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Increasing Rooming-In Rates on a Mother Baby Unit

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A Dissertation Submitted to The Graduate School at the University of Missouri- St. Louis

in partial fulfillment of the requirements for the degree

Doctor of Nursing Practice with an emphasis in Pediatric Nurse Practitioner

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Abstract

Problem: For new postpartum mothers, rooming-in has much evidence-based benefit; yet it is not widely accepted. Recent trends show the standard of care has changed to have newborns cared for in the nursery during parts of the postpartum period. Healthcare providers have unintentionally lacked providing ample education to new mothers regarding the benefits of rooming-in for mothers and newborns.

Methods For this quality improvement (QI) project, a descriptive observational study design was used to identify if implementing standardized rooming-in education for patients influences rooming-in rates or the rates of exclusive breastfeeding at discharge. Thirteen staff nurses were identified as “champions” of this project. These nurses were educated on the potential benefits of rooming-in for new mothers and infants so they could better educate parents. Nurses identified patients who met the eligibility requirements for the project and initiated the documentation of data collection thereby tracking the time an infant spent outside of the mother’s room.

Results Successful rooming-in rates prior to standardized education were 33.3% ($n = 10$), with a partial rooming-in rate of 68.75% ($n = 22$). After the implementation of standardized education for rooming-in; successful rooming-in rates were 58% ($n = 65$), with a partial rooming-in rate of 41.6% ($n = 47$). Of the patients that successfully roomed-in, 75% were exclusively breastfeeding at discharge ($n = 45$). In the partial rooming-in group; 60% were exclusively breastfeeding at discharge ($n = 21$). The most frequently observed reason for separation was maternal preference ($n = 61, 38.36\%$).

Implications for practice Overall, offering standardized education to patients on rooming-in should be added to the postpartum nurse's education on all mother baby units to increase rooming-in rates and breastfeeding by discharge.

Increasing Rooming-In Rates on a Mother Baby Unit

Women from many cultures want and need closeness with their newborns. This desire for closeness is a physical and emotional need shared by a new mother and their baby. Rooming-in is an evidence-based practice that promotes new mothers and newborns remaining together in their post-partum rooms. Unfortunately, over the past few generations, the standard of care has changed to have newborns cared for in the nursery during parts of the postpartum period. Some mothers come with the expectation that their baby will stay in the nursery for extended periods of time following birth, especially at night. Encouraging rooming-in is challenging for nursing staff because families are not aware of the benefits of rooming-in. New parents often view the nursery as a way to decrease any anticipated exhaustion. Healthcare providers have unintentionally been insufficient in providing education regarding the benefits of rooming-in for mothers and newborns.

A major benefit of rooming-in is to assist in the promotion of breastfeeding. The American Academy of Pediatrics (AAP) (2016) recommends breastfeeding exclusivity until 6 months of life, but at one midwestern hospital, only 36% are breastfeeding exclusively at discharge. Through the promotion of rooming-in, breastfeeding can become routine during the post-partum stay and the baby has an increased chance of continuing to be breastfed during their first 6 months of life.

The benefits of rooming-in extend far beyond breastfeeding. Rooming-in also promotes better sleep for moms and babies. New mothers who are not separated from their babies in the hospital learn about their newborn's unique sleep behaviors early on. This allows an opportunity for new parents to ask providers about their baby's sleep behaviors and learn techniques to support normal sleep patterns. According to the AAP, rooming-in also leads to improved patient satisfaction, increased infant security, supports cue-based feedings, decreases hyperbilirubinemia, increases the likelihood of breastfeeding at 6 months of age, and helps to improve outcomes for drug-addicted infants experiencing neonatal abstinence syndrome (2016).

While studies have discussed the many benefits of rooming-in, it is not widely accepted. The purpose of this project is to implement education for staff nurses in order to increase rooming-in rates on a Mother-Baby Unit in a large post-partum unit in a suburban Midwestern hospital. The aim of the project is to increase rooming-in rates by 10%, with the idea that this may lead to an increase in exclusive breastfeeding rates by discharge. A proposed question for this project is what is the effect of staff nurses implementing standardized education on rooming-in to patients in order to increase rooming-in rates and possibly the rates of exclusive breastfeeding by discharge?

