Evaluating the Knowledge, Skills, and Attitudes of Recent DNP Graduates Regarding

Breastfeeding Care

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May 3, 2025

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Abstract

Lack of access to qualified providers contributes to the poor breastfeeding outcomes in the United States. While advanced practice registered nurses (APRNs) are positioned to fill this need, low knowledge, skill, and confidence have been identified as barriers to providing breastfeeding care. This paper examines graduate APRNs current practice, attitudes, knowledge and skill, and educational experience with breastfeeding care. An anonymous survey was disseminated to graduates of an academic health institution from the family nurse practitioner, nurse midwifery, and pediatric nurse practitioner tracks, which aimed to attain baseline information to inform curriculum development. The findings highlight that the primary barrier to providing care is a lack of provider knowledge, while there is consensus that addressing breastfeeding difficulties falls within the APRN scope of practice. Additionally, the results show low confidence and limited knowledge in breastfeeding care, dissatisfaction with recent graduate education on the subject, and a strong desire for professional training in breastfeeding care to be included as a mandatory component of APRN graduate education. Results from this survey reveal a discordance between the desire to provide care to breastfeeding families with the ability to do so, offering opportunity for intentional curriculum development. While the objective of this survey was to attain baseline information on new graduates for the purpose of informing course design, the agreement from graduates that breastfeeding care aligns with the scope of practice of APRNs serving breastfeeding families and that breastfeeding care should be a part of the required curriculum for graduate education deserves further discussion.

Evaluating the Knowledge, Skills, and Attitudes of Recent DNP Graduates Regarding Breastfeeding

Care

It is well established that breastfeeding is considered the optimum nutrition for human infants and offers extensive benefits to the mother (Masi & Stewart, 2024; Pecoraro et al., 2018). Most professional organizations, including the American Association of Pediatrics (AAP), the World Health Organization, the American College of Nurse Midwives (ACNM), and the American College of Obstetrics and Gynecologists (ACOG) recommend exclusive breastfeeding for about 6 months and breastfeeding for at least 1 year (ACNM, 2016; ACOG, 2021b; Meek et al., 2022; World Health Organization & Unicef, 2023). Despite these recommendations, both the nation and Oregon continue to lag behind the Healthy People 2030 goals to reach 42.5% of infants exclusively breastfed at 6 months and 54.1% of infants with any breastfeeding by 1 year (Office of Disease Prevention and Health Promotion, n.d.). As of 2019, Oregon's rate for exclusive breastfeeding at 6 months peaked at 34.2%, with the national rate reaching only 24.9% (Centers for Disease Control and Prevention [CDC], 2023). Rates for any breastfeeding at 1year are 44% for Oregon and 35.9% for the nation (CDC, 2023). Health disparities are embedded in these low rates, disproportionately impacting Black, indigenous, and people of color (BIPOC) populations, rural communities, and patients identified as lower socioeconomic status (CDC, 2022).

Early breastfeeding cessation is commonly associated with physiologic difficulties for both mother and baby and concerns about milk supply, both of which require time-sensitive interventions to prevent cessation before 6 months postpartum (Hornsby et al., 2019). Barriers to meeting breastfeeding goals include both social and structural impediments, including inadequate parental paid leave policies, lack of access to qualified lactation care, and lack of support in the workplace (ACOG, 2021a). A study by Odom et al. (2012) showed that 60% of mothers did not meet their own goals with breastfeeding duration, citing the health service processes as a primary reason for premature weaning. Poor consistency in advice and fragmented care have been identified as health service factors which contribute to decreased continuation of breastfeeding (Cramer et al., 2021).

Problem Description

Advanced practice registered nurses (APRN) who serve postpartum women and newborns include certified nurse midwives (CNM), pediatric nurse practitioners (PNP) and family nurse practitioners (FNP). Though these providers are perfectly aligned to provide comprehensive evaluation and management for breastfeeding complications, only 60.1% of nurse midwives practice to the full scope of their certification, including newborn care (Thumm et al., 2023). Knowledge gaps in breastfeeding care are a consistent finding across studies, with providers acknowledging they are unprepared by their formal education to support breastfeeding families (Blixt et al., 2023; Khasawneh et al., 2023; Brzezinski et al., 2018; Hookway & Brown, 2023). The deficit for application of knowledge to practice is large with roughly half of providers lacking confidence in their skills and ability to manage simple breastfeeding cases (Hookway & Brown, 2023). The lack of confidence, knowledge, and skills has resulted in APRNs referring out for lactation complications rather than managing the care themselves.

The subject location of this project is a large academic health institution with six APRN specialty tracks embedded in a Doctor of Nursing Practice (DNP) program. The subject location currently provides limited education in the evaluation and management of complications of breastfeeding to its APRN students whose population focus includes breastfeeding families. Although the subject location has plans to provide additional elective education in breastfeeding care management, the baseline level of confidence, knowledge, and skills and the impact of the educational preparation on new graduate's capacity to practice to the full scope of their license remain unknown.

Available Knowledge

An iterative search was conducted with the keywords lactation, breastfeeding, professional training, health outcomes, newborn care, education, scope of practice, nurse specialists, nurse

midwives, and nurse practitioner. The databases searched included PubMed, CINAHL, Scopus, and MEDLINE with further refinement to limit dates from 2019-2024 and English language.

Studies show that APRNs who care for lactating families identify lactation management as an advanced skill which requires specialized, additional knowledge to adequately care for this population (Brzezinski et al., 2018; Hookway & Brown, 2023; Khasawneh et al., 2023). Knowledge gaps related to complications were significant in the areas of pain management and low infant weight gain (Blixt et al., 2023), two of the top factors in early breastfeeding cessation. It is worrying that these gaps were not only related to complications of lactation, but also to fundamental breastfeeding management knowledge (Hookway & Brown, 2023). Although years of nursing experience were positively correlated with a positive attitude, experience was not associated with increases in knowledge (Khasawneh et al., 2023). In addition, current knowledge of lactation was strongly correlated to personal experience with breastfeeding, but not with prior nursing education (Brzezinski et al., 2018; Khasawneh et al., 2023), highlighting the advantage that those with personal history have and the gap in evidence-based practice.

Skill is the application of knowledge to practice. Most providers feel they have only a basic skill to care for breastfeeding dyads, noting that their professional training was focused on healthy newborns rather than babies with complications (Brzezinski et al.; 2018, Hookway & Brown, 2023; Khasawneh et al., 2023). Providers report struggles with assessing breastfeeding, recognizing normal from abnormal, and developing a breastfeeding management plan, contributing to feelings of being unprepared to support breastfeeding families (Brzezinski et al., 2018; Khasawneh et al., 2023).

