Pediatric Nurse Practitioner Barriers to Supporting Breastfeeding by Mothers and Infants

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ABSTRACT

Infant health and development outcomes are positively affected by breastfeeding. Despite the multitude of breastfeeding benefits to mothers and infants along with strong recommendations for exclusive breastfeeding from government agencies and professional associations, the rate of exclusive breastfeeding during the first six months of life remains low. Strongly positive attitudes make pediatric nurse practitioners, especially those in primary care settings, ideally positioned to encourage, support, and provide breastfeeding management to mothers and infants. However, pediatric nurse practitioners may report breastfeeding education and breastfeeding skills deficits along with other barriers to optimal breastfeeding care.

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Multiple benefits exist with breastfeeding for both infant and mother. Recent findings pertaining to the benefits of infant breastfeeding include that it may decrease the risk of allergies and various respiratory infections; increase IQ and enhance neurodevelopment; and potentially reduce the risk of obstructive sleep apnea (Bar, Milanaik, & Adesman, 2016; Hendaus, Jomha, & Ehlayel, 2016; Vinha & de Mello-Filho, 2017). Hess, Ofei, and Mincher (2015) systematically reviewed the literature to examine the “correlation between breastfeeding practices and

childhood obesity rates in African-Americans” finding that “current research does suggest a protective effect of breastfeeding against childhood obesity in this high-risk population” (p. 313). Infants with neonatal abstinence syndrome have shorter hospital stays post birth when breastfed (Holmes, Schmidlin, & Kurzum, 2017).

Despite the plethora of breastfeeding benefits, the rate of exclusive breastfeeding rate for the first six months of life is 16.4% in the United States (Centers for Disease Control and Prevention, 2016). The

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16.4% rate falls well below the American Academy of Pediatrics (AAP) recommendation of 100% exclusive breastfeeding during the first six months of life (AAP, 2012). The World Health Organization (2017) defines exclusive breastfeeding as “the infant receives only breast milk. No other liquids or solids are given—not even water—with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals, or medicines.” The divide between reality (16.4%) and recommendation (100%) presents an opportunity for breastfeeding advocates to develop solutions.

Many factors influence the low national rate of exclusive breastfeeding. Family and partner support, social norms and cultural mores, parental leave and return to work policies, socioeconomic status, and maternal perceptions around time and ease requirements of breastfeeding all potentially affect the decision by mothers to engage in and continue exclusive breastfeeding (Busch, Logan, & Wilkinson, 2014; Neifert & Bunik, 2013). Primary care clinician encouragement and support affects mother’s breastfeeding decision-making (DiGirolamo, Grummer-Strawn, & Fein, 2003; McFadden et al., 2017; Meek & Hatcher, 2017; U.S. Preventive Services Task Force Recommendation Statement, n.d.). Breastfeeding support during routine health supervision visits positively affects both exclusive breastfeeding and breastfeeding duration (Labarere et al., 2005). Early support and education to address a common reason mothers stop breastfeeding—nipple pain—may increase exclusive breastfeeding (Kent et al., 2015).

The recently provided guidance for the clinician rendering pediatric care in *The Breastfeeding-Friendly Pediatric Office Practice* (2017) notes “the clear majority of continued breastfeeding support occurs in the community” (p. e201). As a profession, pediatric nurse practitioners (PNPs) have provided pediatric primary care since 1965, and with the growth in the number of nurse practitioners in the United States coupled with more states allowing PNPs full practice authority, it can be expected that PNPs will continue to emerge as proponents of

breastfeeding and purveyors of breastfeeding support and management (American Association of Nurse Practitioners, n.d.).

One under-explored factor is the barriers that PNPs face in optimally supporting mothers and infants in exclusive breastfeeding. The National Association of Pediatric Nurse Practitioners (2013) reaffirmed that exclusive breastfeeding for the first six months of an infant’s life provides optimal nutrition, but segments of the PNP population still feel underprepared and lack confidence in their effectiveness to support and manage mothers and infants who are breastfeeding. Elucidating such factors may assist practicing PNPs and those who offer PNP educational experiences to determine needs and goals better to address such deficits.

LITERATURE REVIEW

Hellings and Howe (2004) conducted a secondary analysis (of data originally published in 2000) to describe PNP attitudes, experiences, and knowledge about breastfeeding. Most (97.4%) of the 77 PNP respondents reported that recommending and assisting women to breastfeed was a vital part of their professional role. Many strongly agreed/agreed that breastfeeding supported immune function (98.6%), decreased gastroenteritis (93.3%), and decreased otitis media (92.1%). Generally, the PNP respondents were highly seasoned with 61% reporting 10 plus years of experience.