Literature Review

A comprehensive literature search was performed to identify available and recent research regarding the implementation of rooming-in and breastfeeding exclusivity rates in the post-partum period. A literature search was conducted using CINAHL, Medline, and PubMed databases. The literature search was done concisely by utilizing a Medical Subject Heading (MeSH) of *rooming in*. Additional keywords included: *breastfeeding or*

*breast feeding, and exclusiv**. This search yielded 108 articles. After a further review of inclusion criteria and abstracts, 13 articles were chosen for this literature review.

Rooming-in is defined as allowing a mother and her baby to remain together 23+ hours a day during the post-partum period (Centers for Disease Control and Prevention [CDC], 2020). Studies consistently show that rooming-in has a significant impact on breastfeeding exclusivity rates. In one quality improvement initiative by Ward et al., (2017), researchers identified an increase in breastfeeding exclusivity rates from 37% to 59% by implementing rooming-in (Ward, et al, 2017). This study initiative aimed to improve exclusive breastfeeding rates through a learning collaborative model discovered by the Best Fed Beginnings Project (Ward, et al, 2017). The sample for the study included 4,181 infants admitted to a postpartum unit at a large urban medical center that serves residents of Ohio, Kentucky, and Indiana. A chart review was performed to determine breastfeeding exclusivity rates. Control and run charts were also utilized to evaluate the impact of interventions over time. Additionally, this project found that their rooming-in rates continued to improve over time with 70% rooming-in at 7 months post-implementation and 98% at 15 months post-implementation (Ward, et al, 2017).

A comparative study by Zuppa et al., (2009) showed 81% of their rooming-in infants were exclusively breastfed while only 42.9% of partial rooming-in infants were exclusively breastfed (Zuppa et. al, 2009). The aim of this study was to compare the feeding patterns of patients who did partial and full rooming-in regarding infant weight loss, hyperbilirubinemia, and rates of exclusive breastfeeding. The sample included an evaluation of 903 healthy term newborns. Infants were evaluated using weight measurements, serum bilirubin levels, and a chart review focusing on breastfeeding

exclusivity. There was no significant difference in the weight loss of infants participating in partial or full rooming. There were also no significant differences in total serum bilirubin levels in patients fully rooming-in compared to partially rooming-in infants.

Collectively, the success and exclusivity of breastfeeding do rely heavily on the proximity of the infant. A comparative study composed of a sample of 176 post-partum women, examined the effect of rooming-in versus separate care on breastfeeding success (Jaafar, Ho, Lee, 2016). Separate care in this study was defined as newborns who were cared for in the hospital nursery outside of being brought to their mother's room for feedings. Results showed that the rate of exclusive breastfeeding on day 4 of life was significantly higher (86%) in the rooming-in group (99 of 115) compared to a group of mothers and infants who received separate care (17 of 38) who had an exclusive breastfeeding rate of 45% (Jaafar, Ho, Lee, 2016). The frequency of breastfeeds per day was also slightly increased in the rooming-in group (8.3 feeds) compared to the separate care group (7 feeds) (Jaafar, Ho, Lee, 2016).

A longitudinal study by Dumas et al., (2013) including 151 women on post-partum day 4, identified that babies who remained in the nursery during the post-partum period were harder to wake for feedings than babies who were rooming in with their mother (Dumas et. al, 2013). The aim of this study was to research the routines of mother and infant interaction on postpartum day 4. This study also discovered that mothers separated from their infants demonstrated more rough interactive behaviors when attempting to latch their newborns and experienced more pain with latching (Dumas, Lepage et. al, 2013). The researchers developed an assessment tool that assessed mother and infant interactions. The assessment tool contained a Likert scale from 1 to 5

(roughest to gentle behavior) which assessed mothers' behavior, a couple of 3-point scale questions, and three "yes or no" questions regarding the occurrence/nonoccurrence of certain behaviors.

Aside from its impact on breastfeeding exclusivity, rooming-in has many other known health benefits for moms and babies. A systematic review and meta-analysis of 6 studies showed rooming-in is beneficial for all opioid-exposed infants (MacMillan et. al, 2018). This systematic review aimed to determine if rooming-in has an effect on the outcomes for newborns with neonatal abstinence syndrome (NAS). A random-effects model using dichotomous variables evaluated outcomes using risk ratio. Rooming-in infants demonstrated significantly less need for pharmacotherapy and reduced length of stays in NICU (MacMillan et. al, 2018). This study also determined that rooming-in is not associated with higher rates of in-hospital adverse events or readmission.

