A Quality Improvement Program the Using Ready, Set, Baby Curriculum During the Baby Friendly Designation Process

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Abstract

Objective: To evaluate the effects of the Ready, Set, Baby (RSB) program based on staff satisfaction and knowledge of perinatal education during the Baby Friendly Hospital Initiative (BFHI) designation process, and to evaluate program effect on maternal knowledge and confidence in initiating and maintaining a breastfeeding relationship. **Design:** A mixed-method quality improvement program. **Setting:** A rural obstetrics and gynecology office and its affiliated labor, delivery, recovery, and postpartum unit, which accommodates approximately 400 births per year. **Participants:** A convenience sample of 26 physicians, nurse practitioners, registered nurses, and a lactation consultant employed by the obstetrics and gynecology office and hospital, and 23 expectant mothers who were established patients at the obstetrics and gynecology office participated. **Interventions/Measurements:** RSB was implemented for staff and mothers with complementary education to reinforce learning. Staff satisfaction with perinatal educational processes, documentation of required education in the electronic health records, and self-reported staff knowledge regarding BFHI practices were evaluated for primary outcomes. Secondary outcomes included maternal knowledge of BFHI perinatal practices and increased confidence in initiating and maintaining a breastfeeding relationship. **Results:** There were significant improvements for staff satisfaction and documentation outcomes. Expectant mothers had increased knowledge of and confidence in using perinatal practices to facilitate breastfeeding. **Conclusion:** RSB is valuable for increasing staff satisfaction and maternal learning objectives during the Baby Friendly designation process.

Keywords: breastfeeding; perinatal education; quality improvement; Baby Friendly Hospital Initiative; “Ready, Set, Baby.”

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Human breastmilk offers perfect nutrition, and breastfeeding is the optimal way to feed infants during the first six months of life (Carolina Global Breastfeeding Institute [CGBI], 2015). Infants benefit from breastmilk because it is more easily digested than infant formula and offers protection from ear infections, allergies, diarrhea, cancers, diabetes, and protects against sudden infant death syndrome (CGBI, 2015). Breastmilk is unique in that it changes in response to the environment and continuously meets the infant's needs (CGBI, 2015). In the United States, 81.9% of infants begin breastfeeding, 25.5% of infants are exclusively breastfeeding at six months, and 30.7% are receiving any breastmilk at one year (The Centers for Disease Control and Prevention [CDC], 2018; Parry et al., 2017). The short duration of reported breastfeeding indicates a further need for breastfeeding education and promotion (CDC, 2018; Parry et al., 2017).

The Baby Friendly Hospital Initiative (BFHI) is an international program designed to inform women, increase confidence, and teach skills to promote breastfeeding initiation and exclusivity (Baby Friendly USA, 2021). The BFHI uses 10 steps to successful breastfeeding to promote evidence-based practices, including written breastfeeding policies; staff training; informing all expectant mothers of the benefits of breastfeeding; assisting mothers to initiate breastfeeding within an hour of birth; showing mothers how to breastfeed and maintain lactation when separated from their infant; giving only breastmilk to infants unless medically indicated; practicing rooming-in; encouraging breastfeeding on demand; providing no artificial nipples; and establishing a breastfeeding support group (Baby Friendly USA, 2021). Facilities that are successful in fulfilling all facets of the 10 steps to successful breastfeeding earn the prestigious

Baby Friendly Hospital Designation (Baby Friendly USA, 2021). Healthcare providers have mixed opinions of the BFHI. Some resent it due to the burden of providing additional education, while others appreciate the BFHI and its ability to educate women and improve the lives of families (Schmied et al., 2014).

Ready, Set, Baby (RSB) is a user-friendly curriculum employed to educate expectant mothers throughout pregnancy and reflects current BFHI recommendations (Parry et al., 2017). Implementation of RSB streamlines the educational process, improves staff satisfaction with patient education, and ensures consistency in maternal education (Cohen et al., 2018). The RSB program ensures women receive prenatal breastfeeding education with resources for support during and after pregnancy including long-term feeding routines and coping strategies to increase breastfeeding initiation, duration, and exclusivity (Munn et al., 2016; Cohen et al., 2018).

Review of Literature

Exclusive breastfeeding is beneficial for mothers and infants and provides a healthy foundation for growth, development, nourishment, hydration, and immunity (Parry et al., 2017; CDC, 2019). Mothers are encouraged to exclusively breastfeed infants for the first six months of life with continued breastfeeding through at least 12 to 24 months in the absence of contraindications to breastfeeding such as maternal HIV infection, maternal use of certain medications, or maternal alcohol or drug abuse (Parry et al., 2017). Breastfeeding successes are multifactorial and dependent on use of BFHI perinatal education, staff perceptions of breastfeeding, and maternal factors affecting breastfeeding (CGBI, 2015; Cohen et al., 2018; Kavle et al., 2017; Lundeen et al., 2016; Munn et al., 2016; Parry et al., 2017; Schmied et al., 2014; Sinha et al., 2015; Whealan & Kearney, 2015).