Many PNPs (40%) reported that formal educational experiences were lacking in that their PNP program provided inadequate (i.e., not at all/not very well) instruction to assist breastfeeding mothers (Hellings & Howe, 2004). As students, the PNPs reported that they had: never taught breast pump use (58.4%), never counseled mothers on breastfeeding concerns (40.3%), never taught breastfeeding techniques (40.3%), and never observed breastfeeding by a new mother (35.1%). Instruction was provided by faculty (80.5%) and lactation consultants (76.6%) using primarily lecture (96.1%), demonstration (63.6%), video (57.1%), rounds/preceptorships (33.8%), and role-play (13%). For 19 of the respondents, the most valuable information source was lactation consultant instruction.

PNP programs in the United States were surveyed to determine breastfeeding and human lactation education in their masters-level nursing curriculum (Boyd & Spatz, 2013). Typically (41.9%), breastfeeding content amounted to 3–4 hours of instruction

in the 36 responding programs. Formal breastfeeding education curriculum content included promotion (100%), problem management (96.9%), culture (87.1%), biological aspects of breastmilk (81.8%), anatomy and physiology of human lactation (72.7%), and historical perspectives (33.3%). Breastfeeding instruction was delivered by faculty (78.8%), lactation specialists (45.5%), and breastfeeding mothers (6.1%). Breastfeeding and human lactation education resources were chiefly: current research (84.8%), clinical guidelines (78.8%), websites (60.6%), and books (54.5%). More active learning including personal experiences (36.4%) and demonstrations (27.3%) were incorporated less often.

These studies suggest that formal education is lacking especially hands-on learning related to breastfeeding for PNPs; however, this gap is not limited to just PNPs. Freed, Clark, Lohr, and Sorenson (1995) surveyed pediatric medical residents about their breastfeeding knowledge and competence perception. Just 50.00% rated themselves as adequate to meet the breastfeeding needs of their patients. Both practicing pediatricians (74%) and pediatric residents (53%) felt their formal education breastfeeding preparation was inadequate.

Hellings and Howe compared their findings with the 1995 study by Freed et al., specifically the pediatrician and senior pediatric resident findings. In general, PNPs (2000 published data) were more likely to consider “breast is best” and less likely to feel neutral/disagree that “exclusive breastfeeding is” most beneficial than pediatricians and senior pediatric residents (1995 published data).

Radzynski and Callister (2015) described health professionals’ attitudes and beliefs about breastfeeding using a sample that included, but was not limited to, pediatricians and pediatric medical residents, but did not include PNPs. As described, the participants, often lacked current knowledge as to breastfeeding benefits; did not always fully encourage all mothers to breastfeed; lacked fully developed assessment and therapeutic skills, and did not recognize the impact health-care professionals can make regarding a mother’s decision to breastfeed.

Effectiveness confidence may contribute to how well PNPs support breastfeeding mothers and infants. A clinician’s self-efficacy in educating patients on breastfeeding during primary care visits appears to affect breastfeeding rates (Labarere et al., 2005). Labarere et al. found that clinicians

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who effectively intervened to assist with breastfeeding during the first primary care visit, by properly addressing issues and helping solve problems, increased exclusive breastfeeding at the 4-week mark by 12% (p. 143).

In the Hellings and Howe (2004) sample, “74% of PNPs rated themselves as effective” “in meeting the needs of breastfeeding women” (p. 13). Busch et al. (2014) presented a breastfeeding Tri-Core Model that has three critical pillars to promote and sustain breastfeeding: maternal self-efficacy, lactation support, and lactation education (p. 488). Many newborns are seen by PNPs at their first post-hospital discharge health visit making it crucial that PNPs are well versed in educating, supporting, and providing resources for the mother. PNPs may assist breastfeeding mothers in determining solutions to exclusive breastfeeding barriers such as the lack of social and partner support, workplace barriers, knowledge deficits, concurrent health concerns, and previous unsuccessful breastfeeding attempts.

Again, this lack of confidence is not just limited to PNPs. Per Freed et al. (1995), 84% of pediatricians and just 50% of pediatric residents self-rated as effective in meeting the needs of breastfeeding mothers and infants. Since the Freed et al. study was published the AAP has devoted association resources and membership expertise to increase exclusive breastfeeding resources including an updated *Breastfeeding and the use of human milk* policy (2012), a breastfeeding initiatives website, and a breastfeeding residency curriculum. However, some poor attitudes, knowledge deficits, and limited breastfeeding management experience still exist among pediatricians (Feldman-Winter, Schanler, O'Connor, & Lawrence, 2008; Meek & Hatcher, 2017).