Rooming-in is recommended for all healthy mothers and newborns postpartum. One regularly reported barrier to rooming-in is the promotion of maternal rest. Eighty-nine women at a small community hospital were given a questionnaire regarding attitudes toward breastfeeding, the Iowa Infant Feeding Attitude Scale (IIFAS) (McRae, 2019). The purpose of this study was to measure the relationship between 24-hour rooming-in and exclusive breastfeeding. Patients were admitted to the Labor and Delivery and Mother-Baby Unit at a community hospital with more than 2,300 births annually. The IIFAS is a 17-item scale that measures attitudes on formula feeding and breastfeeding. The tool is composed of a Likert-type scale with responses ranging from strongly agree to strongly disagree. Scales range from 17 (preference to formula feed) to 85 (preference to breastfeed). Using a descriptive, correlational design, results showed no statistically

significant attitude differences between breastfeeding or mother-newborn separation in the post-partum period (McRae, 2019).

Theo and Drake (2017) reported that a majority (60%) of their postpartum patients had a positive rooming-in experience. The purpose of this study was to explore the perception of postpartum mothers regarding their own needs. The setting for this project was a postpartum unit in a medical institution in the Southeast United States. This study included a convenience sample of 25 postpartum women. A survey was used to ask patients to rate their rooming-in experience using a Likert-type scale, that included an additional six question survey inquiring about sleep, satisfaction with childbirth experience, rooming-in, and hospital stay. Findings were then compared with a pre-study literature review. This study found that most women (96%) stated that the nurses had a positive influence on their rooming-in experience (Theo & Drake, 2017). One limitation of this study is the small sample size of 25 mothers. Because the women were asked to describe their own unique experiences, findings cannot be applied to the entire population of postpartum mothers.

Another barrier to rooming-in is the possible development of hyperbilirubinemia from decreased intake. Nurse visual assessment of infant intake is an important part of postpartum documentation. Nurses who observe breastfeeding moms can educate moms on infant cues regarding adequate intake and changes in skin tones. Shan et al., (2019) used a retrospective cohort design to detect possible associations between rooming-in and neonatal hyperbilirubinemia. Using a retrospective data collection method, the study focused on 3,341 healthy, term neonates. Results found that as their rooming-in rate increased, so did their newborn hyperbilirubinemia (Shan, Wang & Lin, 2019). While

this is an important finding to share with nursing staff who monitor rooming-in newborns, more studies are needed to understand the underlying factors about why this may occur.

Lastly, another barrier to rooming-in is the lack of some new mothers' knowledge regarding the benefits of rooming-in. Using a structured interview format, Consales, et al., (2020) found that 83% of postpartum women knew about some of the benefits of rooming-in including the ability to recognize infant's cues, infant bonding, and increased confidence in caring for the baby (Consales et. al, 2020). However, improved breastfeeding was only reported by a small portion of mothers as a benefit of rooming-in. This study set out to explore maternal awareness of rooming-in and the most frequently reported barriers according to their experience. The sample size included 328 mothers and 333 newborns that were healthy and full term. Basic information was obtained by chart review, a 10-item interview consisting of closed and open-ended questions, and hospital staff kept a daily record of rooming-in time. Mothers shared that their main obstacles to rooming-in were fatigue (40.5%) and cesarean-related issues (15.5%) (Consales et. al, 2020). Nighttime was also reported as being the most critical time of the day for rooming-in (Consales et. al, 2020). Nurse support and education are crucial to support rooming-in. Overall, the benefits of exclusive breastfeeding and rooming-in are undeniable. These benefits can cohesively aid one another for mother and baby's health. The research to support rooming-in regarding breastfeeding exclusivity is consistent and is the best practice for healthy infants and new mothers.

Methods

Design

This quality improvement (QI) project utilized a descriptive observational design. Quantitative data was collected via paper documentation. Data collected included de-identifiable patient information, amount of time infant was separated from mother per shift (in minutes), assessment of infant breastfeeding exclusivity at discharge, and whether an infant received phototherapy prior to discharge.

Setting

This project took place on a mother-baby unit in a Mid-Western hospital that delivers approximately 9,000 newborns annually. This hospital delivers more babies than any surrounding hospital in the metropolitan area. This unit uses a staff of over 160 nurses to provide care for three floors of Mother Baby patients. Thirteen staff nurses were identified as “champions” of this project and were trained on patient education of rooming-in and data collection.

