Maternal-Newborn, Pediatric, and Neonatal Nurses' Promotion and Support of Breastfeeding

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Abstract

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Background & Significance: Insufficient breastfeeding knowledge and support are not a new phenomenon among nurses. This leaves newborns/infants and their families vulnerable to inconsistent breastfeeding information, support, and practices.

Problem Statement: Anecdotal evidence from a large non-Baby Friendly Hospital Initiative (BFHI) academic center in the Pacific Northwest implies there is a lack of knowledge and inconsistent practices among nurses in their knowledge and support of breastfeeding.

Purpose: This quantitative quality improvement project will measure:

1. Pediatric and neonatal nurses' beliefs, attitudes, and subjective norms of breastfeeding at a non-BFHI academic healthcare institution in the Pacific Northwest and
2. Their behavioral intention and willingness to change.

Methods: The survey includes a demographic section and the Questionnaire of Professional Breastfeeding Support (QPBS), a four-part, reliable, and validated questionnaire developed to assess beliefs, attitudes, subjective norms, and behavioral intentions. The survey was administered to maternal/newborn, neonatal, and pediatric nurses at a large non-BFHI academic institution with distribution limited to staff nurses through a link provided via electronic mailing lists. All data was collected anonymously and voluntarily via Qualtrics©. The University IRB determined the project to be non-human research. Demographic responses were analyzed using descriptive statistics. QPBS survey was analyzed for each metric to obtain mean and standard deviation ranges, as well as, for the subscales.

Results: Of the 1,044 eligible RNs, 294 responded to the survey for a response rate of 28%. Behavioral intention to support breastfeeding scored highest ($M = 4.13$, $SD = 0.89$), followed by beliefs ($M = 3.92$, $SD = 1.2$), attitudes ($M = 3.80$, $SD = 1.2$), and subjective norms ($M = 3.57$, $SD = 1.02$). While most nurses supported breastfeeding and expressed willingness to improve their practice, over half ($n = 209$, 71%) reported insufficient or no prior breastfeeding education. These findings highlight variability in support practices and institutional expectations.

Discussion: The survey revealed a positive intent among nurses to support breastfeeding despite inconsistent attitudes and perceived institutional norms. These results suggest a strong foundation for future quality improvement but underscore the need for updated policies, standardized education, and system-wide alignment to support breastfeeding practices effectively.

Disclosures

This author has no conflicts of interest or financial relationships to disclose.

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Introduction

Problem Description

Breastfeeding is well-documented in providing a multitude of short- and long-term health benefits to mothers and their infants when used as the primary source of nutrition (United Nations Children's Fund & World Health Organization, 2021). The American Academy of Pediatrics (AAP) (2022), the National Association of Pediatric Nurse Practitioners (NAPNAP) (Busch et al., 2019), and the World Health Organization (WHO) (2023) recommend exclusive breastfeeding for all newborns as the main source of nutrition for the first 6 months of life, with continuation until age 2 or beyond as desired by the infant and mother. Despite global public health initiatives, breastfeeding rates remain below what is required to protect the health of women and children (United Nations Children's Fund & WHO, 2021).

United States data from 2019 revealed that only 83.2% of lactating persons initiated breastfeeding after giving birth in a hospital. Within 2 days, 19.2% of those breastfeeding introduced formula to their newborns, with only 55.8% continuing any breastfeeding at 6 months (Centers for Disease Control [CDC], 2022). More recent data from the state of Oregon reported 96% of lactating persons initiated breastfeeding after birth. At 6 months, the continuation of breastfeeding dropped almost 3-fold to 36%, well below the national average (Oregon Health Authority [OHA], 2023). With more than 98% of all births occurring in a hospital (National Academies of Science, Engineering, and Medicine [NASEM], 2020), registered nurses (RNs) are positioned in the prime location to provide valuable support in the promotion of successful breastfeeding (Bernaix, 2000). Research unveils that despite the optimal bedside RN supportive

role, there remains a significant knowledge deficit, leading to inaccurate, inconsistent, and variable support (Bernaix, 2000; Ferrag, 2019; Winikoff, 1986). The devastating consequence of this knowledge gap results in early discontinuation of breastfeeding, dismantling the optimization of infant nutrition and maternal health in the postpartum period.

Available Knowledge

Insufficient breastfeeding support is not a new phenomenon among pediatric nurses. Studies dating back to the 1980s report institutional policies encouraged formula-feeding, preventing successful initiation of breastfeeding, even when desired by the mother (Bernaix, 2000; Winikoff, 1986). Specific practices by nurses that delayed or inhibited breastfeeding included: Prolonged and/or unnecessary separation of mother and infant, routine provision of infant formula, confusion about drug contraindications for breastfeeding, and inconsistent identification of breastfeeding infants (Winikoff et al., 1986). More recent studies have found similar detrimental practices among nurses such as limiting breastfeeding initiation, premature pacifier introduction without breast introduction, misguided formula administration in the absence of a medical requirement, gratuitous distribution of formula samples, professionals' deficiency in clinical expertise and competence concerning breastfeeding management issues, as well as inconsistent or insufficient dissemination of breastfeeding-related information; All of which have been observed to inversely correlate with the sustained duration of breastfeeding (Bermejo et al., 2016; DiGirolamo et al., 2008; Oliver-Roig, 2013).

A lack of protection and promotion of breastfeeding is a decades-old problem well-known to infant and pediatric health worldwide. The WHO and United Nations International Children’s Emergency Fund (UNICEF) have attempted to combat decreasing breastfeeding rates detrimental to infant nutrition by creating the Baby-Friendly Hospital Initiative (BFHI) in 1991.

The overall goal of this initiative was to provide a universal evidence-based policy framework to promote, protect, and support breastfeeding. Institutions that desire to achieve BFHI status must adopt strict policy including the Ten Steps to Successful Breastfeeding, which has posed challenges for many institutions. Implementation of the BFHI guidelines is a lengthy process and requires buy-in from all members of the institution to adhere to protocols, attend staff training, and support breastfeeding from all staff members from conception through discharge post-delivery (Rosner, 2024). Although there are over 600 birthing facilities in the United States that have achieved BFHI designation, only 28% of the nation's births occur in one of these facilities (Baby-Friendly USA, 2019), leaving a majority of the population vulnerable to erratic breastfeeding protection.