Additional breastfeeding training can help prepare APRNs to care for lactating families. A recent meta-analysis established that breastfeeding training programs targeted at APRNs have a positive correlation with increased breastfeeding knowledge (Antoñanzas-Baztan et al., 2020; Blixt et al., 2023; Wang et al., 2023). In addition, breastfeeding knowledge acquisition had a positive correlation on attitude, contributing to APRN's desire to access more training (Antoñanzas-Baztan et al., 2020; Hookway & Brown, 2023; Khasawneh et al., 2023; Wang et al., 2023). Breastfeeding training has shown consistent improvement in confidence to manage both basic and complex breastfeeding cases (Antoñanzas-Baztan et al., 2020; Blixt et al., 2023). Further, skill improvement was consistent across professions, showing both internal and external validity of breastfeeding training to the APRN profession (Hookway & Brown, 2023). Importantly, breastfeeding training has been shown to have a high transfer of knowledge to application in the practice environment (Antoñanzas-Baztan et al., 2020). Meta-analysis has confirmed that in addition to significant impacts on knowledge, confidence, and skills, breastfeeding training programs clinically improve breastfeeding rates in the areas of duration of exclusive breastfeeding, decreased breastfeeding challenges, and increased satisfaction with advice and counseling received during care (Wang et al., 2023). Providing additional advanced lactation training to guide the management of common and uncommon complications of breastfeeding improves the APRNs confidence, skills, and knowledge, resulting in positive impacts on breastfeeding rates and outcomes. **Rationale**

A root cause analysis (see Appendix A) examined various external and internal contributors to APRNs referring out for breastfeeding care rather than managing the care themselves. The analysis highlighted the impact of the provision of graduate education competency on multiple other contributors, including educational deficiency in knowledge and skill to evaluate and manage care for breastfeeding families. In addition, a lack of knowledge and skill contribute to the APRN capacity to advocate for environmental deficiencies, represented by supplies and clinic space, and system contributors such as inadequate time for visits and inappropriate reimbursement for services. Thus, increasing competency regarding breastfeeding care upon graduation will impact multiple areas of need and provide a foundation for providers to both advocate for change within the healthcare system and practice to the full scope of their license. Professional education targeted at APRN students is an upstream approach to the downstream problem of inconsistent and suboptimal breastfeeding care. Robust and comprehensive APRN education can support professional workforce development and meet the patient need for continuous, evidencebased care to improve breastfeeding outcomes. This project directly addresses the first domain of the American Association of Colleges of Nursing (AACN) graduate education competencies, identified as *knowledge of nursing practice* and the ability to integrate advanced specialty knowledge into clinical reasoning (AACN, 2021). For the graduating APRN licensed to take care of breastfeeding patients, integrating specialty knowledge into skill requires the prioritization of full scope graduate educational curriculums. Curriculum development is an iterative process which benefits from the attainment, analysis, and evaluation of the internal and external factors related to the context for which the curriculum will be implemented (Iwasiw et al., 2020). Establishing baseline data from previous APRN graduates of the subject academic institution is necessary to guide development of a unified and intentional curriculum in breastfeeding care and management.

Guided by the Institute for Healthcare Improvement (IHI) Model for Improvement and utilizing the Plan-Do-Study-Act (PDSA) cycle, this project will gather baseline knowledge, skills, and attitude data from past graduates of the subject APRN programs and identify areas of educational need. The PDSA cycle was chosen as a model because it reflects the iterative process of course development and evaluation and can be applied multiple times over the life of future course design. Evaluation of past students will be informed by the Theoretical Domains Framework (TDF). The TDF evolved out of the integration of numerous frameworks which evaluate behavior change and incorporates the domains of knowledge, skills, professional role and identity, self-belief, and environmental context (Cane et al., 2012). The TDF has been utilized in implementation science with the application of interviews and questionnaires organized around these domains and has acted to illuminate the many factors influencing the implementation of best practice in healthcare (Cane et al., 2012). These domains are inclusive of context, competency, and confidence, all factors which impact transfer of knowledge to practice and will help guide the project's approach to identifying salient data points which are known to impact behavior change.

Specific Aim

The primary aim of this project was to gather baseline data from recent CNM, PNP, and FNP track graduates on the knowledge, skills, attitudes, and barriers regarding APRN provision of breastfeeding care by December 15th, 2024. Information attained in this project will be used for iterative course curriculum development, including course objectives and content development reflecting gaps and descriptive barrier domains.

Methods

Context

This project was implemented at an academic healthcare center in the Pacific Northwest. The subject location's programming is inclusive of bachelor to doctoral degree programs and is accredited by the Commission on Collegiate Nursing Education. All APRN degrees are doctoral degrees, culminating in the DNP. DNP tracks that include a terminal scope of practice for serving breastfeeding families include CNM, FNP, and PNP. Over the last five years, the subject location has consistently graduated about 25 students from these tracks each academic year. Breastfeeding education in these DNP tracks varies significantly but currently can include up to eight hours of direct clinical practicum with an International Board-Certified Lactation Consultant (IBCLC) and didactic training isolated to single lectures inside the pharmacology, pathophysiology, and newborn care courses. It is notable that required curriculum content only includes content on normal breastfeeding, including topics such as anatomy and physiology of lactation, newborn positioning on the breast, and normal ranges and expectations for newborn growth.

Prior to the initiation of this project, anonymous, informal interviews with approximately six recent graduates and current APRN students at the subject school were conducted and identified that

the program does not adequately prepare graduates to care for breastfeeding families. In addition, interviewees unanimously cited a desire to develop basic competency in evaluation and management of breastfeeding difficulties as part of their graduate education, reflecting strong support for additional training in this area of study.

Intervention

An online survey was developed and disseminated to recent graduates of FNP, CNM, and PNP DNP tracks graduating from the academic years 2021-2024. Development of the survey reflected an intention that structure and content would elicit information inclusive of both external and internal factors impacting APRN practice. Survey structure was based on the Breastfeeding Resident Education Study (BRESt) survey, a validated survey assessing breastfeeding knowledge and skill, comfort level, clinical practices, role perception, and educational needs of resident physicians and aligns with the TDF for behavior change (Esselmont, 2018). In addition, the survey content was influenced by the validated Breastfeeding Support Confidence Scale to measure self-efficacy to provide care (Blixt, 2023). In addition to quantitative survey questions, qualitative questions were added to provide opportunity for individual feedback and thoughts on topic areas.

The final survey structure was limited to the four domains of Practice Environment, Role Definition, Knowledge and Skill, and Educational Experience. **The Practice Environment domain** included questions on specialty, geographic location, clinical resources, and quantifies breastfeeding patient care. The practice environment domain evaluated the external contextual factors which influence a provider's ability to provide care in their current practice environment. The **Role Definition domain** included questions on barriers to providing breastfeeding care, attitudes about scope of practice, and assessment of confidence to provide breastfeeding care for specific topics. This domain sought to elucidate attitudes of new graduates on their capacity and role to provide breastfeeding care. The **Knowledge and Skill domain** included 12 questions which assessed content areas identified by Rosen-Carole et al.(2022), Sims et al.(2015), and Hookway and Brown (2023) as foundational content for advanced practice providers to provide breastfeeding care. T he baseline information on knowledge and skill is particularly important to inform future breastfeeding education content. The **Educational Experience domain** includes information regarding the timing and quantity of graduate's breastfeeding care education and perceptions of adequacy and inclusion into the core APRN curriculum.

