

Attitudes, Practices, and Knowledge About Human Lactation Among Nursing Students

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Nurses are on the front line of the healthcare system and should, therefore, have the evidence-based knowledge to manage breastfeeding. The objective of this study was to assess the attitudes and knowledge about human lactation among a group of nursing students. An anonymous online survey was sent to all College of Nursing students at a local university in Kentucky. Nursing students participating in the survey favored breastfeeding over formula feeding for infants. Lack of knowledge and various misconceptions about breastfeeding were reported. Whether a nursing student has or has not completed a class about human lactation during the nursing program, and has had or not had children, significantly influences their attitudes and knowledge toward breastfeeding. Future studies should focus on identifying if nursing faculty members and nursing students recognize human lactation as a value and central knowledge for nurses.

Keywords: nursing students; breastfeeding knowledge; nursing programs; human lactation

Background

Healthcare professionals, especially nurses, play an important role in educating and supporting breastfeeding (BF) because they are the largest major group of professionals who spend the most time with patients (Bozzette & Posner, 2013; Spear, 2006; Ward & Byrne, 2011). Consequently, they need to receive adequate education to promote and effectively manage BF for newborns and infants and especially for mothers who have not previously breastfed an infant (Freed, Clark, Harris, & Lowdermilk, 1996; Spear, 2006; Ward & Byrne, 2011).

Researchers have indicated that undergraduate nursing curriculums dedicate little time to teach about BF (Boyd & Spatz, 2013). In general, BF classes for nursing students in the United States are limited to only one to two classes given during the Obstetrics course, which results in a large percentage of nurses who are ill-equipped to provide optimal breastfeeding support for mothers and infants (Boyd & Spatz, 2013; Bozzette & Posner, 2013; Ward & Byrne, 2011; Webber & Serowoky, 2017).

The purposes of this study were to (a) determine the attitudes and knowledge about infant feeding among a sample of nursing students; (b) identify misconceptions about BF among nursing students; and (c) compare BF attitudes and

knowledge among nursing students who had received a class about human lactation versus those who had not.

Methods

A descriptive study was designed to determine attitudes, knowledge, and practice about human lactation among a group of nursing students.

Sampling

The sample size encompassed all nursing students, including undergraduate, DNP, and PhD students at a local state university in Kentucky ($N = 793$). Recruitment was done anonymously via email using the College of Nursing student email server. Response rate was 17% ($n = 135$).

Procedures

The Medical Institutional Review Board (IRB) of the local university site approved the study. An email cover letter was prepared to invite students to participate and was used as an informed consent form. A link was provided at the end of the email cover letter; when potential participants opened the link, it was because they agreed to participate in the study, and a survey with the questions was opened. To increase participation, reminders of the email cover letter were sent out via email three times to all potential participants in intervals of 2 weeks.

Study data were collected and managed using Research Electronic Data Capture (REDCap) tools hosted at the

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University of Kentucky (Harris et al., 2009). REDCap is a secure, web-based application designed to support data capture for research studies.

Measures

A survey was developed based on the extraction of questions used in previous research (Seidel, Schetzina, Freeman, Coulter, & Colgrove, 2013). The survey consisted of 50 items, including six questions inquiring about general demographic characteristics, and 44 questions on infant feeding practices, opinions, and basic knowledge such as “Breastfeeding is beneficial for the mother and reduces the risk of illness,” “Women with small breasts do not produce enough milk,” and “Breastfeeding and formula give the same benefits.” For most of the items (32 items), respondents were asked to rate the statements with strongly disagree (1) to strongly agree (5); and others items (6 items) were dichotomous with “yes” and “no” options.

Data Analysis

REDCap provided automated export data downloads to SPSS (released 2015, IBM SPSS Statistics for Windows, Version 22.0, IBM Corp., Armonk, NY) for statistical analysis. Descriptive analyses, including mean, standard deviation, and frequency distributions, were used to summarize the data. The group was divided into two comparison groups based on having received a class about BF as part of their nursing school curriculum. Group comparisons of study variables were made using one-way analysis of variance.

Results

Most respondents were undergraduate students, White, female, and aged between 18 and 30 years. Of the participants, 48% were originally from other states, 45% were from Kentucky, and 7% were from other countries (Table 1).