Inconsistent support is a byproduct of insufficient breastfeeding education and inadequate institutional policies guiding evidence-based practice models. In the absence of proper breastfeeding education for pediatric and neonatal nurses, inconsistent support is driven by variation in knowledge acquisition, with personal experience being the highest reported source of knowledge for many pediatric and neonatal nurses (Farrag et al., 2018; McLaughlin et al., 2011). In a survey of 203 pediatric nurses from 27 hospitals, 39% of nurses stated they gained their knowledge of breastfeeding from personal experience (Hayes, 1981). Regardless of educational opportunities, 27% still had doubts about their counseling ability to support breastfeeding mothers (Hayes, 1981). Nearly 40 years later, research highlights that this trend still exists, if not getting worse. Farrag et al. (2018) revealed 60.8% of pediatric nurses reported their breastfeeding knowledge came from personal experience, mirroring almost identical results from a study by McLaughlin et al. (2011), which reported personal experience as the main source of breastfeeding knowledge in 60% of pediatric nurses. Inconsistent advice and support among

pediatric nurses' cause confusion and poor breastfeeding outcomes for mothers and their children (Farrag et al., 2018).

Framework

The Theory of Reasoned Action (TRA) developed by Ajzen and Fishbein (1980) was used as the framework for this project. TRA argues that the single-best indicator of behavior is behavioral intention. Intention is thought to be driven by two major determinants including one's attitude toward the behavior (salient behavioral beliefs held regarding the presumed outcome), and the subjective norm (perceived expectations with regard to the person performing the behavior) (Ajzen & Fishbein, 1980). Simply stated, behavior is influenced by a personal factor and a social factor (Bernaix, 2000). Understanding behavioral intention is a powerful tool in assessing the intention of individuals in performing a desired behavior. For this project, the use of the TRA framework will aid in understanding the current attitudes, beliefs, and subjection norms influencing behavioral intention to provide effective and informed breastfeeding support among maternal/newborn, neonatal, and pediatric nurses.

Specific Aims

This study has two specific aims: To measure maternal-newborn, neonatal, and pediatric nurses' beliefs, attitudes, and subjective norms of breastfeeding at a large non-BFHI academic healthcare institution (AHI) and to measure the behavioral intention and willingness to change.

Methods

Context

The survey was administered to maternal/newborn, neonatal, and pediatric RNs at a large non-BFHI AHI in a major metropolitan city. The survey was distributed to a total of 1,044 RNs who are employed on one of the following units: Labor & delivery (L&D), mother baby unit

(MBU), neonatal intensive care unit (NICU), pediatric intensive care unit (PICU), pediatric intermediate care, pediatric medical/surgical care, pediatric hematology/oncology, and pediatric float pool. This AHI has 151 staffed beds for newborn and pediatric patients. There were 2,182 live births in 2023 at this AHI, the 4th largest live births recorded within the state. This AHI is the largest academic teaching hospital in the state, with both undergraduate and graduate nursing programs offered. It is both the largest pediatric hospital and level IV NICU in the state, serving patients from several neighboring states as well. A formal letter of support was obtained from nursing directors for the services included (Appendix B).

No studies have reported on maternal/newborn, neonatal, and pediatric nurses' beliefs, attitudes, and subjective norms at this non-BFHI AHI. There have been no hospital-wide quality improvement projects to identify maternal/newborn and pediatric nurses' contribution to the success or early discontinuation of breastfeeding. The current breastfeeding policy at this institution is overdue for review by more than 2 years.

Interventions & Measures

Permission was granted to use the Questionnaire of Professional Breastfeeding Support (QPBS) (Appendix C), a four-part reliable and validated questionnaire developed to assess beliefs, attitudes, subjective norms, and behavioral intention (Appendix D). The QPBS survey was constructed to include four main content domains: 1) Breastfeeding practice, 2) Information on breastfeeding and professionals' support style, 3) Interventions related to instauration and continuation of breastfeeding, and 4) The Code of Marketing of Breast Milk Substitutes. Questions were developed within each content domain and distributed among the four components of the Theory of Reasoned Action Scale (TRA). The Beliefs Scale is further organized into three factors with questions addressing how to maintain breastfeeding over time,

limiting breastfeeding, and professional advice related to breastfeeding. The Attitudes Scale comprises two factors addressing attitudes towards practices facilitating the establishment and continuation of breastfeeding, and attitudes toward *The Code of Marketing of Breast Milk Substitutes.* The Subjective Norms Scale has two factors addressing norms related to breastfeeding support and limiting breastfeeding. The Behavioral Intention Scale consists of eight questions without a factor subscale.

Survey validity was determined through internal consistency, principal components factor analysis, criterion-related validity, and comparison of contrasted groups. The reliability was calculated using Cronbach's alpha coefficient. The total scale and subscales had satisfactory results, which ranged from 0.65 to 0.81, suggesting the QPBS could be useful in implementing BFHI to assess staff adherence, specific training effects, and prevailing norms related to breastfeeding (Bermejo et al., 2016).

The QPBS survey (Appendix D) includes a prequel demographics section written by this author (Appendix E). The demographics section included nine items using multiple-choice format, and included such items as age, gender, ethnicity, unit, number of years' experience as a pediatric/neonatal RN, international board-certified lactation consultant (IBCLC) certification, personal breastfeeding experience, and prior breastfeeding education/training. The 49-item QPBS was formatted using the intended Likert scale response system, where responses are scored numerically: 1 for "strongly disagree," 2 for "disagree," 3 for "neither disagree nor agree," 4 for "agree," and 5 for "strongly agree." Overall, the survey has 58 questions and takes on average 10 minutes to complete. The survey was formatted and distributed using Qualtrics© software.

The survey was distributed to 1,044 RNs who care for newborns or pediatric patients having the potential nutrition plan of breastfeeding. The distribution of the survey was limited to staff nurses on the identified neonatal and pediatric units through a link provided via electronic mailing lists. Additional quick response (QR) codes were displayed on all units for easy, additional access to increase participation (Appendix F). Participation in the survey was not required, and no incentives were provided if individuals chose to partake in the survey. All survey responses were anonymous, and respondents who completed the survey through the Qualtrics© link were required to use two-factor authentication for secure access.

Analysis

Data were collected using Qualtrics©, an online survey tool. After the electronic survey was closed, data were downloaded into Microsoft Excel, compared to the hard copy of each participant's data, checked for accuracy, and then analyzed. Sample demographics were summarized using means and standard deviations for continuous variables, and frequency counts and percentages for nominal variables. Respondent answers from 18 questions from the QPBS were reverse-scored using (6 -*reported score* = *inverse score*) to ensure all questions were reported with a positive intention as designed by a traditional Likert scale. Quantitative breastfeeding support data derived from the survey were used to obtain a mean and standard deviation for each statement for each of the four subsections.

