

Standardizing Postpartum Day-of-Discharge Lactation Patient Education in a Faculty

Midwifery Practice:

A Quality Improvement Project

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Abstract

Goal: The goal of this quality improvement project at the Oregon Health and Science University Faculty Midwifery Practice was to promote consistent breastfeeding education for day-of-discharge postpartum patients.

Background: Breastfeeding has known benefits for the lactating parent and infant. Midwifery lactation education is not standardized across practices in the United States. Midwives in this practice recognized a need for improved consistency in day-of-discharge postpartum education.

Brief description of the project: The intervention was based on the Institute for Healthcare Improvement's Plan-Do-Study-Act framework. An infographic that detailed evidence-based lactation information and resources was created. A voice-over slide deck describing the rationale and workflow was disseminated to all midwives and midwifery students prior to participating in inpatient postpartum care during the project timeline. A daily survey was administered to the midwives querying whether the infographic was discussed with eligible patients and whether midwives felt prepared to answer lactation questions.

Assessment of findings: 30% of midwives and students (9/30) viewed the voice-over slide deck prior to the start of the project. 80% (33/41) of eligible patients received infographic education from the midwifery team. Patients received the infographic but there were poor response levels regarding midwives' comfort with answering lactation questions. Of the 40% (12/30) of midwives and students who completed post-project surveys, 100% (12/12) reported that the project helped to promote consistent breastfeeding education.

Conclusion: There was improved standardization of day-of-discharge patient lactation education. Next steps for this midwifery practice include minor modification of the workflow to promote sustainability.

Standardizing Postpartum Day-of-Discharge Lactation Patient Education in a Faculty Midwifery Practice

Midwives are a crucial part of the postpartum team and the education they give to patients can help promote successful lactation. This includes the use of evidence-based counseling to help dyads reach their breastfeeding goals. The American College of Nurse Midwives (ACNM) guideline on “Support After Birth” notes that midwives provide information and support in the early days of breastfeeding, including the supporting determination of adequate milk supply. Midwives are in a unique position to guide dyads on this journey, as birth through 28 days of life is within a midwife’s scope of practice as well as the postpartum health of the birthing parent (ACNM, 2018).

There are multiple ways to feed an infant: human lactation (breastfeeding or chestfeeding), pumping and bottle feeding, formula feeding, or a combination of any of these methods. There are known benefits to providing infants with human milk; however, there are many barriers to a parent reaching their lactation goal. According to the World Health Organization, 44% of infants around the world in 2021 were exclusively breastfed between the ages of birth and six months (WHO, 2021). In Oregon, breastfeeding rates are generally higher than national rates. In 2021, 94% of babies were exclusively breastfed at birth, while 41% of babies were exclusively breastfed at six months and 34% at one year of age (Special Supplemental Nutrition Program for Women, Infants, and Children, 2021).

While these numbers are quite high at birth, they quickly decrease by approximately 50% by six-months postpartum (Special Supplemental Nutrition Program for Women, Infants, and Children, 2021). While this is a multifactorial problem, an aspect that is not discussed in the

literature is the lactation education that midwives receive and administer to patients. In 2022, no midwifery educational program in the United States instituted a standardized lactation program (Webber et al., 2022). The purpose of this quality improvement project is to standardize day-of-discharge postpartum lactation education for midwives in a faculty midwifery practice in an academic health center in the Pacific Northwest. To promote inclusivity, this paper will use the terms ‘lactating parent’ and ‘human milk’, unless other terminology was used in outside research.

Available Knowledge

Standardized Lactation Programs and Impact on Lactating People

A standardized lactation education program for midwives can ensure evidence-based knowledge is disseminated to patients and fellow midwives. Tanaka and Horiuchi (2021) utilized an educational program to study whether providing standardized education improves breastfeeding outcomes in dyads with preterm infants. The 60 minute in-person education program was set in a large perinatal medical center in Japan that employed 50 midwives. Each midwife took part in the education program. This study aimed to clarify the roles of nurses and nurse-midwives in aiding in milk expression, implementing appropriate care for milk expression, and highlighting the significance of early milk expression in the preterm dyad. The authors found that this education program was effective at increasing the midwife’s knowledge and attitude on caring for breastfeeding people; however, this study did not find that these programs increased initiation or frequency of milk expression of the mothers of preterm infants (Tanaka & Horiuchi, 2021). As this study included only preterm infants, there is limited generalizability to term infants. Similarly, there is not enough evidence or description provided as to the specifics of the

education program. The randomization of this trial is a strength, as well as the inclusion of a large midwifery practice.

Breastfeeding requires effort from a multidisciplinary team of providers which often includes a midwife. Swerts et al. (2019) used an observational and focus group study to qualitatively research how the midwife and the mother feel about their role in the breastfeeding experience. This observational study included 21 midwives and 59 mothers interacting and discussing breastfeeding, both in the hospital and primary care setting. Midwifery patients who were breastfeeding were included. Exclusion criteria included neonatal admission in the intensive care unit. Gestational age of the infant was not cited in this study. The focus groups included two groups of midwives (n=10) and two groups of mothers (n=9).