The survey development team was comprised of the process owner, DNP project chair, several experienced DNP faculty, and the Office of Student Academic Affairs (OAA). Request for input into the survey design and content was sent to faculty from the aforementioned tracks on September 30, 2024 with an open comment period of two weeks. A reminder email was sent to the faculty one week after the initial request for feedback.

Techniques for assuring completeness and accuracy of the data included consultation with the University statistical team who assisted with review of the survey tool and analysis of the survey data. In addition to faculty feedback, the DNP chair regularly reviewed and provided feedback on the survey tool and measures. The survey reminders were written in inclusive language, encouraging all DNP track graduates to participate independent of their status serving breastfeeding families.

Survey development was completed by October 15, 2025, after four (100%) faculty returned feedback on survey content. The survey was delivered via the OAA to 108 graduate alumni from the CNM, PNP, and FNP tracks from the years 2021-2024. The email included a link to the anonymous Qualtrics survey, an introductory statement describing the purpose of the survey, and contact information for the project owner.

At the end of each week, the process owner utilized a run chart to review the number of returned surveys to determine if any additional outreach needed to occur. Email reminders were sent at the end of weeks two, four, and five requesting survey return and reminding the participants of the deadline.

Study of the Intervention

The survey implementation and content were studied through continuous review of number and percent of respondents as well as final data analysis of the survey results. Data collected from participant return rates, completion rates, competency scores, and qualitative feedback was consolidated into recommendations for improvement in content and dissemination of the survey for future cohorts.

Measures

The outcome measures for the survey included scores for knowledge, skill, and confidence, and rank for barriers to practice. This baseline data serves to measure the success of the current education provided to CNM, PNP, and FNP graduates to provide breastfeeding care upon transition from graduate school to practice. Future monitoring of these outcome measures over time will provide the project team with needed data to inform iterative content development and evaluate the effectiveness of the educational material provided by the university.

The process measures were related to the distribution and response from participants and included the percent and number of respondents completing the survey and rate of return. The total rate of return was further analyzed by DNP track specialty. These measures were used to evaluate the total participant survey response rate as compared to the average response rate of 44% for on-line surveys (Wu et al., 2022) and acted as a determination of whether the single method distribution process was adequate to capture input from an adequate number of graduates. In addition, these measures provided insight into variation between specialties which functioned to inform recommendations for future dissemination approaches to improve survey participation.

The balancing measure focused on potential negative impacts on survey participation and was evaluated through feedback from survey participants on their survey experience through a qualitative, open-ended question at the end of the survey. The two primary concerns were the burden of time spent

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and potential emotional strain upon considering one's lack of knowledge on an APRN practice area. In order to mitigate the negative impact of time spent, the survey was limited to approximately 10 minutes for completion and email reminders were limited to a maximum of three reminders after the initial request for completion email was sent out. Steps taken to mitigate issues of emotional distress were inclusion of a statement in the introductory letter about the need for all perspectives, and a statement in the survey itself about the knowledge questions being their own section. Additionally, the option of "I do not know" was added to each knowledge question, eliminating the conflict of respondents having to guess at a question where there was a clear gap in knowledge. Qualitative comments from survey participants were used to provide recommendations for revision of the survey prior to dissemination to future alumni cohorts.

Analysis

Process measures for total participant engagement and participant engagement by specialty and graduating year cohorts were evaluated at the end of each week starting on November 7 and ending on December 8. Rate of return for surveys were analyzed in relation to timing and viewed via a run chart to evaluate for trends, correlations with interventions, and variation in return rate. Variation was anticipated along the timeline due to participants risk of losing track of emails and neglecting to return surveys due to time competition with other workload requirements, which were balanced out with email reminders. Common cause variation was anticipated as a downward trend in survey return with time, while special cause variation was anticipated as an upward shift with email reminders. Balancing measures were analyzed through qualitative feedback from the participants and organized into common themes.

Outcome measures were analyzed using descriptive statistics for the domains of practice environment, role definition, knowledge/skill, and educational experience. This data was further stratified demographic data and analyzed by graduation year and specialty. Practice environment included geographic area, practice ownership, availability of a lactation consultant on site, and whether providers served breastfeeding families. Role definition included barriers to practice, confidence, and attitudes related to scope of practice. Barriers to practice were examined under professional role through a rank order and included five primary domains which were drawn from the Cause and Effect Diagram (Appendix A), including appointment duration limitations, lack of available urgent visit appointments, lack of confidence in skill, lack of knowledge in treatment, and a lack of space to work with breastfeeding families in the clinic. This data was used to identify the most important barriers to implementation of breastfeeding services within current practice environments and was further stratified by specialty area using multivariant pivot charts to elucidate variance within each cohort. Confidence was analyzed through six content areas using percentages and number as the most meaningful analysis of cohorts from 5-point Likert scale questions. Knowledge and skill were analyzed using a mean score for the section. Demonstration of competency was evaluated with a cutoff of 70% correct on the knowledge/skill questions for each participant, and 70% correct for the cohort for each question. The cutoff of 70% was chosen due to its relationship to the minimum passing standard for the University's courses. Educational experience was analyzed through percentages and stratified by specialty and by graduation year.

Balancing measures were examined through qualitative data assessed and organized into themes reflecting differing experiences taking the survey. This process was completed by the process owner and chairperson to enhance validity. This data was captured from the final question of the survey, which asked participants to reflect on their experience with taking the survey.

Ethical Considerations

The Institutional Review Board determined this project was not research on 10/17/2024 (Appendix D). All communication with the graduates was done through the OAA through email to maintain confidentiality and anonymity for the survey. Contact information was attained by the OAA via

their contact list from graduates and all contact for this cycle of the project initiated from the OAA. Survey responses were not connected to contact information and were completely anonymous. Negative experiences completing the survey were captured in the final question through a qualitative open-ended question and analyzed as a potential confounding variable impacting answers on the survey and for future iterations of the survey to minimize harm.

Results

At survey closure, 33 (31% response rate) surveys were returned. Of these surveys, 26 (79%) were complete and included in the full data analysis beyond the initial demographic information. There were four FNPs and three PNPs who started the survey but stopped after the question asking if they served breastfeeding families. All CNMs who started the survey completed it.