Ethical Considerations

A request for determination from Oregon Health & Science University (OHSU) Institutional Review Board (IRB) was submitted and determined to be non-human research (Appendix G). As there is a small risk for staff burden, the survey contained two parts: a short demographic section and the four-part QPBS survey. It was anticipated that this survey would take

approximately 10 minutes to complete. No identifiable data were collected from the participants as the survey was anonymous. Autonomy of nurses was reserved through the right to participate or not to participate. Data from surveys was secured on a password-protected device with two-factor authentication for secure access.

Results

Demographics

Of the 1,044 RNs eligible to participate in the survey, a total of 292 RNs completed the survey in its entirety, with a response rate of 28%. Most participants identified as female (*n* = 271; 92%), with the highest degree being Bachelor of Science in Nursing (BSN) (*n* = 262; 89%). Forty-two percent (*n* = 124) reported an age between 30 and 39 years, and 35% (*n* = 104) had between one and five years of experience as a pediatric/neonatal RN. Almost 50% of respondents primarily work in the NICU (*n* = 69; 24%) and the pediatric acute care medical/surgical units (*n* = 66; 23%). Only 4% (*n* = 11) have their IBCLC. Over 50% of respondents (*n* = 156) had no personal experience with breastfeeding, while only 35% of those (*n* = 107) had breastfed their infants past 6 months of age. Twenty-nine percent of RN respondents perceived their institutional provided breastfeeding education as "very good" (*n* = 15) or "appropriate" (*n* = 69), leaving 51% (*n* = 149) perceived their institutional provided breastfeeding education as "insufficient" and 20% (*n* = 60) claiming they received "no previous education/training."

Table 1

Sample Demographic Characteristics

Demographics of Nursing Staff	***n* (%)**
Age (30-39 years)	124 (42)

Gender (Female)	271 (92)
Nursing Degree (BSN)	262 (89)
Years of Experience (1-5 years)	104 (35)
IBCLC Certification (Yes)	11 (4)
Inpatient Unit Primarily Worked On	
Pediatric Medical/Surgical	66 (23)
Pediatric Intermediate Care	22 (8)
Pediatric Hematology/Oncology	23 (8)
Pediatric Intensive Care Unit	19 (7)
Pediatric Float Pool	23 (8)
Maternal/Newborn	29 (10)
Labor & Delivery	41 (14)
Neonatal Intensive Care Unit	69 (24)
Personal Experience with Breastfeeding	
Breastfed for > 6 months	107 (35)
Breastfed for < 6 months	16 (5)
Attempted but stopped due to complications	13 (4)
Never Breastfed	156 (53)
Rating of Previous Breastfeeding Education Provided by Workplace	
No previous education/training	60 (20)
Insufficient	149 (51)
Appropriate	69 (24)

Very Good	15 (5)

Survey Results

The complete results from the QPBS are presented in Table 2. Overall, three scales had mean scores representative of the numerical value of 3, which correlates to "neither agree nor disagree" on the Likert scoring system. The beliefs scale (n = 279) had a mean score of 3.92 (SD = 1.04). Mean scores subsequently decreased on the attitudes scale (n = 270) and subjective norms scale (n = 262), with mean scores of 3.80 (SD = 1.20) and 3.57 (SD =1.02), respectively. Interestingly, the behavioral intention scale (n = 255) had a positive association with a mean of 4.13 (SD = 0.89) correlating to "agree" on the Likert scoring system. Within the beliefs scale, 77% of respondents (n = 215) agree or strongly agree that exclusive breastfeeding was recommended up to 6 months. From an attitudes scale perspective, greater than 50% of respondents (n = 154) enjoy talking to mothers about breastfeeding problems. The subjective norms scale revealed that 66% of respondents (n = 175) express the need for consistent breastfeeding information being given to mothers. Lastly, 81% of respondents (n = 207) intend to participate in future formal breastfeeding education provided by their workplace, highlighting positive behavioral intention.

Table 2

Pediatric/Neonatal Nurses' Responses to the Questionnaire of Professional Breastfeeding Support Scales

Item	Mean ± SD (range)
Beliefs Scale	
Exclusive breastfeeding is recommended up to 6 months	4.12 ± 0.93 (1-5)

Efforts should be made to maintain breastfeeding even when infants are separated from their mothers	4.38 ± 0.77 (1-5)
Expressed breast milk can be frozen	4.38 ± 0.43 (1-5)
Information on how to express milk is necessary when breastfeeding mother are separated from their infants	4.77 ± 0.49 (2-5)
Breastfeeding support groups play an important role in maintaining breastfeeding	4.04 ± 0.79 (3-5)
Bottle-feeding is the best way to administer formula supplements to infants that need them	3.49 ± 0.78 (1-5)
Exclusively breastfed infants should also drink water*	4.68 ± 0.66 (1-5)
As a general rule, every 3 hours is a good breastfeeding schedule	3.73 ± 0.86 (1-5)
Scheduled breastfeeding limits breast milk production*	3.38 ± 1.08 (1-5)
Infants should not feed for more than 10 minutes on each breast per session*	3.92 ± 0.89 (1-5)
Breastfeeding is beneficial to maternal health	4.31 ± 0.71 (3-5)
Breastfed infants tend to enjoy better health than those fed formula	3.55 ± 1.04 (1-5)
Mother and newborn skin-to-skin contact immediately after birth is important to establish breastfeeding	4.25 ± 0.78 (1-5)
Breastfeeding should be maintained until at least 2 years of age	2.81 ± 0.80 (1-5)
The presence of infant formula advertising in health care centers does not influence a mother's decision to breastfeed*	3.65 ± 0.97 (1-5)
Health care professionals should avoid giving mothers gift packs containing pacifiers or infant formula	2.80 ± 1.14 (1-5)

Overall beliefs scale	3.92 ± 1.04
Attitudes Scale	
I think it is unnecessary to discuss the benefits of breastfeeding with pregnant women*	4.20 ± 1.08 (1-5)
I think it is over the top for a mother to initiate breastfeeding immediately after birth*	4.71 ± 0.52 (2-5)
I think that a mother and newborn skin-to-skin contact in unnecessary in the first half hour after a cesarean section*	4.52 ± 0.72 (1-5)
I feel uncomfortable seeing a woman breastfeeding a child more than 1 year old*	4.42 ± 0.92 (1-5)
I think it is unrealistic to recommend that a mother breastfeed on demand*	3.97 ± 0.92 (2-5)
I am not sure about expressed milk*	4.5 ± 0.75 (1-5)
I like talking to mothers about breastfeeding problems	3.6 ± 1.12 (1-5)
I would not mind working with support groups	3.54 ± 1.10 (1-5)
I think it is over the top to use a cup or glass to give formula supplements to breastfeeding infants*	3.23 ± 1.04 (1-5)
I think it is excessive to prohibit infant formula advertising in health care centers*	3.11 ± 1.20 (1-5)
I think it is acceptable to give mothers gift packs containing pacifiers	3.71 ± 1.05 (1-5)
I do not like seeing infant formula advertising in my health center	3.01 ± 1.23 (1-5)
I think it is excessive to prohibit professionals from giving free samples of infant formula to breastfeeding mothers*	2.86 ± 1.22 (1-5)