Overall, this study supported other research that highlights that mothers and midwives both care about milk supply and proper latch. Also, that mothers expect that midwives have adequate knowledge regarding breastfeeding. Furthermore, midwives indicated in the focus groups that incorrect information about breastfeeding leads to early cessation of breastfeeding (Swerts et al., 2019). Limitations of this study include that involvement in the focus group was voluntary, and participants knew about the topic of the group, creating the possibility of bias. Strengths include that all study groups included both nulliparous and multiparous patients.

Bolaños-Villar et al. (2023) utilized a prospective study with non-randomized sampling (n=1705) to determine the effectiveness of printed infographics delivered before discharge on duration of breastfeeding in the Mexican State of Sonora. This study utilized five, validated infographics at three different times in pregnancy. The prenatal period (n=432), pre-discharge from the hospital (n=743), and postpartum periods (n=127) were chosen as times to disseminate

lactation information. A licensed provider provided instruction on the importance and method of breastfeeding at each of the designated times. Education began at 28 weeks of gestation and continued through until two weeks postpartum. The control group (n=403) received only in-hospital teaching. Overall, this study found that the use of the infographics that promoted breastfeeding throughout all three testing periods increased exclusive or predominant breastfeeding rates by 6% ($p < 0.05$) (Bolaños-Villar et al., 2023).

The strengths of this study include that participants were recruited at different times in their pregnancy, rounding out the education patients received. Limitations of this study include that 57% of the participants were lost to care in the postpartum period, meaning the data that were collected in the postpartum period did not reflect the entire study group (Bolaños-Villar et al., 2023). While midwifery was not mentioned directly in this research study, it mentions clinicians who are trained in breastfeeding support which may include midwives (American College of Nurse Midwives, 2016).

These three studies indicate that education may improve lactation rates when midwives have the tools, education, and evidence-based information to provide that education to their patients. It also highlights that repeated conversations regarding lactation and continuity of care may lead to better outcomes. While midwives receive differing didactic and clinical training during their education, having an evidence-based handout can help to guide midwives to give consistent teaching to their patients at discharge.

Barriers to Continuation of Lactation

The American Academy of Pediatrics (AAP) recommends that infants are breastfed up to the first six months of life. The AAP endorses breastfeeding as being protective against diabetes,

high blood pressure, and breast and ovarian cancers in the infant's later adult life. The AAP recommends that people who breastfeed receive the support from their communities and providers to endorse positive breastfeeding experiences (AAP, 2022).

There are known long term benefits of breastfeeding for the newborn, yet people cease breastfeeding earlier than desired (Odom et al., 2013). It is unclear whether patients do not know the long-term benefits of breastfeeding, or if there is a lack of consistent support or evidence-based resources being disseminated from providers to lactating parents. Odom et al. (2013) found that 60% of mothers stopped breastfeeding before they had planned or desired. This longitudinal study (n= 1177) highlighted factors that contributed to the discontinuation of breastfeeding, including lactation difficulties, infant weight concerns, maternal or newborn illness, and the effort associated with lactation, including pumping. Lactation concerns included difficulty with latching, damaged or painful nipples, painful breastfeeding, and mastitis. Some participants felt that breastfeeding was too inconvenient or tiring, or that pumping was too time consuming (Odom et al., 2013). Of the 706 people who did not meet their breastfeeding goals, about 25% of the participants cited milk supply or infant nutritional concerns as the reasons why they stopped breastfeeding. About 32% said they did not have enough milk, and about 9% reported that a health professional told them their baby was not gaining enough weight, which led to them to cease breastfeeding (Odom et al., 2013).

Milk production and the perception of milk production are crucial in the success of breastfeeding. Odom et al. (2013) discussed that anytime a parent perceives that their newborn is not getting an adequate quality or quantity of breastmilk, they are likely to stop breastfeeding no matter the age of the infant. As there is a lack of evidence regarding the percentage of people

who are truly incapable of creating and secreting human milk, it is the power of perception that leads people to believe they are not creating enough milk to feed their infant (Odom et al., 2013).

For first-time parents, the first three months of a newborn's life can be an overwhelming time as they learn how to care for their newborn. Perception of insufficient milk supply is the focus of two important studies. An integrative review of multiple medical databases investigated the role that perceived insufficient milk supply had on lactating people in the United States and internationally (Gatti, 2008). The author reported that 35% of mothers stopped breastfeeding due to perceived insufficient milk supply. Of note, very few people utilized medical evaluation to determine whether their newborn was receiving enough milk; instead, they made the decision to stop breastfeeding based on newborn satisfaction cues (Gatti, 2015).

Another study (Sandhi et al., 2020) (n=250) utilized a cross-sectional research design to determine what aspects of early infant-maternal bonding and behavior contributed to perception of milk supply. This study found that skin-to-skin contact and breastfeeding education were the greatest indicators of high perceived milk supply.

Factors that Promote Healthy Milk Supply

The American Congress of Obstetricians and Gynecologists (ACOG) offers evidence-based education related to common lactation issues to pregnancy providers. The ACOG Committee Opinion on Breastfeeding Challenges recommends that people who are concerned about insufficient milk supply should be counseled that the average feeding frequency is 8 to 12 times per day, steady weight gain should be seen at days four or five of life, and the baby should make six to eight wet diapers per day. These are all indications that the newborn is receiving enough nutrients (Breastfeeding Expert Work Group, 2021).