Findings

Although the survey return rate did not meet the process measure of attaining a total survey return rate of 44%, it did show an increase in survey return with each email reminder. Survey return rate responded positively immediately on the day of reminder emails, with increased survey return numbers aligning with the day of each email communication. Variance in timing of email reminders was observed with email reminder number 1 sent out on Thursday and email number 2 and number 3 sent on Monday due to the unanticipated delay related to the weekend, holiday, and OAA staff availability. Process measures were analyzed using the run chart as shown in Figure 1, which included 45 data points, which demonstrated no shifts and no trends. The central tendency of surveys returned per day was expressed as the median (Mdn=0) and showed reasonable range (0-12 surveys/day). All variation observed with increased return rates after email reminders was attributable to common cause variation as no shifts or trends were noted.

Figure 1

Survey Return Run Chart



Practice Environment

Of the 33 providers who started the survey, 10 (30%) were CNMs, 15 (46%) were FNPs, and eight (24%) were PNPs. Characteristics from graduation year show nine (27%) recently graduating in 2024, 12 (37%) in 2023, eight (24%) in 2022, and four (12%) in 2021. Seven participants did not complete the survey, stopping after the question on service to breastfeeding families (Question 9). Of these, four were FNPs and three were PNPs. All CNMs who started the survey completed it. Among those who completed the survey (n=26), 10 (38%) were CNMs, 11 (42%) were FNPs, and five (19%) were PNPs. Characteristics from geographic location, practice environment and practice focus are summarized in Table 1.

Table 1

Characteristics of Participants by Practice Environment

Total		Completed	
n=33		n=26	
 Number	Percent	Number	Percent

Geographic location

Urban/suburban	24	73	17	65
Rural	9	27	9	35
Frontier	0	0	0	0
Practice type				
Hospital owned	17	52	14	54
APRN owned	1	3	1	4
Physician owned	9	29	5	19
Community Birth Center	1	3	1	4
Public health	3	10	3	12
Other	1	6	1	4
Practice focus				
Primary care	15	46	11	42
Reproductive healthcare	0	0	0	0
Perinatal care	8	24	8	31
Specialty clinic	10	30	7	27

Participants were further stratified into those who provide breastfeeding care to their patients (n=21, 64%) and those who do not (n=12, 36%). Of those who completed the survey (n=26), 19 (73%) provide care to breastfeeding families. Examination of patient contact and practice was observed through asking about the number of patients these providers served each week, with each lactating patient and infant counted independently, and the number of patients these APRNs provided evaluation and management of breastfeeding. Results are summarized in Table 2.

Table 2

Provision of Breastfeeding Care

	Number	Percent
Patients served/week		
1-3	8	42
4-6	1	5
7-10	5	26
10 or more	5	26
Evaluate and manage		
0-24%	3	16
25-49%	3	16
50-74%	2	11
75-100%	11	58

Role Definition

Role definition results include attitudes regarding breastfeeding as internal to APRN scope of practice, confidence, and barriers to providing care. When asked the question "Do you consider the evaluation and management of breastfeeding difficulties to be a core competency of your scope of practice?" over half of the participants (n=14, 52%) answered "definitely yes" or "probably yes" while 9 (35%) stated "definitely not" or "probably not." Most CNMs (70%) and PNPs (60%) reported that care for breastfeeding difficulties was within their scope of practice, while only 27% of FNPs agreed with this. One CNM graduate commented "I went into my career knowing almost nothing about breastfeeding when it's a huge part of the dyad and postpartum for most families," reinforcing the commonality of providing care to the breastfeeding population within this specialty. A summary is provided in Table 3 with stratification by APRN specialty.

Table 3

			Number	Percent <i>(n=26)</i>	Percent of specialty
Definitely not	Total		7	27	
		CNM	2		20
		FNP	3		27
		PNP	2		40
Probably not	Total		2	8	
		CNM	1		10
		FNP	1		9
		PNP	0		0
Neutral	Total		4	15	
		CNM	0		0
		FNP	4		36
		PNP	0		0
Probably yes	Total		4	15	
		CNM	1		10
		FNP	1		9
		PNP	2		40
Definitely yes	Total		9	35	
		CNM	6		60

Attitude Regarding Breastfeeding Care as Internal to Scope of Practice

 FNP
 2
 18

 PNP
 1
 20

Providers commented that their practice did not include breastfeeding care unless they worked in a specialty breastfeeding clinic, reinforcing the reality that practitioners are referring out early for breastfeeding care. This was reflected by a CNM who stated, "we see lactating parents at pp visits but do not see them specifically for [lactation] except for mastitis, otherwise we refer." Another CNM commented that midwives do well in antepartum, intrapartum, and immediately after birth, but neglected to mention the postpartum period after hospital discharge. Finally, a CNM's comment that many patients do not bring their babies to postpartum clinic highlights a lack of appreciation from the public for the role of the APRN in supporting breastfeeding families during the postpartum period.

Confidence in providing care was expressed as an overall mean of 2.97, with 3 being equal to "neither confident or not confident." The content areas with the least confidence included managing insufficient glandular tissue and chronic pain (mean = 2.38, 2.77, respectively). Forty two percent of APRNs stated they were "extremely not confident" at managing breastfeeding patients with insufficient glandular tissue. In addition, 46% of participants were "extremely not confident" or "slightly not confident" (23%, 23%) in supporting breastfeeding patients with chronic pain. The content areas with the highest confidence were newborn difficulty and low milk supply (mean = 3.35, 3.23, respectively). Confidence by topic is summarized is Figure 2.

Figure 2

Confidence to Provide Care by Content Topic



Low milk supply and chronic pain were further analyzed using pivot tables. Low milk supply was stratified by year graduated (see Figure 3) to examine the influence of practice experience on supporting lactating patients with low milk supply. Although cohorts across graduate year consistently reported "slight confidence" in evaluating and managing low milk supply, participants who graduated in 2022 and 2023 reported the lowest confidence in this area.

Figure 3



Low Milk Supply Confidence and Year Graduated by Count

Confidence in evaluation and management of chronic pain in breastfeeding was examined by specialty type. Figure 4 shows the high variance in this content area across specialty type, with PNPs being the least confident and CNMs having the most confidence. Interestingly, FNPs showed a tendency toward lower confidence, despite chronic pain being a common issue in primary care.

Figure 4



Chronic Pain Confidence and Specialty Type by Count

Barriers to practice were ranked with practitioner knowledge identified as the most important barrier to providing breastfeeding care. This was followed by knowledge of billing and coding, visits not being prioritized on the provider schedule, short appointment durations, and lastly, inadequate space. This was particularly true for CNMs, with 50% of the CNM participants ranking provider knowledge as the highest barrier. The greatest barrier for FNPs was visits not being prioritized.

Knowledge and Skill

The average overall mean for correct answers for knowledge and skill was 41%. Two questions surpassed the target of 70% competency, including content related to anatomy of lactation and management of mastitis. Content that was above 50% included endocrinology, intrapartum variables, mental health, and milk transfer assessment (64%, 52%, 56%, 52%, respectively). Topics with the lowest

scores included professional recommendations for duration of breastfeeding, UNICEF/WHO Ten Steps to Successful Breastfeeding, radiology and medications, endocrinology for induced or hyperlactation, and returning to work recommendations. Table 4 summarizes the participants results for each of the 12 knowledge and skill questions.