Overall attitudes scale	3.80 ± 1.20
Subjective Norms Scale	
We are all expected to give similar information on breastfeeding	3.62 ± 0.98 (1-5)
A mother's informed choice about childcare is respected	4.14 ± 0.81 (1-5)
The work of mothers' support groups is appreciated	4.03 ± 0.80 (1-5)
Formula samples are given to breastfeeding mothers*	3.12 ± 0.90 (1-5)
Breastfeeding training is considered important	3.95 ± 0.98 (1-5)
Besides information, mothers are given practical help with breastfeeding	3.72 ± 1.04 (1-5)
Pacifiers are recommended to calm babies	3.55 ± 0.95 (1-5)
We recommend supplementing breastfeeding with formula or other foods from 4 months*	3.62 ± 0.93 (1-5)
We recommend adhering to an infant feeding schedule	3.24 ± 1.03 (1-5)
We recommend bottle-feeding when mothers encounter difficulties with breastfeeding (the infant cries a lot or is not sated, the mother is very tired)*	2.73 ± 1.02 (1-5)
In the case of mastitis, we recommend suspending breastfeeding until the infection has gone*	3.68 ± 0.97 (1-5)
Infant formula advertising (calendars, stationary, stadiometers, etc.) is permitted*	3.27 ± 0.95 (1-5)
Overall subjective norms scale	3.57 ± 1.02
Behavioral Intention Scale	

Inform mothers about the benefits of breast milk.	4.38 ± 0.62 (2-5)
Encourage mothers to breastfeed their babies for as long as possible.	4.01 ± 0.79 (2-5)
Show mothers how to recognize and respond to signs of hunger in an infant.	4.59 ± 0.52 (3-5)
Inform mothers how to continue breastfeeding when they return to paid work.	4.25 ± 0.80 (2-5)
Participate in training activities to update my knowledge of breastfeeding.	4.08 ± 0.90 (1-5)
Support mothers' decisions about breastfeeding.	4.60 ± 0.51 (3-5)
Facilitate contact between mothers and peer support groups.	3.82 ± 0.95 (1-5)
Avoid the presence of formula advertisements in my workplace.	3.31 ± 1.09 (1-5)
Overall behavioral intention scale	4.13 ± 0.89

* Signifies questions that were reverse-scored for consistent analysis

Discussion

In this QI project, the QPBS was used to determine pediatric and neonatal nurses' beliefs, attitudes, subjective norms, and behavioral intention regarding the promotion and support of breastfeeding. General findings indicate agreement from respondents regarding beliefs (M = 3.92, SD = 1.04) and behavioral intention (M = 4.13, SD = 0.89). This data strongly suggested that nurses within this AHI favor breastfeeding and report a willingness to provide evidence-based breastfeeding support. Sixty-six percent (66%) of respondents (n = 175) indicated a desire to provide evidence-based breastfeeding support. Alternatively, the attitudes scale score (M = 3.80, SD = 1.20) and the subjective norms scale score (M = 3.57, SD = 1.02) suggest systemic and cultural inconsistencies within this AHI. This finding is affirmed with 71% of respondents (n

= 209) expressing frustration with a lack of consistent breastfeeding education, leaving nurses reliant on personal experience as their main source of breastfeeding knowledge.

Results from this study endorse historical trends previously mentioned. In this QI project, nurses were reliant on personal experience over formal education and training, contributing to inconsistent and contradictory breastfeeding support provided at the bedside (Farrag et al., 2018; McLaughlin et al., 2011). This is particularly concerning given only 35% of respondents (n = 107) have personal experience with breastfeeding for 6 months or greater, leaving over half of all respondents without personal experience or formal education to inform support. With only 4% of respondents IBCLC-certified (n = 11), this AHI is severely limited in expertise among its bedside nursing staff, mirroring national concerns about universal evidence-based breastfeeding support (Bernaix, 2000; Hayes, 1981). Further research is indicated to review differing levels of exposure to evidence-based breastfeeding support across units at this AHI.

Additionally, the subjective norms scale score (M =3.57; SD = 1.02) is rather unsurprising. This AHI has not achieved BFHI status and subsequently was found to have an outdated breastfeeding policy, more than 2 years overdue for review. Although 66% of respondents (n = 175) express the need for consistent breastfeeding information to be given to mothers, individual intention was not reinforced or prioritized by the institution. Alternatively, the beliefs scale score had an unexpected mean of 3.92 (SD = 1.04) in the absence of a clear policy or protocol. Respondents (n = 215, 77%) overwhelmingly agree that exclusive breastfeeding is recommended up to 6 months (M = 4.12, SD = 0.93) and is beneficial to maternal health (M = 4.31, SD = 0.71). This suggests independent variables such as personal experience, social media, informal peer learning, or cultural beliefs may be positively influencing nurse beliefs in the absence of formal institutional support.

Although this QI project served to inform baseline characteristics among maternal-newborn, pediatric, and neonatal nurses without intervention or post-intervention assessment, behavioral intention scores reveal that 81% of respondents (n = 207) intend to participate in future formal breastfeeding education provided by their workplace. Arguably, if the single-best indicator of behavior is behavioral intention, then nurses at this non-BFHI AHI are ready to provide evidence-based breastfeeding support at the bedside (Ajzen & Fishbein, 1980). These results serve as a call to action for leadership to invest in structured breastfeeding education and revise outdated institutional breastfeeding policy.

Limitations

The data were collected at a single institution in the Pacific Northwest, limiting the significance of findings to that institution only, rather than a general population. It is also limited in design with a single baseline survey without intervention, not allowing for a confined or consistent sample should this data be used to inform further quality improvement. Several questions in the QPBS are phrased in a pejorative, which could have contributed to confusion in assigning a Likert value or misrepresenting the intended data. The length and format of the survey also appeared to be a limitation, as evidenced by 39 respondents (13%) answering some, but not all, of the questions. Early discontinuation by respondents was addressed by including all answered questions in the statistical analysis up to the furthest point of completion for each respondent.

