



# Student Nurses Knowledge of Breastfeeding and Lactation: A Literature Review

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## Abstract

Breastfeeding has long been considered as the optimal feeding method for all infants and the American Academy of Pediatrics (AAP) recommends exclusive breastfeeding for at least the first six months [1]. As well, the Centers for Disease Control (CDC) agrees that breastfeeding is the best source of nutrition for infants [2] and the World Health Organization (WHO) concurs the exclusive breastfeeding that exclusive breastfeeding is the unequalled infant feeding method for the first six months [3]. Breastfeeding support and education are considered to be key elements of breastfeeding success [2]. Breastfeeding support from health professionals can be effective in influencing a mother's decision to initiate and maintain breastfeeding Yang et al. [4]. Despite this knowledge, the research indicates that many nursing programs do not include breastfeeding education in their current curriculum. A literature review was examined that included 11 studies published between the years of 2013 and 2020 that utilized an educational intervention for nursing students on breast feeding. The purpose of the literature review was to examine whether the educational interventions increased student knowledge of breastfeeding, benefits of breast feeding, and attitude towards breastfeeding. The results of the literature review suggested that even a brief educational intervention could improve students' knowledge and attitude towards breastfeeding and continued education will increase student confidence in supporting breastfeeding mothers, thereby improving breastfeeding support.

**Keywords:** Breastfeeding; Benefits of Breastfeeding; Educational Interventions on Breastfeeding; Lactation

## Introduction

Breastfeeding has long been touted as the optimal feeding choice for all infants. The American Academy of Pediatrics (AAP) recommends exclusive breastfeeding for at least the first six months and continued as long as the mother-infant dyad deem it mutually beneficial [1]. As well, the Centers for Disease Control (CDC) agrees that breastfeeding is the best source of nutrition for infants [2]. The World Health Organization (WHO) concurs that exclusive breastfeeding is the unequalled infant feeding method for the first six months and continued until at least two years or more [3]. Exclusive breastfeeding can reduce the risk of certain health conditions [1]. Studies have shown an association between breastfeeding and increased health benefits for both mothers and infants. Breastfeeding has been linked to better maternal and newborn outcomes worldwide [1-3]. As well, exclusive breastfeeding of infants has been found to promote cognitive development and protect against infectious diseases such as diarrhea or pneumonia [3]. An association has been noted between breastfeeding mothers

and a reduced risk of type two diabetes, breast cancer, and ovarian cancer [2,3]. Key components to breastfeeding success threaded through the literature are breastfeeding support and education [2]. Breastfeeding support from healthcare professionals has been found to be a factor in a mother's decision to breastfeed [4,5]. Although considered a natural act, breastfeeding is a learned behavior [3]. The need for breastfeeding support from caregivers and healthcare workers led to the development of the Ten Steps to Successful Breastfeeding developed by WHO and UNICEF [3]. The emergence of the Ten Steps to Successful Breastfeeding led to the development of a breastfeeding counseling course to offer education and training to healthcare personnel who work with breastfeeding women in an effort to improve breastfeeding initiation and continuation [3].

## Background

Nursing education aims to promote positive health practices among the general population as well as among nurses themselves [6]. Breastfeeding is considered one of these important health

practices [6]. Breastfeeding support from health professionals can be effective in influencing a mother’s decision to initiate and maintain breastfeeding [4]. A key reason cited for premature cessation of breastfeeding is inadequate support from healthcare providers [7]. As such, increasing health professional confidence in clinical lactation skills is key to improving maternal and child health outcomes [7]. Healthcare providers, including nursing students, do not always get the education and training to feel confident in assisting breastfeeding mothers [4, 8]. The research depicts either no breastfeeding education or limited education in new graduate nurses. This in turn impacts their confidence in their ability to provide the necessary guidance and support [9]. Studies demonstrate when mothers felt unprepared to breastfeed, breastfeeding initiation and continuation rates go down [8]. Since nutrition is critical in the first year of life, it becomes essential that undergraduate curriculum provide education in breastfeeding to assist students in acquiring the necessary skills and knowledge [10]. This literature review indicates that many nursing programs do not include breastfeeding education in current curriculum. This is significant because nurses are the primary caregivers for postpartum/breastfeeding mothers [9]. Breastfeeding research shows that targeted breastfeeding education, didactic and clinical, has significantly increased breastfeeding knowledge [9,11]. As such, it is important that health care professionals including nurses, who spend the majority of time with the patients, be able to offer consistent, accurate knowledge regarding breastfeeding and lactation [8]. Despite these findings breastfeeding education is not a standard in nursing program curriculum [9].

