

# Lactation Curricular Content of Pediatric Nurse Practitioner Programs in the United States: A National Survey

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## KEY WORDS

Lactation, breastfeeding, nursing education, curricula, pediatric nurse practitioner

## INTRODUCTION

The health benefits of breastfeeding for both parent and child are well documented (Meek et al., 2022; Centers for Disease Control and Prevention, 2022a). Meek et al. (2022) states that the normative standard for infant health and nutrition is breastfeeding and human milk. Studies continue to support and document the significant health benefits of breastfeeding for mothers (Feltner et al., 2018) and children

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(Stoody et al., 2019). Multiple national organizations advocate exclusive breastfeeding for the first 6 months of life with recommendations to continue breastfeeding until at least 1 year of age (American Academy of Family Physicians, 2018; American College of Nurse-Midwives, 2018; Busch et al., 2019). Meek et al. (2022) now recommends continued breastfeeding to 2 years and beyond, as long as mutually desired by parent and infant.

Despite these recommendations, breastfeeding rates in the United States are not meeting projected goals. The Healthy People 2030 breastfeeding objectives include increasing the proportion of exclusively breastfed infants for 6 months to 42.4% and continued breastfeeding at 1 year to 54.1% (Office of Disease Prevention and Health Promotion, n.d.). These benchmarks are not being met in the United States, especially in vulnerable communities. Although initiation rates for breastfeeding in the United States are above 80%, there has been little progress in meeting the 6-month exclusivity goals or the continuation of breastfeeding until 1 year (Centers for Disease Control and Prevention, 2022b). The latest data reported in the Centers for Disease Control and Prevention Breastfeeding Report Card (2022b) indicated 83.2% of infants receive “some” breast milk (at the time of birth), but this rate drops significantly by 6 months old with 55.8% of infants receiving “any” breastmilk. This is followed by a sharp decrease to 35.9% of infants still breastfeeding at 12 months old. Breastfeeding exclusivity rates show the same trajectory, with 62.6% of infants exclusively breastfeeding at birth, dropping to 24.9% at 6 months (Centers for Disease Control and Prevention, 2022b). Recent data have indicated a significant drop in breastfeeding initiation rates

as well as decreased rates of breastfeeding at 3 and 6 months old because of the onset of the COVID-19 pandemic (Koleilat et al., 2022).

A significant factor in breastfeeding success is knowledgeable support from health care providers (HCP); however, women cite a lack of support from health professionals as a barrier to the initiation and continuation of breastfeeding (Miller & Wojnar, 2019). A lack of lactation education for health professionals is well documented in the literature (Esselmont et al., 2018; Freed et al., 1995; McFadden et al., 2017). Multiple studies address the need for improved lactation education with recommendations regarding incorporating this information into academic curricula (Antoñanzas-Baztan et al., 2020; Boyd & Spatz, 2013; Webber et al., 2022). Recent studies have shown that increased education can improve knowledge of lactation management and attitudes regarding breastfeeding support (Yang et al., 2018), potentially improving breastfeeding outcomes. However, many providers continue to rely on their own experiences, rather than the evidence, for clinical decision-making when providing lactation support (Boss et al., 2021).

Historically, breastfeeding support has been relegated to lactation specialists to assist breastfeeding dyads. Pediatric nurse practitioners (PNPs) are well-positioned to support breastfeeding families. NAPNAP (2019) recognized that PNPs “are uniquely qualified to be leaders in providing interprofessional lactation education and care by establishing core competencies in lactation education” (NAPNAP Breastfeeding Special Interest Group et al., 2019, p. A13). PNPs often round on parents and infants in the hospital following delivery and provide ongoing support during health maintenance visits throughout the first year of life. However, a study of women’s perceptions of HCP support regarding breastfeeding found women often received conflicting advice and poor practice management (Blixt et al., 2019). Therefore, it is essential that PNP students receive appropriate didactic and clinical education to provide accurate support to breastfeeding dyads.

## LITERATURE REVIEW

The support and advice from HCPs have considerable influence on a parent’s decision to initiate and maintain successful breastfeeding (Cohen et al., 2018; Tang et al., 2019). One major obstacle to breastfeeding success is the lack of assistance from knowledgeable HCPs (Gianni et al., 2018; Robinson et al., 2019). Some providers may deter from addressing breastfeeding during health visits because of the additional time needed to deliver information. Although HCPs are familiar with the benefits of breastfeeding, some directly endorse infant formula (Rosen-Carole et al., 2020), citing time constraints in clinical practice. In some situations, personal experiences can play a role in HCPs’ support of breastfeeding; one study found that > 90% of female pediatricians felt their inability to meet personal breastfeeding goals impacted the clinical advice given to mothers (Sriraman & Kellams, 2016).