Implications for Future Quality Improvement

The QPBS is a valid and reliable tool designed for QI to initiate or implement breastfeeding policy based on the BFHI. This project instituted the QPBS at a non-BFHI AHI to gather baseline data regarding the protection, promotion, and support of breastfeeding in the absence of an updated policy. This data should inform current institutional practices and

highlight staff RN buy-in for future QI projects to improve bedside breastfeeding support. Given positive behavioral intention scores, the QPBS can be used to determine the magnitude of effect of an educational course by measuring beliefs, attitudes, subjective norms, and behavioral intention pre- and post-session through score comparison. Additionally, further analysis of data collected from this study can highlight institutional inconsistencies between inpatient units by comparing scores within each QPBS scale. Furthermore, the subjective norms scale informs institutional norms perceived by staff at this non-BFHI AHI, urging the need for updated evidence-based policy implementation. Lastly, the behavioral intention scale is predictive of behavior, communicating predicted success for future QI.

Conclusion

This QI project served to provide a foundational assessment of pediatric/neonatal nurses' beliefs, attitudes, subjective norms, and behavioral intention to change regarding the promotion and support of breastfeeding at large non-BFHI AHI. Despite a favorably high beliefs score, nurses reveal significant variability exists among attitudes and perceived institutional norms, suggesting a misalignment between individual motivation and organizational infrastructure. Reassuringly, behavioral intention prevailed, communicating future intent to improve breastfeeding support at the bedside.

These findings reinforce the urgent need for an updated institutional breastfeeding policy and consistent, evidence-based nurse education to ensure equitable and optimal breastfeeding support institution-wide. With nurses serving as frontline advocates during critical postpartum and pediatric care periods, supporting their development through training and systems-based interventions is key to improving maternal and infant outcomes.

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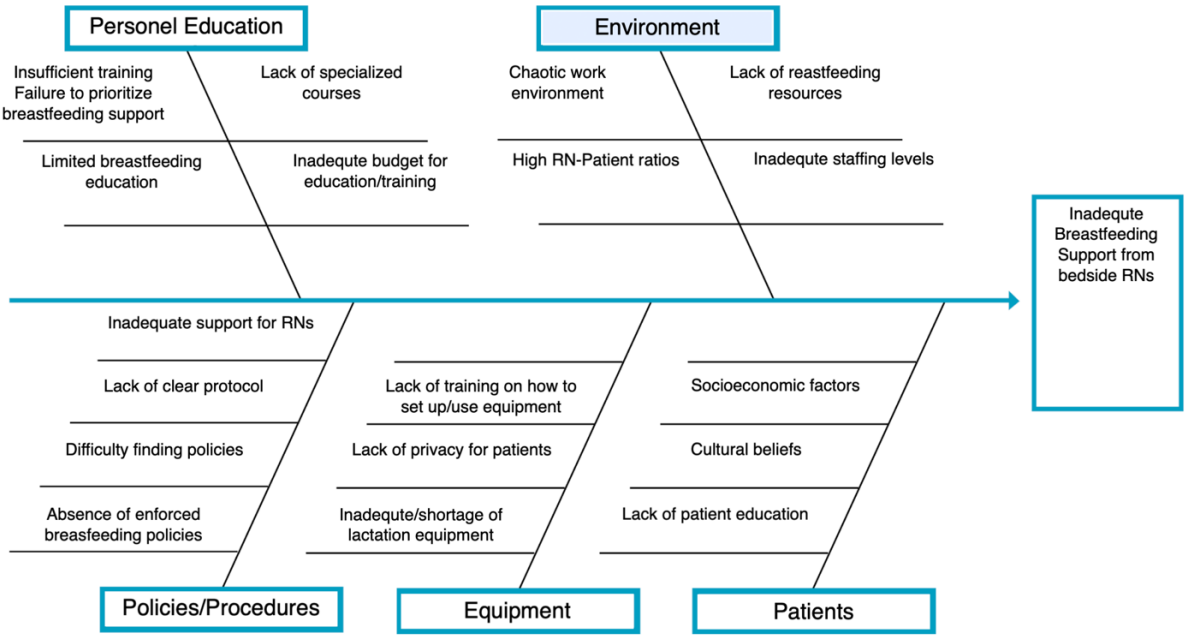
Appendix A

Fishbone Cause and Effect Diagram



Appendix B

Letters of Support from Clinical Agency

Figure B1

Letter of Support from Women's and Neonatal Care

Date: *08/29/2024*

Dear Molli Calhoun,

This letter confirms that I, Molly Blaser, allow Molli Calhoun (OHSU Doctor of Nursing Practice Student) access to complete her DNP Final Project at our clinical site. The project will take place from approximately September 2024 to March 2025.

This letter summarizes the core elements of the project proposal, already reviewed by the DNP Project Preceptor and clinical liaison (if applicable):

- **Project Site(s)**: Oregon Health & Science University – Mother/Baby Unit 13C, Labor and Delivery 12C, Neonatal Intensive Care Unit (NICU) 12A; Doernbecher Children's Hospital – All inpatient floors (9N/S, 10N/S, PICU)
- **Project Plan:**
    - Identified Clinical Problem: Insufficient breastfeeding support is not a new phenomenon among pediatric nurses. Registered nurses are in a prime location to provide valuable support in the promotion of successful breastfeeding for newborns and all pediatric patients under 2 years of age. Despite the optimal bedside RN supportive role, there remains a significant knowledge deficit, leading to inaccurate, inconsistent, and variable support of breastfeeding. The devastating consequence of this knowledge gap results in early discontinuation of breastfeeding, dismantling the optimization of infant nutrition and maternal health in the postpartum period.
    - Rationale: The Theory of Reasoned Action (TRA) posits that the single-best indicator of behavior is behavioral intention driven by one's attitude toward the behavior in relation to the subjective norm. This QI project will use the TRA framework to understand the current attitudes, beliefs, and subjection norms influencing behavioral intention to provide effective and informed breastfeeding support among maternal/newborn, neonatal, and pediatric nurses.
    - Specific Aims: This study aims to measure pediatric nurses' beliefs, attitudes and subjective norms of breastfeeding at a large non-BFHI academic healthcare institution (AHI) and to determine behavioral intention and willingness to change. This project will provide invaluable data regarding breastfeeding support and set the stage for continued QI among bedside nurses in their support of breastfeeding.
    - Methods/Interventions/Measures: The Questionnaire of Professional Breastfeeding Support (QPBS), a 4-part reliable and validated questionnaire developed to assess beliefs, attitudes, subjective norms and behavioral intentions will be administered to maternal/newborn, neonatal and pediatric RNs at OHSU and Doernbecher Children's Hospital. The questionnaire will be administered through Qualtrics and include a demographics section. The distribution of the survey will be limited to staff nurses on the above-mentioned units through a link provided via electronic mailing lists. Additional quick response (QR) codes will be displayed on all units for easy, additional access to increase participation. Participation of the survey will not be required, and no incentives will be provided if individuals chose to partake in the survey.
    - Data Management: At the completion of the survey window (September 2023 – December 2023), data will be downloaded into Microsoft Excel for quantitative and qualitative analysis. Sample demographics will be summarized using means and standard deviations for continuous variables, and frequency counts and percentages for nominal variables. Qualitative data will be compiled into an Excel spreadsheet and qualitative description will be used to identify an overarching theme and common sub-themes. Quantitative breastfeeding support data derived from the survey will be used to obtain a mean and standard deviation for each statement within the subsections of the QPBS. All survey responses