**Findings**

This review of the literature was done to examine whether educational interventions increased student nurses’ knowledge of breast feeding, benefits of breast feeding, and attitude towards

breastfeeding. Although the literature search provided many articles in regard to breastfeeding support and education, this review looked at 11 studies published between the years of 2013 and 2020 that included an educational intervention aimed at improving breastfeeding knowledge. One study by Yang, Burns, et al. [11] revealed that despite structured theoretical breastfeeding education, students did not feel confident in supporting breastfeeding in a clinical setting. A study by Ben Natan et al. [6] surveyed female students and found that the support received from campus were predictive of female students’ intention to breastfeed even though students had very high knowledge and positive attitude towards breastfeeding. Another study by Hatamleh & Sabeeb [12] revealed a greater knowledge of breastfeeding in female nursing students than male students but concluded that breastfeeding education should be provided equally to males and females to better promote breastfeeding. A large study by Linares et al. [13] showed that even a two hour class significantly impacted student attitudes and knowledge about breastfeeding. Similar results were noted in a study by Froelich et al. [14] which indicated that even a brief educational intervention could affect knowledge and attitude toward breast feeding. A literature review conducted by Yang et al. [4] examined nursing students’ or other health professional students’ knowledge, attitudes or experiences related to breastfeeding. Findings suggested that nursing curriculum can improve breastfeeding knowledge, students’ attitudes, and students’ confidence in helping and guiding breastfeeding mothers. A study by Davis and Sherrod [5] and another study by Bozzette & Posner [9] revealed that an educational based intervention improved the students’ breastfeeding knowledge and attitude toward breastfeeding. As well, a study by Pajalic [15] showed that in addition to breastfeeding benefits, information on traditions and cultural acceptance of breastfeeding should be included in nursing education (Table 1).

**Table 1:** Summary of Articles Reviewed.

Reference Author & Year	Study Design	Study Population	Data Collection Method	Aim of Study	Summary of Results & Discussion
Ben Natan et al. [6]	Descriptive Cross-sectional	Students from a large university in central Israel. Participants were one hundred female students from nursing and 100 female students from other disciplines, of childbearing age, who were either pregnant or mothers.	Students completed a questionnaire regarding their breastfeeding knowledge, intentions, attitudes, and their perception of their academic institution’s support for breastfeeding	To compare breast-feeding attitudes and knowledge among nursing students and students from other faculties, as well as their perception of their academic institution’s support for breastfeeding, and to explore the association between these factors and students’ intention to breastfeed during the course of their studies.	Results Nursing students’ level of breast-feeding knowledge was very high, and higher than that among students from other faculties. However, both groups had similar moderately positive overall scores for attitudes towards breastfeeding. In addition, both groups expressed similar moderate intentions to breastfeed during the course of their studies. Students’ perception of their academic faculty as supportive of breast-feeding, their breastfeeding attitudes, and breastfeeding knowledge, were found to predict their intention to breastfeed during the course of their studies. Conclusions: Nursing programs should place more emphasis on improving nursing students’ attitudes towards breastfeeding. In order to promote breastfeeding among students during their studies, it is important to ensure a pro-breastfeeding environment on campus.

