changes and warning signs of postpartum complications (Suplee et al., 2017). Four hospitals participated in the pilot program with an estimated 150 nurses utilizing the post-partum education tools (Suplee et al., 2017). Through survey data, the discharge education checklist was reported to be easy to use and nurses were satisfied with the amount of information on the tools (Suplee et al., 2017). Nurses also reported that patients were able to understand what was being taught to them about warning signs and were able to describe when they should seek care (Suplee et al., 2017). Common barriers in the implementation included a lack of Spanish translation, frustration with duplication of documentation required of nurses, inadequate staffing in implementation, strict timelines during the project, and inconsistent data collection from project team leaders (Suplee et al., 2017). The project highlighted the strengths of the commitment of hospital leaders, availability of staff, nurse lead authority and decision-making capabilities, support with communication from the researchers, positive working relationships, and designation of specific staff in specific leadership roles (Suplee et al., 2017).

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Despite the reported benefits of the pilot program by Suplee et al. (2017), the program was limited in its sample size and geographic concentration. Two hospitals dropped out of the program and the nurse survey had a 33% response rate (Suplee et al., 2017). In addition, the study did not look at the exact teaching method utilized in presenting the tool. Although more research is needed on how these tools impact the reduction of morbidity and mortality, the results indicate the need for the implementation of standardized education by nurses who care for women during the postpartum period and the role these education tools can have in decreasing maternal morbidity and mortality. This specific tool empowers nurses by engaging them in group discussions before implementing the education tool. It is critically important that nurses work with women to help them understand the need to listen to their bodies and act on signs that do not seem normal (Suplee et al., 2017). Women need to be encouraged through clear education to be proactive and obtain care during the early postpartum period.

Women often receive a plethora of information regarding pregnancy, labor, and delivery during the perinatal period. However, there are often information gaps in the early postpartum period (Guerra-Reyes et al., 2017). A quantitative-qualitative study sought to explore the gaps between information desired and information received during postpartum and identified the sources women used when seeking postpartum education (Guerra-Reyes et al., 2017). The surveys conducted in Monroe County Indiana identified gaps in the topics of mental and sexual health with a p-value of less than .05 (Guerra-Reyes et al., 2017). In addition, the research was surprised to find that postpartum education gaps were highest in those with higher levels of education and income. Similar to previous studies, the researchers found that 84% of participants used a doctor or nurse, and 82% used websites such as WebMD, Baby Center, and The Bump for postpartum information (Guerra-Reyes et al., 2017).

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The Guerra-Reyes et al. (2017) study was limited to the population of Monroe County, Indiana which is predominantly with residents reporting some college education. More research is needed to identify how both mothers and nurses seek to bridge information gaps to enable the development of more targeted public health interventions (Guerra-Reyes et al., 2017). The research reported was not focused specifically on discharge information provided in the hospital setting with a focus on gaps instead of education that patients received and its effectiveness. Regardless, new mothers readily need access to easy-to-understand information about self-care and infant care. Despite potential perceived sensitivity, women's postpartum sexual and mental health should be more incorporated into postpartum discharge education (Guerra-Reyes et al., 2017).

Another questionnaire utilized by Ziabakhsh et al. (2018) specifically looked at the postpartum inpatient experience to inform the service delivery, assess hospital routines, and improve discharge planning in the hospital (Ziabakhsh et al., 2018). 178 women participated and 93% rated their postpartum experience as "excellent" or "very good" with 78% feeling that nurses never seemed rushed or too busy to care for them (Ziabakhsh et al., 2018). Despite these positive survey findings, the questionnaire revealed that two-thirds of women had concerns about going home (Ziabakhsh et al., 2018). These concerns related to "feeling overwhelmed" and "not knowing how to settle their baby" (Ziabakhsh et al., 2018). Women who had Caesarean births expressed more concerns over the nurses caring for their emotional well-being (36% satisfaction) compared to women who had vaginal births (46% satisfaction) (Ziabakhsh et al., 2018).

The inpatient questionnaire performed in the Ziabakhsh et al. (2018) study was limited in its geographic scope to British Columbia, Canada. The study was only exploratory and therefore did not contain a hypothesis to set more stringent P values to test the significance of the survey

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findings (Ziabakhsh et al., 2018). Despite these factors, there are clear implications for the clinical setting. Although women are overwhelmingly satisfied with postpartum care, there is room to improve the emotional care given to women, especially to women who experienced a cesarean birth (Ziabakhsh et al., 2018). In addition, infant feeding continues to be a notable concern for women and women feel more supported by breastfeeding than with other feeding methods (Ziabakhsh et al., 2018). Overall, this questionnaire reveals key differences in postpartum experiences and additional challenges faced by women that have cesarean births and choose to forgo breastfeeding.

Evidence Synthesis

Women in the postpartum phase report high satisfaction rates with discharge education, however, research indicates that there are gaps in education around infant and self-care and nurses should place a high emphasis on the warning signs of severe postpartum complications. Despite the numerous topics that must be covered during the postpartum phase, multiple inpatient studies of women rate satisfaction with discharge instructions including infant and postpartum self-care (Buchko et al., 2012; McCarter et al., 2022; Wagner & Washington, 2016; Ziabakhsh et al., 2018). In two intervention studies aimed at improving patient education, there was no improvement in the already high satisfaction scores. Both an education booklet (preintervention satisfaction 88%) and a trial group teaching a class in the hospital (4.92 Likert pre-intervention score) did not improve the patient satisfaction scores with postpartum education. In both case patient education actually declined slightly, education booklet (86% satisfaction), and group postpartum education (4.79 Likert score) (Buchko et al., 2012; Wagner & Washington, 2016). Despite the overall high satisfaction with postpartum education, all studies in the research included less than 150 patient populations and were limited to the hospital-

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completed survey during discharge. Even the scoping review from McCaret et al. (2022) which included over forty-six sources concluded that the outcome performance reported on surveys did not accurately reflect the effectiveness of education (McCarter et al., 2022).

Despite the high satisfaction scores in the hospital, research indicates gaps and biases in education both in the hospital and in the months after discharge. Once women leave the hospital many report struggling with infant care in retrospect after discharge (McCarter et al., 2022) and report wanting more specific information about sexual and emotional health (Guerra-Reyes et al., 2017). Other studies indicate differences in care and education in the inpatient setting based on specific demographics. For example, women who gave birth by cesarean section reported only a 36% satisfaction with nursing care over emotional needs compared to that women who gave birth vaginally report a 46% satisfaction rate (Ziabakhsh et al., 2018). Although breastfeeding was a high education priority in many studies (Buchko et al., 2012; McCarter et al., 2022; Wagner & Washington, 2016; Ziabakhsh et al., 2018), women who did not choose to breastfeed felt less supported. There may also be a disconnect between the priorities of nurse education and the education desires of postpartum patients. Nurses tended to prioritize safety including infant safe sleep, prevention of infant falls, decreasing infection, screening depression, and avoiding adverse outcomes post-discharge (McCarter et al., 2022). Whereas women focused on self-care, pain management, infant care, and parenting (McCarter et al., 2022). The largest gaps in education need only occurred retrospectively in the post-partum setting including infant care, sexual health, and emotional health. Although these topics should be focused on in the in-patient setting, it may be difficult for nurses to predict the unique, dynamic needs of patients once they leave the hospital. The research indicates a need for nurses in the hospital to follow up education

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with a phone call and ensure that women attend their post-partum obstetric appointments after birth.