Sample

This project used a convenience sample of healthy, term (>37 weeks) infants delivered vaginally or by cesarean section, whose maternal preference was to breastfeed. Infants with risk factors that put them at increased risk of requiring formula supplementation were excluded (Small for gestational age (SGA), Large for gestational age (LGA) Gestational Diabetes Mellitus (GDM), and exposure to maternal betamethasone, terbutaline, or labetalol) as breastfeeding exclusivity was a secondary outcome measurement. All infants admitted to the mother-baby unit by a champion nurse from March 1, 2022, through March 31, 2022, were included in the analysis. A unique

alphanumeric identifier was created and applied to each patient for de-identification purposes. The identifier is a combination of the mother's first and last initials and date of delivery (eight digits-month/day/year), generating a unique ten-digit identifier. A master list of coded identifiers was stored on the project leader's hospital computer in a password-protected file.

Approval Processes

This project was reviewed by the clinical agency site Institutional Review Board (IRB) and was determined to be exempt. This project was also reviewed by the University of Missouri- St. Louis (UMSL) IRB prior to implementation and was determined to be a quality improvement activity not requiring IRB approval. The risk to individuals involved in this project was no greater than what is normally involved in their care. Possible benefits included increased mother-infant bonding and a possible increase in breastfeeding exclusivity by discharge.

Data Collection/Analysis

Data was documented by the staff RNs on the patient SBAR and paper data collection sheet. Data collection sheets, while inpatient, were stored behind the patient SBAR that are protected and carried by staff RNs. Once the patient was discharged, staff RNs deposited the paper data collection sheet and SBAR in a closed folder at the nurses' station. This information was collected by the DNP student project leader on a weekly basis. Patient data was de-identified. Demographic variables collected included maternal age, baby gestational age, and gender. Data evaluation included a review of patient

SBAR and the data collection sheet. Data analysis focused on the documentation of the time (in minutes) the infant was out of the room each day of life; if the patient was exclusively breastfeeding at discharge (yes/no) and whether the newborn received phototherapy prior to discharge (yes/no).

Procedure

The implementation of rooming-in education for mother-baby staff nurses was a QI project led by the Doctor of Nursing Practice (DNP) candidate. Thirteen staff nurses were identified as “champions” of this project on a volunteer basis. These nurses were educated on the potential benefits of rooming-in for new mothers and infants so they could better educate parents. Nurses were also encouraged to review page 29 of the admission booklet with patients, where they found brief talking points on the benefits of rooming-in (See Appendix A). Nurses identified patients who met the eligibility requirements for the project and initiated the documentation of the data collection sheet and thus, the tracking of the time an infant spends outside of the mother’s room. This data collection sheet was attached to the patient SBAR that the assigned staff carried throughout the shift. At the end of data collection, data was collected by the project leader and transferred into an Excel spreadsheet and analyzed using descriptive statistics. Means and measures of central tendency were analyzed, and a Chi-square Test of Independence was used to analyze the collected data.

Results

Demographics

One hundred and forty-four infants and their mothers met the eligibility criteria for this quality improvement project from February 19, 2022, through March 31, 2022. The most frequently observed gravida/para was G1P1 ($n = 46$, 31.94%). The most frequently observed method of delivery was vaginal delivery ($n = 113$, 78.47%). These frequencies and percentages are presented in Appendix B, Table 1 and Figure 1. Mother ages ranged with an average of 30.24 ($SD = 5.07$, $SEM = 0.42$, $Min = 17.00$, $Max = 41.00$). The observations for gestational age had an average of 39.1 ($SD = 0.94$, $SEM = 0.08$, $Min = 37.10$, $Max = 42.20$) These descriptive statistics can be found in Appendix C, Table 2. Of the study participants, 100% had the intention of breastfeeding exclusively and 100% of the patients enrolled in the second phase of data were educated on the benefits of rooming-in during their newborn admission.

Results

Prior to the implementation of standardized education of the patient by the champion nurses, current rooming-in rates were established using a group of 32 patients from February 19th through February 28th, 2022. One hundred and thirteen patients were enrolled in the second phase of data collection in which standardized education on the benefits of rooming-in was implemented from March 1st through March 31st, 2022. Successful rooming-in rates prior to standardized education were 33.3% ($n = 10$), with a partial rooming-in rate of 68.75% ($n = 22$). After the implementation of standardized education for rooming-in, successful rooming-in rates were 58% ($n = 65$), with a partial rooming-in rate of 41.6% ($n = 47$). Of the patients that successfully roomed in, 75% were exclusively breastfeeding at discharge ($n = 45$). In the partial rooming-in group; 60% were exclusively breastfeeding at discharge ($n = 21$). The most frequently observed

reason for supplementation was maternal preference ($n = 28, 77.78\%$). Other frequencies and percentages are presented in Appendix D, Table 3, and Figure 2-3.