Students’ attitudes toward BF are presented in Figure 1. Most student participants agreed that BF is beneficial for the baby (99%) and reduces the risk of illness. They also believed that it benefits the mother’s health, reduces the risk for diseases, and helps the mother to lose weight. Students agreed or strongly agreed (95%) that it is up to parents to decide how to feed their infant. Most of the students identified BF as normal in their family (70%) and the preferred method of infant feeding in the United States (59%).

Regarding knowledge, our data showed that most of the students disagreed or strongly disagreed: formula is

Table 1. Demographic Characteristics of Nursing Student Respondents (N = 135)

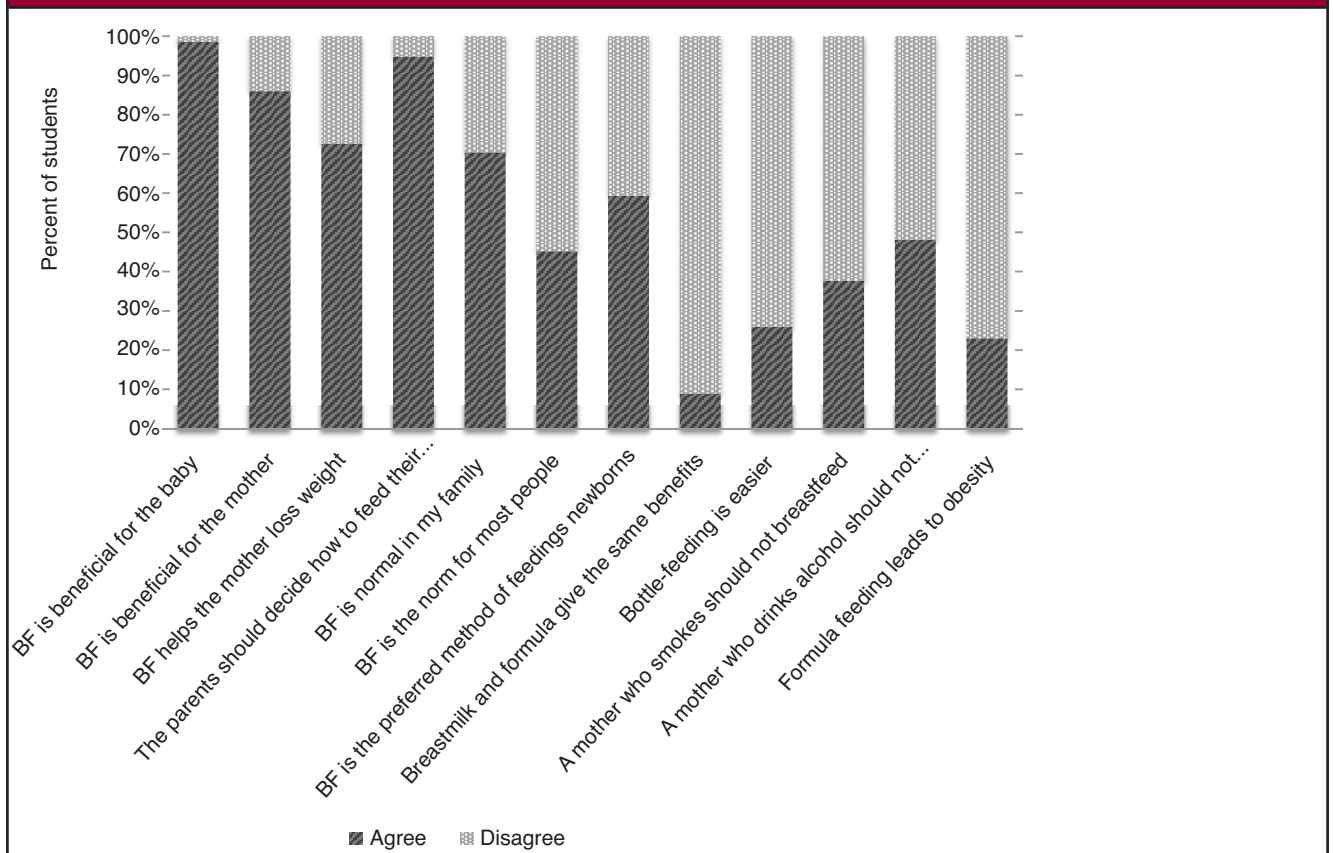
Variable	n (%)
Age range (years)	
18–20	23 (17)
21–24	49 (36.3)
25–30	23 (17)
31–39	21 (15.6)
≥40	19 (14.1)
Gender	
Female	133 (98.5)
Male	2 (1.5)
Ethnic background	
White	116 (85.9)
African American	4 (3)
Hispanic	3 (2.2)
Asian	7 (5.2)
Other	4 (3)
Education ^a	
Freshman	1 (0.7)
Sophomore	24 (17.8)
Junior	30 (22.2)
Senior	21 (15.6)
Second degree	14 (10.4)
DNP	33 (24.4)
PhD	11 (8.1)
Other	1 (0.7)
Place of birth	
Kentucky	61 (45.2)
Other states in the United States ^b	30 (48.1)
Outside the United States ^c	9 (6.7)
With or without children	
With children	41 (30.4)
Without children	94 (69.6)