Since over half of post-partum deaths occur after discharge from the hospital, it is no surprise that research indicates more attention to the specific warning signs and potential severity needs to be focused on in the inpatient and outpatient setting. Two studies led by Patricia Suplee (2016 & 2017) specifically looked at current nursing practice in the hospital around the education of signs of maternal morbidity and implemented an extensive education intervention with both nurses and patients (Suplee et al., 2016, 2017). The initial research from Suplee et al. (2016) confirms later research about education around signs of morbidity which state that both nurses and patients cannot identify all warning signs and complications nor understood that symptoms could occur up to 6 weeks or more after discharge (Logsdon et al., 2018, as cited in McCarter et al., 2022). Another 2017 study cited in the same scoping review noted that at the 6 to 8-week postpartum period, participants reported that they had not received adequate information about signs of complications after cesarean birth (Almalik 2017, as cited in McCarter et al., 2022). Intervention research indicates that nurses need continued education around warning signs and are vital in leading changes around education interventions. Although this research indicates the implementation of standardized education by nurses has the potential to play a significant role in decreasing maternal morbidity and mortality, the research lacks clear metrics to measure the impact on the patient population. In addition, specific teaching techniques were not studied nor was there consistency over staff initial training with education materials present in the known research.

Implications for this Quality Improvement Project

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The implications of this literature reveal a clear need for standardization of post-partum education in the inpatient setting. Although there is a lack of research using specific impact measures on patient education outcomes, the delivery, and content need to be standardized before patient metrics can be assessed. Interventions should be nurse-driven and include focus groups and surveys to assess current knowledge and practices. Content must also be prioritized both on patient needs and specific warning signs around maternal morbidity and mortality. Since most postpartum education gaps occurred after discharge, nurses should also emphasize the need for continued care and vigilance in the 6 to 8 weeks following discharge with clear directives for the need to attend all postpartum outpatient appointments with their OBGYN providers. By providing a forum for nurses to discuss current practices around discharge, more participation in the standardizing will occur and the overall education process can be improved to ensure both patient safety and well-being health goals are met during the critical post-partum period.

Global Aim

The global aim of the quality improvement project was to improve and streamline the discharge education process for nurses to ensure equitable access to printed reference material for maternal and newborn care.

Specific Aims

The specific aim of this quality improvement project was to survey, educate, and report 75% satisfaction with the discharge new process.

Rationale

The PDSA (Plan-Do-Study-Act) framework guided this improvement project. This four-step model includes planning outcome predictions and assigning tasks, implementing the plan, studying the obtained data and results, and finally adopting, adapting, or abandoning the process

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(Christoff, 2018). The planning phase consisted of consulting key nurse and leadership stakeholders to assess the current education discharge process and printed materials given to patients. In planning a pre-intervention survey was presented at a monthly staff meeting with an opportunity for more input on the intervention phase during the Unit Council meeting which followed the staff meeting. After the intervention was designed it was put into practice with support material offered at each computer terminal which nurses access when printing discharge materials. During this intervention pre- and post-survey data will be collected and used to make further recommendations to the discharge education process.

Methods

Context

The hospital states that its global mission is a commitment to the care and improvement of human life. Specific to its mission, the hospital is upgrading its cesarean operating room with a 1.3-million-dollar renovation to improve its labor and delivery care. The facility also includes a level II special care nursery for fetal emergencies. The department emphasizes customized birthing experience and care throughout both labor and postpartum care. Although the floor predominately serves peripartum and pediatric patients, it has expanded recently to include other health needs of women. Its stated mission on all patient care boards reads “To provide the families of our community safe, nurturing, individually fostered care.”

The maternity unit serves women of childbearing ages, on average 20-40 years of age. Patients stay on average 2 nights for a vaginal birth and 3 nights for a cesarean birth. The unit also serves post-operative hysterectomy patients who stay on average one night. The unit performs better than national averages in all leapfrog safety categories including cesarean rate (22%), episiotomies (1.6%), jaundice screening (99.6%), and post-cesarean section blood clot

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treatment (99.3%) (*Ratings / Leapfrog Group, 2022*). The patient census varies greatly. Last year there were 469 births with an average of 40-60 births per month. The hospital keeps track of patient experience through online and follow-up call data. Locally the nurse managers do weekly rounding to elicit patient experiences on nursing care, pain management, and frequency of call bell use. Most commonly, patients arrive on the unit from home and are placed in observation status until labor is confirmed with laboratory or diagnostic testing. There are also patients that arrive from the office and are also placed on observation status for a scheduled non-stress test or an unscheduled blood pressure monitoring.

The nurse manager and safety coordinator is responsible for the data management of many unit practices including the rate of primary caesarian sections, hand hygiene, hypertensive code blood pressures, the use of oxytocin (Pitocin), and fetal heart rate monitoring, eat, sleep, and console data (ESC), critical congenital heart defect screening, and percentage of breastfeeding patients upon discharge compared to the initial plan to breastfeed (K. Krausse, personal communication, February 6, 2023). This data is often reported on a national level and is used to make changes in practice on the unit. The nurse manager also conducts weekly rounding on both patients and nurses. The manager can also become a clinician on the floor if staffing demands require an extra RN.

Education classes are offered both in person and online to prepare parents for birth, newborn care, and breastfeeding. Classes are offered in five 1-hour weekly sessions or a one-day six-hour class. In addition, a post-natal weekly class is offered to parents which focuses on infant nutrition and breastfeeding. Classes help introduce and reinforce education given by nurses during the hospital stay (S. Vanasse, personal communication, February 16, 2023). During postpartum recovery, nurses provide various newborn and self-care education to patients

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including newborn safe sleep, diapering and hygiene, infant soothing techniques, nutrition, car seat safety, breast care, perineum hygiene, postpartum depression symptoms, and postpartum warning signs (K. Krausse, personal communication, February 6, 2023). Topics are reinforced before discharge when the nurse prints out one-page handouts that review key topics covered during the stay.

After reviewing the assessment there was a need for more standardized postpartum discharge education. The COVID pandemic placed stress on the education and delivery of in-person classes in prenatal classes. Finding both time and space for these additional pre and postnatal classes has been a challenge for the staff. In addition, there is no dedicated social worker on the unit who would normally help further support parents at risk for postpartum complications due to a lack of access to healthcare resources. The new electronic monitoring system (EMAR) has been challenging for nurses to navigate leading to rushed discharge routines and a lack of reported clarity on what education materials need to be given to patients under the new EMAR. Nurses and providers are constantly changing protocols to utilize evidence of best practices for the safety of the patients. For example, nurses utilize flow sheets to make clinical decisions and document assessment data that inform care when utilizing each individual protocol (K. Krausse, personal communication, February 6, 2023). Refer to Figure A for an example of the newborn hypoglycemic protocol, which represents the most recent guidelines recommended by the New England Journal of Medicine (van Kempen et al., 2020). In addition, it is the unit policy that labor nurses always monitor fetal heart rate strips, and during lunch breaks, another nurse must monitor the strip. Continuous fetal monitoring has been shown as an effective predictive tool during the labor process (Kumar et al., 2020). Research demonstrates that post-

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natal education should be standardized to emphasize the warning signs of postpartum complications to prevent morbidity and mortality.

Cost and Benefit Analysis

There was a limited costs associated with this proposed intervention. An online survey platform, Qualtrics©, will be utilized for data collection and analysis to ensure no costs to the user or participants. In addition, the hospital already subscribes to the Krames Online education library, which is connected to the Electronic Medical Record (EMAR) for nurses to utilize when selecting and printing education materials during discharge. The non-financial costs associated with the project will include project lead and nurse participant time. Each nurse participant was expected to volunteer approximately 30 minutes per focus group and an additional 10- 15 minutes for survey completion.

Intervention

Based on the survey and qualitative results of the focus group interviews, a 4-week intervention period was implemented with a standardized list of educational materials. Additional staff training about the discharge process will be offered at the monthly staff meeting. A handout tutorial was posted in the breakroom and around the nurse station at each computer outlining the easiest way to access the standardized education materials during patient discharge. During the intervention, data will be collected on how often the standardized list of handouts was utilized for patient discharge education.