Baby Friendly Hospital Initiative

The BFHI was created to alleviate worldwide breastfeeding disparities caused by the medicalization of breastfeeding (Schmied et al., 2014). The initiative was developed to support maternity centers and promote practices such as skin-to-skin contact and rooming-in, avoidance of unnecessary breastmilk substitutes, encouragement of baby-led feedings, and continued breastfeeding support after hospital discharge (Schmied et al., 2014; CGBI, 2015). The BFHI is linked to substantial increases in breastfeeding initiation, duration, and exclusivity rates (Schmied et al., 2014).

For an organization to attain the BFHI designation, there are two readiness surveys that must be passed. The first readiness survey focuses on staff knowledge and written policies where all physicians, nurse practitioners (NPs), and registered nurses (RNs) within the organization receive education consistent with BFHI practices (Baby Friendly USA, 2021). The second readiness survey focuses on maternal knowledge and documentation in the electronic health record (EHR) and mothers must be able to verbally indicate their knowledge of baby-friendly topics to surveyors (Baby Friendly USA, 2021). Surveyors perform chart audits to review staff documentation of BFHI maternal education which must be complete in at least 80% of EHRs (Baby Friendly USA, 2021). Implementation of BFHI practices is challenging and must be individualized to meet the facility's needs through modification of policies, organizational leadership, and staff training (Schmied et al., 2014).

Ready, Set, Baby

Educational interventions are essential to breastfeeding promotion and are more beneficial in the community setting than at-home educational programs (Sinha et al., 2015). BFHI practices increase breastfeeding initiation by 66% compared with other prenatal

breastfeeding programs (Sinha et al., 2015). Basic knowledge of breastfeeding and intentions to breastfeed are not sufficient to increase exclusive breastfeeding rates; however, planned length of exclusive breastfeeding, early initiation of breastfeeding, and prenatal counseling facilitate prolonged exclusive breastfeeding (Kavle et al., 2017; Marinelli et al., 2019). Antenatal breastfeeding education provided in a consistent manner, throughout pregnancy and the postpartum period, simplifies the mother's understanding of the breastfeeding relationship (Marinelli et al., 2019).

RSB is an educational program for women in any trimester of pregnancy developed by lactation consultants, breastfeeding researchers, maternal and child health students, and health educators to facilitate implementation of BFHI practices by providing education about what to expect after delivery, breastfeeding, common concerns, resources for support, and solutions for continued breastfeeding after mothers return to work (CGBI, 2015; Parry et al., 2017). RSB facilitates communication between expectant mothers and healthcare providers through use of flipcharts, vignettes, and open-ended questions (Parry et al., 2014). Satisfaction with the educational curriculum increases staff compliance and promotes evidence-based practices to increase effective breastfeeding (Lundeen et al., 2014).

Staff Perceptions

An optimistic perception of the BFHI by healthcare providers positively affects consistent delivery of perinatal education and care (Schmied et al., 2014). Healthcare professionals' views on birth and boundaries interfere with BFHI practices, and skeptics have deemed the BFHI as being unfriendly to mothers (Schmied et al., 2014; Wieczorek et al., 2016). Extensive staff development, education, planning, collaboration, and enthusiasm develop committed leaders to drive a system change (Schmied et al., 2014). Time, education, and

implementation of BFHI practices lead to staff reassurance, stakeholder ownership, positive patient responses, and interdisciplinary teamwork in staff members who initially meet BFHI changes with fear and resistance (Lundeen et al., 2016).

Maternal Factors

Factors that facilitate breastfeeding include prenatal breastfeeding support from healthcare professionals, an engaged support person, and participation in a breastfeeding support group (Whealan & Kearny, 2015). Prenatal breastfeeding education increases breastfeeding initiation by 41% and postpartum support improves early breastfeeding successes (Cohen et al., 2018; Nilsson et al., 2020).

Negative breastfeeding encounters are associated with interrupted immediate skin-to-skin contact, epidural analgesia, previous short durations of breastfeeding, and previous negative experiences with breastfeeding (Nilsson et al., 2020). Women report the major barriers to breastfeeding to be lack of time, conflicting education, and medicalization of breastfeeding (Whealan & Kearney, 2015). Maternal smoking is the factor most associated with lack of breastfeeding initiation, shortest duration, and lowest milk supply (Cohen et al., 2018). Cesarean delivery has a strong negative impact on breastfeeding initiation due to interrupted mother-infant dyad connection, increased maternal weight, and delayed lactogenesis (Cohen et al., 2018). Maternal employment is the most reported barrier to continued breastfeeding (Kavle et al., 2017).

In summary, exclusive breastfeeding rates in the United States are low, indicating further need for comprehensive staff and maternal educational programs (CDC, 2018; Parry et al., 2017). Modification of current educational models is foundational for practice changes to increase staff satisfaction (Lundeen et al., 2016). Consistent implementation of BFHI practices

through use of RSB increases breastfeeding initiation and duration, provides extra staff training, and ensures women receive prenatal breastfeeding education throughout pregnancy (Munn et al., 2016).

Framework Rationale

Rosswurm and Larrabee's model for evidence-based practice change was developed to facilitate change from intuition-driven traditional methods to practices based on evidence (White et al., 2016). The model for evidence-based practice change assesses the need for change, links problems with interventions and outcomes, synthesizes best evidence, designs changes in practice, implements and evaluates the changes, and integrates and maintains the changes in practice (White et al., 2016). RSB modifies traditional educational and infant feeding practices to align with current guidelines and promote exclusive breastfeeding (Parry et al., 2017). Consistent teaching of evidence-based research empowers new mothers on their breastfeeding journey.