Despite the importance for HCPs to obtain the knowledge needed to manage breastfeeding appropriately, educational deficits in preparing PNPs to support breastfeeding continue to be reported. Boyd and Spatz (2013) evaluated the breastfeeding curriculum content of PNP programs in the United States. Results indicated that although most programs included breastfeeding promotion, variations between didactic and clinical education existed. Brzezinski et al. (2018) surveyed PNPs in pediatric primary care regarding their educational preparation to support breastfeeding. The practitioners reported that their formal education had provided minimal education regarding breastfeeding, covering basic knowledge of breast anatomy and physiology and only moderate preparation for overall breastfeeding management.

Didactic education alone is not sufficient to improve breastfeeding management skills. As a practice profession, nurse practitioners should have access to appropriate clinical opportunities as a component of formal educational programs. Lack of access and variability in clinical settings may limit practice opportunities, thus impacting the development of the skills and confidence needed for successful breastfeeding management. From a pedagogical perspective, simulation provides a safe learning environment that enhances students’ knowledge and application of didactic concepts (Sundler et al., 2015). Several studies have focused on using simulation to teach clinical nursing skills (Brown et al., 2020; Riley-Baker et al., 2020). Additional studies have found simulation to be an effective educational approach in improving providers’ breastfeeding attitudes, knowledge, and skills (Germain et al., 2018; Sadovnikova et al., 2020). Webber et al. (2021) found using both low and high-fidelity simulation exercises increased undergraduate nursing students’ breastfeeding confidence and self-efficacy during their maternal-child health rotation.

The U.S. Breastfeeding Committee established Core Competencies for Breastfeeding Care and Services for all Health Professionals, recommending that HCPs possess minimum knowledge, skills, and attitudes to support breastfeeding (United States Breastfeeding Committee, 2010). NAPNAP (2019) recognizes that breastfeeding offers optimal nutrition for newborns and infants; however, there are no specific PNP core competencies for breastfeeding management. The NAPNAP breastfeeding position statement recommends that evidence-based educational and clinical experiences in lactation should be included in all educational programs that prepare pediatric HCPs (NAPNAP Breastfeeding Special Interest Group et al., 2019). Evidence of an organized approach to lactation education within PNP programs has not been established, and it is unclear how PNPs gain the breastfeeding didactic knowledge and clinical competencies needed to support optimal breastfeeding outcomes.

## Study Objectives

This study aimed to survey primary care and dual-track pediatric nurse practitioner (PNP-acute care/primary care)

programs in the United States for their lactation curricular content, including opportunities for clinical experiences in managing breastfeeding parents. The specific study aims were to determine (1) the quantity (hr) and content (topics) of lactation education provided to students enrolled in primary care and dual-track PNP programs, (2) the extent to which lactation education is included in clinical experiences, and (3) whether or not simulation is used to teach clinical lactation skills.

## METHODS

This descriptive study design used an online survey deployed via a secure platform (LimeSurvey) to gather and store the survey data findings. Institutional Review Board approval was provided by the review board at a private, urban, Midwestern university. In the invitation email, participants were notified of Institutional Review Board approval; initiating the survey indicated consent to participate in the study. Inclusion criteria for receiving a survey invitation included individuals identified by the Pediatric Nursing Board Certification (PNCB) as directors or coordinators of PNP-PC or PNP-AC/PC programs. In addition, an online search of PNP-PC and PNP-AC/PC programs was conducted, and the data was counterchecked against the Pediatric Nursing Board Certification list with individuals listed on the school of nursing's Web site. This resulted in 73 directors/coordinators receiving an email invitation to participate. Of the surveys sent, there was one opt-out and two undeliverable emails, resulting in 70 invitations distributed. Authors received  $N = 32$  survey responses, indicating an overall 45% response rate. Not all respondents answered every survey question, as reflected in the reported data.

The survey was administered over 8 weeks. Four reminder emails were sent to increase participation. The LimeSurvey platform is designed to generate one token per email address. Once the survey was initiated, the token was used, and that survey could not be re-accessed, ensuring one response per program.