Perspectives on effectiveness may vary between pediatric clinicians and mothers. Taveras et al. (2004) matched and compared mother–newborn pairs with their obstetric and pediatric clinicians. In the 201 mother–pediatric clinician pairs, which included 20 nurse practitioners in pediatrics, when the clinician reported usually or always discussing breastfeeding duration at the 2-week infant preventative visit,

mothers reported such discussion held only 25% of the time. For the mothers breastfeeding at 4 weeks, 88% perceived their pediatric clinician to be very supportive. When breastfeeding mothers recalled a breastfeeding duration discussion with their pediatric clinicians, 25% the mothers perceived their pediatric clinicians' advice as very important (p. e408). There was also a mismatch between mothers and pediatric clinicians' perceptions regarding discussion pertaining to return to work recommendations. Virtually all pediatric clinicians (97%) stated that they usually or always discussed with mother her plans to continue with breastfeeding when/if returning to work, mothers, however, reported such a discussion only 55% of the time.

Systems issues may also affect the ability of PNPs to most effectively support breastfeeding mothers and infants. Although the Bright Futures guidelines recommend a health supervision follow-up visit occur "within 3 to 5 days after birth and within 48 to 72 hours after discharge" (p 361) for newborns, not all pediatric clinicians comply with this recommendation (Hagan, Shaw, & Duncan, 2017; Neifert & Bunik, 2013). Other systems-related barriers include time constraints, lactation counselor availability, provision of infant formula samples, and recommendations to supplement with infant formula.

METHOD

A 30-question survey pertaining to breastfeeding barriers and support experienced by practicing PNPs was developed guided by the United States Breastfeeding Committee (USBC, 2010) by two of the authors (LB, NM). Four major areas were surveyed: formal graduate education preparation, skill deficits, attitudes and self-awareness, and practice setting barriers. Seven questions, focused on the formal education preparation for breastfeeding PNPs received as graduate students, were posed. Five questions were posed regarding breastfeeding skills. Five questions were asked about breastfeeding attitudes. Five questions were queried regarding practice limitations including time, resources, knowledge, and skills. The survey instrument was assessed for face validity by three primary care PNPs who found the survey to be clear and understandable. The PNPs comprehended the survey wording.

The Core Competencies of Breastfeeding were written as a "guideline and framework to integrate evidence-based breastfeeding knowledge, skills, and attitudes into their standard health care delivery

practices" (USBC, 2010). The Core Competencies are meant to be utilized as a framework for all pediatric health-care providers because the committee advocates the importance of breastfeeding to promote the nation's health and well-being. Thus, from these competencies, the statements were modified, so the participants could rate how well and/or how confidently they fulfilled these competencies.

For example, in the knowledge section of the competencies, the first competency is listed as "all health professionals should understand the: 1.1 basic anatomies and physiology of the breast." The statement was modified as first question in block one to reflect the PNPs formal education about basic anatomy and physiology about the breast; the question stated: "Please rate how well your program of study prepared you on the following breastfeeding topics: Basic anatomy and physiology of the breast." For each section, the responses were answered using appropriate Likert scales throughout the survey. Most of the survey questions were designed to assess the PNP's education, skill level, and attitudes on breastfeeding based on the USBC's core competencies as adapted from the USBC document of imperative areas for all pediatric clinicians to be competent in; the survey adapted questions about breastfeeding and tailored them specifically to the PNP.

The survey was disseminated one-time only in November/December 2016 to 4,959 Advanced Practice Nurses (APNs) certified in New Jersey with a valid email address found on the publicly available New Jersey Board of Nursing website with 523 emails returned as undeliverable. This left a total of 4,436 emails that were potentially delivered. Per the American Association of Nurse Practitioners (2016), the national distribution of PNPs is 6%. It was anticipated 6% of the APNs on the email list would yield a potential of 266 PNPs. With an anticipated population of 266 PNPs in New Jersey, there were 33 respondents who met the inclusion criteria of being an active practicing PNP. Institutional Review Board approval and informed consent were obtained.

DEMOGRAPHIC DATA

Thirty-three PNPs currently practicing in pediatric primary care or pediatric specialty care responded. Most respondents were female ($n = 31$; 96.80%) with one male responding. More than half of the respondents were under the age of 40 ($n = 19$, 57.60%). Most respondents were prepared at the master's level ($n = 32$; 97%) with only one respondent reporting a

TABLE 1.