Specific Aims

The purpose of this quality improvement (QI) project was to create a system change by implementing a streamlined process through which staff could educate expectant mothers using the RSB program. Primary outcome measures included staff satisfaction with educational content and processes, documentation of the education provided to mothers in the EHR, and staff knowledge of BFHI topics. Secondary outcomes included maternal knowledge of perinatal practices to increase successful breastfeeding and maternal confidence in initiating and maintaining a breastfeeding relationship. Process measures identified outcomes of staff satisfaction and knowledge, and maternal knowledge and confidence.

Methods

Context

This was a three-month prospective mixed-method QI project implementing the RSB program with additional complementary educational materials in an obstetrics and gynecology clinic and its affiliated labor, delivery, recovery, and postpartum (LDRP) unit. The hospital was a rural 355-bed facility with six birthing suites and two triage rooms.

Participants were a convenience sample of 26 office and LDRP staff members, including physicians, NPs, RNs, and an International Board-Certified Lactation Consultant (IBCLC), who participated in the system change and were surveyed for primary outcomes. Physicians provided medical care to expectant mothers and were asked to reinforce the education provided by RNs and answer any additional questions. NPs were the advanced-practice providers responsible for ensuring the overall health of infants during the hospitalization period and served as advocates and educators for mothers. RNs provided ongoing support to mothers through education, care, and assistance with practices such as immediate skin-to-skin contact, rooming-in, and breastfeeding. The IBCLC was the site stakeholder and facility coordinator in charge of the BFHI designation process and functioned primarily as a lactation consultant, but was also an experienced neonatal intensive care nurse.

Eligibility and inclusion requirements consisted of physicians, NPs, RNs, and IBCLCs with active roles in direct patient care who were English-speaking and had access to the computerized charting system. Exclusion criteria included non-English-speaking individuals and locum staff. Twenty-three expectant mothers were surveyed for secondary outcomes; they were established obstetric patients at the clinic in any trimester of pregnancy and were English-speaking women of any age with confirmed and viable pregnancies. Descriptive statistics for staff and maternal participants are presented in Table 1.

Intervention

RSB used a multidisciplinary team approach to care. Every staff member received the same training, and expectant mothers received consistent perinatal education. Office and LDRP staff were given a preimplementation survey to determine current levels of satisfaction and levels of self-perceived knowledge, after which they were presented with the RSB curriculum and complementary educational materials. As part of the BFHI designation process through the hospital, additional education was provided to staff that focused on the BFHI topics of skin-to-skin contact, rooming-in, breastfeeding positions and latch, assisting mothers to breastfeed, and hand expression education. Office staff received RSB flipcharts, complementary single-page educational handouts created specifically for this program to reinforce the RSB curriculum, and educational booklets provided by the hospital to educate expectant mothers at each prenatal appointment. Collaboration among staff and mothers was encouraged at each patient encounter through use of RSB program materials, which contained information staff and expectant mothers needed to know to obtain the BFHI designation.

In collaboration with staff, a topographical outline was established, which detailed complementary educational topics to cover at specific office visits. Breastfeeding education was provided at the eight-week prenatal appointment, skin-to-skin contact education at the 12-week appointment, feeding on demand at the 16-week appointment, positioning the baby for breastfeeding and correct breastfeeding latch at the 20-week appointment, rooming-in at the 24-week appointment, and information regarding labor at the 28-week appointment. All resources were organized according to weeks of gestation and stored in a centralized location to promote a streamlined process. In addition to the educational process, the QI program focused on

consistent documentation in the EHR. The office staff collaborated to determine the exact location where every provider would document the education provided.

LDRP nurses were also provided with additional training through the hospital to assist mothers with breastfeeding and were asked to reinforce the evidence-based information discussed during prenatal visits to postpartum mothers. LDRP nurses were shown where to document the education provided to mothers and were provided with a discharge checklist, a resource sheet, and electronic media to assist with maternal education. A discharge checklist was requested by staff to ensure that all required education was provided to each mother (see Appendix A). The checklists provided a quick reference for staff to visualize which educational topics needed to be discussed. The resource sheet was a comprehensive list of names, contact numbers, locations, and meeting times for local breastfeeding support placed in the front of each discharge booklet. During hospital admission, mothers and their partners watched a 10-minute digital media presentation focusing on infant feeding, safety, and postnatal care for mother and baby.

BFHI requirements state that there are to be no infant formula products, names, or logos visible to patients or visitors, so no infant formula preparation or bottle-feeding education was included in the discharge booklets (Baby Friendly USA, 2021). If a mother expressed the desire to formula feed after hospital discharge, she was provided with separate education regarding safe formula preparation.

Following the three-month implementation period, office and LDRP staff were provided with a follow-up survey to determine satisfaction with educational practices and knowledge augmentation. Retrospective chart reviews evaluated documentation of RSB education and

BFHI practices both three months before the QI program was implemented and three months after the program's completion.