The intervention team consisted of members of the leadership team including the director, manager, perinatal nurse coordinator, and education coordinator/Birth Navigator. In addition, members of the Unit Practice Council (UPC) will be consulted on the implementation of the intervention. Two full-time charge nurses on the day shift was also part of the team to

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ensure the intervention meets the current education discharge needs of nurses. The hospital-wide educator was consulted to ensure the EMAR system is being utilized fully to access all available education materials for patients efficiently.

The intervention is predicted to result in an increase of 20% in nurses reporting Agree or Strongly Agree with the ease in the overall discharge process from the pre- and post-survey data. There is predicted to be at least a 10% increase in staff reporting Agree or Strongly Agree to the appropriateness and utilization of education materials during discharge. The standardization of the discharge process and education materials should also result in more post-intervention positive responses in the qualitative responses collected in the focus group, interviews, and free text survey responses.

Study of the Intervention

The proposed quality improvement intervention was evaluated as a mixed-method study. The initial pre-intervention phase of the project consisted of two focus groups with a follow-up survey to collect current information and data on post-partum education material. Since the current Krames Patient education library consists of over 4,000 possible handouts it was important to utilize nurse data to come up with a complete list of education materials currently being utilized in the post-partum setting. All participants who volunteer for a focus group, individual interview, or survey were asked to sign their consent to participate after reading an Information Sheet for Survey Respondents. Both the Information Sheet for Respondents and survey responses were disseminated to participants utilizing Qualtrics©. Specifically, the pre-intervention assessed the current ease of the discharge process, appropriate current education materials for the patient, and utilization of education materials during education. One-to-one interviews and group focus groups asked participants to give additional qualitative data about

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what nurses teach patients during the post-partum phase and how they utilize the printed materials. Focus group and survey data also identified current barriers in the discharge process. They provided opportunities for nurses and other leading stakeholders to offer solutions such as preprinted handouts, checklists, additional technology training with the new EMAR system, and the location of education materials.

Following the intervention period, nurses were surveyed to assess the ease of the discharge process, the appropriateness of current educational materials, and the utilization of education materials during education. Follow-up interviews and focus group participants were surveyed and interviewed to assess qualitative experiences with the new discharge intervention with standardized education materials and the potential impact it had on postpartum discharge teaching. The data was compiled, and the intervention's results were presented to staff at a monthly meeting.

Measures

Satisfaction with the new discharge protocol and education were measured using a Likert scale survey-style questions. Satisfaction was measured by nurses reporting “agree” or “strongly agree” with statements about the ease and standardization of the discharge process after the intervention period. The project planned to incorporate at least two group focus group sessions, allowing members of the nurse unit council to provide specific input on intervention implementation and post-intervention reflection. The aim was to have at least 20 nurse participants, 75% of nursing staff, including their feedback through surveys and focus group participation. Participants completed a pre- and post-survey on current practices and feelings towards the discharge education process. The intervention took place over a 4-week period and utilize the software Qualtrics© for survey completion and data analysis.

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Both the specific education needs, and the measure of the outcome associated with this process intervention was be measured through nurse surveys and interviews. Both surveys consisted of specific questions which assess which patient education materials are currently being utilized and the frequency of their use. This data was used to create a standardized list for all nurses to use for patients with the aim of both streamlining and ensuring equity for all patients during the discharge process. Survey participants were asked to rate the frequency of use for each specific handout using a Likert Type Categorical Scale: “All patients,” “Most patients,” “Some Patients,” “None of the Patients, ” and “Choose not to answer.” The post-intervention survey asked the same questions about the use and frequency of use of specific education materials in order to assess whether the standardized list was implemented.

In addition to an assessment of the frequency, the 14-question survey utilized Likert-style questions that rate the current process of discharge. These three questions assessed the current ease, standardization, and current knowledge of the process by asking nurses to rate statements: “strongly agree,” “agree,” “neither agree nor disagree,” disagree,” and “strongly agree.” The success of the intervention was measured with an identical survey. The intervention planned to improve both the overall mean score and the percentage of nurses agreeing that the discharge process is easy to use, and standardized and that nurses have the necessary knowledge to select appropriate materials. After each question, nurses were asked a free-response style question to identify current barriers and advantages to the current system. These qualitative responses informed the intervention education and future recommendations after the project was completed.

Since the intervention required nurses to comment on the specific types of current educational material, a unique survey was required to assess what reference materials were

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utilized. This survey had not been assessed for reliability. Recent research shows that Likert-style questions with more labeled responses, up to six choices, resulted in more reliability than scales with just two endpoints labeled (Jebb et al., 2021). In the survey proposed, there were two styles of Likert-style questions with four and five labeled choices. Both the preintervention and post-intervention surveys aimed to get over 60% participation or 20 total survey and interview responses from both day and night-shift nurses.

Analysis

Upon completion of the intervention, the pre- and post-intervention survey Likert scale data will be utilized to assess the effectiveness of the intervention in increasing the ease of the discharge process, appropriateness of current education materials for patient understanding, and the utilization of education materials during education. Quantitative assessment will be performed using descriptive statistical analysis which included an assessment of mode, mean, median, and percentage of participants that Agreed or Strongly Agreed with the survey questions. The statistical analysis will be analyzed with Qualtrics®. Additional qualitative data will be obtained using free response text boxes at the end of each survey and collecting responses from individual and group focus groups. This qualitative data will be recorded and analyzed for key themes surrounding discharge education practices.

Ethical Considerations

All participants were voluntary and were only included in the study if they sign off on an Information Sheet for Survey Respondents fix this sentence – to past tense. The intervention was limited to improving postpartum discharge education's content and distribution. Therefore, no patient information, medical records, or participation was required for the intervention. The project leader was an employee of the organization but not in this microsystem and was

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employed in a different role as a licensed nursing assistant. There was no conflict of interest between employment and the proposed intervention. The project was reviewed by the Quality Review Committee of the University of New Hampshire Department of Nursing to verify it met standards and was exempt from full International Review Board (IRB) review.

Results

The development and implementation of this quality improvement project took place over two distinct phases. The leadership team suggested a goal of streamlining and standardizing discharge feedback based on nurse feedback. The objectives of streamlining and standardizing discharge materials and processes were established. A survey was developed to gather data on the current process with specific questions addressing the availability of a standard list and the perceived ease with the discharge process. A standard keyword search list was developed, and a nurse guide was created due to the results study of the first PDSA cycle.

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Initial Steps of the Intervention

During the second PDSA cycle, the goal was to educate all nurses in the microsystem on creating a standardized list through a keyword search term on the Electronic Medical Record (EMAR). Education was provided at a monthly staff meeting and new guides on accessing the standard list of education materials were posted at every computer at the nurse's station. The findings of the post-intervention PDSA cycle were presented at a monthly staff meeting with further suggestions on how to further streamline the discharge process based on survey results.