As mentioned previously, lactating parents are often concerned about the amount of breastmilk they are producing. Providing evidence-based information about the factors that promote healthy breastmilk supply is crucial in the education of new parents. There are several factors that contribute to healthy milk supply including breast composition, parental nutrition, maternal hormones, and breast emptying. Some people are diagnosed with insufficient glandular tissue which limits the amount of milk they are able to produce. This is found in patients with a history of polycystic ovarian syndrome or other endocrine conditions including diabetes or obesity (Kam et al., 2021).

The hormones that are involved in breastmilk production include prolactin and oxytocin. Prolactin is the hormone that is involved in the production of breastmilk; oxytocin is the hormone that allows for the expulsion of the breastmilk in response to skin-to-skin contact with the infant. Prolactin production is highest at night, and therefore pumping or breastfeeding at night can help to establish and increase milk supply (World Health Organization, 2009). Breast emptying is considered to be the best mechanism to continue prolactin feedback because as more milk is ejected from the breast, the prolactin mechanism is triggered to produce more (Kent et al., 2012). As an effective latch is crucial in the emptying of the breast, having concerns or pain with latch can make emptying the breast more difficult, therefore hindering milk production.

Skin-to-skin contact and proximity of the infant to the lactating parent is another important factor in promoting successful breastfeeding. Agudelo et al. (2021) explored the outcomes of immediate skin-to-skin contact (at one minute of life), or delayed skin-to-skin contact (at 60 minutes of life) on exclusive breastfeeding duration. This randomized control trial (n=297), found that both intervention groups had similar outcomes of exclusive breastfeeding at

five months. This indicates that delayed (1 hour) skin-to-skin contact does not have a negative impact on breastfeeding duration (Agudelo et al., 2021). This is an important distinction to make as dyads who experience surgical birth are often concerned about how it will impact their ability to lactate.

Further evidence suggests that skin-to-skin can improve long term lactation rates. Srivastava et al. (2014) utilized a randomized controlled trial (n=298) to investigate whether early skin-to-skin (within 30 minutes of birth) had an impact on the length of time patients breastfed with babies who were born at term. This study found that more babies who were exposed to early skin-to-skin contact were exclusively breastfed at the first postpartum visit as well as the six-week follow up visit than the control group who received standard care of drying, weighing, and swaddling the newborn directly after birth (P=0.002) (Srivastava et al., 2014).

Many new parents and their communities turn to both pharmacologic and non-pharmacologic methods to promote milk supply (galactagogues). The Academy of Breastfeeding Medicine does not endorse the use of any galactagogues (Brodrib, 2018). Common non-pharmaceutical methods, such as fenugreek, have some anecdotal evidence, however; due to inconclusive studies, and high rates of negative side effects they are not recommended. Similarly, there is no evidence to suggest that the parental diet contributes to the amount of milk created, but rather a balanced diet paired with adequate hydration can help provide lactating people with enough calories and energy to maintain lactation (Burbidge, 2021).

The role of the midwife in lactation support and care of the breastfeeding dyad, as well as the importance of perceived milk supply has been confirmed by this literature review. This

project aims to provide standardized lactation education from midwives for patients on day-of-discharge.

Rationale

The framework used to guide this QI project is the Knowledge to Action (KTA). This framework utilizes knowledge inquiry and synthesis to create tools that help to disseminate information (Field et al., 2014). The KTA Framework is beneficial when creating the tools used in this project, as the literature review will create the basis for the intervention used by the midwives to teach lactation education. This is important as the midwives will have accurate, unbiased, and evidence-based information that they can disseminate to patients to effect change (Field et al., 2014).

The Plan-Do-Study-Act (PDSA) cycle from the Institute for Healthcare Improvement was used for implementation of this study. This framework includes steps that help to test change through running several cycles of a quality improvement project (Institute for Healthcare Improvement, 2023).

Global and Specific Aims

Globally, this project aimed to standardize lactation education that midwives disseminate on the postpartum day of discharge.

Specific Aims:

- By September 30, 2023, 100% of the midwives and midwifery students scheduled to take call in the practice between October 1, 2023 and November 30, 2023 will listen to a voice-over slide set provided by the doctoral project student leader. The voice-over slide

set will include midwifery education about postpartum lactation and instructions about plans for project workflow.

- Midwives, including faculty and per-diem midwives and student midwives, will utilize the newly created infographic with the aim of 75% of midwives discussing the intervention infographic with eligible patients on the day-of-discharge during cycle one. Eligible patients include all midwifery patients who had a vaginal birth, as this project aims to educate midwives who manage vaginal deliveries at this site. This will take place over two separate, four-week long, PDSA cycles between October 10, 2023 and November 30, 2023. Midwives do not provide discharge education to patients who had a surgical birth.
- By the end of cycle two (November 30, 2023), 75% of midwives will feel they are prepared to answer questions related to the infographic.

Context

This quality improvement team included a doctoral student investigator, content experts in lactation, doctoral project experts, as well as the practice manager to ensure patient safety. Stakeholders were interviewed, and a cause and effect diagram was created (Appendix A). An in-depth literature review was carried out to review reasons why people cease breastfeeding before they are ready, common issues people have with breastfeeding, and resources for patients. The interventions were reviewed by key stakeholders, including lactation and midwifery experts.