Table 4

Knowledge and Skill Competency Scores

	Percent "incorrect"	Percent "I do not know"	Precent correct
UNICEF's 10 Steps	52%	36%	12%
Professional recommendations for duration	48%	28%	24%
Induced lactation protocol	24%	48%	28%
Endocrinology- lactogenesis	44%	36%	20%
Anatomy of lactation	0%	0%	100%
Endocrinology- lactogenesis	36%	0%	64%
Mental health and lactation	8%	36%	56%
Intrapartum variables	8%	40%	52%
Management of mastitis	4%	24%	72%
Returning to work	72%	16%	12%
Endocrinology- hyperlactation	16%	72%	12%
Radiology and medications	36%	40%	24%
Milk transfer assessment	16%	32%	52%

Interestingly, counseling patients who are returning to work, which impacts the majority of breastfeeding patients, show 88% either choosing the wrong answer (72%) or "I do not know" (12%), highlighting a large gap in knowledge in this area. Breastfeeding care for patients struggling with mastitis was the area with the greatest knowledge. Knowledge and skill data was further analyzed for variance within the participant pool and by answer type using a box and whisker plot as shown in Figure 5 below. The "percent correct" column shows the greatest variance (88%), reflecting a wide range of knowledge on topics and within the participant pool.

Figure 5



Knowledge and Skill Variance by Answer Type

Educational Experience

The majority of participants (54%) received their breastfeeding education in graduate school. Less than half received education from their practice experience (42%) or from their experience being a parent themselves (42%). Almost one quarter (23%) seek out information independently, either through self-learning or through additional medical education. Three international board-certified lactation consultants (IBCLC) and a certified lactation counselor were included in the final analysis. An additional participant stated they received breastfeeding education "a long time ago." While 80% of CNMs received breastfeeding education in graduate school, only 45% of FNPs, and 20% of PNPs received breastfeeding care as a part of their graduate education. Almost all participants (n=24, 92%) reported that their graduate education did not prepare them to evaluate and manage breastfeeding difficulties. The two participants who stated that their graduate education was adequate did not receive any education during their APRN degree, raising the question of accuracy of this response. One participant provided feedback on adequacy by stating "Very little teaching about breastfeeding in the classroom, had two days with a RN and which was helpful but would have been way more helpful if I had been taught about breastfeeding beforehand so I could understand the context of what the RN was talking about and follow the care better." Another participant pointed out the lack of access to clinical breastfeeding experience due to the disruption in graduate education with the COVID-19 pandemic. Finally, a comment was included about adding in supplementation education as additional content, stating "I also think part of the training should be in proper formula feeding and supplementing as well. I don't remember ever being taught how to do paced bottle feeds, SNS systems, etc. I have these skills from being a postpartum doula." This comment aligns with the low knowledge competency score for supplementation.

The concept of additional breastfeeding education as part of the academic health center's regular APRN curriculum was offered as either an "elective" or "required" option. Two thirds (67%) of participants felt breastfeeding education should be a required component of their APRN education. When this data was stratified by specialty, 100% of CNMs and 56% of FNPs stated that breastfeeding education should be required. One third of the PNPs chose required over elective. One PNP put both required and elective as answers requiring this data to be excluded, and one PNP did not answer the question. A FNP pointed out that they "would have loved to be able to take a breastfeeding elective, or have it as a required class, especially during our prenatal rotations. I wish we had a whole block around pregnancy and not just a couple weeks of lecture for FNP program."

Discussion

Survey results highlight the need to improve access to breastfeeding care education in APRN programs and provide recommendations for development of curriculum content. While most graduates agree that breastfeeding care is within their scope of practice and should be a mandatory part of the graduate curriculum, this survey exposed a gap in knowledge and low confidence as a hinderance to providing care. Findings also identified several content areas for improving knowledge which align with professional organization's recommendations for initiating, establishing, and maintaining breastfeeding care.

Baseline data provided from this survey reveals a discordance between provider desire to provide breastfeeding care and ability to translate evidence to practice. Findings identified practitioner knowledge as the major barrier to providing breastfeeding care. This was reinforced by findings which revealed inadequate knowledge and skill in breastfeeding care across graduates. Data analysis identified future focused content in graduate curriculum based on the lowest scores for confidence and knowledge. These content areas include maternity care practices, returning to work, chronic pain, supplementation techniques for low infant weight gain, and management of insufficient glandular tissue in lactating patients. Given the range of time in practice and inclusion of IBCLCs in the participant pool, it was not surprising to see a wide variance in knowledge and skill level. However, the fact that only two areas achieved competency accentuates the limited ability of these graduate APRNs to evaluate and manage breastfeeding care.

Interpretation

The survey analysis provides insight into the relationships between graduate nursing educational preparation, current knowledge status, confidence to provide care, and professional identity for the evaluation and management for breastfeeding difficulties. Similarly to the study by Hookway and Brown (2023), participants showed a desire for more training but did not feel prepared by their prior graduate education. Training programs which include knowledge, skills, and counseling in the curriculum and are longer in duration have a greater positive impact on breastfeeding rates (Wang et al., 2023), offering an opportunity for graduate education to fill this need. Interestingly, most participants would have liked to have breastfeeding care as a required component of their graduate education, reflecting the high value of this material to the APRN population serving breastfeeding families.

The number of providers caring for breastfeeding families was higher than expected, with 58% caring for more than 75% of their breastfeeding patients. Of concern with this result is the intersection of the low level of knowledge, skills, and confidence with the high percentage of providers offering breastfeeding care to patients, bringing into question the adequacy of care provided. The geographic and specialty representation among participants was better than expected, with the rural/urban ratio reflecting the population of the state (Oregon Office of Rural Health, 2024). Survey results were bolstered by the fact that more FNPs participated than expected, which may reflect their interest in breastfeeding care and allowed for better comparison across specialties.

This survey highlighted several targeted content areas that extend from initiation to maintenance of breastfeeding. These areas directly align with the study by Gianni et al. (2019) which examined breastfeeding cessation in the first three months postpartum and identified infant failure to thrive, maternal nipple pain, returning to work, and perception of low milk supply as the most common risk factors for early weaning. The low knowledge score in the maternity care practices content area is a major gap in the graduate curriculum which teaches students best practices in supporting breastfeeding in the early days after birth. Although maternity care practices lay the foundation for the initiation and establishment of breastfeeding, most weaning occurs outside the hospital environment. The low score in the return-to-work content area exposes a gap in knowledge across specialties to support families to maintain lactation. The gap in knowledge in the return-to-work area reflects the common focus of practitioners on the immediate postpartum period. This was also expressed in a comment by a CNM that midwives provide good care during antepartum, intrapartum, and immediately after birth. Although support during these times is fundamental to establishing breastfeeding, breastfeeding statistics show that while breastfeeding initiation rates may be strong at hospital discharge, they fall rapidly by three months and accelerate an even larger gap from goals to actual rates by six months (WHO & Unicef, 2023). Zimmerman et al. (2022) estimated the mean duration of exclusive breastfeeding in a high initiation population to be 66.8 days, a period when breastfeeding families are far removed from the maternity care system. Finally, focusing on common causes of breastfeeding failure in graduate education curricula for APRNs, such as chronic pain and diagnostic differentials for low milk supply, will provide guidance and enhance confidence across specialties in the management of the most common causes of early weaning.

