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Grace Murphy

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### Citation

Murphy, G. (2021). Tiny Tusks Internship: Does Breastfeeding Education in an Undergraduate Nursing Program Affect Student Knowledge and Attitudes Concerning Breastfeeding?. *The Eleanor Mann School of Nursing Undergraduate Honors Theses* Retrieved from <https://scholarworks.uark.edu/nursuht/145>

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**Tiny Tusks Internship: Does Breastfeeding Education in an Undergraduate Nursing Program Affect Student Knowledge and Attitudes Concerning Breastfeeding?**

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May 8, 2021

## Introduction

In August of 2020, I had the honor of becoming a Tiny Tusks Breastfeeding and Infant Support Intern. Tiny Tusks provides honors nursing students enrolled in the Eleanor Mann School of Nursing at the University of Arkansas an opportunity to support mothers in the community by providing breastfeeding services, education, and assistance at public Razorback sporting events. Interns provide this support by setting up designated lactation spaces at sporting events, such as gymnastics meets, football, and basketball games, for mothers to breastfeed or pump. Before the implementation of this program, there was not an accepting space for women at these events to breastfeed comfortably. Although women have been legally allowed to breastfeed in any public space since 2007 (Arkansas Department of Health, 2017), stigmas continue to exist around public breastfeeding that discourage women from doing so. Tiny Tusks aims to include breastfeeding women in public events by providing an atmosphere where women can feel comfortable breastfeeding. The program would not be possible without the efforts of Dr. Kelly Vowell Johnson and Dr. Allison Scott, the funding of the Women's Giving Circle, and the partnership of the Eleanor Mann School of Nursing with the University of Arkansas Athletic Department.

Prior to beginning my internship with Tiny Tusks, I had numerous questions I hoped to answer through my experience. First, I desired to increase my overall knowledge about breastfeeding and feel confident providing education and support to mothers. Additionally, I wanted to further understand the perspective of breastfeeding mothers in the community, and understand barriers of continued breastfeeding. These questions were important to me because, as a nursing student with limited clinical experience in the obstetrical (OB) or pediatric areas of practice and without children of my own, I had limited knowledge and experience regarding

breastfeeding. These questions were also crucial to grasp because of how they would assist me in my future career as a nurse. Since I have always been especially interested in OB and pediatric fields of nursing, I recognized having a foundation of breastfeeding knowledge and experience would be essential for my future career.

### **Internship Reflection**

The significant responsibilities of a Tiny Tusk intern included attending various Razorback sporting events, setting up and monitoring breastfeeding spaces, providing education and support to mothers, immersing ourselves in breastfeeding education with modules, podcasts, or meetings in the community, completing a project with a focus on either marketing, education, or research, writing a final paper including a reflection and literature review, and finally presenting our findings for approval to our mentors before graduation. These activities supported the main learning objectives of the internship which were to strengthen systems thinking, ethical reasoning, communication, and problem-solving skills that would translate into professional practice. Overall, interns were required to complete 120 hours to meet the responsibilities and goals outlined by the internship.

Multiple factors contributed to my preparation for this internship. First, my OB and pediatric coursework helped to prepare me to work with breastfeeding mothers. I learned about different breastfeeding techniques in these classes and was able to educate moms about what I learned during my clinical rotation in the Neonatal Intensive Care Unit. Additionally, I was able to shadow a lactation consultant during clinicals to broaden my experience and knowledge. Learning about public health in my community health course also prepared me to work with diverse patient populations, communicate with others, and recognize the benefits of non-profit, community-based programs such as Tiny Tusks. It also taught me the importance of advocating

for populations in the community that are often overlooked, just as Tiny Tusk advocates for breastfeeding women. Lastly, completing a group literature review my junior year of college helped prepare me for the research portion required for this internship.

While this internship was an amazing learning experience that I am grateful for, there were many challenges that Tiny Tusk interns faced throughout this year. Most of these challenges were due to being in the middle of a global pandemic caused by the spread of COVID-19. Although I was able to participate in the majority of the responsibilities of a Tiny Tusk intern, the new capacity limitations of Razorback sporting events and lack of tailgating caused less mothers and infants to attend these events. This resulted in fewer opportunities for interns to provide breastfeeding education and support. With little demand for breastfeeding support and education during this time, Tiny Tusk interns implemented problem-solving skills and shifted our focus on other current demands of the community, such as helping with mass COVID-19 vaccine clinics. Although participating in these clinics did not directly involve breastfeeding, this shift did fit the scope of our internship responsibilities since Tiny Tusk is a community-focused program.

Another challenge I had as a Tiny Tusk intern was to manage completing my internship responsibilities while also being a full-time student, working as a nurse intern at a local hospital, studying to pass the licensure exam to become a registered nurse, and searching for a job for after graduation. Although it was a challenge to juggle all of the tasks required for these roles, I learned time management skills and how to successfully multi-task.

The final challenge I faced as an intern was dealing with ethical dilemmas. One dilemma I faced was when pregnant women would ask for advice on whether the vaccine was the right move for them. Since clinical trials of the vaccine did not include pregnant women, it was hard

to provide evidence-based answers for women contemplating whether or not to receive the vaccine. After speaking with instructors, I learned that women should consult their doctor to discuss what is the best decision for them, however, it is ultimately up to the woman to decide what she wants to do. While it was truly incredible to administer vaccines to countless people in the community, it was hard to answer questions and deal with dilemmas that arose in these situations.