Interventions for expectant mothers included education during each prenatal appointment utilizing the flipcharts, handouts, and educational booklets. Between 24 and 28 weeks of gestation, expectant mothers were registered for an educational seminar using the Microsoft Teams virtual meeting space. Each mother attended one of the sessions, which were offered bimonthly and lasted approximately 60 minutes. Sessions were taught by an IBCLC using a PowerPoint presentation on RSB education and other topics such as the pre-registration process, hospital information, and hospital COVID-19 policies. Expectant mothers were asked to complete initial and follow-up surveys before and after the session to measure increases in knowledge and confidence. Postpartum mothers also received monthly emails covering what to expect at various infant developmental milestones, infant safety education, breastfeeding support, and information for mothers. Data were collected over three months.

Study of the Intervention

Quantitative data on staff satisfaction were reported using anonymous electronic preimplementation and postimplementation surveys and focused on levels of satisfaction with use of perinatal educational content. Documentation outcomes were analyzed through a retrospective chart review and focused on BFHI practices and patient education in the EHR. Staff knowledge data were obtained through anonymous preimplementation and postimplementation surveys regarding BFHI-specific categories with which expectant mothers should be familiar.

Secondary outcome data on maternal knowledge and confidence were obtained through anonymous surveys before and after the Microsoft Teams educational sessions. Knowledge

topics were based on BFHI practices, and maternal confidence was evaluated based on confidence in initiating and maintaining a breastfeeding relationship.

Process measures from the preimplementation and postimplementation surveys were used to determine the overall program effect on satisfaction, documentation, knowledge, and confidence.

Measures

Staff Satisfaction

Quantitative data were collected using a Likert scale, where 1 was completely dissatisfied with the perinatal curriculum, and 5 was very satisfied. The impact of RSB was further explored through an anonymous qualitative questionnaire provided to staff after program implementation to determine RSB's impact on care provided, workflow, and staff satisfaction with RSB. Thematic analysis was performed to determine outcomes.

Documentation in the Electronic Health Record

BFHI practices and education recorded in the chart review included skin-to-skin contact, rooming-in, breastfeeding initiation, exclusive breastfeeding during hospitalization, assistance with breastfeeding, hand expression of breastmilk, pacifier use, hunger cues, resources for support after discharge, supplementation, and formula use and preparation education if indicated. Documentation of the perinatal practices and education within the EHR was reported as being absent, present, medically indicated reason, or maternal preference after education provided.

Staff Knowledge

Quantitative data on staff knowledge were collected using a Likert scale, where 1 was not familiar at all and 5 was very familiar. Self-reported staff knowledge included familiarity with the BFHI, familiarity with RSB, knowledge of benefits of breastfeeding, benefits of early

initiation of breastfeeding, importance of correct positioning at the breast, importance of correct breastfeeding latch, benefits of skin-to-skin contact, benefits of rooming-in, risks of formula supplementation, benefits of waiting eight hours to give the first bath, health benefits of breastfeeding for mother and infant, frequency of feedings, recognizing and explaining infant hunger cues, and recognizing and explaining infant fullness cues. A higher score indicated higher self-reported knowledge.

Maternal Knowledge

Secondary outcome data for maternal knowledge were collected using a Likert scale questionnaire on a scale of 1 to 5, where 1 was no knowledge, and 5 was very knowledgeable.

Maternal Confidence

Secondary outcome data for maternal confidence were measured on a Likert scale of 1 to 5, where 1 was no confidence, and 5 was very confident.

Process Measures

Process measures examined the responses provided on the preimplementation and postimplementation surveys and were used to identify changes in staff satisfaction and knowledge, as well as maternal knowledge and confidence.

Data Analysis

Data from the quantitative surveys were entered and stored in Intellectus Statistics, an online, privacy-protected statistical program. *P*-values were calculated using a 95% confidence interval.

Staff satisfaction was evaluated using quantitative and qualitative measures. Wilcoxon rank-sum tests were used to determine the effects of the primary intervention on staff satisfaction

before and after QI program implementation. Qualitative responses were further reviewed to gain specific insights. Content and thematic analyses were performed on staff responses.

Chi-square and Fisher's exact tests were used to compare preimplementation and postimplementation documentation in the EHR for randomly selected charts. Chart-reviewed data compared documentation outcomes for the data collected in the EHR. Binary logistic regressions were used to determine if vaginal or cesarean mode of delivery significantly impacted breastfeeding initiation or exclusivity.

Wilcoxon rank-sum tests were used to determine primary intervention effects on staff knowledge before and after implementation of the QI program. Self-reported staff knowledge included familiarity with the topics outlined in the Staff Knowledge section.

Wilcoxon rank-sum tests were used to determine secondary intervention effects on expectant mothers before and after the educational seminar. Topics compared were mothers' intent to initiate breastfeeding or formula feeding; planned period of breastfeeding; knowledge of educational topics recorded in the EHR; and confidence in ability to initiate and maintain a breastfeeding relationship.

Process measures evaluated individual matrices for staff and maternal survey responses to determine primary and secondary outcomes. *P*-values were reported to be significant for α values <0.05.

Ethical Considerations

The QI program was approved by the Institutional Review Board at Lenoir-Rhyne University, Hickory, North Carolina and through the facility's research committee. Implied consent was obtained if participants completed the surveys. Participants remained anonymous as

personally identifiable information was not collected. There were no risks associated with this program as it was designed to improve upon the educational system previously in place.