Educational experience results exposed a significant dissatisfaction with participant's graduate education and a stronger than expected desire for breastfeeding care as a required component of graduate education. APRNs are falling behind compared to their colleagues in their capacity to care for breastfeeding families as shown by the discordance in the barriers to practice between APRNs and physician colleagues. Primary barriers to providing care differed from previous research on obstetrician and gynecologist colleagues who identified limited time as the primary barrier, and provider knowledge as the least important barrier (Sims et al., 2015). The importance of this contradiction underscores the necessity of graduate education to provide adequate knowledge to the APRN population, bringing this barrier down to the control of the practitioner as they navigate a healthcare system with limited time with patients. Interestingly, FNP graduates identified prioritization of breastfeeding visits as the highest barrier, with provider knowledge second. This highlights the challenge to this specialty imposed by the practice environment which results in limited opportunities to serve this population, further exacerbating access to skilled practitioners in primary care. Provider knowledge deficit and low confidence align with participant's experience of inadequate graduate education in breastfeeding care, offering opportunity for APRN graduate programs to improve the scope and depth of breastfeeding care competency.

Limitations

Limitations for this survey include specificity to one academic health institution, use of a nonvalidated survey when assessing knowledge and skills, and a less than desired response rate. Results cannot be generalized to the national academic community, but rather are specific to this institution's curriculum, clinical opportunities, and geographic location. Confounding variables which may have influenced outcomes in the survey include the fact that this university resides in a state with one of the highest breastfeeding rates in the nation, likely influencing the attitude of practitioners in support of breastfeeding care as fundamental to their education and scope of practice.

Although the survey was developed based on the validated BRESt survey by Esselmont et al. (2018) and evaluated by a group of faculty who do not specialize in lactation, the survey questions pertaining to the assessment of knowledge and skill have not been validated. Measures were taken to improve construct validity by using the BRESt survey as a guide for content areas and basing questions on the Academy of Breastfeeding Medicine's protocols, the World Health Organization and American Academy of Pediatrics recommendations for best practice, and Unicef's Ten Steps to Baby Friendly criteria. The faculty review provided a certain level of face validity, but improvements could be made in construct validity to assure the questions accurately reflect a gap in knowledge or skill.

Feedback in the open text response question from participants completing the survey experience was completely positive. One FNP who currently does not serve breastfeeding families stated "This is an amazing questionnaire, as a new parent the lack of breastfeeding education from my care team was immensely alarming. I had to personally seek out a lactation consultant who greatly helped me. I believe that every provider should have their lactation certification." However, the fact that all the participants who did not complete the survey were FNPs and PNPs who stopped after

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question nine, asking if they served breastfeeding families, raises the question of why these participants dropped out. Although the survey instructions and emails reinforced the value of hearing from those who did not serve breastfeeding families, it is possible that these participants did not see their input as valuable, resulting in cessation of completion of the survey.

Unanticipated contextual elements which may have impacted the response rate for this survey include the timing of email reminders, the holiday season starting in the middle of the survey completion time, and the impact of the COVID-19 pandemic. It was noted during the process of survey implementation that email reminders would need to be sent out on different days of the week, and that Survey Reminder 3 fell on the Monday following the Thanksgiving holiday weekend. In addition, the timing of graduation from these programs in correlation with the COVID-19 pandemic (2021-2023) may have impacted clinic practices and access to graduate clinical experiences and continuing medical education, limiting opportunities for development of competency.

Conclusion

This project aligns the identification of provider knowledge as the primary barrier to providing breastfeeding care with a baseline core competency deficiency in graduates and provides recommended areas for targeting content in curriculum development. The lack of breastfeeding care management education has led to inconsistent capacity for new graduates to provide competent care for the entirety of their population. The detection of low knowledge, skill, and confidence in breastfeeding care, despite its identification as a competency within the APRN scope of practice, underscores the need for education in breastfeeding complications. Practicing to the full scope of the APRN licensure will require graduate education to provide adequate curriculum and clinical opportunities for practitioners to develop competency upon graduation. Although access to the breastfeeding population may vary between and within specialties, improving the knowledge and skill base upon graduation will increase the confidence of the APRN provider to take more responsibility for the evaluation and management of breastfeeding difficulties.

Continual process improvement and evaluation of knowledge, skills, and attitudes for graduates of this academic health institution will provide feedback and evaluation of graduate's educational experience, highlight opportunities for improvements in content gaps, and monitor for increases in confidence to provide care. Considerations for future survey dissemination include sending out email reminders at the end rather than at the beginning of the week. In addition, adding a question to the survey regarding the perceived impact of the COVID-19 pandemic on the provider's knowledge, attitude, and skills may provide additional information highlighting student needs. The unexpected number of incomplete surveys (21.2%) deserves further analysis to identify problem questions and consideration of framing and word choice changes as needed to encourage survey completion. Utilization of multiple outreach dimensions, including mailings and incentives to return a completed survey, are also recommendations for future surveys to increase the return rate of participants. Finally, validation of knowledge and skill questions and further development of question content will provide more robust data and specify content gaps and recommendations for course development.

This project revealed the discordance between recent graduate's attitudes and desire to provide breastfeeding care and the knowledge and skill to do so. While the objective of this survey was to attain baseline information on new graduates for the purpose of informing course design, the agreement from graduates that breastfeeding care aligns with the scope of practice of APRNs serving breastfeeding families and that breastfeeding care should be a part of the required curriculum for graduate education deserves further discussion. Graduate education can do better in preparing APRNs to provide breastfeeding care to their patients. Enhancing graduate education should begin with a focus on content areas which show the least confidence and knowledge and have the greatest impact of breastfeeding outcomes, such as chronic pain and standard recommendations to establish and maintain breastfeeding. Increasing the confidence, knowledge, and skills in breastfeeding care management will provide the foundation for APRNs to improve access to skilled practitioners and ultimately improve breastfeeding outcomes.

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Appendix A

Cause and Effect Diagram



Appendix B

Institutional Review Board Letter of Determination



NOT HUMAN RESEARCH

October 17, 2024

Dear Investigator:

On 10/17/2024, the IRB reviewed the following submission: +

A	
Title of Study:	Evaluating the Knowledge, Skills, and Attitudes of
	Recent DNP Graduates Regarding Breastfeeding Care
Investigator:	Doria Thiele
IRB ID:	STUDY00027896
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 <u>HIPAA</u> and <u>Research website</u> and the <u>Information Privacy and Security website</u> for more information.