Pajalic [15]	Written reflections from students and content analysis	Nursing students n=65	Written reflections from nursing students (n=65) were examined using manifest content analysis.	The aim of the present study was to describe the nursing students' perspectives on breastfeeding in Sweden.	The results show that the factors of importance in promoting successful breastfeeding are information about breastfeeding's benefits, traditions and cultural acceptance of the practice, and by government prohibition of infant formula. Conclusion: Knowledge about the benefits of breastfeeding needs to be prioritized continuously during education.
Sadovnikova et al. [7]	Commentary	Physician residents, nurse-midwifery students, and clinical lactation experts	Reflections from physician residents, nurse-midwifery students, and clinical lactation experts on the lactation simulation model	Development and evaluation of a high-fidelity lactation simulation model	This study developed and evaluated a high fidelity lactation simulation model (LMS) using feedback from physician residents, nurse-midwifery students, and clinical lactation experts on LSM prototypes.
Yang, Burns et al. [11]	Descriptive qualitative study	Taiwanese Nursing students, mothers, nursing staff and teachers	Focus groups and small group interviews were conducted with four participant groups in southern Taiwan.	To explore the expectations and experiences of Taiwanese nursing students in supporting breastfeeding on clinical placement. To gain additional insight into student experience, we also sought the perspectives of mothers, nursing staff and teachers about the role of nursing students in supporting breastfeeding mothers.	Three main themes emerged from the data that captured the nursing students' experiences during clinical practice, which were "High expectations"; "The reality is different"; and "Improving confidence in students." The study found that students lacked confidence in supporting breastfeeding in the clinical setting. Students were expected to support women to achieve their breastfeeding goals under the supervision. The students highlighted the importance of establishing trust to effectively support mothers, and for the students to feel confident to provide the breastfeeding information. Conclusions: Despite structured theoretical breastfeeding education prior to clinical placement, students did not feel they were adequately prepared to support women who are breastfeeding during their clinical placement. The findings demonstrated the need for further support in developing effective communication skills and building confidence prior to clinical placement.
Yang et al. [4]	Literature review	Studies focused on nursing students' or other health professional students' knowledge, attitudes or experiences related to breastfeeding. Intervention studies to improve knowledge and attitudes, were also included. All papers were reviewed using the relevant Critical Appraisal	A systematic review of peer reviewed literature was performed. The search for literature was conducted utilizing six electronic databases, CINAHL, MEDLINE, ProQuest, PubMed, Scopus, and Cochrane, for studies published in English from January 2000 to March 2017. Studies focused on nursing students' or other health professional students' knowledge, attitudes or experiences related to breastfeeding. Intervention studies to improve knowledge and attitudes, were also included. All papers were reviewed using the relevant Critical Appraisal	To describe nursing and other health professional students' knowledge and attitudes towards breastfeeding, and examine educational interventions designed to increase breastfeeding knowledge and attitudes amongst health professional students	Fourteen studies were included in the review. This review indicates that in some settings, health professional students demonstrated mid-range scores on breastfeeding attitudes, and their knowledge of breastfeeding was limited, particularly in relation to breastfeeding assessment and management. All of the studies that tested a specialized breastfeeding education program, appeared to increase nursing students' knowledge overall or aspects of their knowledge related to breastfeeding. Several factors were found to influence breastfeeding knowledge and attitudes, including timing of maternal and child health curriculum component, previous personal breastfeeding experience, gender, cultural practices and government legislation. Conclusions: Based on this review, it appears that nursing curriculum, or specialized programs that emphasize the importance of breastfeeding initiation, can improve breastfeeding knowledge and attitudes and students' confidence in helping and guiding breastfeeding mothers.