## Survey Development

Three nursing educators with expertise in pediatrics, lactation, course development, and clinical research developed the survey on the basis of surveys used in previous research (Webber & Serowoky, 2017; Webber et al., 2022). The survey was designed to collate the study's aims by assessing the quantity and the variety of didactic and clinical experiences delivered within a program's curriculum, including simulation exercises. The survey consisted of 25 quantitative items and three open-text questions for qualitative descriptive feedback. General program questions included the program's geographic location, course delivery methods, faculty expertise in lactation, and student enrollment. The quantitative items questioned specific curriculum topics of breastfeeding and human lactation, the number of courses and hours containing lactation material, the various learning methods, the use of simulation, and any opportunities for a community lactation clinical experience. The open-text

questions were intended to capture participants' descriptions and perceptions of their institution's lactation curriculum, preparation for novice entry into practice, and any additional comments regarding breastfeeding education.

Data analyses were performed using the LimeSurvey platform and IBM SPSS software (version 27) software platform (IBM, n.d.). The quantitative data were analyzed by applying the descriptive statistics command.

## RESULTS

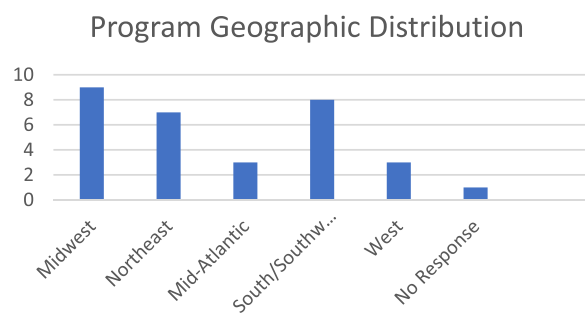
### Baseline Program Data

Of the 32 respondents, 68.75% were directors/coordinators of PNP-PC programs, and 21.88% were of dual PNP-AC/PC programs; 9.38% chose not to respond. Responses were from all geographic areas of the United States (Figure). Most programs ( $n = 19$ ) reported having a hybrid of online and on-site coursework for their program; six reported being exclusively online, and three were exclusively on-site. Four responders did not complete this survey item. Among the 32 respondents, four reported that a faculty member held certification as an International Board-Certified Lactation Consultant (IBCLC). Student enrollment data is reported in Table 1.

### Didactic Lactation Curriculum

The survey included six questions regarding lactation curriculum content. Of the 32 responses, 62.5% reported that their program contained specific lactation content, whereas 15.62% did not contain specific lactation content, and 21.88% did not respond to the item. Respondents were asked if their programs included taking a breastfeeding/lactation course—independent of PNP-specific courses. Twenty-three (71.88%) of respondents indicated their program did not offer an option for a lactation/breastfeeding course, whereas three (9.38%) indicated their program did. The remaining respondents did not answer this question. When asked how many courses incorporated breastfeeding into course content, eight programs (25%) stated 1 course included breastfeeding content, 10 programs (31.25%) stated 2 courses included breastfeeding content, and seven programs (21.88%) said they incorporated content within three courses. The remaining respondents either did not answer this question or chose "other."

**FIGURE. Geographic distribution.**



**TABLE 1. Enrollment data**

Student enrollment	No. of programs
< 11 students	2
11–20 students	8
21–30 students	6
31–40 students	4
41–50 students	4
> 51 students	4
No response	4

When queried how many hours of content are devoted specifically to breastfeeding education, 6.25% of the respondents indicated they provide at least 1-hr of lactation content, 12.5% provide 2 hr of content, 43.76% of programs reported 3 or 4 hr, and two programs (6.25%) noted having  $\geq 5$  hours of lactation content. One respondent indicated their nursing school offered 1-hr of the qualifying continuing education recognition points specific to lactation.

The PNP programs were asked to identify which specific topical lactation areas are included within their curriculum. Many of the PNP programs responded that they covered extensive material within 1–5 hours or more of instruction time (Table 2). The authors queried what style and type of resources the PNP program used to incorporate and deliver the breastfeeding/lactation content into the curricula. As displayed in Table 3, a wide range of resources are employed.