will be anonymous, and respondents will complete the survey through the Qualtrics link, which requires dual-factor authentication for secure access.
    - Site(s) Support: Support from the clinical site will include permission to distribute the QPBS through both email correspondence as well as QR codes displayed in employee areas of each unit. Permission will include face-to-face contact with potential respondents to help increase participation.

During the project implementation and evaluation, Molli Calhoun will provide regular updates and communicate any necessary changes to the DNP Project Preceptor.

Our organization looks forward to working with this student to complete their DNP project. If we have any concerns related to this project, we will contact Molli Calhoun and Sandra Banta-Wright (student's DNP Project Chairperson).

Regards,

Molly Blaser, Nursing Director, Women's and Neonatal Care blaserm@ohsu.edu 503-998-6623

_____

Signature Molly Blaser, MN, RN, NE-BC Date Signed 8/29/24

Figure B2

Letter of Support from Pediatrics

Date: *07/24/2024*

Dear Molli Calhoun,

This letter confirms that I, Camie Herkomer, allow Molli Calhoun (OHSU Doctor of Nursing Practice Student) access to complete her DNP Final Project at our clinical site. The project will take place from approximately September 2024 to March 2025.

This letter summarizes the core elements of the project proposal, already reviewed by the DNP Project Preceptor and clinical liaison (if applicable):

- **Project Site(s)**: Oregon Health & Science University – Mother/Baby Unit 13C, Labor and Delivery 12C, Neonatal Intensive Care Unit (NICU) 12A; Doernbecher Children's Hospital – All inpatient floors (9N/S, 10N/S, PICU)
- **Project Plan:**
    - Identified Clinical Problem: Insufficient breastfeeding support is not a new phenomenon among pediatric nurses. Registered nurses are in a prime location to provide valuable support in the promotion of successful breastfeeding for newborns and all pediatric patients under 2 years of age. Despite the optimal bedside RN supportive role, there remains a significant knowledge deficit, leading to inaccurate, inconsistent, and variable support of breastfeeding. The devastating consequence of this knowledge gap results in early discontinuation of breastfeeding, dismantling the optimization of infant nutrition and maternal health in the postpartum period.
    - Rationale: The Theory of Reasoned Action (TRA) posits that the single-best indicator of behavior is behavioral intention driven by one's attitude toward the behavior in relation to the subjective norm. This QI project will use the TRA framework to understand the current attitudes, beliefs, and subjection norms influencing behavioral intention to provide effective and informed breastfeeding support among maternal/newborn, neonatal, and pediatric nurses.
    - Specific Aims: This study aims to measure pediatric nurses' beliefs, attitudes and subjective norms of breastfeeding at a large non-BFHI academic healthcare institution (AHI) and to determine behavioral intention and willingness to change. This project will provide invaluable

data regarding breastfeeding support and set the stage for continued QI among bedside nurses in their support of breastfeeding.

- Methods/Interventions/Measures: The Questionnaire of Professional Breastfeeding Support (QPBS), a 4-part reliable and validated questionnaire developed to assess beliefs, attitudes, subjective norms and behavioral intentions will be administered to maternal/newborn, neonatal and pediatric RNs at OHSU and Doernbecher Children's Hospital. The questionnaire will be administered through Qualtrics and include a demographics section. The distribution of the survey will be limited to staff nurses on the above-mentioned units through a link provided via electronic mailing lists. Additional quick response (QR) codes will be displayed on all units for easy, additional access to increase participation. Participation of the survey will not be required, and no incentives will be provided if individuals chose to partake in the survey.
- Data Management: At the completion of the survey window (September 2023 – December 2023), data will be downloaded into Microsoft Excel for quantitative and qualitative analysis. Sample demographics will be summarized using means and standard deviations for continuous variables, and frequency counts and percentages for nominal variables. Qualitative data will be compiled into an Excel spreadsheet and qualitative description will be used to identify an overarching theme and common sub-themes. Quantitative breastfeeding support data derived from the survey will be used to obtain a mean and standard deviation for each statement within the subsections of the QPBS. All survey responses will be anonymous, and respondents will complete the survey through the Qualtrics link, which requires dual-factor authentication for secure access.
- Site(s) Support: Support from the clinical site will include permission to distribute the QPBS through both email correspondence as well as QR codes displayed in employee areas of each unit. Permission will include face-to-face contact with potential respondents to help increase participation.

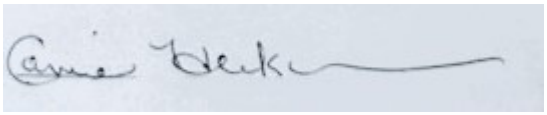
During the project implementation and evaluation, Molli Calhoun will provide regular updates and communicate any necessary changes to the DNP Project Preceptor.

Our organization looks forward to working with this student to complete their DNP project. If we have any concerns related to this project, we will contact Molli Calhoun and Sandra Banta-Wright (student's DNP Project Chairperson).

Regards,

DNP Project Preceptor (Name, Job Title, Email, Phone):_____

Camie Herkomer, Director of Pediatric Nursing, Herkomer@ohsu.edu, 503.708.6132

Signature  Date Signed 07/24/2024

Appendix C

Email Approval to Use the Questionnaire of Professional Breastfeeding Support (QPBS)

From: ANTONIO OLIVER ROIG <antonio.oliver@mscloud.ua.es>
Sent: Tuesday, June 18, 2024 3:02 AM
To: Sandra Banta-Wright <bantawrs@ohsu.edu>; antonio.oliver@ua.es <antonio.oliver@ua.es>; rbermejo@um.es <rbermejo@um.es>
Cc: Molli Calhoun <calhoumo@ohsu.edu>
Subject: [EXTERNAL] RE: Seeking permission to use a survey tool

Dear Sandra,

Thank you for reaching out. I understand the importance of your quality improvement project on breastfeeding support for postpartum mothers. I apologize for the difficulty you've had in contacting Dr. Rosa Bermejo.