Results

Quantitative Staff Satisfaction

Results from the staff quantitative pretests and posttests revealed no statistically significant differences in satisfaction with RSB use; however, median posttest satisfaction scores were higher than pretest scores. Survey results are in Table 2.

Qualitative Staff Satisfaction

Qualitative analysis revealed encouraging outcomes regarding RSB use increasing staff satisfaction with the provision of perinatal education. Four overarching themes were identified with regards to implementation of RSB, which included use of RSB with complementary education, impact on staff workflow, impact on maternal knowledge, and changing dynamics within the organization.

Theme 1: Ready, Set, Baby With Complementary Education

Use of RSB content with educational handouts met the specific needs of staff and expectant mothers and was valuable to the organization throughout the BFHI predesignation phase. As one respondent stated, “The program has been vitally important for developing visual aids, slide shows, and those types of resources. Visual displays have definitely been an addition and plus to our program.” Additionally, expectant mothers were encouraged to take the handouts home after the prenatal appointment, which further met their educational needs. Another provider stated, “there have definitely been improvements with [use of the] handouts to discuss at each visit with the other visual aids.” Overall, staff consensus was that the QI program “was a

great improvement [compared with previous processes] with the printed sheets to give to our patients at each visit."

Theme 2: Impact on Staff Workflow

Staff had varying views regarding how their workflow was impacted by use of RSB. One staff member had previously worked in a BFHI-designated facility, was accustomed to providing the education found in the RSB program, and found there was "no negative impact" to using this QI initiative. Another staff member was bothered by the limited timeframe during which education was to be provided and stated, "OB appointment times are 15-minute visits, and this leaves little time to discuss in length." As with any change in practice, there was an adjustment period, and some interruption in usual workflow was expected. As another staff member reported, "[it was] more time consuming initially but is now part of the daily routine." As time progresses, implementation of the program becomes easier, initial apprehensions dissipate, and a new workflow is developed (Lundeen et al., 2016).

Theme 3: Impact on Maternal Knowledge

Prior to the QI program, nurses reported that mothers were not always well-informed about BFHI practices. According to staff, "[the QI program] has definitely improved mothers' knowledge before delivery," as mothers arrived at the hospital with the expectation of engaging in skin-to-skin contact and rooming-in with their newborns. Staff members were thankful for RSB and complementary education because "it gave more opportunities to speak with our patients about breastfeeding and is especially great for first-time moms." Consistency in maternal education from staff provides clear guidance and ensures that all mothers are informed to make educated decisions about choices surrounding the birth of their babies (Baby Friendly USA, 2021).

Theme 4: Changing Dynamics Within the Organization

Consistent with the literature, there was a division among staff, as some believed BFHI practices tried to force mothers to breastfeed, while others appreciated the opportunity to ensure mothers had current best-practice education to promote informed decision-making (Schmied et al., 2018). An anonymous participant discussed the QI program's ability to positively impact the organization's cohesiveness during the BFHI designation process:

> The program has been a good asset for communication and cooperation with [the office staff] because you have such a different dynamic when you are part of a hospital team versus an office team. It is a little hard to understand how workflow goes. The program was well-accepted into the [office] atmosphere and with the nurses. We all collaborated, and the staff were willing to try using the handouts to assist with making sure the education was being reinforced.

With time, the program became more accepted into the culture of the office and LDRP unit. Positive staff and maternal outcomes increased the program's acceptability within the organization (Lundeen et al., 2016). Another staff member reported, "We really feel like this program has changed, and that acceptance of the program by the staff and patients has increased." Changing dynamics "have been helpful in our hospital becoming ready for the baby-friendly designation."

Documentation in the Electronic Health Record

Outcomes of chart-reviewed documentation revealed statistically significant improvements for rooming-in, exclusive breastfeeding rates, and pacifier-use education (see Table 3). Overall, staff documentation was trending in a positive direction and improved in most categories.

Binary logistic regressions were calculated and showed that facility outcomes were consistent with findings in the literature stating that mode of delivery significantly impacted breastfeeding initiation and duration (Cohen et al., 2018). If an infant was born by cesarean section at the facility, there was a significantly decreased likelihood of the infant ever being breastfed or exclusively breastfed (see Table 4). The odds of infants ever being breastfed increased by 70% and the likelihood of exclusive breastfeeding increased by 86% for infants born by vaginal deliveries compared with those born by cesarean section.

Staff Knowledge

Quantitative analysis of staff outcomes for increasing knowledge revealed no statistical differences with use of the RSB program (see Table 2). Median score analysis did show knowledge increases for familiarity with the RSB program, knowledge of the benefits of breastfeeding, and confidence in recognizing and explaining hunger cues.

Maternal Outcomes

Secondary outcomes for expectant mothers revealed significant increases in maternal knowledge and confidence topics outlined in Table 5.

Discussion

Summary

QI strategies implemented included staff engagement, staff education, streamlining of educational processes, centralization of educational resources, organization of multiple points of contact and types of educational modalities, and establishment of consistency in maternal education and postdischarge education. Evidence-based guidelines and protocols were used and designed to increase satisfaction with perinatal education, enhance knowledge, increase confidence, monitor processes, and track outcomes. The QI strategies assisted the facility in

translating evidence-based guidelines into evidence-based care, and it has thus successfully achieved the first step in gaining the BFHI designation by passing the first readiness survey. Implementation of this QI program contributed to an adoptable system change in the facility to meet desired outcomes.