### Lactation Clinical and Simulation Experiences

Six survey questions asked about the availability of student lactation clinical experiences and opportunities offered by the PNP programs. Direct clinical experiences and simulation provide a hands-on real-patient interaction approach to the learning environment for students and can be extremely valuable. These clinical experiences have been shown to improve students' psychomotor skills, with students preferring environments that are more realistic to what they might encounter as nurses (Terzioğlu et al., 2016). The study authors asked how many schools provided or arranged for students to participate in a lactation clinical experience. Of those that responded, 16 programs did not provide specific clinical lactation clinical experiences, 10 indicated that they do arrange such opportunities, and six did not respond to this question.

**TABLE 2. Educational topics covered in Pediatric Nurse Practitioners programs**

Topic covered	Programs covering each topic (%)
Management strategies for common breastfeeding problems	75.00
Early Postpartum/newborn breastfeeding initiation	68.75
Promotion and management strategies of breastfeeding (to achieve Healthy People, 2020 and 2030 goals)	68.75
Medications and/or maternal or infant illness while breastfeeding	62.50
Biological aspects of breastmilk	56.25
Special populations and infant health conditions (preterm, multiples, ankyloglossia, failure-to-thrive)	56.25
Anatomy and physiology of human lactation	53.12
Culture and breastfeeding	53.12
Attitudes and biases toward breastfeeding support	53.12
No response to this question	15.62

**TABLE 3. Resources used for lactation education**

Answer	Percentage
Clinical guidelines	75.00
Videos	56.25
Current research	53.12
Web sites	43.75
Adjunct or guest speakers who are IBCLC	34.38
Personal experience	34.38
Textbooks on lactation and breastfeeding	34.38
Published manuals/pamphlets	25.00
Demonstrations	25.00
Faculty who are IBCLC	18.75
Not completed or Not displayed	15.62

Note. IBCLC, International Board-Certified Lactation Consultant.

Most programs (81%) indicated students had the opportunity to promote breastfeeding or counsel expectant mothers on feeding choices. Sixty-eight percent of programs stated students had the opportunity to practice lactation-specific skills with clients, such as latch and positioning, but no lactation clinical competencies were identified. The authors inquired about the availability of community sites for clinical lactation practice opportunities. Almost half of the respondents (47%) reported their students did not have the opportunity to practice within community settings such as The Special Supplemental Nutrition Program for Women, Infants, and Children clinics, breastfeeding classes, or postpartum breastfeeding support groups.

The study authors inquired how many PNP programs incorporated lactation/breastfeeding-specific simulation into clinical education and how many hours were devoted to simulation. Of those responding, four offered lactation simulation, and 22 did not. Six programs did not respond to this question. Of those offering simulation, two programs provide a 1-hr simulation, whereas two offer a 2-hr lactation simulation. Two of the four programs engage IBCLCs to develop, assist and/or coordinate the lactation simulation.

### Open Text-Box Comments

To gather direct narrative responses, respondents were asked three additional descriptive items: (1) What are the difficulties that prevented your program from providing lactation