Figure 3

PDSA Cycles for Streamlining Postpartum Education Materials

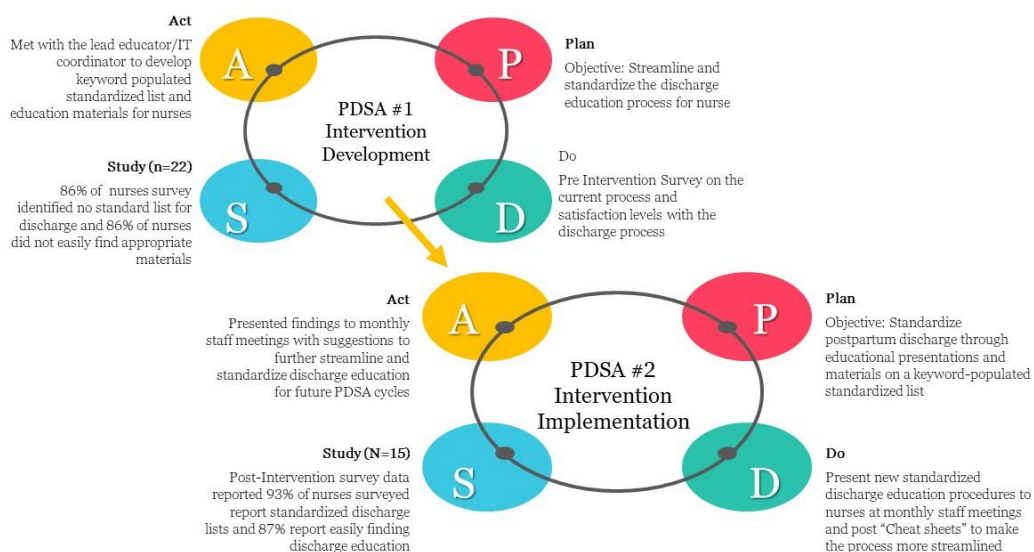


Figure 1 Note. Two cycles of inquiry were conducted over a two-month period to develop and implement a new process of nurse discharge education which utilized a keyword search on the EMAR for nurses during postpartum discharge

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Quantitative Process Measures and Outcomes

For two months 22 staff members participated in the pre-intervention phase and 15 staff members participated in the second post-intervention phase. All participants identified as female. During pre-intervention, 63% of participants worked as an RN on the day shift, 19% worked as an RN on the night shift, and 18% selected “other”, management or lactation support. During the post-intervention, 53% of participants worked as an RN on the day shift, 34% worked as an RN on the night shift, and 33% selected “other”, management or lactation support.

Table 1.
Demographic Data

<u>Demographic Data</u>	<u>PDSA Cycle 1 Total Sample (N=22) n (%)</u>	<u>PDSA Cycle 2 Total Sample (N=15) n (%)</u>
Employment Status		
FT Day Shift	8 (36)	5 (33)
PT Day Shift	6 (27)	3 (20)
FT Night Shift	3 (14)	4 (27)
PT Night Shift	1 (5)	1 (7)
Other	4 (18)	2 (33)
Choose Not to Answer	0 (0)	0 (0)

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The pre-intervention survey found that 86% of staff disagreed or strongly disagreed with the statement that discharge information was easy to find appropriate discharge information for patients. 85% disagreed or strongly disagreed that there was a standardized list of printed materials for patients. 58% disagreed or strongly disagreed that they knew how to find and print all needed discharge materials.

The post-intervention survey found 87% of staff agreed or strongly agreed that it was easy to find appropriate printed materials. 83% agreed or strongly agreed that there was a standardized list of printed materials for patients. 87% agreed or strongly agreed that they knew how to find and print all the needed discharge materials.

Table 2
Nurse Ratings of Process

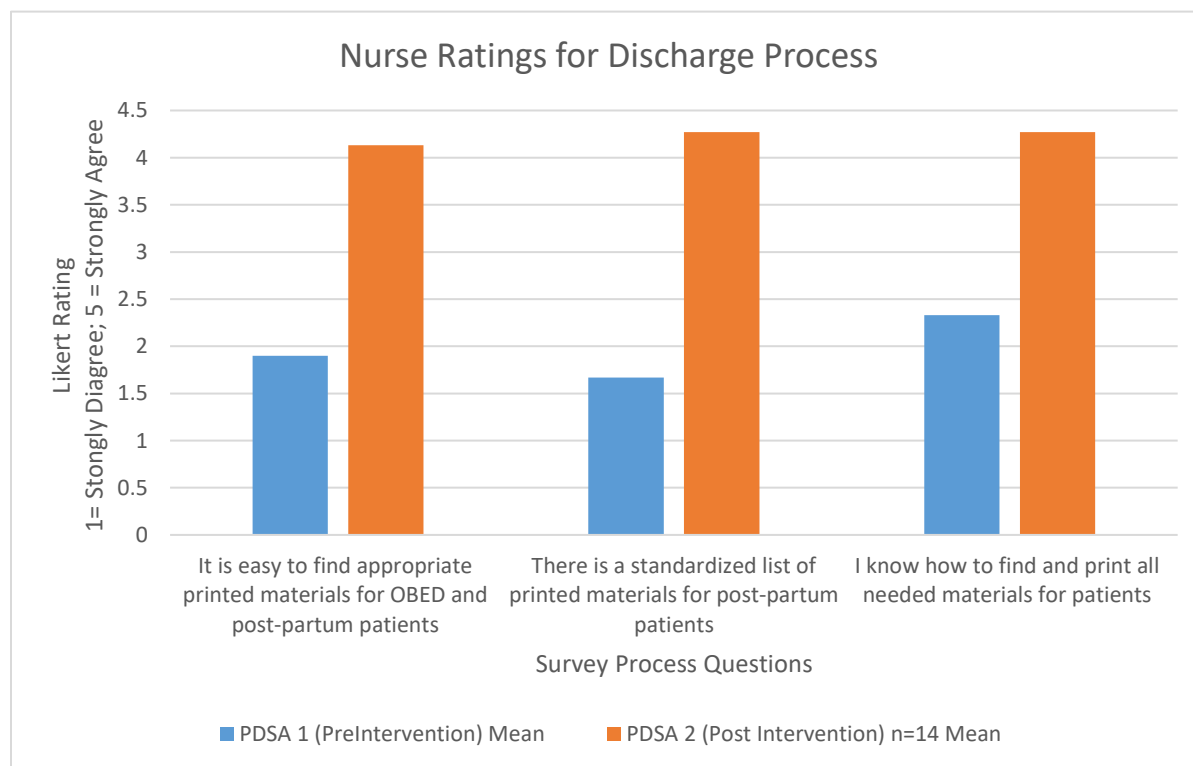
	PDSA Cycle 1 (N = 22)			PDSA Cycle 2 (N =15)	
	Likert Category (score)	<u>Total Sample (N=21) n (%)</u>		Likert Category (score)	<u>Total Sample (N=15) n (%)</u>
Question : It is easy to find appropriate printed materials for patients					
	Strongly Disagree (1)	6 (29)		Strongly Disagree (1)	0 (0)
	Disagree(2)	12 (57)		Disagree(2)	0 (0)
	Neither (3)	2 (10)		Neither (3)	2 (13)
	Agree (4)	1 (5)		Agree (4)	9 (60)
	Strongly Agree (5)	0 (0)		Strongly Agree (5)	4 (27)
Question: There is a standardized list of printed materials for patients					
	Strongly Disagree (1)	11 (52)		Strongly Disagree (1)	0 (0)
	Disagree(2)	7 (33)		Disagree(2)	0 (0)
	Neither (3)	2 (10)		Neither (3)	1 (7)
	Agree (4)	1 (5)		Agree (4)	9 (60)
	Strongly Agree (5)	0 (0)		Strongly Agree (5)	5 (33)
Question: I know how to find and print all needed materials for patients					
	Strongly Disagree (1)	6 (29)		Strongly Disagree (1)	0 (0)
	Disagree(2)	6 (29)		Disagree(2)	0 (0)
	Neither (3)	5 (24)		Neither (3)	2 (13)
	Agree (4)	4 (19)		Agree (4)	7 (47)
	Strongly Agree (5)	0 (0)		Strongly Agree (5)	6 (40)

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Likert Data ranged from 1-5 for both the pre-intervention and post-intervention surveys. A 1 score was given to “strongly disagree statements”, a 3 score was given to “neither agree nor disagree”, and a 5 score was given to “strongly agree”. Survey participants who selected choose not to answer were not included in the mean calculations. The mean score to rate the ease of discharge was 1.9 Likert score for the pre-intervention and 4.13 mean Likert score for the post-intervention. The statement of a standardized list for patients had a mean score of 1.67 Likert during the pre-intervention phase and a 4.27 Likert mean score for the post-intervention phase. The statement of knowledge on the ability to find and print needed materials had a mean Likert score of 2.33 for the post-intervention phase and 4.27 for the post-intervention phase.