Demographic and Education Characteristics of 33 Pediatric Nurse Practitioners

Variable	N	%
Age		
20–29	5	15.2
30–39	14	42.4
40–49	8	24.2
50–59	4	12.1
60–69	2	6.1
Gender		
Male	1	3.0
Female	32	97.0
Degrees/certificates earned*		
BSN	25	75.8
Any other bachelor's degree	5	15.2
MSN	32	97.0
Any other master's degree	1	3.0
DNP	1	3.0
PhD in nursing	0	0.0
Any other doctoral degree	0	0.0
IBL certification	0	0.0
Lactation counselor certificate	3	9.1
Other lactation certificate	0	0.0
Years practiced in primary care		
0–3 years	17	51.5
4–8 years	7	21.2
9–13 years	4	12.1
14 + years	5	15.2

*Multiple degrees/certifications could be selected; thus, percentages do not sum to 100.

BSN = Bachelor of Science in Nursing; MSN = Masters of Science in Nursing; DNP = Doctor of Nursing Practice; IBL = International Board of Lactation Consultant Examiners.

Doctor of Nursing Practice degree. Three (9.10%) had a “lactation counselor certificate.” Over half had practiced for less than 3 years ($n = 17$, 51.50%). Five respondents had 14 or more years’ experience (15.20%) (Table 1).

RESULTS

Formal Graduate Education Preparation to Support Breastfeeding

Generally, PNPs reported that their formal graduate education had only *slightly prepared* them with knowledge of basic anatomy and physiology of the breast. In general, PNPs reported *moderate preparation* during their formal graduate education for the role of breastfeeding and human milk in maintaining health and preventing disease, the impact of PNP health-care practices on breastfeeding outcomes, evidence-based contraindications to breastfeeding, potentially adverse outcomes for infants who do not breastfeed, indications for referral to lactation services, and resources available to mothers seeking breastfeeding information or services. For all seven

areas, less than 20% of PNPs felt *extremely prepared* (range 9.40%–19.40%) from their graduate education with at most 20% reported *not being prepared* at all (range 6.30%–19.40%) (Table 2). PNPs reported being least prepared about resources available to assist breastfeeding mothers seeking breastfeeding information or services (mean = 2.65), indications for referral to lactation services (mean = 2.81), evidence-based contraindications to breastfeeding (mean = 2.84), and basic anatomy and physiology of the breast (mean = 2.88).

Skill Deficits

Barriers beyond formal education preparation exist for PNPs working to optimally support exclusive breastfeeding. Practicing PNPs self-reported *basic* skill levels for assessing nipple latch during an infant health visit (38.70%), recognizing and educating on normal and abnormal infant breastfeeding patterns (32.30%), and developing and communicating a breastfeeding management plan (35.50%). PNPs reported their skill level as *intermediate* in practicing in a manner that protects, promotes, and supports breastfeeding (32.30%). In only one skill area was an *advanced* level most reported for assessing an infant breastfeeding (32.30%). The reported advanced skill level for *assessing an infant breastfeeding* contrasts with the reported basic skill level for *assessing nipple latch* during an infant health visit. PNPs reported being least skilled in developing and communicating a breastfeeding management plan (mean = 2.97) and assessing nipple latch during an infant health visit (mean = 3.03) (Table 3).

Attitudes and Self-Awareness

Overall, PNPs had *strongly positive* attitudes towards breastfeeding (Table 4). PNPs reported understanding the importance of tailoring breastfeeding information and services to the family’s culture, knowledge level, and language preferences (mean = 4.72), valuing breastfeeding as an important health promotion activity and a way to prevent certain illnesses (mean = 4.69), and recognizing the importance of PNPs delivering breastfeeding care and services (mean = 4.59). PNPs also reported *high self-awareness*: recognizing when their own personal values and biases may affect or interfere with breastfeeding care (mean = 4.53) and recognizing limitations of their own lactation knowledge and expertise (mean = 4.23).

TABLE 2.