^aStanding at the moment of the internet survey.

^bAL, AZ, AR, CA, CO, DE, FL, HI, IL, IN, IA, KS, LA, MD, MI, MN, MO, NC, OH, PA, TN, TX, WA, and WV.

^cBrazil, Chile, England, Indonesia, Korea, Nigeria, Philippines, South Korea, and Thailand.

Figure 1. Nursing students' attitudes and knowledge about human lactation (N = 135).



just as good as breast milk (81%), and infants receiving breast milk and formula milk will get the same benefit as infants exclusively BF (65%). Additionally, nursing students also disagreed that BF is painful (48%), it will cause the breasts to sag (59%), women with small breasts do not produce milk (93%), BF mothers get less sleep (54%), bottle feeding is easier than BF (42%), and that frequent nursing and holding will spoil the infant and make him/her too dependent (90%).

Students also identified some mother's characteristics that are associated with the likelihood to BF, specifically they recognized education about BF increases the likelihood that a woman will decide to breastfeed (90%), and women with implants may be unable to breastfeed (69%). Additionally, 90% knew that a higher level of education is associated with higher likelihood of BF. Opinions about substance used showed that some students agree and strongly agree (48%) that "a mother who drinks alcohol should not BF," and disagree or strongly disagree (45%) that "a mother who smokes may not BF." When questioned, regarding the need for the college of nursing to provide more knowledge about BF, just more than half of the nursing students (53%) said that they would be interested in taking an advance BF course in the future.

There were significant differences in the responses between the groups of students who have had the BF class versus those who have not received the class during their nursing education in the Nursing Care of Childbearing Families Course. Table 2 presents a descriptive summary of the responses that were significantly different between the groups. In general, findings were expected, showing that students who have received the class about human lactation were more knowledgeable about BF than their counterparts who had not received the class. Additionally, significant differences were found in the responses of students who reported being parents ($n = 41$) versus students with no children ($n = 94$). Students with children had significantly higher scores (agree or stronger agree) on "deciding to breastfeed or formula feed would be up to the parents?" ($F = 8.24; p < .01$); "breastfeeding is normal in your family" ($F = 7.09; p < .01$); "breastfeeding is beneficial for the mother and reduces the risk for illness" ($F = 10.36; p < .01$).

Students without children had significantly higher scores (agree and stronger agree) in "women with small breasts do not produce enough milk" ($F = 4.15; p < .05$); "It is easier to bottle feed than to breastfeed" ($F = 6.33; p < .05$); and "a woman who has breast implants could

Table 2. Descriptive Summary of Attitude and Knowledge About Human Lactation of Nursing Students Respondents (N = 135)