<p>Yang, Schmied et al. [10]</p>	<p>Pre-test/post-test survey design</p>	<p>Two cohorts of Taiwanese nursing students (N=215)</p>	<p>This study used a pre-test/post-test survey design with two cohorts of nursing students (N=215). Knowledge and attitude were assessed before and after: (a) theoretical (didactic and skills laboratory) education in Cohort one, and (b) clinical placement in Cohort Two.</p>	<p>To examine the change in knowledge and attitude in Taiwanese nursing students following theoretical and clinical learning experiences on breastfeeding.</p>	<p>Findings: Students in both cohorts demonstrated significant improvements in knowledge and attitude post-theoretical education, and post-clinical placement. Prior to theoretical education in Cohort One, those with experience of close family members being breastfed were more than 14 times (adjusted odds ratio: 14.09, 95% confidence interval: 1.73-114.64) to be in the high knowledge group. However, following theoretical or clinical education, there were no sociodemographic group differences in breastfeeding knowledge or attitude in Cohorts One or Two.</p> <p>Conclusion: Results revealed that the current breastfeeding education program in Taiwan, both theoretical and clinical components, increased nursing students' knowledge and improved positive attitudes towards breastfeeding, and any sociodemographic differences in knowledge and attitude about breastfeeding were ameliorated following theoretical and clinical placement experience focused on breastfeeding.</p>
<p>Hatamleh &amp; Sabeeb [12]</p>	<p>Cross-sectional descriptive study</p>	<p>The convenient sample were 113 undergraduate nursing students recruited from a regional college in Saudi Arabia</p>	<p>Study used a pretested self-administered questionnaire. A descriptive-study design was used to determine knowledge of and attitudes towards breastfeeding and breastfeeding support among a single sample of student nurses. The setting for this study was a nursing school in the middle region of the Kingdom of Saudi Arabia.</p>	<p>The aim of this study was to investigate breastfeeding knowledge and attitudes of nursing students while they were enrolled in the nursing college.</p>	<p>Results of the study showed that most participants had a positive attitude towards breastfeeding and believed that all mothers should breastfeed their children. Female participants showed significantly greater knowledge on benefits of breastfeeding compared to male participants, however, all nursing students had misconceptions about breastfeeding and knowledge on several aspects of breastfeeding were poor. Some of the misconceptions were about need for supplemental formula and exclusiveness of breastfeeding in the first 6 months of life. Only 42% of the students thought that the mother should keep breastfeeding even if she becomes sick. 43.3% of the participants thought that breastfeeding could spoil modern mothers' image. The study concluded that optimal breastfeeding practices must be taught equally to male and female nursing students to promote breastfeeding.</p>