TABLE 4. Responses to open text questions

Question text	Qualitative responses
<p>Question 2: If your program curriculum does offer lactation content, do you feel the content volume is sufficient for student novice entry into practice?</p>	<p>Sufficient</p> <p>At this point yes, separate lectures and content were added last year rather than just being embedded in other lectures such as infant nutrition. I found that the curriculum previously contained significantly more information on formula feeding possibly leading to bias</p> <p>All our students are experienced pediatric nurses before entry into our program. We enhance their experiences using the simulation devices with clinical scenarios. And students are in clinicals with preceptors who are lactation consultants. In addition, our students take a mandatory newborn course which includes time with a lactation consultant</p> <p>Yes, relative to the entirety of the curriculum</p> <p>Not sufficient</p> <p>I would like to incorporate more content regarding supporting the breastfeeding dyad in the primary care setting</p> <p>We have a few PNP/IBLCs in local pediatric primary practices in our area. These are in addition to the hospital based and community based IBLCs</p> <p>Being positioned within the primary care practice seems to increase likelihood for sustained breastfeeding</p> <p>I offer very basic content—I feel that the students understand the material but am concerned on their ability/opportunity to apply that knowledge to clinical practice</p> <p>No, I feel there could be specific improvement in course offerings for breastfeeding education for the pediatric nurse practitioner. Students have a variety of work experiences and backgrounds, considering clinical and shadowing with lactation specialists would be of value</p> <p>It could be better. We used to coordinate shadow experiences for the students where they would spend a half day with a lactation consultant in the nursery and attend a breastfeeding support class. It was a great learning experience for the students, but the process of scheduling and coordination became too labor intensive for our faculty, so we had to eliminate it</p>
<p>Question 3: Do you have any additional thoughts or comments regarding breastfeeding education in PNP programs?</p>	<p>We do not currently offer a separate lactation course but did offer a 3-credit elective in the past which provided necessary didactic information for those interested. It was offered through a consortium of universities to increase enrollment. However, it is no longer offered because of low interest and cost</p> <p>Our NP faculty are very experienced breastfeeding advocates and supporters but chose not to incur the expense of becoming certified lactation consultants. We do place our students with preceptors who are certified lactation consultants</p> <p>The didactic courses for pediatric primary care are offered over 3 full semesters. The content for breastfeeding education fits nicely into the Well Child Health Promotion semester. One full week is devoted to the newborn (birth to 30 days). Before COVID, every student spent two full clinical days with a lactation consultant who has her own practice during the Well Child Clinical practicum course</p> <p>We have a simulation activity of a 4-day-old outpatient visit breastfeeding and jaundice. We also assign an Aquafer case study and cover breastfeeding in our primary care of the well child course</p> <p>As a CLC, I am biased, but breastfeeding is so important that I would love to see becoming a CLC a requirement of PNP programs</p> <p>Need resources for faculty</p> <p>I think it is critical that PNP programs incorporate breastfeeding education into the curriculum. Supplementation without appropriate breastfeeding support and troubleshooting is a common problem in the area surrounding my clinical practice</p> <p>Breastfeeding education across primary care pediatrics is lacking, bringing more robust education to PNP programming would be potentially useful in improving breastfeeding rates and long-term health outcomes</p> <p>Simulations would be a great addition to the program—thanks for the suggestion</p> <p>Thank you for bringing this to our awareness. Because of this survey, we will be meeting as a group to discuss how we can do better to incorporate more of this content into our curriculum</p>

Note. CLC, certified lactation consultant; COVID, coronavirus disease; IBCLC, International Board-Certified Lactation Consultant; NP, nurse practitioner; PNP, pediatric nurse practitioner.

content? (2) Do you believe the content you provide related to breastfeeding is sufficient for student novice entry to practice? and (3) Please provide any additional thoughts or comments. There were three responses to the first question. One respondent noted there was limited ability to offer consistent clinical lactation education because of the availability

of preceptors. The second respondent noted they were unsure of resources available for breastfeeding education, and the third indicated time constraints. Responses to questions two and three were more robust and are summarized in Table 4. Fourteen respondents indicated that they believed they provided sufficient lactation education within

their programs. Four stated there was insufficient lactation content, and one commented that they had never assessed whether it was sufficient.

## DISCUSSION

The World Health Organization through the Baby-Friendly Hospital Initiative (Baby Friendly, 2019), the U.S. Breastfeeding Committee (2010), and the U.S. Surgeon General (United States Department of Health & Human Services, 2011) have all strongly asserted that providing basic lactation education to all HCPs is essential. This education is needed to support the breastfeeding family and “shift” how we think and talk about breastfeeding as a public health measure. Lactation education provided during career preparation significantly impacts HCPs’ knowledge of and attitudes toward breastfeeding (Linares et al., 2018; Meek & Academy of Breastfeeding Medicine, 2019; Rhodes & Burgess, 2018). Linares et al. (2018) noted in their survey of nursing students (RN, DNP, PhD) that even a 2-hr breastfeeding class had significantly impacted continued breastfeeding education for HCPs following formal education can also contribute to increased breastfeeding self-efficacy leading to increased support of breastfeeding families (Antoñanzas-Baztan et al., 2020).

This is the first survey of breastfeeding curricular content in PNP programs because of the Boyd and Spatz (2013) study. This survey revealed considerable differences in the breadth and depth of lactation content provided within PNP programs. Although all programs reported they included breastfeeding content, there was a wide range in the number of hours devoted to breastfeeding education (from 1 to > 5 hr) and the topical areas covered. It is unclear how programs can cover the amount of content indicated in survey responses in 1–2 hr of didactic education.

If breastfeeding success depends on knowledgeable support from their HCP, the minimal number of hours spent on lactation education throughout a graduate program without any specific clinical component is likely insufficient for providers to manage lactation issues in clinical practice appropriately. Of concern was the number of respondents (47%) that indicated their curricula did not include content regarding cultural aspects, attitudes, and biases toward breastfeeding. Positive attitudes have been shown to impact providers’ support of breastfeeding and successful breastfeeding outcomes (Yang et al., 2018). In addition, cultural understanding and sensitivity can significantly impact breastfeeding outcomes (Lee & Baker, 2021). Exclusion of this content may negatively impact breastfeeding outcomes, especially among populations with health care disparities.