The specific context of this quality improvement project is a large academic midwifery practice that gathers information from pregnant people at new prenatal appointments, throughout their stay on labor and delivery, and at the six-week postpartum visit in the form of a

benchmarking worksheet that midwives complete during visits with pregnant or recently postpartum people. This worksheet includes information about whether the patient plans to breastfeed and how their breastfeeding journey has evolved after they have delivered. The data obtained from these worksheets are maintained in a secure database where it is analyzed and de-identified before being used for research. During the year, January 1, 2022 to December 31, 2022, 443 patients were admitted to the hospital for birth. Of these, 422 (95.3%) planned to exclusively breastfeed. After birth, 306 (71.5%) were able to latch within 60 minutes of birth. During their postpartum inpatient stay, 369 people (96.6%) were exclusively breastfeeding.

In terms of this quality improvement project, the infant feeding method after discharge from the hospital was a vital data point. Unfortunately, this data contains missing values as some patients who delivered in December would have postpartum visits in the following year, and other patients may have been lost to care. Because of this, 271 (62.1%) of the patients are not represented in this data set introduced above. In the same year, 169 patients had data collected regarding their postpartum feeding methods at the 6-week postpartum visit. Of those 169 patients, 126 (74.6%) were feeding their baby with only breastmilk. Others (n = 40, 23.7%) were providing both formula and breastmilk and 3 people (1.8%) were solely providing formula.

Finally, the benchmarking data (n=169) reflects when or if a parent decided to introduce formula (n=38), and the top reasons why. For parents who introduced formula, most (n = 26, 68.4%) introduced it in the first 0-7 days. Reasons for providing formula included insufficient milk production (55.8%), recommendation by a pediatrician (27.9%), weight loss of infant (23.3%), and diagnosed insufficient glandular tissue (0.0%). While there are some gaps in the data collection, these data reflect the broader evidence of why people stop breastfeeding before

they are ready. In addition, it reflects that many patients are lost to care after their postpartum visits, highlighting the importance of prenatal and day-of-discharge lactation education.

Intervention

The intervention for this quality improvement project was to create educational material for standardized midwifery lactation education on the postpartum day of discharge for the two PDSA cycles. The infographic was developed through an exhaustive literature review and meeting with stakeholders, including both midwifery and lactation experts (Appendix B). The literature review explored the overlap between midwifery education and standardized lactation teaching at discharge. The infographic was then reviewed by these experts, and edits were applied to ensure that it met practice standards. Since the infographic includes many embedded resource links, it was provided digitally in the patient instructions section of the Electronic Health Record (EHR) upon discharge to allow for ease of access. A voice-over slide set was created and distributed to both faculty and per-diem midwives at the practice before the first PDSA cycle. Topics included lactation education for midwives, common reasons for early breastfeeding cessation, resources for midwives to provide to patients, and the workflow for the PDSA cycles for the project (Appendix C).

Before the start of the first PDSA cycle, a folder was placed in the midwifery call room with a laminated copy of the infographic, as well as a small supply of printed copies. The folder included the instructions about when to distribute the infographic, and adding the infographic to the EHR. In order to gather data about how many midwives were engaging with the project, a short survey consisting of three questions was asked of the midwife during their shift. These questions included: *Did you review the lactation infographic with the patient at the bedside? If*

so, how many? Did you feel prepared to answer questions related to the lactation infographic? Did you attach the infographic to the AVS? (Appendix D).

The print and/or digital version of the infographic was given to midwifery patients on the day-of-discharge over the two PDSA cycles that ran from October 1 through October 31 2023, and November 1 through November 30, 2023. The midwife or midwife student talked through the handout at the bedside with the patient so they understood how to use it, and when it might be helpful. The midwives were emailed weekly with updates to the workflow, and feedback was sought between the first and second PDSA cycles about what could be improved.

Surveys were reviewed daily by the doctoral project student leader, and the data on responses to the 3 questions were input into an Excel database secured on One Drive. Chart review was not conducted as it was not included in the plans for the workflow that was provided to the IRB prior to the beginning of the project; its absence did not impact the aims of the study. Protected data were not disclosed or used in any way. Eligibility included midwives who were involved in the care of patients who had a vaginal delivery and were breastfeeding or planning to breastfeed.

Study of Intervention

Assessment of this intervention happened in two PDSA cycles. The first measured how many midwives engaged with the project. The second PDSA cycle aimed to engage more midwives, and determined whether midwives felt prepared to answer questions related to the intervention. The first cycle was useful in understanding which aspects of the project functioned well and aspects that were not being adopted.

Success of the intervention was measured by two different surveys taken by the midwives, one that was disseminated between the two PDSA cycles, and one that was disseminated at the end of the project. Engagement was considered high if the surveys reflected that a large number of patients received the infographic, and also if the midwives felt prepared to answer questions relating to the lactation education on the infographic. Engagement was considered low if there were few responses to the survey, or if midwives did not feel confident in answering questions related to the information discussed.