Sincerely,

The OHSU IRB Office

Appendix C

Project Timeline

	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	April- May
Finalize project design and approach (703A)	х								
Complete IRB determination or approval (703A)		х							
Attain letter of approval (703A)			Х						
PDSA Cycle 1 (703B)				х	х				
Final data analysis (703B)						Х			
Write sections 13-17 of final paper (703B)							Х	Х	
Prepare for project dissemination (703B)									x

Appendix D

Letter of Support

Letter of Support from Clinical Agency

Date: 11/18/2024

Dear Doria Thiele,

This letter confirms that I, Sarah Spellman, allow Debbie Alba (OHSU Doctor of Nursing Practice Student) access to complete her DNP Final Project at our clinical site. The project will take place from approximately November 1, 2024 to March 15, 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, School of Nursing, Office of Academic Affairs
- Project Plan:
 - Identified Clinical Problem: An identified lack of knowledge and skills in advanced practice registered nurses
 (APRN) serving breastfeeding families has resulted in providers referring out rather than managing the care inside the
 office. The subject location provides limited opportunity to attain novice competency in the evaluation and
 management of complications of lactation to its graduates. Rather, curriculum in this topic based on the normal
 processes of establishing lactation and breastfeeding, leaving students to seek baseline competence in the evaluation
 and management of complications from additional education outside of the required curriculum for graduation.
 - Rationale: Comprehensive graduate education for APRN students supports professional workforce development which enables graduates to practice to the full scope of their license. For the graduating APRN licensed to take care of breastfeeding patients, integrating specialty knowledge into skill requires the prioritization of full scope graduate educational curriculums. Curriculum development is an iterative process which benefits from the attainment, analysis, and evaluation of the internal and external factors related to the context for which the curriculum will be implemented. Establishing baseline data from previous APRN graduates of thil academic institution is necessary to guide development of a unified and intentional curriculum in breastfeeding care and management.
 - Specific Aims: The primary aim of this project is to gather baseline data from recent APRN graduates on knowledge, skills, attitudes, and barriers regarding APRN provision of breastfeeding care by December 15th, 2024.
 - Methods/Interventions/Measures: An anonymous online survey evaluating the knowledge, skills, attitudes, and environmental context of recent graduates of the CNM, PNP, and FNP tracks in the Doctor of Nursing Practice (DNP) programs graduating from the academic years 2021-2024 will be used to establish baseline data. The outcome measures for the survey will the scores in the domains of knowledge, skill, role definition, and barriers to practice. The process measures for the actual distribution and response from participants will be the percent and number of participants completing the survey. The balancing measure will be an assessment of negative impacts on survey participation and will be evaluated through feedback from survey participants on their survey experience.
 - Data Management: Data will be gathered via an anonymous online survey, including both open-ended qualitative questions and closed-ended quantitative questions. Data will be collected via a Qualtrics survey which is stored on secure servers managed by the institutional information technology department. The data will be analyzed using an Excel spread sheet which will be stored on a secure server owned by the University.
 - Site(s) Support: The study site will support this project through feedback and guidance on the survey, and through
 assistance with communication through the Office of Academic Affairs (OAA). The survey will be sent out directly
 from the OAA to all recent graduates from 2021-2024, and three email reminders will be sent out during the duration
 of the open survey.

During the project implementation and evaluation, *Debbie Alba* will provide regular updates and communicate any necessary changes to the DNP Project Chairperson. If I have any concerns related to this project, I can contact *Debbie Alba* and *Doria Thiele* (student's DNP Project Chairperson).

Regards,

12/10/2024

Signature, Sarah Spellman, Assistant Dean of Academic Services

Date Signed

Appendix E

Breastfeeding Care Survey Tool

Q1 You are invited to participate in this anonymous survey about your educational experiences and current practice regarding care of breastfeeding families. This survey is part of a DNP final project led by Debbie Alba (albad@ohsu.edu). We hope to gather information to enhance educational opportunities for APRN students at OHSU to improve the care of breastfeeding families. If you do not currently care for breastfeeding families, we still request your completion of the survey as your experience is just as valuable. Your responses will be anonymous and we will not know if you choose to complete the survey or not. It is expected to take about 10 minutes for you to complete this survey. Please take your time to reflect on each question and answer as accurately as you can. Thank you for your time and help with this project!

• Yes, I consent (1)

No, I do not consent (2)

Skip To: End of Survey If You are invited to participate in this anonymous survey about your educational experiences and cu... = No, I do not consent

Skip To: End of Block If You are invited to participate in this anonymous survey about your educational experiences and cu... = Yes, I consent

End of Block: Consent

Start of Block: Practice Environment

Q2 What year did you graduate from your OHSU APRN program?

0 2021 (1)

- 2022 (2)
- 2023 (3)
- 2024 (4)

Q3 Which of the following best reflects your work hours per week?

 \bigcirc less than 10 hours (1)

O 10-24 hours (2)

O 25-31 hours (3)

 \bigcirc 32 or more hours (4)

Other (5)_____

Q4 What is your APRN specialty?

O Certified nurse midwife (1)

 \bigcirc Family nurse practitioner (2)

O Pediatric nurse practitioner (3)

Other (4)_____

Q5 What is your practice environment?

		Hospital-owned practice (1)
		Midwife-owned practice (2)
		Physician-owned practice (3)
		Community birth practice (4)
	Clinic, or p	Public health practice (FQHC clinic, school-based health clinic, government funded ublic health department (5)
		Other (6)
Qe	What is the	e primary focus of your work environment?
	O Primar	y care (adult or pediatric) (1)
	O Reproc	ductive health care (2)
	O Perina	tal care (3)
	◯ Specia	Ity clinic (4)
Q7	' How do yo	u define your practice geographic location?
	🔿 Urban	or suburban (1)
	O Rural (40,000 peo	any geographic area ten or more miles from the centroid of a population center of ople or more (2)

 \bigcirc Frontier (30-60 min to services, or 12-20 people per square mile (3)

Q8 Does your current practice environment staff a lactation expert, such as an International Board Certified Lactation Consultant (IBCLC), who sees patents to manage breastfeeding problems (other than yourself)?

0	No (1)	
0	Yes (2)	

Q9 Do you currently serve breastfeeding families in your practice?

0	No	(1)
\bigcirc	Yes	(2)

Skip To: End of Block If Do you currently serve breastfeeding families in your practice? = No

Q10 How many patients on average per week do you see who are breastfeeding or lactating? Count each lactating person and each infant as an individual patient.

1-3 (1)
4-6 (2)
7-9 (3)

• Greater than 10 (4)

Q11 For what percent of your breastfeeding patients (baby or lactating patient) do you evaluate and lead the care management?