Formal Education Knowledge of Breastfeeding Scale Percentages, Means, and Standard Deviations of Pediatric Nurse Practitioners

Item	Total <i>N</i>	Not Prepared at All (1)		Slightly Prepared (2)		Moderately Prepared (3)		Very Prepared (4)		Extremely Prepared (5)		<i>Mean</i>	<i>S D</i>
		<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%		
Basic anatomy and physiology of the breast	32	2	6.30%	12	37.50%	9	28.10%	6	18.80%	3	9.40%	2.88	1.10
Role of breastfeeding & human milk in maintaining health & preventing disease	31	2	6.50%	7	22.60%	11	35.50%	5	16.10%	6	19.40%	3.19	1.19
The impact of your health-care practices on breastfeeding outcomes	31	3	9.70%	6	19.40%	12	38.70%	6	19.40%	4	12.90%	3.06	1.15
Evidence-based contraindications to breastfeeding	31	6	19.40%	6	19.40%	10	32.30%	5	16.10%	4	12.90%	2.84	1.29
Potentially adverse outcomes for infants who do not breastfeed	31	3	9.70%	7	22.60%	13	41.90%	3	9.70%	5	16.10%	3.00	1.18
Indications for referral to lactation services	31	4	12.90%	9	29.00%	11	35.50%	3	9.70%	4	12.90%	2.81	1.19
Resources available to assist mothers seeking breastfeeding information or services	31	6	19.40%	11	25.80%	11	35.50%	3	9.70%	3	9.70%	2.65	1.20

TABLE 3.

Breastfeeding Skills Scale Percentages, Means, and Standard Deviations of Pediatric Nurse Practitioners

Item	Total N	None (1)		Basic (2)		Intermediate (3)		Advanced (4)		Expert (5)		Mean	S D
		N	%	N	%	N	%	N	%	N	%		
Practicing in a manner that protects, promotes, and supports breastfeeding	31	1	3.20%	6	19.40%	10	32.30%	8	25.80%	6	19.40%	3.39	1.12
Assessing nipple latch during a visit	31	1	3.20%	12	38.70%	7	22.60%	7	22.60%	4	12.90%	3.03	1.12
Assessing an infant breastfeeding	31	0	0.00%	9	29.00%	8	25.80%	10	32.30%	4	12.90%	3.29	1.04
Recognizing and educating on normal and abnormal infant breastfeeding patterns	31	1	3.20%	10	32.30%	8	25.80%	8	25.80%	4	12.90%	3.13	1.12
Developing and communicating a breastfeeding management plan	31	2	6.50%	11	35.50%	9	29.00%	4	12.90%	5	16.10%	2.97	1.20

Practice Setting Barriers and Beyond

Most PNPs reported being only slightly concerned with barriers in their practice setting. PNPs rated as *slightly important*: limited time during health supervision visits to address breastfeeding problems (54.84%), limited time during health supervision visits to give routine advice on breastfeeding (43.75%), limited knowledge of ICD-10 codes that address breastfeeding (33.33%), limited skills of their own for counseling mothers about breastfeeding (25.93%), and limited availability of lactation consultants, classes, or mother support groups (25.93%) (Table 5). Equal numbers of PNPs (25.93%) reported the latter—limited availability of lactation consultants, classes, or mother support groups—as of moderate concern versus not at all important.

Almost 70.00% of PNP reported that they work in an office setting that provides infant formula to mothers and families. Nearly all PNPs (95.60%) provided formula samples to breastfeeding mothers and infants (Table 6).

LIMITATIONS

Limitations of this study include challenges in outreach to the pediatric nurse practitioner-specific population, one-time only survey distribution, the small ($n = 33$) geographically limited (New Jersey) sample, and the use of an only partially validated (i.e., face validity) survey tool. As such, the study findings have limited generalizability and may not apply to the pediatric nurse practitioner profession as a whole.

DISCUSSION

Breastfeeding attitudes findings indicated that responding PNPs have strongly positive attitudes about breastfeeding. PNPs reported that breastfeeding is very important to the mother–infant dyad. PNPs reported that breastfeeding is important for health promotion and positive outcomes. These strong positive attitudes of PNPs towards breastfeeding is an important foundational consideration for organizations and educators when designing programs and resources for PNPs. In other words, PNPs strongly “buy-in” to breastfeeding, making the next focus—how might all PNPs especially those in primary care settings fully obtain the knowledge and skills to expertly support mothers, infants, and families.

TABLE 4.
Breastfeeding Attitudes Scale Percentages, Means, and Standard Deviations of Pediatric Nurse Practitioners

Item	Total <i>N</i>	Strongly Disagree (1)		Somewhat Disagree (2)		Neither Agree nor Disagree (3)		Somewhat Agree (4)		Strongly Agree (5)		<i>Mean</i>	<i>S D</i>
		<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%	<i>N</i>	%		
I value breastfeeding as an important health promotion and a way to prevent certain illnesses	32	2	6.30%	0	0.00%	0	0.00%	2	6.30%	28	87.50%	4.69	1.00
I recognize the importance of delivering breastfeeding care and services	32	3	9.40%	0	0.00%	0	0.00%	1	3.10%	28	87.50%	4.59	1.19
I understand the importance of tailoring information and services to the family's culture, knowledge, and language level	32	1	3.10%	0	0.00%	0	0.00%	5	15.60%	26	81.30%	4.72	0.77
I recognize the limitations of my own lactation knowledge and breastfeeding expertise	31	3	9.70%	0	0.00%	2	6.50%	8	25.80%	18	58.10%	4.23	1.23
I recognize when personal values and biases may affect or interfere with breastfeeding care	32	1	3.10%	0	0.00%	0	0.00%	11	34.40%	20	62.50%	4.53	0.80

TABLE 5.