A Chi-square Test of Independence was conducted to examine whether successful rooming-in and standardized education were related. The results of the Chi-square test were significant based on an alpha value of .05, $\chi^2(1) = 7.43, p = .006$, suggesting that successful rooming-in and standardized education are related to one another. Appendix E, Table 4 and Figure 4 presents the results of the Chi-square test.

The most frequently observed reason for separation was Maternal Preference ($n = 61, 38.36\%$). Additional commonly reported reasons for separation include circumcision ($n = 25, 15.72\%$), 24 hour testing ($n = 24, 15.09\%$), other testing ($n = 18, 11.32\%$), bath ($n = 16, 10.06\%$), weight ($n = 13, 8.18\%$), newborn condition ($n = 1, 0.63\%$) and maternal condition ($n = 1, 0.63\%$). These frequencies and percentages are presented in Appendix F, Table 5 and Figure 5.

Discussion

Limitations to the QI project included 13% of data collection sheets had some portion of data missing. The use of paper documentation by nursing staff posed the risk of a lack of documentation on reasons why infants left the room and for how long. This is because paper documentation was collected versus the electronic medical record. Another limitation of this study is the nature of this project. This was an unincentivized project possibly involving more than 160 nurses, and only 13 nurses were identified as champions and thoroughly educated on the evidenced-based benefits of rooming-in. The rooming-in mother needs support and encouragement to continue to room-in from all

staff nurses throughout her entire hospitalization. Despite discussing the project in nursing huddles and email communications, it is unclear if all nurses involved fully understood the data collection process. Additional factors affecting study results could be the lifting of visitor restrictions related to COVID-19 precautions. Patients were allowed access to an unlimited number of visitors for the first time in two years and this may have attributed to increased feelings of fatigue and the discontinuance of rooming-in overnight.

Overall, this QI project was relatively easy to implement. The greatest portion of time was spent preparing the mother-baby unit for the project, educating champion nurses, and tracking maternal-infant separation. Most importantly, the QI project did not pose any risk to the patients involved or cause known inconveniences for the unit. Despite the project ending, many of the nurse champions desire to continue to educate patients on the benefits of rooming-in as a part of their standard practice. This is a long-term goal of this project for all mother-baby staff nurses in the future. This QI project was successful in identifying that implementing standardized education may have a significant effect on rooming-in rates and breastfeeding exclusivity. The results are promising as the study surpassed the goal of a 10% increase in rooming-in rates by demonstrating a 24.7% increase in rooming-in rates after 31 days of educating patients.

In the obstetric world where maternal choices are so heavily impacted by generational views and preferences, patient education must grow to support best practices. This quality improvement project is a testament to the power of nursing education. Nursing education, alone, significantly increased rooming-in rates as well as breastfeeding exclusivity rates. These results also exhibit the need for doctorally prepared nurse practitioners. The Doctor of Nursing Practice (DNP) degree prepares nurses to see the needs a patient population

has, develop and initiate change, and evaluate the effectiveness of a change. The DNP-prepared nurse practitioner becomes a leader for change while having compassion and awareness of what it means to be a nurse.

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Appendix A



ROOMING-IN
Rooming-in (sleeping parents and babies together in the same room) is beneficial to the health and development of infants. When possible, you want to begin rooming-in during your hospital stay. Unless there is a medical issue with either you or your baby that requires you to be apart, rooming-in allows the hospital staff to care for you both at the same time. Be sure to talk to your nurse in the hospital about your needs, especially if you had a cesarean birth, are taking narcotic medication for pain relief, and don't have a companion in the room with you.

The benefits of rooming-in:

- Facilitates feeding as you learn your baby's feeding cues
- Your baby cries less and you can soothe them quickly
- You make more breast milk, as breastfeeding occurs often
- You get more rest and peace of mind
- You gain confidence in caring for your baby with experienced staff nearby
- You can monitor your baby more easily

Rooming-in is so valuable the AAP encourages parents to keep doing it at home. Because it also reduces the risk of SIDS, the AAP recommends rooming-in until your baby is at least 6 months old—ideally, a year.