Figure 4:

Mean Nurse Likert Ratings for Discharge Process Pre and Post Intervention

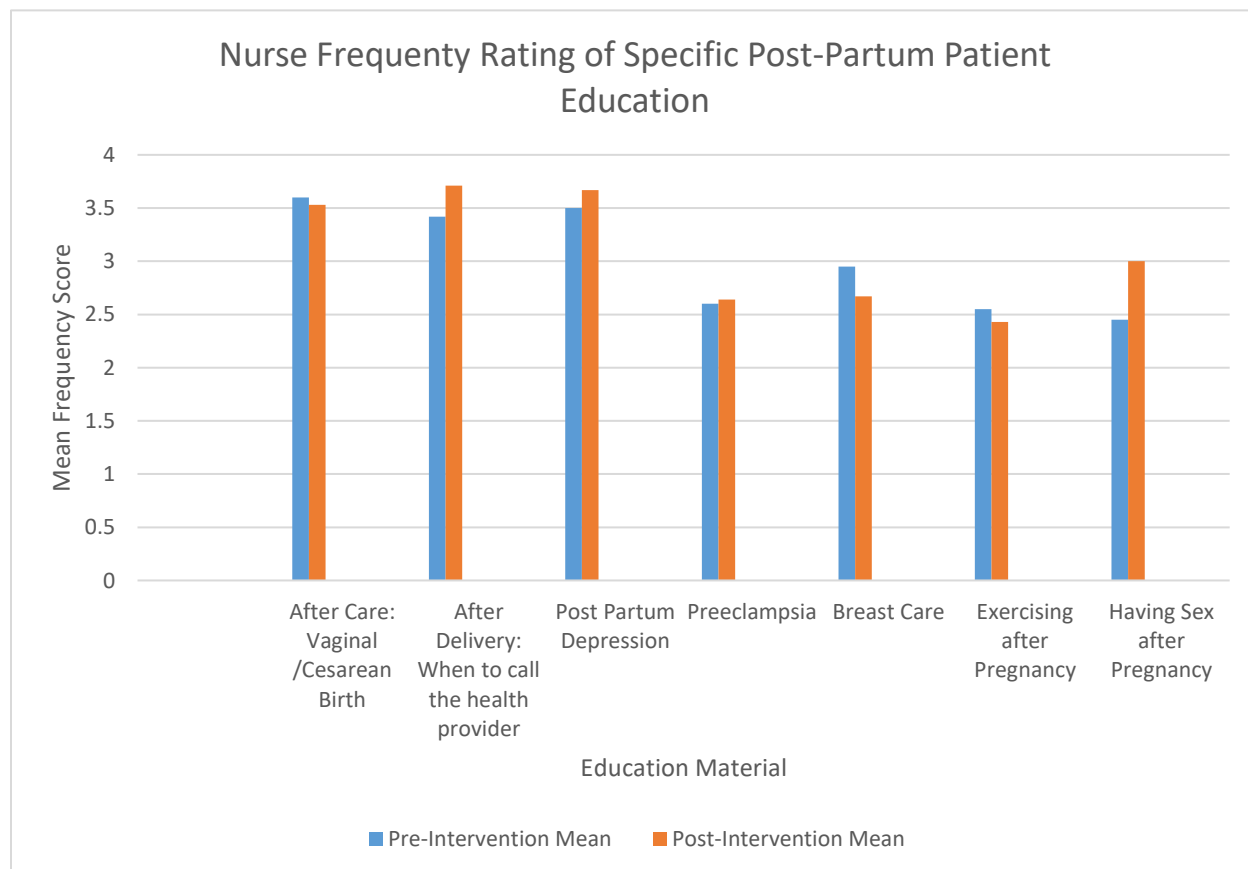


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Likert frequency data ranged from 1-4 for both the pre-intervention and post-intervention surveys. A 1 score was given to a frequency rated “print for no patients”, a 2 score was given to “print for some patients”, a 3 score was given to “print for most patients”, and a 4 score was given to “print for all patients”. Survey participants who selected choose not to answer were not included in the mean calculations. Three post-partum education materials had a high mean frequency of use rating during pre-intervention and post-intervention included “After Care for Vaginal/Cesarean Birth” (pre and post), “After Delivery: “When to call the health provider” (pre and post), “Post Partum Depression” (pre and post). The education material with the lowest mean frequency score in the pre-intervention and post-intervention included “Preeclampsia” (pre and post) and “Exercising after Pregnancy” (pre and post).

Figure 5:

Mean Nurse Frequency Ratings of Postpartum Education Materials for Pre and Post Intervention

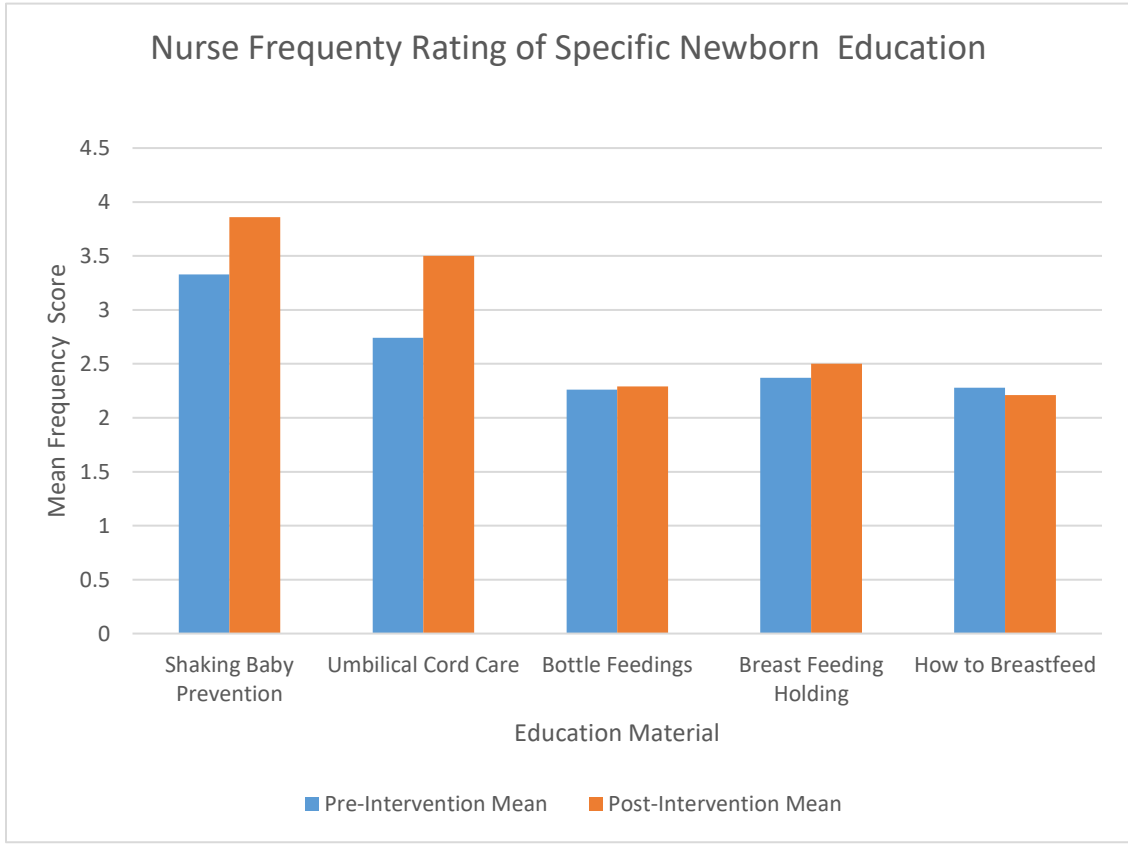


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For newborn education, the two materials had a high mean frequency of use rating during pre-intervention and post-intervention included “Shaking Baby Prevention” (pre and post), and “Umbilical Cord Care (pre and post). The education material with the lowest mean frequency score in the pre-intervention and post-intervention included “Bottle Feedings” (pre and post) and “How to Breast Feed” (pre and post).