Dr. Rosa Bermejo can be reached at her current email address: rbermejo@um.es. I suggest reaching out to her directly to request permission to use the survey tool published in the Journal of Obstetric, Gynecologic and Neonatal Nursing in 2016.

As a co-author of the study, I can grant you permission to use the survey tool for your project. I am confident that the other authors will not have any issues with the tool being used for such a valuable purpose.

Please let me know if there is anything else I can assist you with. I wish you and Molli the best of luck with your project.

Kind regards,

Antonio Oliver Roig.
Associate Professor.
Nursing Department.
University of Alicante.

Appendix D

Questionnaire of Professional Breastfeeding Support (QPBS) Survey

Table DC1

Beliefs Scale

Please indicate your own personal feelings about each statement below about the **Beliefs Scale** by marking the phrase that best describes your attitude or beliefs about each statement regarding breastfeeding. Please be truthful and describe your attitude as it really is, not what you would like for it to be.

Please mark each statement based upon the following scoring:

1 = STRONGLY DISAGREE with the statement
2 = DISAGREE with the statement
3 = UNDECIDED - you neither agree or disagree with the statement
4 = AGREE with the statement
5 = STRONGLY AGREE with the statement

Part Two: Beliefs Scale					
Items	**Strongly Disagree**	**Disagree**	**Neither Disagree or Agree**	**Agree**	**Strongly Agree**
Exclusive breastfeeding is recommended up to 6 months.					
Efforts should be made to maintain breastfeeding even when infants are separated from their mothers.					
Expressed breast milk can be frozen.					
Information on how to express milk is necessary when breastfeeding mother are separated from their infants.					
Breastfeeding support groups play an important role in maintaining breastfeeding.					
Bottle-feeding is the best way to administer formula supplements to infants that need them.					
Exclusively breastfed infants should also drink water.					
As a general rule, every 3 hours is a good breastfeeding schedule.					
Scheduled breastfeeding limits breast milk production.					
Infants should not feed for more than 10 minutes on each breast per session.					

Breastfeeding is beneficial to maternal health.					
Breastfed infants tend to enjoy better health than those fed formula.					
Mother and newborn skin-to-skin contact immediately after birth is important to establish breastfeeding.					
Breastfeeding should be maintained until at least 2 years of age.					
The presence of infant formula advertising in health care centers does not influence a mother's decision to breastfeed.					
Health care professionals should avoid giving mothers gift packs containing pacifiers or infant formula.					

PageBreak

Table D~~C~~2

Attitudes Scale

Please indicate your own personal feelings about each statement below about the **Attitudes Scale** by marking the phrase that best describes your attitude or beliefs about each statement regarding breastfeeding. Please be truthful and describe your attitude as it really is, not what you would like for it to be.

Please mark each statement based upon the following scoring:

STRONGLY DISAGREE with the statement
DISAGREE with the statement
NEITHER DISAGREE OR AGREE - you neither agree or disagree with the statement
AGREE with the statement
STRONGLY AGREE with the statement

Part Three: Attitudes Scale					
Items	**Strongly Disagree**	**Disagree**	**Neither Disagree or Agree**	**Agree**	**Strongly Agree**
I think it is unnecessary to discuss the benefits of breastfeeding with pregnant women.					
I think it is over the top for a mother to initiate breastfeeding immediately after birth.					
I think that a mother and newborn skin-to-skin contact in unnecessary in the first half hour after a cesarean section.					

I feel uncomfortable seeing a woman breastfeeding a child more than 1 year old.					
I think it is unrealistic to recommend that a mother breastfeed on demand.					
I am not sure about expressed milk.					
I like talking to mothers about breastfeeding problems.					
I would not mind working with support groups.					
I think it is over the top to use a cup or glass to give formula supplements to breastfeeding infants.					
I think it is excessive to prohibit infant formula advertising in health care centers.					
I think it is acceptable to give mothers gift packs containing pacifiers.					
I do not like seeing infant formula advertising in my health center.					
I think it is excessive to prohibit professionals from giving free samples of infant formula to breastfeeding mothers.					

PageBreak

Table DC3

Subjective Norms Scale

Please indicate your own personal feelings about each statement below about the **Subjective Norm** by marking the phrase that best describe your attitude or beliefs about the Subjective Norm at your institution. Please be truthful and describe your attitude as it really is, not what you would like for it to be.

Please mark each statement based upon the following scoring:

STRONGLY DISAGREE with the statement
DISAGREE with the statement
NEITHER DISAGREE OR AGREE - you neither agree or disagree with the statement
AGREE with the statement
STRONGLY AGREE with the statement

Part Four: Subjective Norm Scale					
Items	**Strongly Disagree**	**Disagree**	**Neither Disagree or Agree**	**Agree**	**Strongly Agree**
We are all expected to give similar information on breastfeeding.					

A mother's informed choice about child care is respected.					
The work of mothers' support groups is appreciated.					
Formula samples are given to breastfeeding mothers.					
Breastfeeding training is considered important.					
Besides information, mothers are given practical help with breastfeeding.					
Pacifiers are recommended to calm babies.					
We recommend supplementing breastfeeding with formula or other foods from 4 months.					
We recommend adhering to an infant feeding schedule.					
We recommend bottle-feeding when mothers encounter difficulties with breastfeeding (the infant cries a lot or is not sated, the mother is very tired).					
In the case of mastitis, we recommend suspending breastfeeding until the infection has gone.					
Infant formula advertising (calendars, stationary, stadiometers, etc.) is permitted.					

PageBreak

Table DC4

Behavioral Intention Scale

Please indicate your own personal feelings about each statement below about **Behavioral Intention** by marking the phrase that best describe your personal behavioral intention about each action. Please be truthful and describe your attitude as it really is, not what you would like for it to be.

Please mark each statement based upon the following scoring:

STRONGLY DISAGREE with the statement
DISAGREE with the statement
NEITHER DISAGREE OR AGREE - you neither agree or disagree with the statement
AGREE with the statement
STRONGLY AGREE with the statement

Part Five: Behavioral Intention Scale					
Items	**Strongly Disagree**	**Disagree**	**Neither Disagree or Agree**	**Agree**	**Strongly Agree**
Inform mothers about the benefits of breast milk.					
Encourage mothers to breastfeed their babies for as long as possible.					
Show mothers how to recognize and respond to signs of hunger in an infant.					
Inform mothers how to continue breastfeeding when they return to paid work.					
Participate in training activities to update my knowledge of breastfeeding.					
Support mothers' decisions about breastfeeding.					
Facilitate contact between mothers and peer support groups.					
Avoid the presence of formula advertisements in my workplace.					