Interpretation

Primary staff outcomes for program satisfaction significantly increased based on the results of qualitative staff responses. Use of RSB with educational handouts to reinforce BFHI topics created an educational process to better suit the needs of staff and expectant mothers. Staff felt there was overwhelming improvement in educational practices with the addition of single-page handouts that were comprehensive enough to meet maternal educational needs yet streamlined enough to have minimal, if any, impact on workflow. In an environment where in-person contact time is limited to 15 minutes, staff appreciated simple and easy-to-use program materials. Modification of the educational process made the program more appealing to staff and led to improvements in staff satisfaction with perinatal education (Lundeen et al., 2016).

Staff perceived RSB to be a great facilitator for opening communication and promoting collaboration between office and hospital staff. The program was appealing and well-accepted by staff and received encouraging maternal feedback, which facilitated program adaptation into daily practice (Lundeen et al., 2016). The team approach with effective collaboration, established in the QI program, was advantageous for changing staff attitudes and perceptions of the BFHI designation (Lundeen et al., 2016; Wieczorek et al., 2016).

Identification of required educational topics and the specific locations to document the education were essential to improving documentation outcomes in the EHR. Inconsistencies in documentation is a limitation for achieving the BFHI designation (Munn et al., 2016).

Retrospective chart audits revealed significant improvements for documentation of rooming-in, exclusive breastfeeding, and pacifier-use education, with upward trends in documentation of mothers engaging in skin-to-skin contact, hand expression education, and hunger cues education. For a hospital to pass the second readiness survey and achieve the BFHI designation, documentation in the EHR must align with maternal knowledge and be found in at least 80% of cases (Baby Friendly USA, 2021).

Primary staff outcomes for knowledge revealed minimal improvements, which was not surprising as 59% of staff had 10 or more years of experience working with expectant mothers. In comparison, only 11% of staff had less than one year of experience with obstetric mothers. Experienced staff had a plethora of knowledge and experience, but shifting research-based knowledge into everyday practice is a time-consuming and challenging task (White et al., 2016).

Maternal participants, especially first-time mothers, benefited from improved educational processes and the Microsoft Teams educational session to improve knowledge and confidence. Visual displays and PowerPoint presentations were appreciated by staff and were helpful in the facility's educational procedures to promote uniformity in delivery of education, especially on breastfeeding. Consistent delivery of BFHI practices, through RSB, ensured that mothers received effective education and support during and after pregnancy (Munn et al., 2016).

Expectant mothers came to the office for obstetric care with preformed familial, cultural, and societal views on infant feeding practices. Cultural expectations, lack of social support, and poorer socioeconomic status negatively impact breastfeeding initiation and duration (Anstey et al., 2017). Results from this QI program revealed that 76% of mothers began breastfeeding with an exclusivity rate of 55% during hospitalization. Among North Carolinians, 80% of White non-Hispanic women initiated breastfeeding, and 22.2% exclusively breastfed at six months,

compared to Black non-Hispanics, who had an initiation rate of 66% and an exclusivity rate of 16% at six months (Anstey et al., 2017). Breastfeeding initiation rates from the RSB program were consistent with usual breastfeeding initiation rates in the region.

Analysis showed maternal knowledge significantly increased in several categories related to skin-to-skin contact, infant feedings and fullness cues, and confidence in initiating and maintaining a breastfeeding relationship. These findings were supported by retrospective chart-reviewed data, which showed upward trends in mothers engaging in skin-to-skin contact and exclusive breastfeeding rates and decreased infant formula supplementation rates. The journey to becoming a BFHI-designated facility is lengthy, and staff should focus on positive achievements while realizing that goals are accomplished one step at a time (Schmied et al., 2014). Analysis of nonstatistically significant outcomes on correct positioning and latch to facilitate breastfeeding, infant fullness cues, and the benefits of early breastfeeding showed future opportunities for modification of education to further meet the needs of expectant mothers.

Future studies should determine if RSB and complementary handouts have similar or different effects on first-time mothers versus second-time mothers with regards to knowledge augmentation or confidence levels. Prior experiences with perinatal education could be advantageous or disadvantageous when educational processes seek to fulfill BFHI requirements and promote exclusive breastfeeding (Zarshenas et al., 2018). RSB should be reviewed to determine if its use has the potential to alter mothers' decisions to breast or formula feed after delivery, taking into consideration cultural perceptions of breastfeeding (Anstey et al., 2017). Studies should also be used to validate the usefulness of postpartum educational emails sent to mothers. Exclusive breastfeeding duration increases when breastfeeding advice and skilled support are provided after delivery (Khanal et al., 2015).

Use of RSB to improve perinatal educational practices is generalizable to any obstetric care provider. The facility had additional motivation to utilize the RSB curriculum as it was attempting to attain the BFHI designation during the QI program's implementation. RSB is appreciated for its graphics, vignettes, and adaptability to meet individual needs (Parry et al., 2017). Use of RSB and complementary materials in office and hospital settings is sustainable due to overall improved staff satisfaction with educational procedures, improved staff EHR documentation, and increased maternal knowledge and confidence levels to promote exclusive breastfeeding. Overwhelming evidence supported RSB's ability to change mindsets to empower the facility to achieve the BFHI designation.