The emails soliciting feedback between cycles one and two were an opportunity for midwives to engage with the material, in hopes of creating stronger commitment to the intervention.

Measures: Process, Outcomes, and Balancing measures

As this project aimed to have 75% of midwives discussing the intervention infographic with eligible patients on the day-of-discharge during cycle one, data were collected from the midwife-on-call via text message on whether the education was received. Patient identification information was not included. The responses to the survey were collected and measured. Given that the survey was only three questions, the ability to recreate this study is high indicating the results have a high chance of reliability. As this project aimed to measure midwife engagement with lactation education, the survey has a high chance of validity.

Analysis

A quantitative analysis of survey data determined the level of response from midwives regarding lactation information and midwives' confidence in answering questions related to the infographic. Variations or absences in data were explored, including why midwives may not have

engaged with the study. Weekly updates were emailed to all midwives and midwifery students aimed to remind and engage midwives in the intervention. The mid-point survey was an important communication tactic that provided free writing space for midwives to describe what was working with the intervention and what needed to change.

Another variable was the inclusion of per-diem midwifery staff. These midwives might not have had as much desire to engage or familiarity with the workflow of quality improvement projects at the practice. All midwives, including per-diem staff, were provided with the voice-over slide deck that included the workflow instructions. Beyond this, the student nurse-midwives were crucial in helping to engage staff midwives.

Ethical Considerations

Acknowledging that systemic racism has played a role in how lactation education is performed and received was a major ethical consideration of this project (Perumalswami & Laventhal, 2018). For the infographic component of this project, all pictures and resources included diverse populations in hopes of representing anyone who might be included in the intervention group. There is evidence to suggest that utilization of visual images can also improve access to information, particularly for populations with low health literacy (Center for Disease Control and Prevention, 2022).

As this project focused on standardization of midwifery workflow related to provision of patient education about lactation, an IRB request for determination of non-research status was sought and granted. No identifiable patient information was collected (Appendix E).

Results

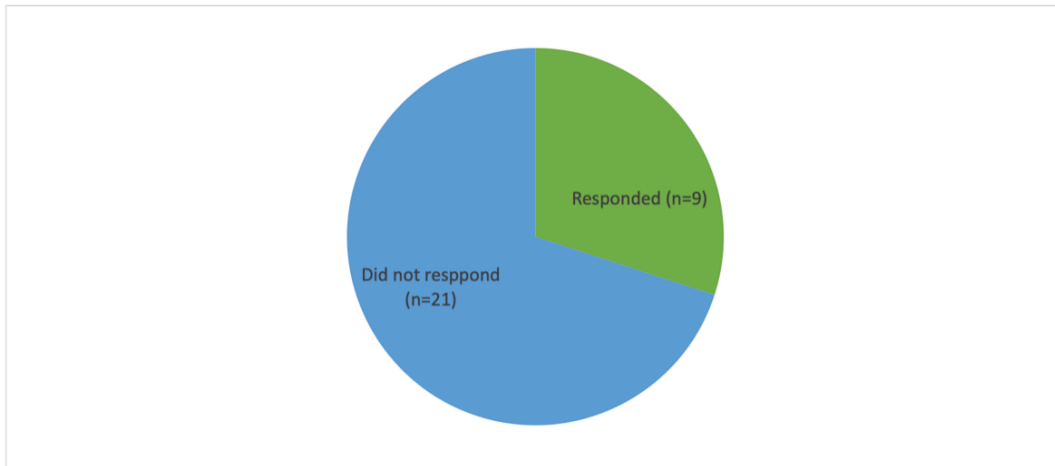


Figure 1
The number of midwives/midwifery students who did or did not reply to the mid-point survey. 9/9 respondents watched the voice-over slide deck.

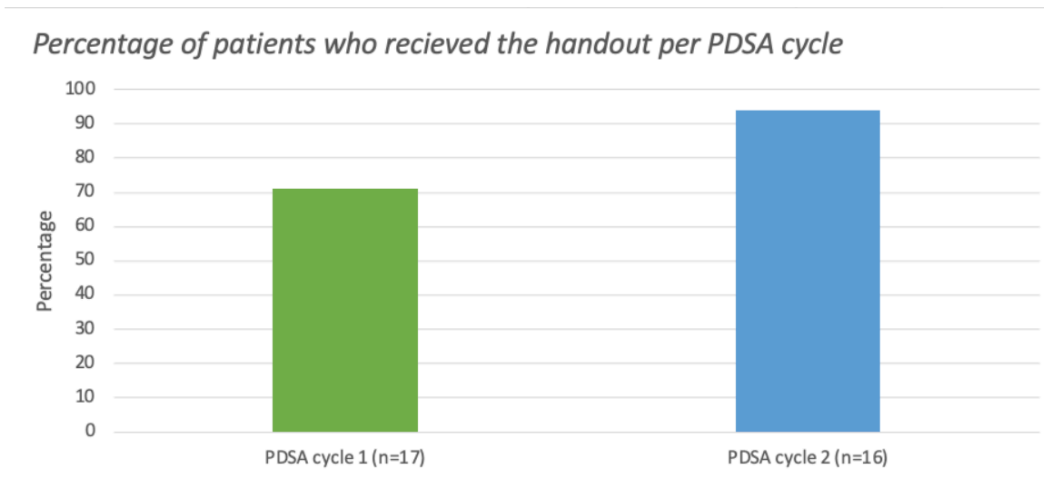


Figure 2
Percentage of patients who received the handout per PDSA cycle. Data were not collected four days in cycle one. Data were not collected seven days in cycle 2.