Breastfeeding Barrier Scale Percentages, Means, and Standard Deviations of Pediatric Nurse Practitioners

Item	Total N	Extremely Important (1)		Very Important (2)		Moderately Important (3)		Slightly Important (4)		Not at All Important (5)		Mean	SD
		N	%	N	%	N	%	N	%	N	%		
Limited time during preventative visits to give routine advice on breastfeeding	32	2	6.25%	2	6.25%	8	25.00%	14	43.75%	6	18.75%	2.38	1.07
Limited time during preventative visits to address breastfeeding problems	31	1	3.23%	2	6.45%	5	16.13%	17	54.84%	6	19.35%	2.19	0.95
Limited availability of lactation consultants, classes, or mother support groups	30	3	10.00%	1	3.33%	8	26.67%	10	33.33%	8	26.67%	2.37	1.22
Limited knowledge of ICD-10 codes that address breastfeeding	30	2	6.67%	2	6.67%	6	20.00%	10	33.33%	10	33.33%	2.20	1.19
Limited skills of my own for counseling mothers about breastfeeding	27	4	14.81%	2	7.41%	7	25.93%	7	25.93%	7	25.93%	2.59	1.37

TABLE 6.

Pediatric Nurse Practitioner Infant Formula Sample Practices

Variable	N	%
Does your practice have infant formula samples in the office?		
Yes	23	69.7%
No	10	30.3%
How often do you give free infant formula samples?		
Never	1	4.3%
Seldom	15	65.2%
Often	7	30.4%

IMPLICATIONS FOR PRACTICE, EDUCATION, AND RESEARCH

Practice

The Breastfeeding Friendly Pediatric Office Practice suggests 20 evidence-based recommendations for pediatric offices and clinics including staff training, early introduction of the subject of breastfeeding, encouragement of breastfeeding mothers to avoid all supplements including water, schedule the first newborn outpatient visit by the third to fifth day of life or within 24–48 hours of hospital discharge, schedule appointments that permits clinicians to observe a feeding during the visit, and maintain a community resource list (Meek & Hatcher, 2017). Meek and Hatcher (2017) note barriers to implementing these recommendations including knowledge limitations, skills, time, and cultural considerations. As well, breastfeeding management may be complex and often requires immediate care.

The skill area where PNPs reported as being weakest was assessing nipple latch. Developing short video-based interventions (e.g., YouTube video) for areas where PNPs report being under-prepared may be potentially useful. “Nipple latch” videos found on YouTube may be a good starting

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place. Lactation specialists could evaluate the available videos for content and accuracy and then make recommendations for use to practicing PNP's, PNP graduate programs, and continuing education for PNP's. As part of their Doctor of Nursing Practice

project, two of the authors (LB, NM) developed the *Pediatric Nurse Practitioner's Pocket Guide for Breastfeeding* that includes information on nipple latch and other evidence-informed breastfeeding content (Figure 1).

Resources: Breastfeeding & Lactation

ICD-10 Codes: Breastfeeding
Source: AAP 2015b

P92.01	Bilious Vomiting of Newborn
P92.09	Other Vomiting of Newborn
P92.1	Regurgitation and Rumination of Newborn
P92.2	Slow Feeding of Newborn
P92.3	Underfeeding of Newborn
P92.5	Neonatal Difficulty in Feeding at Breast
P92.8	Other Feeding Problems of Newborn
P92.9	Feeding Problem of Newborn, Unspecified
R11.10	Vomiting, Unspecified (>28 days old)
R11.12	Projectile Vomiting (>28 days old)
R11.14	Bilious Vomiting (>28 days old)
P59.0	Neonatal Jaundice Associated with Preterm Delivery
P59.3	Neonatal Jaundice from Breast Milk Inhibitor
P59.8	Neonatal Jaundice from Other Specified Causes
P59.9	Neonatal Jaundice, Unspecified
P74.1	Dehydration of Newborn
P74.2	Disturbances of Sodium Balance of Newborn
P74.3	Disturbances of Potassium Balance of Newborn
P92.6	Failure to Thrive in Newborn
R63.6	Underweight
R68.11	Excessive Crying of Infant (Infant)
R68.12	Fussy Infant (Infant)
R10.83	Colic
R19.4	Change in Bowel Habit
R19.5	Other Fecal Abnormalities
R19.7	Diarrhea, Unspecified
R19.8	Other Specified Symptoms and Signs Involving the Mother
Q38.1	Ankyloglossia
Q38.5	Congenital Malformations of Palate (High-arched Palate)