As reported, programs use various resources to provide lactation education; one of the most cited resources is personal experience (Table 3). This is of concern, given that didactic and clinical education should be based on research and evidence versus relying on providers’ personal experiences. Along with didactic education, programs described clinical opportunities provided to PNP students. More than 50% of the responding programs indicated they did not arrange

specific breastfeeding management opportunities, and only four offered breastfeeding simulations. Given that breastfeeding management is a hands-on skill, a lack of opportunities to practice these skills can directly impact a practitioner’s ability and confidence in providing basic breastfeeding support. In addition, no programs reported having specific lactation competencies within clinical courses. With no breastfeeding competencies, a student’s clinical lactation experience is potentially left to chance, limiting educational expectations and opportunities.

Qualitative responses provided mixed feedback regarding the adequacy of lactation education. Some respondents indicated the lactation content was sufficient given that students were already experienced pediatric nurses—although individual students’ background knowledge and clinical nursing experiences can be highly variable. Other respondents believed exposure to “newborn content” provided students with sufficient lactation education and that the content was adequate in the context of the overall curriculum. Other respondents indicated they believed the lactation didactic content and clinical opportunities were insufficient for novice PNP students to enter into practice and identified the need for improvements in didactic offerings and clinical experiences. In recognizing the need for clinical opportunities, one respondent stated that students have various work experiences and backgrounds; clinical and shadowing with lactation specialists would be of value. Another respondent indicated they previously arranged for lactation shadow experiences with lactation consultants, but the process of scheduling and coordination became too labor intensive, so we had to eliminate it. Therefore, identifying strategies to integrate clinical practice opportunities into curricula without searching for elusive clinical sites is essential in providing much-needed lactation education to PNP students.

Several respondents indicated the survey opened their eyes to the need for more formal lactation education within PNP programs, either as standalone courses or purposefully threaded throughout the curriculum. Some respondents indicated they had not fully considered simulation as a clinical opportunity. Another stated their faculty would be meeting shortly to discuss how they can better incorporate lactation content into their curriculum.

The Baby-Friendly Hospital Initiative states that physicians and advanced practice nurses should receive at least 3 hr of breastfeeding management education (Baby Friendly, 2019). Other organizations, including the American Academy of Pediatrics (2021) and the International Board of Lactation Consultant Examiners (2018), focus on the achievement of lactation-specific clinical competencies rather than identifying a specific number of didactic hours needed to support breastfeeding dyads appropriately. This approach appears to have merit. Woeber (2018) describes the development of a clinical competency evaluation tool for midwifery education. Using a structured tool to assess achievement of competencies allows faculty to observe strengths and gaps in student clinical knowledge and adjust as needed. These findings suggest that shifting from a

**TABLE 5. Lactation curriculum resources**

Source	Overview
American Academy of Pediatric Residency Curriculum <a href="https://www.aap.org/en/learning/breastfeeding-curriculum/">https://www.aap.org/en/learning/breastfeeding-curriculum/</a>	An online resource providing goals, objectives, educational materials, and lesson plans for a comprehensive breastfeeding curriculum (no fee)
Lactation Education Accreditation and Approval Review Committee (LEAARC) Appendix B: Competencies for Lactation Consultant Education Programs <a href="http://www.leaarc.org/docs/LactationConsultantStandards2018.pdf">http://www.leaarc.org/docs/LactationConsultantStandards2018.pdf</a>	A list of competencies required for entry-level lactation professionals. It can be adapted to fit the needs of any educational program
Meek & The Academy of Breastfeeding Medicine (2019). Educational objectives and skills for the physician with respect to breastfeeding. <i>Breastfeeding Medicine</i> , 14(1). <a href="https://doi.org/10.1089/bfm.2018.29113.jym">https://doi.org/10.1089/bfm.2018.29113.jym</a>	A published overview of breastfeeding competencies recommended for pediatric providers in graduate medical school training
Wellstart International <a href="http://www.wellstart.org/Self-StudyModule.pdf">http://www.wellstart.org/Self-StudyModule.pdf</a>	A competency-based tool designed to provide a context for the integration of lactation management knowledge and skills into the curriculum of health care providers working with breastfeeding families (monthly fee)