Of the 30 midwives or midwifery students who had the opportunity to complete the mid-point survey, nine completed the question related to if they had listened to the voice-over slide deck. Of the nine that responded to this question, 100% (9/9) reported they had watched the voice-over slide deck (Figure 1). In total, there is data to account for thirty percent of the

midwives or midwifery regarding the voice-over slide deck. The remaining 70% is unaccounted for. Eighty percent of eligible patients (33/41) received the infographic component of this project over the two PDSA cycles (Figure 2). Thirty percent (9/30) of midwives or midwifery students completed the entirety or aspects of the mid-project survey, and 40% (12/30) completed the entirety or aspects of the post-project survey. Of the 12 that completed the post-project survey question related to project success, 100% reported the project helped to promote consistent breastfeeding education.

Data were not collected on 18% (11/61) of eligible days. This was due to lack of response or no daily survey sent. For two of the days that patients were discharged but not involved in the intervention, per diem midwives were on call. The doctoral student sought out information from the student nurse midwife on these days to attempt to fill holes in the data. This reinforced the concern that non-faculty midwives have less buy-in, understanding of, or desire to participate in quality improvement projects than faculty midwives. However, there were more days where no data were collected that faculty midwives were on-call (4/11). Some possible explanations for this include the midwife being too busy on the floor to respond or forgetting to respond to the daily survey sent out by the doctoral student (7/11). On the days when no survey was sent, the primary investigator, who was a doctoral student, was on call or post-call (Appendix A). There were no discharges 34% of the days (21/61).

Unintended consequences for this project included the feedback that patients desired paper copies of the infographic. This was unanticipated and not included in the budget. As a result, a QR code was developed to help provide the patients with direct access to the infographic without a paper copy. A failure of this project was the lack of participation in the viewing of the

voice-over slide deck with only 30% (9/30) of midwives and midwifery students having viewed it. Further, there was difficulty in identifying who had responded to the mid-point and post-project surveys as the results were anonymous, meaning the exact midwives who were involved was not identifiable. Further, not all questions were answered in each survey.

Summary

One of the most relevant results from this quality improvement study was that midwives and midwifery students felt the study helped to promote consistent breastfeeding education. The initial aim of the project was to have 100% of midwives and midwifery students having watched the voice-over slide deck. At the end of this project, it was found that only 30% of the target population had watched the voice-over slide deck, as 70% did not respond to the mid-point survey, there is no way to determine if they watched the voice-over slide deck. The secondary aim was to have 75% of midwives be engaged with this project. The result was that 68% (15/22) of midwives were engaged with this project. As for the final aim, there was poor engagement regarding midwives' comfort answering questions, and therefore it is difficult to assess whether the midwives were not responding to this question because they felt comfortable or uncomfortable with lactation information.

Strengths of this project included reproducibility, and ease of modifications that were able to take place in this project. The project's greatest strength was that the infographic utilized the Knowledge to Action framework to promote standardized evidence-based education.

Interpretation

The aims of this project were not met. This could be due to a myriad of factors including poor utilization of the voice-over slide deck, lack of buy-in from the midwives, lack of

appropriate reminders to the project including the multiple surveys, surveys too lengthy, lack of time to complete the project on the unit, and time conflicts for the doctoral student leader. Even with less-than-expected participation in the surveys, there was universal agreement that the infographic promoted standardized lactation education amongst those who responded to surveys. The results of this project are in line with other studies that mention how infographics can help promote lactation education; however, at the time of this publication there are no studies to directly compare this project. This project had an impact on this midwifery system as it required more postpartum rounding time which was difficult on busy days on the unit. This is a trade-off in that there may have been differences in how much time was spent with each patient based on time constraints of the unit.

Limitations

Factors that limited internal validity included imprecision in the design, as the aims were not exactly aligned with the daily survey that was administered. Because submission for the mid-point and post-project surveys was anonymous, there was no way to track the independent participation of each survey. Another limiting factor is the inherent risk in human-initiated surveys as they can be forgotten or not responded to. This was the case in this project as there were seven days in which the doctoral student leader was not able to complete the survey due to external forces including their own clinical duties and four days in which midwives did not respond potentially for similar reasons. Similarly, no data was collected for those 11 days, and that could change the results as well as the percentage of people who received the infographic. Furthermore, there were flaws in the data collection method which could result in different analysis of the data.

The limitations to the generalizability of this study include the time it took to create the infographic. Practices without a doctoral program may not have the resources, or the budget, to create a tailored infographic. As mentioned above, this project added extra minutes to the postpartum visits which might not be possible in all practices.

An unexpected element that was not considered during the planning phase was the number of days when there were no discharges, which amounted to be 34% of days (21/61), limiting the data points to measure midwife engagement. Similarly, there is the possibility this number could be higher with the days missing data.