Bright Futures Lactation Resource Center
www.bfrc.com/resources.htm

New Jersey Breastfeeding Coalition
www.breastfeedingnj.org/resources/

Partnership for Maternal & Child Health of Northern New Jersey
www.partnershipmch.org/resources/breast-feeding-resources

State of New Jersey Parent Link
www.nj.gov/njparentlink/health/breastfeeding/

ZipMilk.org (will assist with local support)
www.zipmilk.org/

La Leche League
www.lllc.org

International Lactation Consultant Association
www.ilca.org

International Board of Lactation Consultant Examiners
www.iblce.org

Create an In-Office Breastfeeding Support Group:

Evidence-Based Advice: Breastfeeding

Proper Latch
Infant puts most of mom's areola into mouth...

1. Mom's nipple goes to the back of the infant's mouth
2. The infant's gums compress the milk sinuses that lie about an inch behind the nipple
3. The tongue is forward, beneath the breast, over the lower gum, and its motion helps the infant draw out the milk.

- Supplement infant with **Vitamin D 400 IUD** daily.
- **Positions to try:** Cradle Hold, Cross Cradle, Football Hold, and Side-Lying Position. (See: www.lllii.org/faq/positioning.html)
- **Nipple pain** is not normal and should be addressed.
- **enough fluids:** Keep a water bottle nearby all day to ensure proper fluid intake.
- Mom should make sure she is **eating enough calories and drinking enough fluids**.
- Infant may feed from **5 to 45 minutes** total time.
- 4 hours; it is OK for the infant to stool with every feed.
- Infant needs to feed every **1 1/2 to 3 hours**, but no longer than every 4 hours.

ICD-10 Codes: Breastfeeding
Source: AAP 2015b

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P92.5	Neonatal Difficulty in Feeding at Breast
P92.8	Other Feeding Problems of Newborn
P92.9	Feeding Problem of Newborn, Unspecified
R11.10	Vomiting, Unspecified (>28 days old)
R11.12	Projectile Vomiting (>28 days old)
R11.14	Bilious Vomiting (>28 days old)
P59.0	Neonatal Jaundice Associated with Preterm Delivery
P59.3	Neonatal Jaundice from Breast Milk Inhibitor
P59.8	Neonatal Jaundice from Other Specified Causes
P59.9	Neonatal Jaundice, Unspecified
P74.1	Dehydration of Newborn
P74.2	Disturbances of Sodium Balance of Newborn
P74.3	Disturbances of Potassium Balance of Newborn
P92.6	Failure to Thrive in Newborn
R63.6	Underweight
R68.11	Excessive Crying of Infant (Infant)
R68.12	Fussy Infant (Infant)
R10.83	Colic
R19.4	Change in Bowel Habit
R19.5	Other Fecal Abnormalities
R19.7	Diarrhea, Unspecified
R19.8	Other Specified Symptoms and Signs Involving the Mother
Q38.1	Ankyloglossia
Q38.5	Congenital Malformations of Palate (High-arched Palate)

PEDIATRIC NURSE PRACTITIONER'S
POCKET GUIDE to BREASTFEEDING
Created by Lisa Brzezinski, DNP & Nancy Mimm, DNP

COMMON BREASTFEEDING PROBLEMS

<p>Inadequate Milk Intake</p> <ul style="list-style-type: none"> - Breast Issues - Mom: Hormonal Issues - Mom: On Medication that Disrupts Milk Production <p>Nipple and Breast Pain</p> <ul style="list-style-type: none"> - Nipple and breast issues - Ankyloglossia - Torticollis - Oral anomalies in infant - Poor latch <p>Poor Milk Extraction</p> <ul style="list-style-type: none"> - Not enough feeding - Poor latch - Mom and infant separated - Infant receives formula - Infant stomach size (see figures at right) 	<p>Milk Oversupply (Mom)</p> <p>Breast Infections* (Mom)</p> <p>Yeast Infections* (Mom on Nipples & Breast)</p> <p>Bloody Nipple Discharge*</p> <p>* Always encourage Mom to get a check-up with her clinician if there is a concern for infection.</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Day 1-2 Blueberry</p> </div> <div style="text-align: center;"> <p>Day 3-6 Grape</p> </div> </div> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <p>Weeks 2-4 Strawberry</p> </div> <div style="text-align: center;"> <p>Month 1+ Egg</p> </div> </div>
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Figure 1. Print-and-fold *Pediatric Nurse Practitioners Pocket Guide to Breastfeeding*.