Figure 6:

Mean Nurse Frequency Ratings of Newborn Education Materials for Pre and Post Intervention

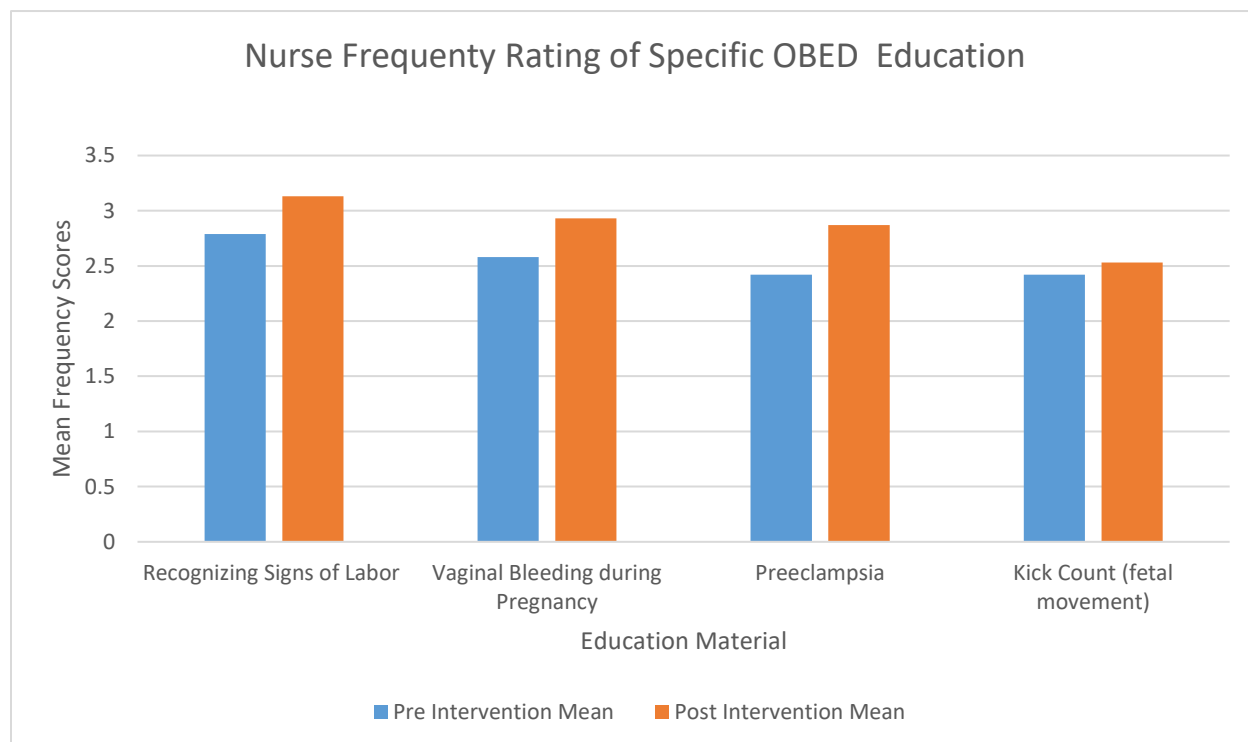


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Obstetric observation patients are those women who are seen in the hospital for observation diagnostic tests such as blood pressure and fetal non-stress test. For obstetric observation patients, the two materials had a high mean frequency of use rating during pre-intervention and post-intervention included “Recognizing Signs of Labor” (pre and post), and “Vaginal Bleeding during pregnancy (pre and post). The education material with the lowest mean frequency score in the pre-intervention and post-intervention included “Preeclampsia” (pre and post) and “Kick Count” (pre and post).

Figure 7:

Mean Nurse Frequency Ratings of Obstetric Observation Patient Education Materials for Pre and Post Intervention



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Qualitative Process Measures and Outcomes

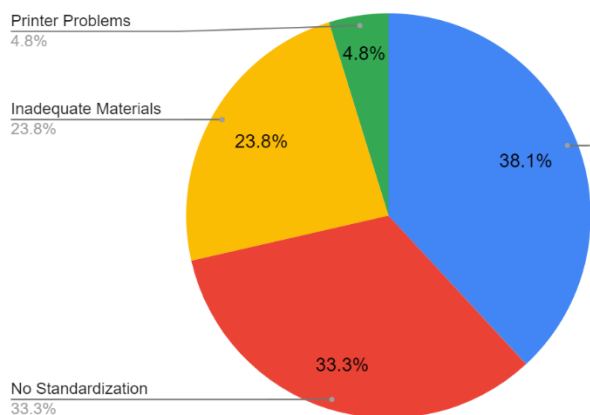
Both the pre-intervention and post-intervention surveys included two free-text questions addressing current barriers and suggested solutions to the discharge process. From the 22 survey responses, 18 (82%) surveys included responses to the barriers and solutions free-text questions. In total, there were 21 suggested discharge responses that were broken down into four themes. 8 (38%) of the recorded responses included barriers related to the new electronic medical record software. These responses included statements “too many clicks”, “difficult to search”, and “search engine not user friendly”. 7 (33%) of the barriers were related to a lack of standardization, including statements “No standardized list” and “Knowing what to print”. 5 (24%) of the barriers involved inadequate materials, “Some topics do not have education materials” and “Not specific enough”.

There were 18 (82%) surveys that suggested solutions with a total of 20 solutions generated. 11 (55%) responses suggested the need for a standardized list, “Developing a set list”. 5 (25%) responses proposed the creation of new educational materials, “Printed Packets” and “Create some more education materials”. 3 (15%) responses included solutions about minimizing the number of clicks required to access the printed education materials during patient discharge

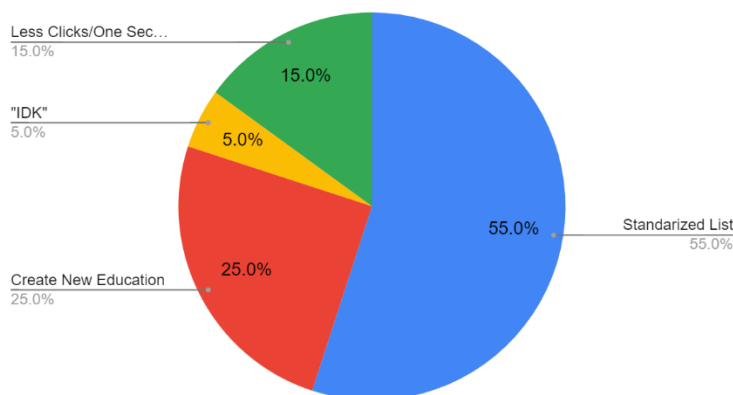
Figure 8:

Pre-Intervention Free Text Survey Data Reporting on Barriers and Solutions to the Discharge

Barriers to Discharge Education



Suggested Solutions to Discharge



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Out of the 15 post-intervention surveys, 6 (40%) did not choose to respond to the barrier question by leaving the space blank. 7 (47%) surveys specifically wrote words such as “none” or “N/a”. 2 (13%) surveys specifically suggested barriers including “It would just be nice if the instructions were part of expase (EMAR)” and “Too many steps”. For the solutions survey question, there were 7 (47%) blank survey responses and 6 (40%) that wrote “None,” “N/a” or “None! I love it”. 2 (13%) post-survey responses included proposed solutions “condensing reading material” and “too many options, not simple”.