The number of midwives or midwifery students who watched the voice-over slide deck was a factor that potentially limited the results of this project. As only 30% of eligible midwives or midwifery students viewed, or responded to the survey that they had viewed the voice-over slide deck, the vast majority (70%) of providers may not have known the work flow of the project before being asked to implement it. This could have skewed the data regarding if the midwives were comfortable with the data as they may have not known the goals of the project or the information they were meant to understand.

Conclusions

This work was an initial movement into standardizing day-of-discharge lactation education for midwives in a faculty practice. This project is sustainable with modifications to the workflow, including adaptations to the infographic to fit for patient education level and format. There is considerably large potential to spread to other contexts as the workflow was simple and easy to follow. This workflow and project are helpful in beginning to understand how midwives in this practice view standardized lactation education, and how they might implement it in the

clinical setting. Next steps for this project include modifying the infographic and workflow to better fit the setting and practice conditions to promote sustainability. The practice has identified a midwife champion who is a IBCLC (International Board Certified Lactation Consultants) who can work with the midwifery practice to identify how to optimize lactation knowledge among the midwives. Furthermore, with the insufficient knowledge regarding midwives' confidence with the material, there are still more gaps to identify what lactation content providers are comfortable with. There are also gaps with determining how to further assess if patient's are absorbing and utilizing the knowledge learned on the day-of-discharge. There is a possibility that the two- and six-week visits might be an opportunity for this. Understanding how to evaluate and document next steps is another gap to fill as there will no longer be daily student reminders to collect data. There are many gaps that will continue to be addressed in future projects.

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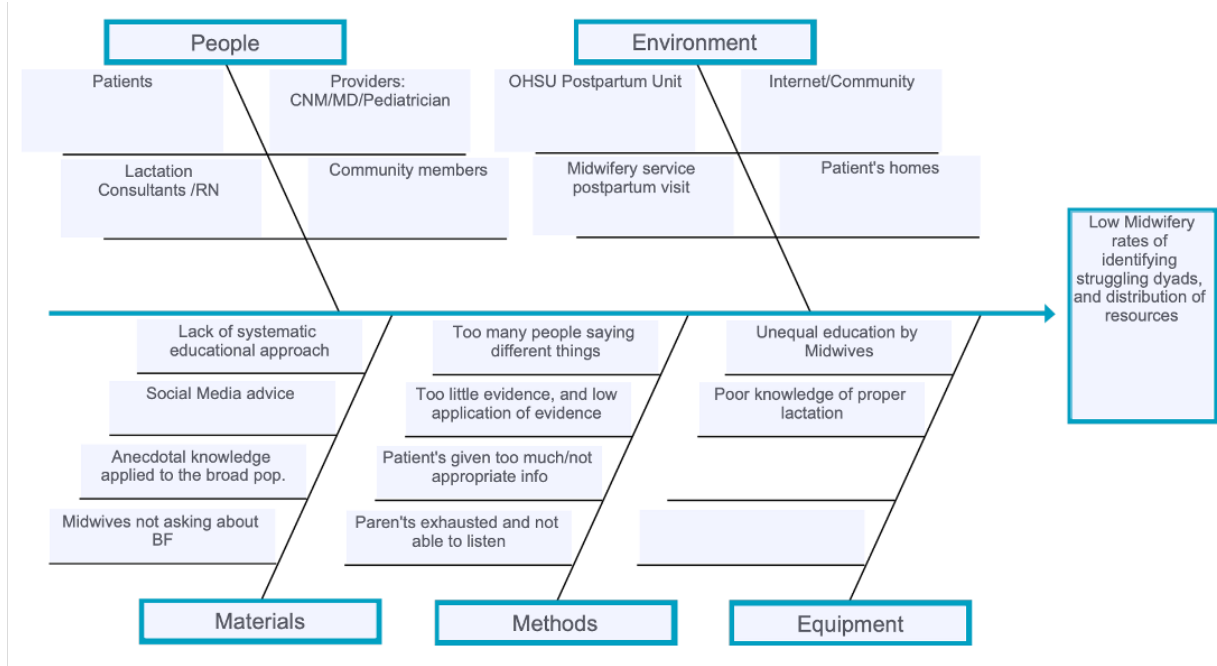
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Appendix A Cause and Effect Diagram



Appendix B Infographic

Top Tips for Feeding Your Baby

Baby's Stomach Size, Milk Volume, and Diaper Expectations

<p>Day 1 Stomach: size of a grape (5-7ml) Milk: Colostrum is created. Diapers- Wet: 1+ Dirty: 1-2 </p> <p>Day 3 Stomach: size of a cherry tomato (22-27ml) Milk: Transition milk can begin to come in Diapers- Wet: 3+ Dirty: 2+ </p> <p>Day 5 Stomach: size of a cherry tomato (22-27ml) Milk: Transition milk continues Diapers- Wet: 6+ Dirty: 3-4+ </p> <p>Day 30 Baby's Stomach: size of a lime (80-150ml) Milk: Mature milk has come in Diapers: Can vary day to day but shouldn't be less than one week old. </p>	<p>Day 2 Stomach: size of a grape (5-7ml) Milk: Colostrum. Diapers- wet: 2+ Dirty: 1-2 </p> <p>Day 4 Stomach: size of a cherry tomato (22-27ml) Milk: Transition milk continues Diapers- Wet: 5+ Dirty: 2+ </p> <p>Day 7 Stomach: size of a strawberry (45-60ml) Milk: Transition milk continues Diapers- Wet: 6+ Dirty: 3-4+ </p>
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How do I know if my baby is getting enough?