Another skill deficit area reported by responding PNPs was in developing and communicating a breastfeeding plan. Lactation experts might consider the development of a prototypical Breastfeeding Action Plan like Asthma and Allergy Action Plans routinely used for children with one of the noted conditions (Asthma & Allergy Foundation of America, 2017). Low literacy versions as well as versions for non-English readers should be considered for development. PNPs could use the action plan to develop individualized breastfeeding management plans with mothers and other family members. The standard breastfeeding action plan could serve as a prompt and as a visual guide for parent teaching and shared decision making.

PNPs reported a lack of breastfeeding resources availability as a moderate concern (25.93%) versus not at all concerning (25.93%). This finding may evidence a spatial resource/need mismatch or PNP resource knowledge deficit. In that, in some geographic areas breastfeeding resources are more available than in other locales. Since PNPs are more likely to practice in resource limited and low-income settings than other pediatric clinicians, this may require addressing some of the social determinants of health issues that affect families in poverty and those living in areas with limited breastfeeding resources.

Education

PNPs often enter the profession with significant experience as pediatric nurses including exposure to breastfeeding content and expectations of the Baby Friendly Hospital Initiative. PNPs are often women of childbearing age as well as mothers who may have breastfed an infant. These experiences can be built upon both in clinical and theory courses. Encouraging PNP students with personal and professional experiences with breastfeeding to share their perspective with classmates may be helpful.

PNP programs may wish to develop a one-credit breastfeeding course available to undergraduate and graduate students from the health-related professions. The course could be offered during winter session or over the summer when students schedules may be less intense. The course should include instruction from not only assigned PNP faculty, but from lactation counselors and mothers who are breastfeeding. Development of a continuing education course with similar hour content as that in the Baby Friendly Hospital model may also be useful.

Trends in prevalence and incidence should inform breastfeeding curriculum content. For example, the increasing incidence of infants with neonatal abstinence syndrome suggests inclusion of evidence-informed content regarding management of breastfeeding mothers and infants recovering from opioid dependence (Busch, 2016). Noting the increase in syphilis among pregnant women as well as concerns with Zika virus infection, safe breastfeeding guidance in the presence of certain maternal infection should be part of curriculum content (Centers for Disease Control and Prevention, 2017; Porter & Mimm, 2017). Understanding these factors may assist PNPs in breastfeeding management of special populations and identification of useful resources.

Cultural considerations in breastfeeding practices for diverse childbearing populations should receive attention. For example, the belief in “Las Dos” in some Mexican populations, may support using a two-generation approach to parent and grandparent education about the health benefits of colostrum and exclusive breastfeeding as well as the harms of infant formula supplementation (Bartick & Reyes, 2012). Understanding these cultural beliefs may assist PNPs in breastfeeding management and identification of useful resources.

Just 9.10% of responding PNPs ($n = 3$) reported lactation counselor certification. This presents an opportunity for policy makers and funders to explore strategies and tactics to increase the lactation counselor certification rate among PNPs. Certification time and expense barriers may potentially be addressed with supplemental funding and dedicated programs for PNPs. Building advanced/expert breastfeeding skills among the PNP workforce may have a significant impact on individual and population-based mother and infant outcomes.

CONCLUSION

Breastfeeding improves infant and maternal health outcomes along with providing significant societal and economic benefits. PNPs need to “own” breastfeeding care by practicing at an advanced or expert level to best support infants, mothers, and families. PNPs need to provide breastfeeding management during child health visits with knowledge, skill, and confidence. Overall, responding PNPs exhibit strongly positive attitudes towards breastfeeding, but may require additional formal educational preparation and continuing education to optimize

Pediatric nurse practitioners need to “own” breastfeeding care by practicing at an advanced or expert level to best support infants, mothers, and families.

their knowledge and skills. The knowledge and skill areas PNPs report as most underprepared were in rank order: 1. knowledge of resources, 2. indications for referral, 3. evidence-based contraindications, 4. basic breast anatomy and physiology, and 5. developing and communicating a breastfeeding management plan.

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