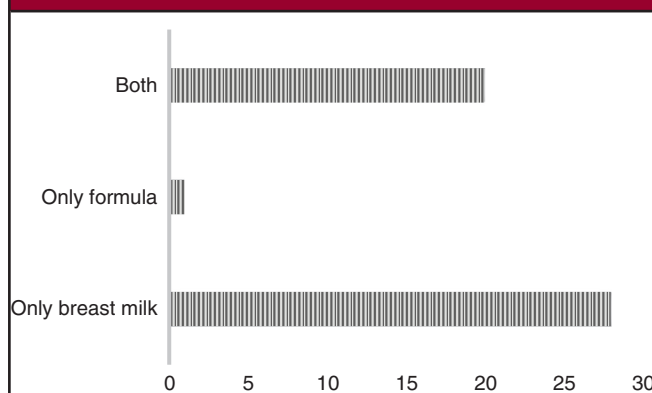
Variable	Total Mean (SD)	Before Class (n = 55) Mean (SD)	After Class (n = 80) Mean (SD)	F	p
Breastfeeding is beneficial for the mother and reduces the risk for illness	4.43 (0.82)	4.20 (0.95)	4.59 (0.69)	7.552	.007
Breastfeeding is beneficial for the baby and reduces the risk for illness ^a	4.78 (0.45)	4.67 (0.51)	4.86 (0.38)	5.917	.016
Women with small breasts do not produce enough milk ^a	1.74 (0.6)	1.87 (0.61)	1.65 (0.58)	4.782	.031
Lack of family support as a barrier for breastfeeding	3.24 (1.19)	2.91 (1.16)	3.46 (1.17)	7.358	.008
Doctors know a lot about breastfeeding	3.03 (1.01)	3.27 (0.93)	2.86 (1.03)	5.594	.019
Frequent nursing and holding will spoil the baby and make him too dependent	1.68 (0.74)	1.87 (0.80)	1.55 (0.67)	6.458	.012
A breastfeeding mother has to be obsessive about what she eats ^a	2.09 (0.74)	2.25 (0.78)	1.97 (0.70)	4.763	.031
A mother who smokes should not breastfeed ^b	3.01 (1.28)	3.39 (1.32)	2.75 (1.18)	8.585	.004
A mother who drinks alcohol should not breastfeed	3.47 (1.16)	3.73 (1.21)	3.29 (1.11)	4.782	.030

^an = 134, 1 subject missed.

^bn = 133, 2 subjects missed.

never breastfeed” ($F = 9.15$; $p < .01$). Interestingly, all students with children reported having experience with BF: all the students breastfed at least one infant exclusively; half of the students reported to have breastfed and supplemented at least one of their infants; and only one student had only provided formula to one of her infants (Figure 2).

Figure 2. Experience with type of feeding of students with children (n = 41).



Discussion

Our data showed that most nursing students considered BF as the preferred feeding method for an infant (79%), and they reported that BF is normal to their families (87%). In the study, we identified some BF misconceptions among nursing students, for example, 9% of the responders believed that breast milk and formula give the same benefits to an infant. One-quarter of the students (25%) thought that giving formula milk to an infant is easier than BF. Students with no children were significantly more likely to agree and strongly agree that formula feeding is easier than BF compared to students with children.

When the students were asked if a mother who drinks alcohol should not breastfeed, 74% of students agreed. The American Academy of Pediatrics (AAP) recommends that ingestion of alcohol by a mother who is BF should be minimized and limited to an occasional social intake, and nursing should be done only 2 hours or more after alcohol intake to minimize its concentration in the ingested milk (Eidelman, 2012). Additionally, when the

students were asked if a mother who smokes should not breastfeed, 54% agreed. AAP states that maternal smoking is not an absolute contraindication to breastfeeding, but should be strongly discouraged because it is associated with an increase in infant respiratory allergy and Sudden Infant Death Syndrome (Eidelman, 2012). It is important that nursing students receive the adequate preparation during school to be able to assist and guide mothers who decide to continue smoking/drinking during BF because the lack of evidence-based knowledge may mislead BF mothers to detrimental infant health.

A significant difference between the answers given by students who have already received the class about human lactation versus the ones who have not received the class was found. Students who received the class had better attitudes and were more knowledgeable about BF than their counterpart who had not taken the class. Our finding suggests that even a 2-hour class significantly impacts nursing students' attitudes and knowledge about BF. Others authors have supported these findings indicating that short educational interventions increase knowledge and attitude on BF in health provider students (Davis, 2015; Ogburn, Espey, Leeman, & Alvarez, 2005). Additionally, our findings showed that students with children were more knowledgeable and had a better attitude about BF versus their counterparts who do not have children, which indicates that the ownership experience is valuable in the attitude about BF. It has been recognized that women who have breastfed an infant or were breastfed as an infant have more positive attitudes about BF (Bai, Fong, & Tarrant, 2015; Kavanagh, Lou, Nicklas, Habibi, & Murphy, 2012).