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Thank you for taking the time to complete this survey on Breastfeeding.

Molli and Sandra

Appendix E

Demographics Survey

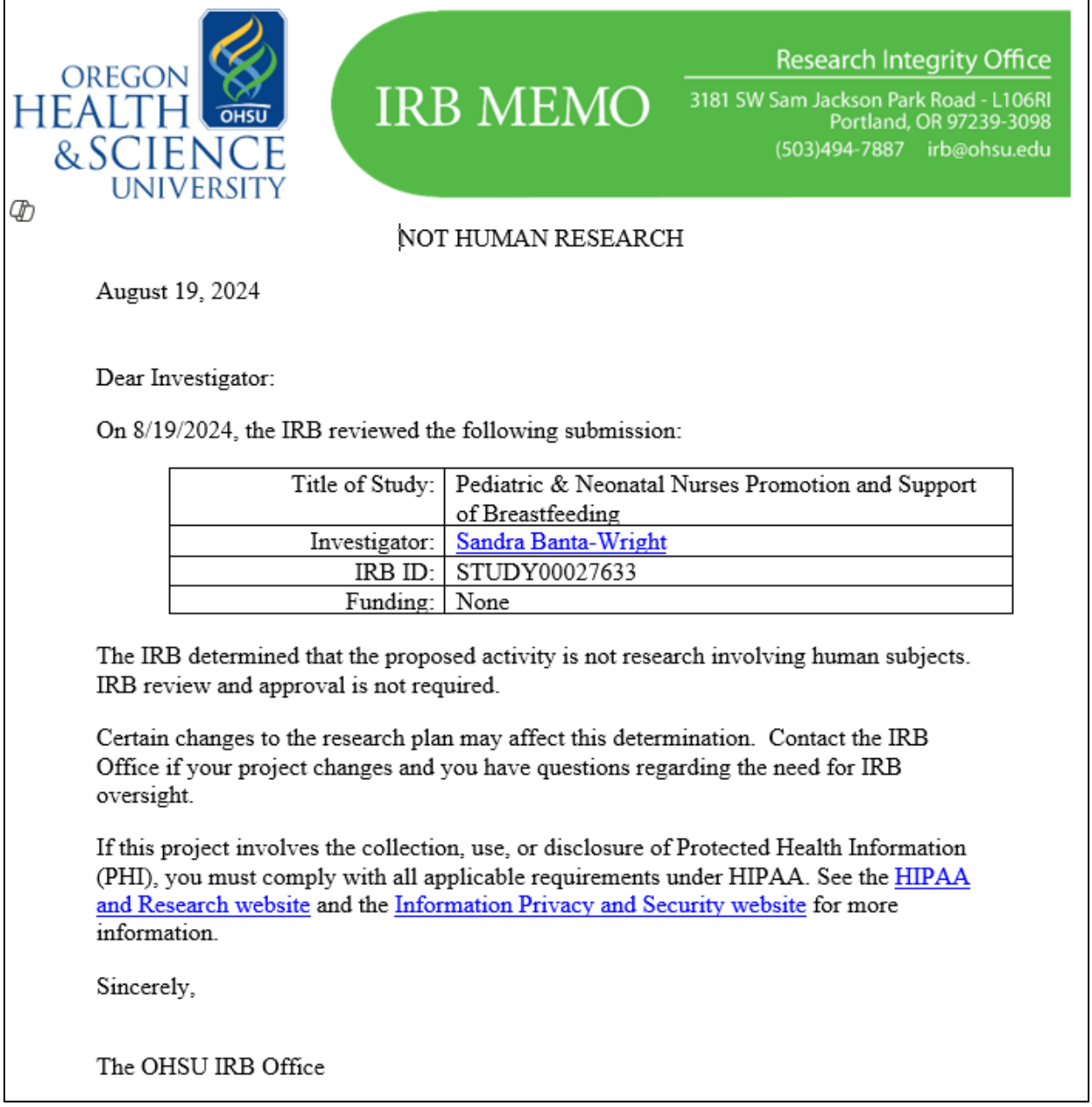
Part one: Demographics Note: There will be a page break after each question.	
Questions	**Responses**
What is your age?	Numerical value
What is your gender?	Male, female, non-binary/third gender, transgender, prefer not to say
What is your ethnicity?	Black, White, Asian, Pacific Islander, Native American, Alaska Native, Hispanic
What was your primary RN degree?	Associate, BSN, MSN, DNP
How many years of pediatric or maternal/neonatal nursing experience do you have?	<1 year 1-5 years 6-10 years 11-20 ears >20 years
What inpatient unit do you work on?	*Pediatrics:* 9N/9S Medical/Surgical acute care 10N Intermediate Medical unit 10S Heme/Onc acute care 8N PICU Pediatric Float pool *Maternal/Neonatal medicine:* 13C Mother/Baby Unit 12C Labor & Delivery 12A Neonatal ICU
Do you hold a current IBCLC certification?	Yes, no
How would you describe your personal experience with breastfeeding?	Breastfed for >6months, breastfed for <6months, attempted to breastfeed but stopped due to complications, never breastfed
How would you rate your breastfeeding education/training provided by your place of employment?	Insufficient, Appropriate, very good, No previous training

Appendix F

Survey Flyer

Appendix G

IRB Determination



OREGON HEALTH & SCIENCE UNIVERSITY

IRB MEMO

Research Integrity Office
3181 SW Sam Jackson Park Road - L106RI
Portland, OR 97239-3098
(503)494-7887 irb@ohsu.edu

NOT HUMAN RESEARCH

August 19, 2024

Dear Investigator:

On 8/19/2024, the IRB reviewed the following submission:

Title of Study:	Pediatric & Neonatal Nurses Promotion and Support of Breastfeeding
Investigator:	Sandra Banta-Wright
IRB ID:	STUDY00027633
Funding:	None

The IRB determined that the proposed activity is not research involving human subjects. IRB review and approval is not required.

Certain changes to the research plan may affect this determination. Contact the IRB Office if your project changes and you have questions regarding the need for IRB oversight.

If this project involves the collection, use, or disclosure of Protected Health Information (PHI), you must comply with all applicable requirements under HIPAA. See the HIPAA and Research website and the Information Privacy and Security website for more information.

Sincerely,

The OHSU IRB Office