<p>Davis &amp; Sherrod [5]</p>	<p>Randomize pretest posttest design</p>	<p>Participants included 113 students in a maternal child rotation who were randomly assigned into 2 groups</p>	<p>Randomized pretest posttest design study investigated student knowledge in providing breastfeeding support. There were 56 students in the experimental group and 57 students in the control group. All students received a one hour evidence based lecture based on content from the AAP, Academy of Breastfeeding Medicine, and CDC. The educational intervention was a lecture via PPT. Students took the ABKAQ (Australian Breastfeeding Knowledge and Attitude Questionnaire) questionnaire prior to the breastfeeding lecture and then after the intervention was completed. The experimental group participated in a simulation role play (15-20 minutes) with 15-20 minute debriefing of a breastfeeding scenario. The control group watched a 45 min breastfeeding video (In Our Hands from Rush University, 2012) followed by a 10 minute post intervention debriefing. All student were asked to complete the post ABKAQ within 7 days after the educational intervention.</p>	<p>The purpose of the study was to determine if an evidence based practice educational intervention would have an effect on baccalaureate nursing students' knowledge and attitude in regard to breastfeeding support provided to mothers.</p>	<p>Results of the paired t tests revealed sufficient evidence that the educational based intervention improved the students Breastfeeding knowledge and attitude toward breastfeeding.</p>
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<p>Bozzette &amp; Posner [9]</p>	<p>Quasi-experimental</p>	<p>convenience sample of 30 fourth year BSN students at a major university in the US enrolled in an obstetric theory rotation</p>	<p>The study used a single group comparison design implementing a survey using pre and post-tests to collect the data. A pretest was obtained prior to the comprehensive breastfeeding lectures with handouts and resources that was integrated into the existing obstetrics course. The targeted intervention was a 1.5 hour lecture on breastfeeding that included powerpoints, videos, and written handouts. The range of topics included anatomy and physiology of lactation. Student mastery was measured through a 20 question breastfeeding knowledge post-test. Questions were related to course objectives and were modified from Marzalik (2004) knowledge survey.</p>	<p>The aim of the study was to evaluate content designed to increase breastfeeding knowledge of BSN nursing students and to demonstrate the need for breastfeeding education.</p>	<p>The results of the pilot program indicated that the breastfeeding education intervention was statistically significant in increasing breastfeeding knowledge scores (<math>t=-7.29</math>, <math>p &lt; 0.005</math>, <math>r^2=0.696</math>) after the education intervention.</p>
<p>Linares et al. [13]</p>	<p>Descriptive study</p>	<p>793 students which included undergraduate, DNP, and PhD students at a local university in Kentucky</p>	<p>The study used a survey consisted of 50 questions including 6 questions about general demographics and 44 questions about infant feeding practices and basic breastfeeding knowledge. Student were divided into 2 comparison groups based on having received a class on breastfeeding as part of their nursing curriculum. One group had breastfeeding education and the other group did not.</p>	<p>The aim of the study was to examine the attitudes, knowledge, and practice about human lactation among nursing students.</p>	<p>Significant differences were noted between the 2 groups. Those who had the breastfeeding class were more knowledgeable about breastfeeding than those that didn't. Most students felt that breastfeeding was the preferred method (79%). Students who had the breastfeeding class has better attitudes and were more knowledgeable about breastfeeding. Even a 2 hour class significantly impacted their attitudes and knowledge about breastfeeding. Another finding was that students with children were more knowledgeable and had better attitudes about breastfeeding.</p>
<p>Froelich et al. [14]</p>	<p>Pre-test, post-test</p>	<p>Participants were from undergrad, grad, and osteopathic medicine classes at a small private university. Initially, 316 participants completed anonymous surveys at the beginning or end of class.</p>	<p>A fact sheet was created on the benefits of breastfeeding and recommendations from the AAP Policy Statement on breastfeeding. Questions were created that examined attitudes toward breastfeeding on a scale from 0-100. Students completed pretest surveys and then spent time reading about the benefits of breastfeeding and AAP recommendations. Post-test surveys consisted of the same questions and were completed immediately and then 1 month later.</p>	<p>The purpose of the study was to determine if a brief educational intervention could affect knowledge and attitudes toward breastfeeding among university students.</p>	<p>A significant change in knowledge and attitudes toward breastfeeding were noted (<math>p &lt; .05</math> to <math>p &lt; .001</math>) in the 5 of the 8 initial questions in importance of breastfeeding, importance of exclusive breastfeeding, how long a baby should be exclusively breastfed, when breastfeeding should be discontinued, and acceptability of breastfeeding in public.</p>

## Conclusion

Breastfeeding is the optimal method of infant feeding [1] and has been associated with health benefits for both the mother and infant [1-3]. Breastfeeding success has been associated with the components of education and support [2]. Inadequate support from healthcare professionals has been linked to earlier breastfeeding cessation [7]. Nurses have been noted as the primary caregivers for breastfeeding women [9]. Many nursing programs do not include breastfeeding education in the curriculum impacting new graduate nurse's ability to provide assistance to breastfeeding mothers. The purpose of the literature review was to examine articles pertinent to the breastfeeding knowledge of nursing students to determine if an educational intervention could improve nursing student's attitudes and knowledge of breastfeeding and lactation. Eleven studies were reviewed where an educational intervention was provided to nursing students. All studies reviewed suggested that even a brief educational intervention could improve students' knowledge and attitude towards breastfeeding and continued education will increase student confidence in supporting breastfeeding mothers.

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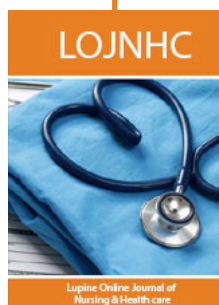


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