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WHAT SAFE SLEEP LOOKS LIKE

- Always place your baby on their back for every sleep—nighttime and naptime.
- Keep your baby's head and face uncovered during sleep.
- EMPTY CRIB**—keep soft objects, pillows, blankets, toys, bumper pads, or any other items out of the crib.
- Use a firm sleep surface, like a mattress in a safety-approved crib, play yard, or other sleep surface covered by a fitted sheet.
- Dress your baby in sleep clothing like a one-piece sleeper or a wearable blanket.

Safe Sleep

The CDC estimates that nearly 3,500 infants die suddenly and unexpectedly each year in the U.S. These deaths are called sudden unexpected infant deaths, or SUIDs—they're sudden deaths that can't be explained. About half of such deaths are due to Sudden Infant Death Syndrome (SIDS). SIDS is the leading cause of SUID for infants under 1 year old.

The ABCs of safe sleep were developed by the American Academy of Pediatrics (AAP). They're an easy way to remember the basic guidelines for protecting your baby while they sleep or nap.

SCAN + PLAY

Recommendations

- Do not smoke and do not allow others to smoke around your baby.
- Do not drink alcohol or use drugs.
- Do not use commercial devices or cardiorespiratory (CRD) devices unless advised by your baby's doctor.
- Nothing with ties, like bibs, pacifiers, cords, or other attachments on or near baby while sleeping.
- Do not use products that claim to reduce the risk for SIDS—like wedges, positioners or other products that claim to keep infants in a specific position.
- There are no electrical cords, window blind cords, or baby monitor cords near the crib.

PACIFIER AND SIDS

Think about using a pacifier at naptime and bedtime. For breastfeeding babies, wait until breastfeeding is going well—about one month of age—before giving a pacifier. Offer a pacifier when putting your baby down to sleep. Don't force them to take a pacifier. If the pacifier falls out of their mouth, don't put it back in. Don't tape the pacifier to your baby's face. Don't put any sweet solution on the pacifier. Pacifiers should be cleaned and checked often and replaced regularly.

For more resources go to:
<https://pediatrics.aappublications.org/content/138/5/e20162938>
www.cdc.gov/sids/aboutsuidandsids.htm

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Appendix B

Frequencies and percentages of Gravida Para

Table 1*Frequency Table for Nominal Variables*

| Variable | <i>n</i> | % |
|------------------|----------|-------|
| Gravida Para | | |
| G2P2 | 38 | 26.39 |
| G1P1 | 46 | 31.94 |
| G5P4 | 5 | 3.47 |
| G4P3 | 7 | 4.86 |
| G3P3 | 11 | 7.64 |
| G6P3 | 1 | 0.69 |
| G2P1 | 5 | 3.47 |
| G5P3 | 3 | 2.08 |
| G11P4 | 1 | 0.69 |
| G4P2 | 7 | 4.86 |
| G3P2 | 10 | 6.94 |
| G8P6 | 1 | 0.69 |
| G3P1 | 3 | 2.08 |
| G7P5 | 1 | 0.69 |
| G8P4 | 1 | 0.69 |
| G4P4 | 2 | 1.39 |
| G6P5 | 1 | 0.69 |
| G5P2 | 1 | 0.69 |
| Missing | 0 | 0.00 |
| Type of Delivery | | |
| Vaginal | 113 | 78.47 |
| Cesarean | 31 | 21.53 |

Note. Due to rounding errors, percentages may not equal 100%.

Appendix C

Results of Mother’s Age and Gestational Age

Table 2

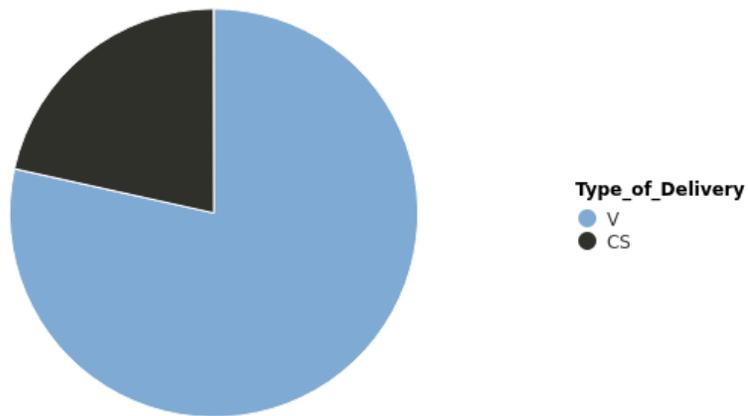
Summary Statistics Table for Interval and Ratio Variables