Contextual Elements and Observed Associations

The pre-intervention and post-intervention data were collected over two consecutive months. Nurses were asked to complete the survey using a posted QR code link or an anonymous survey link posted during the staff meeting. The QR code required nurses to be working on the floor during the time of survey completion and required 2-5 minutes to complete. The anonymous survey link could be shared virtually through computer email or via text message and allowed nurses to complete the survey outside of the work schedule. The pre-survey included 6 surveys completed using the link and 16 surveys completed using the QR code. The post-survey only included 15 surveys, and all were completed using the QR code. This contextual element could have contributed to the difference in the completion of the post-intervention survey. In addition, during the post-intervention survey, there was a 50% increase in the monthly patient census scheduled to give birth during the time of the post-intervention survey which could have contributed to a reduction of nurses completing the survey.

The data relied on participants to complete the exact same survey twice. Some participants mentioned that “I already completed the survey”, this response may indicate that there was a lack of communication and that the project needed both participants to complete a

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total of 2 surveys. This may have led to fewer total survey responses in the post-intervention phase of the project.

Unintended Consequences

A potential unintended consequence of the quality improvement project was a de-emphasis on the actual patient-centered delivery of discharge education. By focusing solely on the nurse process of streamlining and standardization of materials there was a lack of discussion on how patients are receiving and using the information during and after discharge from the hospital. There were no unexpected costs to the project. The benefits of streamlining and standardization were expected and included staff self-reported efficiency and confidence associated with the new discharge process.

Missing Data

The initial pre-intervention survey had 22 participants, 78% of the total eligible nursing staff. The post-intervention survey has 15 participants, 54% of the total eligible nursing staff. This difference in survey participation could be due to the contextual factors of the unit having a 50% increase in the number of scheduled births or survey fatigue since participants were asked to complete the same survey twice. In addition, the intervention was conducted for a two-week period and some participants may not have had the opportunity to discharge a patient to utilize the new process and therefore elected not to participate in the post-intervention survey.

Additionally, in the pre-intervention survey, 18 of the 22 (82%) surveys included free-text survey responses about the barriers and proposed solutions to the discharge process. In the post-intervention survey, 2 of the 15 (13%) surveys included free-text survey responses about the barriers and proposed solutions to the discharge process. The lack of responses could indicate that there was an overall lack of perceived barriers or solutions after the intervention.

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Alternatively, survey fatigue could have also contributed to the lack of participation in the post-intervention data.

Discussion

Summary

Key Findings

The survey data gathered from this quality improvement project suggests that standardizing and streamlining the discharge education material made it easier for nurses to find the desired discharge information for postpartum patients. Before the implementation of standardization, 86% of nurses interviewed disagreed or strongly disagreed that it was easy to find appropriate discharge education, while after the intervention 0% of nurses disagreed or strongly disagreed with 87% of nurses agreeing or strongly agreeing that it was easy to find needed education material. Creating a standardized list and instructions during the intervention phase also contributed to nurses reporting more knowledge about the discharge process and increasing the ability to find the appropriate materials. Pre-Intervention 58% of nurses disagreed or strongly disagreed with the statement that they knew how to find appropriate discharge education, but post-intervention 0% disagreed or strongly disagreed with the same statement with 87% of nurses agreeing or strongly agreeing with the statement that they knew how to find appropriate discharge education. Lastly, the intervention reduced the number of nurses reporting barriers to the discharge process. Prior to the standardization and streamlining intervention, 82% of nurses expressed barriers, while after the intervention only 13% of nurses noted barriers in the discharge process.

Relevance to the Rationale

The initial PDSA cycle was useful in confirming and identifying barriers in the discharge process. The planning phase involved key stakeholders and leadership identification of potential

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barriers and helped identify the current needs for education materials during the discharge process. The action phase involved a survey of all staff members involved in educating and discharging postpartum patients. The study of the survey confirmed many of the perceived barriers including 33% of surveys citing the barrier of the lack of standardization and 38% citing the use of the new EMAR system as a barrier to finding appropriate discharge education material. In addition to these identified barriers, nurses also suggested possible solutions which included 55% suggesting the need for a standardized list of possible postpartum education materials and 15% of surveys suggesting the need to streamline the process with fewer clicks. These two suggested solutions were used during the planning phase of the next PDSA cycle. 25% of nurses suggested the need to create new educational materials, however, due to time constraints and EMAR restrictions limited to a specific medical online library, this solution could not be a part of the subsequent PDSA cycle.

The second PDSA cycle focused on the implementation of a quality improvement plan based on suggestions for standardization and streamlining. Based on previous survey data, new education on the discharge process was presented to nurses with a more standardized list created in the EMAR. Printed instructions on how to access the standardized list using a streamlined keyword such as "... csection" were posted next to all computer terminals in the nurse stations. The study phase of this final PDSA cycle revealed that this intervention successfully removed barriers to discharge and made it easier for nurses to find relevant postpartum discharge education materials for patients.

Relevance to the Specific Aim

The global aim of the quality improvement project was to improve and streamline the discharge education process for nurses to ensure equitable access to printed reference material

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for maternal and newborn care. The quality improvement project stated the specific aim was to survey, educate, and report 75% satisfaction with the discharge new process. All three goals were met through the completion of the two PDSA cycles with over 78% participation in the pre-intervention phase and 58% of related staff participating in the post-intervention staff. Over 90% of staff were educated on the standardized and streamlined discharge education process. The education goals were tracked through the attendance record of two staff meetings which included specific education on the new process. Most notably, the project exceeded its goal of 75% of nurses reporting satisfaction with the process as evidenced by the post-intervention survey which found that 87% agreed or strongly agreed that it was easy to find relevant discharge education materials and 87% agreed or strongly agreed that they had the knowledge to find and print appropriate discharge education materials using the new EMAR system.

Project Strengths

This project was effective at eliciting stakeholder feedback through an initial pre-intervention survey with over 78% participation among staff. The high participation led to more stakeholder buy-in and utilized the initial survey results to identify both barriers and possible solutions to create a more streamlined and standardized discharge process. Using this specific feedback generated, the project also was successful in communicating the specific barriers of the discharge process to the appropriate leadership, who understood the technology behind the EMAR system and could more easily identify the keywords needed to generate a standardized list of discharge materials. Most impactful, the same discharge process and EMAR system are used on multiple microsystems within the hospital and other hospitals within the macrosystem of the hospital corporation which includes over 180 hospitals nationwide and worldwide. Therefore, communication of this specific quality improvement project could result in more streamlined and

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standardized education processes in other microsystems within the hospital and in other macrosystems worldwide.

Interpretations

Impact of the Intervention on Nurses and Discharge Education

The results of this quality improvement (QI) project indicate that nurses reported a lack of knowledge, ease, and standardization related to the discharge education process before the intervention. Post-intervention most nurses agreed that the new process improved knowledge, ease, and standardization related to the discharge process. Although the project did not assess the direct teaching between nurse and patient during the discharge instruction, the standardization of education materials takes the first step in ensuring equity among patients during the critical time of discharge education. Despite the numerous amounts of information women receive throughout the perinatal period, there are often information gaps in the early postpartum period (Guerra-Reyes et al., 2017). The results of this QI project did not identify specific gaps but did create a system where additional education materials can easily be added to an existing standardized list. This new streamlined system can ensure that all patients have access to the same types of discharge materials.

Furthermore, the creation of a more streamlined and standardized list ensures that all patients receive critical information related to serious post-partum and newborn warning signs. In both the pre-intervention and post-intervention survey these topics were reported as having the highest frequency of use. Over half of the post-partum deaths occur after discharge from the hospital and research from the American College of Obstetricians and Gynecologists (ACOG) indicates that more attention to the specific warning signs and potential severity needs to be focused on in the inpatient and outpatient setting (Suplee et al., 2016, 2017). The standardized

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list ensures that this critical education information concerning post-partum warning signs is easily available and expected for nurses to give to patients during discharge.