The study site College of Nursing, like many in the country (Boyd & Spatz, 2013), only dedicate 1 or 2 hours of a Nursing Care of Childbearing Families Course to discuss BF and related topics. Our data findings suggest that 2 hours of class provides basic knowledge about human lactation; however, many hours of training are needed to prepare a health provider to acquire the skills to support a nursing mother (Ward & Byrne, 2011; World Health Organization, 2015). The International Board of Lactation Consultant Examiners (IBLCE) requires at least 90 hours of lactation-specific education and a minimum of 1,000 hours of clinical practice to apply for the IBLCE examination to become an IBCLC (International Board of Lactation Consultant Examiners, 2013-2016). Comparing the number of hours recommended versus those received, it is clear that nursing students are getting limited knowledge about human lactation topics which produce inadequate management and support to BF mothers who may be unable to achieve their BF goals (Bozzette & Posner, 2013). In fact, many previous studies indicate that most healthcare

professionals are not prepared to effectively manage BF (Coreil, Bryant, Westover, & Bailey, 1995; Graffy & Taylor, 2005; Kakrani, Rathod Waghela, Mammulwar, & Bhawalkar, 2015; Ogburn et al., 2005; Ward & Byrne, 2011; Webber & Serowoky, 2017).

We highlight that nursing programs should place more emphasis on improving training of nursing students on the significance and management of BF. There are restrictive hours that are assigned to review human lactation in nursing curriculum; however, a well-planned class with clinical practice experiences and case scenarios could improve human lactation knowledge. With this approach, nurses will have the appropriate lactation knowledge to assess mothers and know when a referral to a lactation specialist is required. Additionally, the recommendation is to provide a specific BF course that can be offered as an "honor course" or elective course during nursing education to those students interested in future work in the birthing centers. For example, the Nursing Curriculum Committee of the study site College of Nursing reviewed the results of this study and recommended an honors course that will be offered to nursing and other health professional students. It is evidence based that educational interventions in baccalaureate nursing students increase knowledge and attitude in providing support to BF mothers (Davis, 2015). Additional clinical experiences will provide the hands-on experience needed to prepare nurses to support BF mothers.

There are some limitations to this study that should be noted. The responders were only 17% of the group of potential participants, which could decrease the representation of all students' opinions. We also believe that the students interested in replying to the survey could be the ones that identified more with the topic of BF, as was noticed by the number of students that already have children in the sample, which also limits the representation of the overall student group. However, we received a good representation of all level of students in the college of nursing.

Conclusion

Our study identified that nursing students do recognize that BF is the preferred method to feed newborns and infants, and they acknowledge that it brings many health benefits for the mother-baby dyad. Overall, the students agreed that they would participate in a BF course if it was made available at the School of Nursing. We also identified lack of knowledge and misconceptions about BF among the students surveyed. Whether a nursing student has or has not completed a class about human lactation during

the nursing program and has had or not had children significantly influences their attitudes and knowledge toward BF. Future studies should focus on identifying if nursing faculty members and nursing students recognize human lactation as a value and central knowledge for nurses.

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Angeline do Nascimento Parente graduated and received her degree in nursing from the Federal University of Pará, Brazil. She was an exchange student of the Brazil Scientific Mobility Program at the University of Kentucky during 2014–2015, she was sponsored by the Institute of International Education, the Brazilian Coordination for the Improvement of Higher Education Personnel, and the Brazilian National Council for Scientific and Technological Development (CNPq). Currently, Angeline works as a Nursing Preceptor at the Amazon School of Higher Education (ESAMAZ) in Belém, Brazil, providing training in Community Health Nursing for nursing students at Primary Health Care Units.



Caroline Coleman earned her Bachelor of Science in Nursing degree from the University of Kentucky (UK) in 2015. She had previously obtained a Bachelor of Arts in anthropology and international studies from UK in 2010. During her time in the undergraduate nursing program, Caroline was a nursing research intern working with her mentor, Dr. Linares. This study was part of her work as research intern. She obtained her RN license in Kentucky in early 2016 and began her nursing career in the neurological intensive care unit at UK Healthcare Chandler Medical Center. A year and a half later, she decided that she wanted to pursue psychiatric nursing and began a nursing position at UK Healthcare Good Samaritan Behavioral Health, where she is currently working. She began pursuing a

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