- My baby goes from fussy to calm after feeding, breasts feel less full, baby pulls away from breast, and the number of diapers are as expected.
- Total feeds in a day should be 8-12 in a 24 hour period
- Baby's weight is monitored at routine newborn visits. They are usually back to their birth weight by day 10-14. If you have any concerns about weight gain or loss contact your pediatrician or lactation consultant. Your pediatrician will let you know if they are concerned.
- [Top 5 Tips to Know if Baby is Getting Enough Milk](#)
- If you are concerned baby isn't latching in the first few days: (8 minutes)

Deep Versus Shallow Latch

- Deep latch: Baby's chin touches your breast, baby's mouth is wide around your breast
- Shallow latch: Your nipple looks pinched or misshapen, latch is painful, baby's mouth is not open wide, baby is only attached to the nipple. If you have any concern reach out for help. Information available in the resources section.
- [Attaching Baby at Breast \(11 minutes\)](#) • [Attaching more comfortably \(1 minute 20 seconds\)](#)

Ways to Support Your Supply

Nutrition

- Producing breastmilk requires an extra 330-400 calories and 2.5-3 Liters of water per day. Keep a snack and water bottle nearby while feeding your baby.
- Your body will take what it needs to make high quality breastmilk.
- Keep taking your prenatal vitamin.
- Ask your provider about any supplements or medications while breastfeeding.

Hormones

- Skin to skin before feedings will help to increase the hormones used in producing and releasing milk.
- The reset position is another great way to reconnect when baby gets fussy or to start a feed. Place baby skin to skin with their head on your chest and their body and legs laying on your stomach.

General Tips

- Lactation is driven by supply and demand. The more you empty your breasts, by either pumping or feeding, more will be produced.
- 60% of people stop their lactation journey before they are ready. One of the main reasons is they fear they do not have enough supply. Setting up an appointment with your pediatrician or lactation consultant if you have any concerns about baby's weight, or questions about your supply is a great way to set your family up for success.

Resources:

[OHSU Resources](#)

[OHSU Outpatient Lactation Services\(503-418-4500\)](#) Virtual or in-person appointments on 7th floor of Center for Women's Health

[Community Resources:](#)

[Providence Lactation Center:](#) Available Monday-Sunday 8-5 (503-537-1400)

[Tongue Tie Consultant Dr. Ghaheri,](#) offices in Portland and Gresham (503-488-2626)

[La Leche League:](#) A great resource that answers many different questions, and access to support groups

[CDC Milk Storage Guidelines](#)

Private lactation services are available throughout the Portland area. Some may take insurance.

Appendix C

Project Timeline

Pre-project administration:

9/13/2023: Voice over slide deck sent to all 22 midwives and 8 midwifery students

10/01/2023: Email sent to midwifery students to inform them of project

10/01/2023: project begins.

PDSA Cycle 1:

10/01/2023: First daily survey is sent out

10/06/2023: No response from per diem midwife, Spok Mobile sent out to SNM on call to retrieve how many people were discharged and if they knew if the midwife participated

10/07/2023: No response, faculty midwife on call

10/08/2023: No response from per diem midwife, Spok Mobile sent out to SNM on call to retrieve how many people were discharged and if they knew if the midwife participated

10/16/2023: Morning reminder was trialed

10/21/2023: No information due to doctoral student unable to send out survey

10/24/2023: No information due to doctoral student unable to send out survey

10/27/2023: Mid-point survey released

PDSA cycle 2:

11/1/2023: PDSA cycle 2 begins, paper copies are no longer available and QR code is implemented

11/4/2023: No response, faculty midwife on call

11/6/2023: Mid-point survey reminder

11/9/2023: No response, faculty midwife on call

11/10/2023: No response, faculty midwife on call

11/15/2023: No information due to doctoral student unable to send out survey

11/20/2023: No information due to doctoral student unable to send out survey

11/24/2023: No information due to doctoral student unable to send out survey

11/27/2023: No information due to doctoral student unable to send out survey

11/28/23: No information due to doctoral student unable to send out survey

12/1/2023: PDSA cycle 2 ends

Post-project:

12/2/2023: Final survey administered

12/15/2023: Final survey reminder

Appendix D
Daily Survey

<i>Daily survey sent to the midwife on call via Spok Mobile</i>	
<i>Did you review the lactation infographic with the patient at the bedside?</i>	Yes/No
<i>Did you feel prepared to answer questions related to the lactation infographic?</i>	Yes / No
<i>Did you attach the infographic to the AVS?</i>	Yes / No

Appendix E IRB Determination

Template:IRB_T_Post-Review_NotHumanResearch

Notification of Not Human Research Determination

To: Sally Hersh

Link: [STUDY00026291](#)

P.I.: [Sally Hersh](#)

Title: Midwifery Discharge Lactation Education

Description: The committee reviewed this submission and assigned a determination of Not Human Research. For additional details, click on the link above to access the project workspace.