Comparison of Results

There has not been another quality improvement project that closely relates to this specific intervention related to the nursing process of discharge education. Evidence from this QI project suggests that successful processes must be nurse driven and utilize nurse specific feedback related to the specific context to be effective in the implementation of change. Although the project utilized nursing reported lack of standardization, corroborated previous research which identified patient reported gaps and a lack of standardization between postpartum patients (Guerra-Reyes et al., 2017; McCarter et al., 2022). Positively both survey cycles reported a high frequency of education materials related to postpartum warning signs. This particular education has been emphasized has a high priority of need since over half of all morbidity complications occur after post-partum discharge (Suplee et al., 2016, 2017). More importantly this improvement project echoed the practice recommended in the literature that nurses should regularly be encouraged to participate in forums to discuss and evaluate current discharge practices (Suplee et al., 2016, 2017). Like discussion forums, this project successfully elicited feedback from nurses through two rounds of surveys to discover specific barriers and solutions to the discharge education process.

Impact of the Project on People and Systems

The largest impact of the project was on the floor/unit day shift RNs who regularly discharge postpartum mothers and newborns. Before the intervention many nurses expressed in verbal interviews with management frustration with the lack of standardization and complicated process to find appropriate discharge education materials for the postpartum population. Both in

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informal interviews and formal survey results the project has created an easier standardized, streamlined system to access appropriate discharge materials. Although there were relatively few differences on the types of materials being utilized before and after the intervention, the frequency of the most important education materials, “postpartum warning signs” remained high. As cited earlier, it is critical for postpartum patients to understand the critical signs and symptoms related to postpartum. Now that the system is more streamlined and standardized, nurses can spend more time focusing on the educational aspects of care instead of dealing with the frustration of using a discharge process which is complicated and not intuitive. Standardization with the new process ensures equity among patients in the types of discharge materials received. Nurses may choose to emphasize certain educational points differently depending on patient readiness. Despite these differences the new system from the intervention will ensure that all patients will have high-quality educational materials to reference once discharged from the hospital.

Reasons for Differences Between Observed and Anticipated Outcomes

Overall, the interventions observed results exceeded the anticipated outcome. No nurses interviewed after the intervention disagreed with survey statement about the ease, standardization, or knowledge of the process of finding appropriate discharge education materials. This outcome can be contributed to the time and emphasis placed at the beginning of the project interviewing and analyzing the needs of the key stakeholders including leadership. Both the problem and solutions used in the intervention were from the direct input of the stakeholders and leadership involved in the implementation of the new quality improvement process. Therefore, there was more participant buy-in and satisfaction with the intervention because most stakeholders had already contributed to the development of the new process.

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Costs and Strategic Trade-offs

One of the greatest strengths of the project was the minimal costs and high potential strategic benefits associated with the quality improvement project. Financially, there was no additional costs in implementing the new process since the project utilized the existing EMAR discharge system. Additionally, the survey system, Qualtrics was freely available to the project leader and end-user. The project has the potential to continue to benefit the microsystem financially by streamlining an essential nursing process which will allow more focus on patient care and education. Additionally, by standardizing the education materials, future changes to the process can more easily be enacted by adjusting the preset list managed by the new EMAR system. Without the intervention nurses would continue to experience dissatisfaction and frustration which could lead to less time dedicated to important patient care and education. Postpartum patients are inundated with information during the hospital stay and it important that they have accurate, reliable, and comprehensive reference material to review once discharged from the hospital in order to heal and adequately care for their newborn.

Limitations

Limits to Generalizability

The results of the intervention were limited to the specific needs and context of the maternity microsystem. Although the intervention can be transferred to other microsystems, it would be vital to conduct a pre-intervention survey to assess the specific discharge education needs of the specific nurse and patient population. The participants of this QI project were all female, maternity nurses. The project was limited in its scope, the process of retrieving education materials using the current EMAR system. There was no investigation or intervention related to the delivery of education materials or patient experience with the discharge process. The process

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of streamlining and standardizing was rooted in the specific capabilities of the EMAR system of the hospital.

Factors Limiting Internal Validity

The pre and post survey questions were specifically written to assess the specific needs of the microsystem and therefore no standardized survey with internal or reliability was utilized. The project lead was present during the completion of the survey which could have led to response bias. Survey fatigue could have impacted results since respondents were presented with identical pre and post survey questions. The time between the two survey cycles was only two and half weeks, which may have impacted nurses critically evaluating the impact of the intervention. Survey analysis was limited to descriptive statistical and qualitative data analysis. Due to the nature of the intervention and preliminary stages of standardization no inferential statistical analysis was used to infer results to a larger population.

Efforts Made to Minimize and Adjust for Limitations

To minimize potential survey response bias, efforts were made to get similar proportions of day and night shift nurses to complete both the pre and post intervention survey. The project leader was present during both phases of the project when the survey was completed. More neutral Likert style questions were utilized to lessen the impact of acquiesce bias. The same questions were also used pre and post bias to eliminate potential bias with the results of the post intervention. The survey was kept short and took nurses an average of 2 minutes to minimize survey fatigue and non-response bias. Quantitative and Qualitative data was utilized in both phases of the project to get a broader response of the context of the microsystem and the specific needs of discharge education.

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Conclusions

Usefulness of the work

Streamlining the education discharge process for nurses not only increases efficiency but also can lead to more productivity. Prior to the intervention the discharge process was a source of stress and required troubleshooting with multiple nurses to find appropriate discharge materials. Now that the process is less time-consuming most nurses agree with the survey that the process is more standardized and easier, and nurses have more time to spend with the patients to give vital education. Patients are generally eager to leave promptly and increasing efficiency will not only improve nurse job satisfaction but patient satisfaction as well.

Standardizing the education materials ensures equity in the process. Instead of patients getting educational materials based on what nurses search for on a large database, there is a concise standardized list relevant to the specific patient population. The standardized list also will allow for future changes to education materials to be easily added without disruption to the process. Regularly using the same list of education materials will help nurses become more familiar with the education materials and allow for better teaching to the patient.

Sustainability

The new quality improvement process can be easily sustainable through continued evaluation of the standard education materials that populate through the keyword search. The actual materials should also be regularly evaluated for accuracy and currency with evidence-based practice. Current literature also points to the importance of regularly interviewing patients to ensure the education materials meet the needs of the patients since the literature points to gaps in education in the weeks following discharge (Ziabakhsh et al., 2018).

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Potential for Spread to Other Contexts

The same discharge process can be utilized in other microsystems in the larger macrosystem. The same EMAR system is utilized within the corporate healthcare system both nationwide and internationally. Regardless of the microsystem, it will be vital for a comprehensive evaluation of the specific contextual needs of the discharge system from the nurse's perspective and the education needs of the patient population. The streamlining and standardization of the education process will be a crucial first step in the larger discharge process.

Implications for Practice and for Further Study in the Field

Both nurses and patients will benefit as more microsystems adopt more streamlined and standardized approaches to discharge. Nurses can increase their productivity through more efficient navigation of the EMAR and ease of finding appropriate education materials for their specific patient population. Not only will nurses experience more satisfaction and less stress, but these benefits will also contribute to patient satisfaction. Patients will be able to spend more time with their nurses reviewing the discharge education materials and nurses will become more familiar with the more standardized education materials. The standardization will create more equity within the discharge process and ensure only the highest evidence-based recommendations are given to patients.

Suggested Next Steps

Further study is needed to transfer streamlined and standardized education materials to the patient's experience. The method of delivery and the patient experience around discharge education is crucial in ensuring patient safety and wellness. In addition, new technologies and applications of ongoing education support should be utilized as patients continue to heal and care

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for newborns after they leave the hospital. Ongoing education can be developed through mobile phone applications, follow-up phone calls, or increase education groups in the postpartum period. Regardless of the method, regular evaluation of the process and types of education materials should be done by all key stakeholders to ensure patients receive the highest, most reliable discharge education.

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