| Variable | <i>M</i> | <i>SD</i> | <i>n</i> | <i>SE_M</i> | Min | Max | Skewness | Kurtosis |
|-----------------|----------|-----------|----------|-----------------------|-------|-------|----------|----------|
| Mother’s Age | 30.24 | 5.07 | 143 | 0.42 | 17.00 | 41.00 | -0.21 | -0.08 |
| Gestational Age | 39.13 | 0.94 | 144 | 0.08 | 37.10 | 42.20 | 0.21 | 0.34 |

Note. '-' indicates the statistic is undefined due to constant data or an insufficient sample size.

Figure 1

Pie Chart of Delivery Method



Appendix D

Figure 2

Barplot of Exclusive Breastfeeding at Discharge by Group

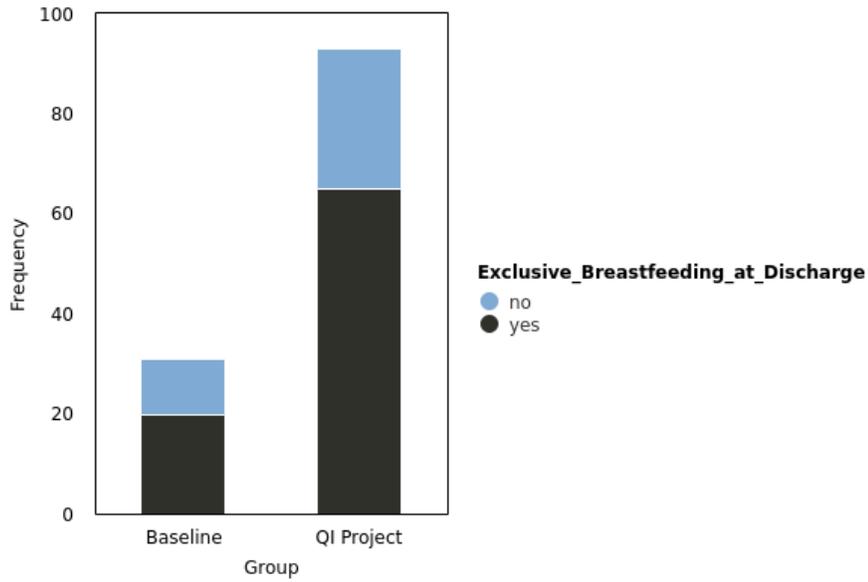
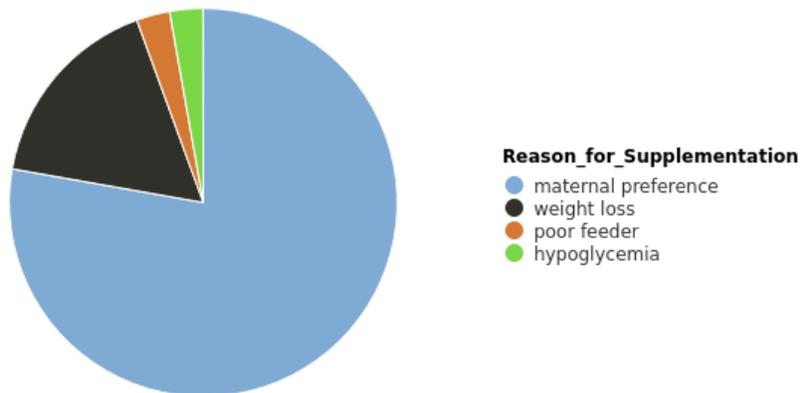


Figure 3

Pie Chart of Reasons for Supplementation



Appendix D

Table 3*Frequency Table for Nominal Variables*

| Variable | <i>n</i> | % |
|-----------------------------|----------|-------|
| Reasons for Supplementation | | |
| maternal preference | 28 | 77.78 |
| weight loss | 6 | 16.67 |
| poor feeder | 1 | 2.78 |
| hypoglycemia | 1 | 2.78 |
| Missing | 0 | 0.00 |

Note. Due to rounding errors, percentages may not equal 100%.

Appendix E

Results of the Chi-square test.