Limitations

This QI program had limitations, including that it was implemented during the COVID-19 shutdown, which restricted in-person contact and reduced maternal participation to 52%. Prior to the COVID-19 shutdown, expectant mothers had monthly in-person appointments at the obstetrics and gynecology office; however, during the time of implementation, in-person office visits were restricted to appointments where testing or scans were completed. More appropriate timing of maternal surveys, such as at the initial office appointment at eight weeks gestation and then after the online Microsoft Teams session at 28 weeks, may facilitate a more comprehensive view of RSB's impact on maternal knowledge and confidence levels. Additionally, surveys used a Likert scale and may have been subject to participant bias; a knowledge-based test may have been more helpful for understanding true changes in knowledge. Finally, there was a limited timeframe of three months. Given additional time, results in focus areas that showed improvements may have become statistically significant.

Conclusion

RSB was provided to perinatal staff and expectant mothers through an evidence-based QI initiative in a collaborative care model. The program was largely successful in improving staff satisfaction with perinatal educational procedures, improving staff documentation in the EHR, and increasing maternal knowledge of perinatal topics to increase exclusive breastfeeding. RSB provided the rudimentary steps for achieving the BFHI designation through fulfilling the first step and providing a segue to the second step in the BFHI-designation process. The facility is continuing its journey to become a BFHI-designated maternity center and uses RSB with complementary educational materials to meet the ongoing needs of staff and expectant mothers.

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Table 1

Descriptive Statistics for Staff and Maternal Participants

Measure	***n***	**Percent**
Staff participants	*n* = 26	100%
Staff participation in pre-educational session	*n* = 26	100%
Staff completion of quantitative surveys	*n* = 17	65%
Staff completion of qualitative surveys	*n* = 6	23%
Staff years of experience with OB patients	0–1 year, n = 2	11%
	2–4 years, n = 1	6%
	5–7 years, n = 2	12%
	8–10 years, n = 2	12%
	10+ years, n = 10	59%
Maternal Participants	*n* = 23	100%
# of live births during implementation period	*n* = 77	100%
# of maternal participants enrolled in Microsoft Teams session	*n* = 65	86%
# of maternal participants who attended Microsoft Teams session	*n* = 40	52%
# of maternal participants who completed pre/post surveys	Pre, *n* = 21	53%
	Post, *n* =23	58%
Age	23–27 years, *n* = 8	35%

	28–32 yeas, *n* = 8	35%
	33–37 years, *n* = 5	22%
	38+ yeas, *n* = 2	8%
Race	Caucasian, *n* = 20	88%
	African American, *n* = 1	4%
	Asian, *n* = 1	4%
	American Indian, *n* = 1	4%
Level of Education	High school diploma, *n*= 5	22%
	GED, *n* = 1	4%
	Some college, *n* = 8	35%
	Associate's degree, *n* = 1	4%
	Bachelor's degree, *n* = 5	22%
	Master's Degree, *n* = 3	13%
Number of Previous Live Births	0 live births, *n* = 9	39%
	1–2 live births, *n* = 14	61%

Note. OB = Obstetric; # = Number; GED = General Educational Development

Table 2

Process Measures of the Ready, Set, Baby Program on Staff Participants

Measure	***p***
Familiarity with BFHI	0.357
Familiarity with RSB	0.141
Knowledge of the benefits of BF	0.317
Knowledge of the importance of early initiation of BF	0.796
Knowledge of positioning baby at the breast for BF	0.490
Knowledge of the importance of a correct BF latch	0.329
Knowledge of the importance of skin-to-skin contact	1.00
Knowledge of the benefits of rooming-in	0.157
Knowledge of the risk of supplementing an EBF infant	0.822
Knowledge of importance of waiting 8 hours before first bath	0.271
Knowledge of health benefits for mom with BF	0.957
Knowledge of health benefits for infant with BF	0.557
Knowledge of how often to feed infant	1.00
Confidence in recognizing and explaining hunger cues	0.109
Confidence in recognizing and explaining fullness cues	0.260
Satisfaction with prenatal BF education	0.073
Satisfaction with postpartum BF education	0.83

Note. BFHI = Baby Friendly Hospital Initiative; RSB = Ready, Set, Baby; BF = Breastfeeding; EBF = Exclusively Breastfed

Table 3

Chart-Reviewed Documentation Outcomes

Measure	**% Change**	***p***
Skin-to-skin contact	9% ↑	0.095
Rooming-in	2%↑ Medical indication: 11% ↑	0.011
Ever BF	10% ↓	0.081
Exclusively BF	14% ↑ Medical indication: 2% ↑ Maternal choice: 17% ↑	<0.001
Supplementation	3% ↓	0.825
Assistance with BF education	9% ↓	0.287
Hand expression education	5% ↑	0.620
Pacifier-use education	27% ↑	0.016
Resources after hospital discharge education	12% ↓	0.175
Hunger cues education	4% ↑	0.500
Planning to formula feed after discharge	9% ↓	0.362
Formula preparation education	3% ↑	0.243