**TABLE 6. Simulation products**

Product	Availability
Health Edco and Childbirth graphics breastfeeding simulator	<a href="https://www.medicalexpo.com/prod/health-edco-childbirth-graphics/product-119758-834833.html">https://www.medicalexpo.com/prod/health-edco-childbirth-graphics/product-119758-834833.html</a>
MamaBreast breastfeeding simulator by Laerdal	<a href="https://laerdal.com/us/products/simulation-training/obstetrics-pediatrics/mamabreast/">https://laerdal.com/us/products/simulation-training/obstetrics-pediatrics/mamabreast/</a>
KOKEN breastfeeding simulation set	<a href="https://www.kokenmpc.co.jp/english/products/educational_medical_models/pediatrics/lm-113a.html">https://www.kokenmpc.co.jp/english/products/educational_medical_models/pediatrics/lm-113a.html</a>
Health Edco and Childbirth graphics breast anatomy simulator	<a href="https://www.medicalexpo.com/prod/health-edco-childbirth-graphics/product-119758-1040439.html">https://www.medicalexpo.com/prod/health-edco-childbirth-graphics/product-119758-1040439.html</a>

specific number of didactic or clinical hours to a competency-based education may better support clinical education.

### Recommendations

The lack of standardized lactation education offered in PNP programs can be addressed in several ways. There are a variety of resources that can be used in threading lactation content throughout existing curricula or for developing a standalone lactation course. These are summarized in [Table 5](#). The Academy of Breastfeeding Medicine ([Meek & Academy of Breastfeeding Medicine, 2019](#)) describes breastfeeding competencies and skills for physicians, which can be modified for care provided by PNPs. The Centers for Disease Control and Prevention funded an American Academy of Pediatrics project to develop a breastfeeding support program and lactation curriculum material ([American Academy of Pediatrics, 2021](#)). The content applies to any advanced practitioner working with breastfeeding dyads. Of particular relevance, the curriculum includes a section on examining attitudes about breastfeeding and how to provide culturally effective care. This is an area found deficient in the review of lactation content within PNP programs.

As previously noted, there are no specific PNP lactation knowledge or management competencies. These could be

developed and implemented for clinical placements in which care is provided to breastfeeding dyads and provide standardization of clinical expectations. Because breastfeeding management is a practice skill, the opportunity to practice hands-on assistance is essential. However, the variability in clinical settings and a lack of knowledgeable clinical faculty present a challenge. This can be addressed by developing and incorporating breastfeeding simulation experiences as a component of PNP education. Case scenarios for simulations can be found in textbooks or online or developed by lactation specialists to meet specific learning outcomes. A wide variety of lactation simulation products are available on the market ([Table 6](#)). Using standardized patients (actors or students role-playing) and recorded vignettes can be another approach used in the simulation. If faculty lack clinical lactation expertise, local lactation specialists can be consulted or hired to develop and participate in these essential activities. Consideration should be given to supporting at least one or more faculty members to expand and enhance their lactation knowledge and skills and certify them as IBCLC.

### Limitations

The survey response rate was 45%, making it difficult to generalize results. The survey timing coincided with the

height of the coronavirus disease 2019 pandemic, potentially affecting the response rate. In addition, the survey participation emails were sent in late spring and early summer, colliding with the end of an academic semester, a busy time of year. Another possible interpretation of the low response rate could be that programs that do not provide specific lactation content in their programs chose not to respond, which may indicate an even lower number of programs providing lactation education. Therefore, breastfeeding-friendly programs might have been more likely to respond to the survey, possibly skewing data results. Finally, survey validation was not conducted. This survey was adapted from a previously developed survey conducted by family nurse practitioner programs (Webber & Serowoky, 2017) and a study of the lactation content in U.S. Midwifery programs (Webber et al., 2022). Survey validity is the next step for future statistical analyses of other nursing specialty programs.

## Summary

It is well established that breastfeeding provides a host of health benefits to both parent and infant, and knowledgeable support from HCPs is crucial for breastfeeding success. PNP's are uniquely positioned to provide this support following delivery and throughout the first years of a child's life. The findings of this study indicate that although lactation education is provided within PNP curricula, the content of that education is varied and inconsistent. In addition, a lack of competencies is expected of students during their clinical practicum. Threading lactation content throughout PNP programs while incorporating simulation experiences is one approach to providing a more comprehensive base of lactation education for future PNP's.

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