- 0-24% (1)
 25-49% (2)
 50-74% (3)
- 75-100% (4)

Q12 What type of care do you provide with breastfeeding families? (choose all that apply)

Prenatal education and preparation for breastfeeding (1)
Care during the immediate hours following birth (2)
Early postpartum care (up to 6 weeks following birth) (3)
Extended postpartum care (beyond 6 weeks following birth) (4)
Other (5)

End of Block: Practice Environment

Start of Block: Professional Role

Q13 Rank the following barriers to providing breastfeeding care (1 = biggest barrier)

_____ Breastfeeding visits are not given urgent priority on the schedule (1)

_____ Lack of organizational knowledge regarding coding and billing for breastfeeding services (2)

_____ Appointment duration is too short to work with breastfeeding families (3)

_____ Inadequate physical space to work on breastfeeding in the clinic (4)

_____ Personal lack of knowledge or confidence regarding the evaluation and management of complications with breastfeediing (5)

_____ Please provide any additional comments regarding barriers to providing breastfeeding care in your practice environment (6)

Q14 Do you consider the evaluation and management of breastfeeding difficulties to be a core competency of your scope of practice?

O Definitely not (1)

O Probably not (2)

O Might or might not (3)

O Probably yes (4)

O Definitely yes (5)

Q15 When you think about your professional role, what is going well with supporting patients who are struggling with breastfeeding difficulties?



Q16 On a scale of 1-5 (with 1 being not confident at all and 5 being very confident) how confident are you...

	Extremely not confident (1)	Slightly not confident (2)	Neither confident or not confident (3)	Slightly confident (4)	Extremely confident (5)
Instructing and treating patients with low milk supply on increasing their milk output? (1)	0	0	0	0	0
Helping lactating patients continue to breastfeed when they are struggling with chronic pain? (2)	0	\bigcirc	\bigcirc	0	\bigcirc
Assessing newborn indicators of breastfeeding difficulty (3)	0	0	0	\bigcirc	0
Helping lactating patients continue to breastfeed when the infant doesn't follow the growth curve? (4)	0	\bigcirc	\bigcirc	\bigcirc	0
Evaluating a lactating patient for insufficient glandular tissue or hypoplasia? (5)	0	\bigcirc	\bigcirc	\bigcirc	0
Instructing lactating patients how to supplement with a spoon, cup, or supplemental nursing device? (6)	0	0	0	\bigcirc	\bigcirc

End of Block: Professional Role

Start of Block: Knowledge and Skill

Q17 In the following section, you will be asked questions about your knowledge of breastfeeding care. These questions will help us evaluate the effectiveness of the education you received at OHSU. Which statement is not included in UNICEF's Ten Steps to Successful Breastfeeding?

 \bigcirc Assist mothers to breastfeed as soon as possible after birth (1)

 \bigcirc Inform pregnant women about the benefits and management of breastfeeding (2)

O Breastfeed every 2-3 hours (3)

Counsel mothers on the use and risks of feeding bottles, artificial nipples (teats) and pacifiers. (4)

 \bigcirc Support mothers to recognize and respond to their infants' cues for feeding (5)

I do not know the answer (6)

Q18 Current recommendations related to duration of breastfeeding for at least two years is consistent between the American Academy of Pediatrics and the World Health Organization.

True (1)

🔵 False (2)

I do not know the answer (3)

Q19 Protocols to induce lactation include the use of progesterone only contraception while simultaneously pumping.

True (1)
 False (2)
 I do not know the answer (3)

Q20 The trigger for copious milk production is the delivery of the placenta.

O True (1)

False (2)

 \bigcirc I do not know the answer (3)

Q21 Breast milk production is limited by the size of a breastfeeding patient's breasts.

O True (1)

🔘 False (2)

 \bigcirc I do not know the answer (3)

Q22 Which hormone is responsible for the secretory mechanism of breast milk production?

Oxtocin (1)

O Human placental lactogen (2)

O Prolactin (3)

O Progesterone (4)

 \bigcirc I do not know the answer (5)

Q23 Breastfeeding is associated with a decreased risk of depression.

O True (1)

🔘 False (2)

 \bigcirc I do not know the answer (3)

Q24 IV fluid during the intrapartum period can result in excessive weight loss in the early days postpartum in the breastfeeding infant.

```
○ True (1)
```

🔿 False (2)

 \bigcirc I do not know the answer (3)

Q25 According to the Academy of Breastfeeding Medicine's Mastitis Spectrum Protocol, treatment with antibiotics should be reserved for systemic symptoms that do not improve after 24 hours of comfort measure effort.

O True (1)

🔿 False (2)

 \bigcirc I do not know the answer (3)

Q26 Mothers who are returning to work should be counseled to pump for their babies every 2-3 hours.

True (1)False (2)

 \bigcirc I do not know the answer (3)

Q27 After ruling out extraneous sources of stimulation, patients suffering from hyperlactation should be instructed to block feed for 24 to 48 hours.

O True (1)

🔾 False (2)

 \bigcirc I do not know the answer (3)

Q28 Patients undergoing CT imaging with iodinated intravenous contrast should abstain from breastfeeding for at least 12 hours after the procedure.

O True (1)

🔾 False (2)

I do not know the answer (3)

Q29 A practitioner is conducting a pre and post feed weight check on a breastfeeding baby. The mother changes the infant's diaper and the baby is placed on the scale. The baby feeds on the first breast until they fall asleep and the practitioner encourages the mother to wake her baby and try again. The mother changes the baby's diaper to wake them up and offers the 2nd breast. The baby feeds for a few more minutes and then falls asleep again. The baby is weighed again. What error was made in this process?

 \bigcirc The mother changed the baby's diaper before placing them on the scale (1)

 \bigcirc The practitioner encouraged the mother to wake the baby (2)

 \bigcirc The mother changed the baby's diaper before offering the 2nd breast (3)

 \bigcirc The baby was weighed again after the 2nd side (4)

I do not know the answer (5)

End of Block: Knowledge and Skill Start of Block: Educational Experience Q30 Where did you receive education related to breastfeeding care management? (choose all thay apply)

Undergraduate school (1)
Graduate school (2)
I am a parent (3)
Additional training outside of graduate nursing program (4)
Practice experience (5)
self directed-learning (6)
other (7)

Q31 Do you hold any certifications in breastfeeding medicine or advanced lactation care?

○ No (1)	
\bigcirc Yes (identify certification) (2) _	

Q32 Do you feel that your graduate education was adequate to prepare you to evaluate and manage difficulties with breastfeeding?

No (1)
Yes (2)
Please provide additional comments (3)

Q33 Do you feel that evaluation and management of breastfeeding complications should be part of the APRN required curriculum or offered as an elective?

Required (1)
Elective (2)
Please provide additional comments (3)

End of Block: Educational Experience

Start of Block: Survey Experience

Q34 Thank you for your time and effort to complete this survey! Please provide feedback about your experience taking this survey.

End of Block: Survey Experience