Note. BF = Breastfed/breastfeeding

Table 4

Binary Logistic Regressions for Mode of Delivery's Impact on Breastfeeding

Variable	***p***
Mode of delivery predicting ever BF	
Intercept	<0.001
Vaginal delivery	0.024
Mode of delivery predicting exclusive BF	
Intercept	0.618
Vaginal delivery	0.002

Note. BF = Breastfed/breastfeeding

Table 5

Process Measures of the Ready, Set, Baby Program on Maternal Participants

Measure	***p***
Likely to begin BF	0.442
Likely to formula feed	0.446
Likely to BF and formula feed	0.543
Likely to BF for 6 months	0.073
Likely to BF for 12 months	0.909
Familiar with the benefits of BF	0.426
Familiar with proper BF latch	0.144
Familiar with importance of a good BF latch	0.259
Familiar with skin-to-skin contact	0.522
Knowledge of importance of skin-to-skin contact	<0.001
Likely to engage in skin-to-skin contact	0.002
Knowledge of hunger cues	0.166
Knowledge of fullness cues	0.010
Knowledge of rooming-in	0.229
Knowledge of importance of rooming-in	0.259
Knowledge of importance of early initiation of BF	0.963
Knowledge of why BF is healthy for infant	0.599
Knowledge of why BF is healthy for mother	0.963
Confidence in ability to initiate BF	<0.001
Confidence in ability to maintain BF	0.041

Confidence in knowledge of feeding frequencies	0.016
Confidence in knowledge of BF resources after hospital discharge	0.004

Note. BF= Breastfeed/Breastfeeding

Appendix A

Postpartum Discharge Check-Sheet

CARING FOR YOURSELF

- **Physical Changes**: Uterus, Bladder, Bowels, Hemorrhoids, Perineum
  - Lochia- when to call provider
- **Complications:** hemorrhage, DVTs, Postpartum Preeclampsia (warning signs)
- **Pain Management:** Vaginal v. Cesarean delivery, gas pains
- **Personal Care:** Perineal/ Incisional care, movement/activity, rest, menses, sex
- **Lifestyle:** Nutrition (breastfeeding), weight loss, exercise
- **Emotional Changes:** Baby blues v. Depression and Anxiety (OCD, psychosis)
- **Family, Friends, Pets:** Quality time with older siblings, limiting visitors, supervise pets with baby.
  - Paternal perinatal depression
- **Skin-to-Skin:** Benefits & Positioning

CARING FOR YOUR NEWBORN

- **Appearance:** Skin, Breasts/Genitalia, Head shape, Eyes
- **Screenings:** Metabolic, Hearing, Pulse oximetry, Jaunice. When to call provider.
- **Baby Boys:** Circumcision v. Intact Penis
- **Newborn Care:** Cord care, Nasal mucus, Nail care, Diaper changes/rash, Bathing
- **Baby Behavior:** Fussing/crying- what does baby want? Overstimulation, Colic, Swaddling
- **Safe Sleep:** ABCs (Alone, on Back, in their Crib), Rooming-in, Pacifier use AFTER breastfeeding is well-established (± 1 month)
- **Car Seat Safety:** Rear-facing car seat until 2yrs, back seat of car, Height/weight limits of car seat, Positioning of harness, Never leave child unattended in vehicle.
- **Shaken Baby Syndrome:** Do not ever shake baby, How to manage frustration, When to call 911
- **Baby's Health:** When to call provider (fever >100.4°F in child younger than 3mo)
- **Late-Preterm Infant:** Temperature, Breathing & Infection, Jaundice, Feedings. When to call healthcare provider v. 911

BREASTFEEDING

- **Exclusive breastfeeding:** Benefits for mom and baby
- **Milk Production:** Colostrum, Mature Milk, Positioning/comfort, Latch, Frequency (8-12x in a 24hr period), Cluster feeding, Stomach size (Day 1: 5-7mL, Day 3: 22-27mL, Day 7: 45-60mL), Hunger cues, Fullness cues.
- **Diapers:** Day 1: 1 wet/1 stool, Day 2: 2 wet/2 stools, Day 3: 3 wet/3 stools, Day 4: 4 wet/4 stools, Day 5: 5 wet/4 stools.
- **Common Concerns:** Sleepy baby, Burping (positions), Growth spurts, Engorgement (steps to minimize/prevent), Blocked Ducts (causes/treatment), Mastitis, Sore Nipples (when to be concerned/get help), Alcohol, Smoking/vaping, Medications, Drugs
- **Expressing Breast Milk:** Hand expression, Pumping, Storing expressed milk/guidelines.
- **Feeding Record:** page 44
- **Going Home:** Before discharge encourage to ask questions, Home tips, Follow-up care
- **Baby Warning Signs:** page 47 (call 911: breathing problems, blue lips). When to contact healthcare provider.
- **Post-Birth Warning Signs:** page 48 (**P**ain in chest, **O**bstructed breathing, **S**eizure, **T**houghts of hurting self/others, **B**leeding, **I**ncision not healing, **R**ed/swollen/painful leg, **T**emperature >100.4°F, **H**eadache that does not improve or associated with visual changes)
  - **Teach-back method**