Table 4

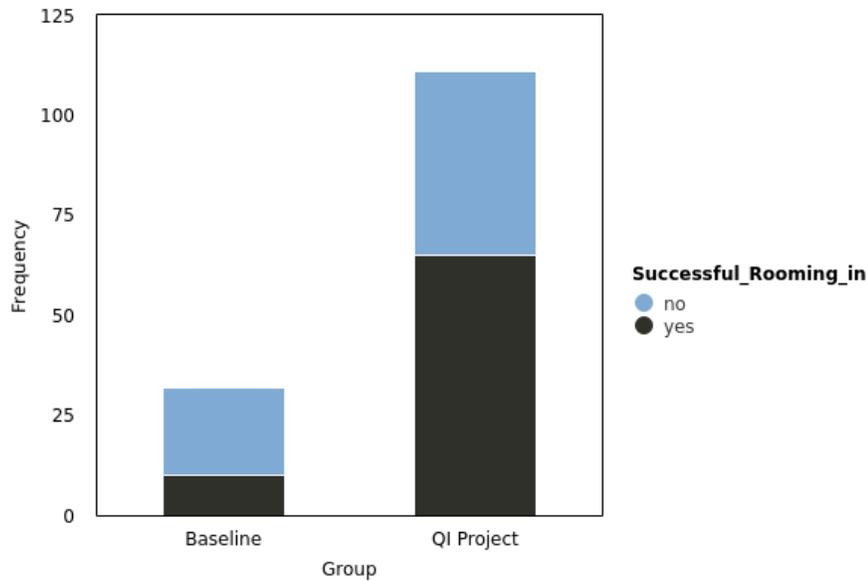
Observed and Expected Frequencies

| Successful Rooming-in (Yes/No) | Group | | χ^2 | df | p |
|--------------------------------|-----------|------------|----------|----|------|
| | Baseline | QI Project | | | |
| no | 22[15.22] | 46[52.78] | 7.43 | 1 | .006 |
| yes | 10[16.78] | 65[58.22] | | | |

Note. Values formatted as Observed[Expected].

Figure 4

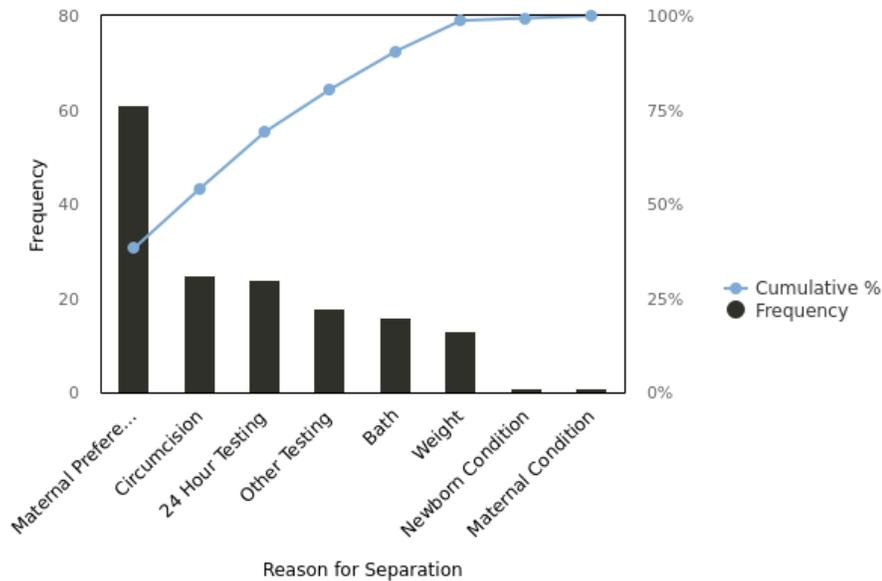
Barplot of Successful Rooming-In



Appendix F

Figure 5

Pareto Chart of Reasons for Maternal/Infant Separation



Results of Reasons for Maternal/Infant Separation

Table 5

Frequency Table for Nominal Variables

| Variable | <i>n</i> | % |
|------------------------|----------|-------|
| Reasons for Separation | | |
| Maternal Preference | 61 | 38.36 |
| 24 Hour Testing | 24 | 15.09 |
| Bath | 16 | 10.06 |
| Weight | 13 | 8.18 |
| Other Testing | 18 | 11.32 |
| Circumcision | 25 | 15.72 |
| Newborn Condition | 1 | 0.63 |
| Maternal Condition | 1 | 0.63 |
| Missing | 0 | 0.00 |

Note. Due to rounding errors, percentages may not equal 100%.