Although this experience came with various challenges, it also allowed me to learn many valuable lessons that assisted me in completing the learning objectives of this internship. I further developed problem-solving and time management skills. Additionally, by participating in four sporting events and five different vaccine clinics, I learned how to better communicate with people in the community. Along with strengthening my communication skills, I improved my organization skills as well. I had to be extremely organized to plan how I would accomplish my hours, finish my research project, and meet with my mentors to stay on track and fulfill the duties of the internship. I also learned to be more independent and accountable throughout this internship. Completing an honors project is optional for students, thus it was solely up to me if I wanted to take on the independent role of an intern and be accountable for the tasks that came with the role. Overall, the challenges I faced as an intern allowed me to learn important lessons and meet the learning objectives and for this internship experience.

Ultimately, this internship experience contributed to my growth as a person and as a future nurse and allowed me to accomplish the goals that I set for myself prior to my internship. I was able to increase my overall knowledge about breastfeeding and feel confident providing education and support to mothers. Additionally, I was able to further understand the perspective of breastfeeding mothers in the community and understand barriers of continued breastfeeding. I

accomplished these goals by completing the educational breastfeeding modules, attending a Northwest Arkansas breastfeeding community meeting, and doing extensive research for my project.

### **Review of Literature Introduction**

Part of the role of a Tiny Tusk intern was to complete a review of literature on a topic relating to our internship experience. Since the aim of Tiny Tusks is to provide breastfeeding education and support to mothers in the community, the question I chose to review was: Does Breastfeeding Education in an Undergraduate Nursing Program Affect Student Knowledge and Attitudes Concerning Breastfeeding? This question is relevant because in order to provide appropriate breastfeeding education and support to mothers in the community, undergraduate students must have adequate knowledge and a positive attitude regarding breastfeeding. This cannot be done unless sufficient breastfeeding education is provided by nursing programs.

It is recommended by the American Academy of Pediatrics (AAP) that infants be exclusively breastfed for the first 6-months of life, and continue breastfeeding while introducing other foods for 1 year or longer (Centers for Disease Control & Prevention, 2020). The Healthy People 2030 breastfeeding objectives include increasing the proportion of infants who are breastfed exclusively through 6 months of age to 42.4%, and increasing the proportion of infants who are breastfed at 1 year to 54.1% (Centers for Disease Control & Prevention, 2020). This is a large goal considering that in 2015 only 24.9% of infants were breastfed exclusively through 6 months of age, and only 35.9% of infants were breastfed at 1 year (Centers for Disease Control & Prevention, 2020). Although breastfeeding rates continue to rise, women cite lack of support from health professionals as a barrier to breastfeeding (Folker-Maglaya et al., 2018). This suggests that healthcare professionals, such as nurses, must be equipped with sufficient education

to provide this support. However, there are many barriers for undergraduate nursing programs to provide this education.

As an undergraduate nursing student, I understand some of the barriers to receiving adequate breastfeeding education. Nursing program curriculum is intense, with little room for extra breastfeeding workshops or interventions. Additionally, the belief that breastfeeding education is only necessary for OB or pediatric nurses leads to other educational topics taking priority in nursing programs. This is a major misconception since nurses encounter breastfeeding women and their children in almost every clinical setting (Folker-Maglaya et al., 2020). Breastfeeding is the foundation of lifelong health, thus breastfeeding education should be promoted throughout the entirety of nursing curriculum, and should not be limited to those interested in the OB nursing field (Yang et al., 2018). Unfortunately, since breastfeeding education is not considered essential to basic nursing education (Folker-Maglaya et al., 2018) and most nursing programs are restricted to just one or two classes about breastfeeding given during the OB course, many nurses are unable to provide the best possible breastfeeding support for mothers and infants (Linares et al., 2018).

Although I feel that I received helpful breastfeeding education through OB lectures and clinicals, without my Tiny Tusk internship experience, which included participating in breastfeeding video-conferences with groups in my community and completing additional breastfeeding modules, I would not feel confident educating and supporting breastfeeding women. This feeling is common among undergraduate nursing students. In fact, the majority of studies about breastfeeding education conclude that basic nursing education does not adequately prepare students to assist breastfeeding women (Folker-Maglaya et al., 2020).



In order to meet the breastfeeding goals and recommendations, undergraduate nursing students must be prepared by their nursing programs to provide education and support to new mothers. The purpose of this review of literature was to examine peer reviewed research articles with the focus of the impact of breastfeeding-specific education in undergraduate nursing programs on breastfeeding knowledge and attitudes of students.

## Methods

### Search Strategy

Information was retrieved through a systematic review of research to evaluate how breastfeeding education in an undergraduate nursing program impacts students' knowledge and attitudes concerning breastfeeding. CINAHL Complete, MEDLINE Complete, and PubMed databases were utilized to complete this review. Article retrieval was refined and strengthened by applying CINAHL and MEDLINE subject headings and PubMed Medical Subject Headings (MeSH) within the corresponding databases. MeSH terms were selected within the PubMed database and included: *breastfeeding AND nursing student AND knowledge or attitude*. The subject headings used within the CINAHL complete and MEDLINE complete databases included the same terms, as well as related terms suggested with the drop-down boxes. These terms included: *breastfeeding or breast-feeding or infant feeding or lactation or lactating or breast milk AND nursing students or student nurses or undergraduate student nurses or pre-licensure nurse AND knowledge or education or understanding or awareness or belief or attitude*. Further search limiters were applied across all databases, such as being a peer-reviewed scholarly journal article, written in the English language, being a primary source article, and published within the years 2015 through 2021. Since my question was chosen in the year 2020, I included the year 2015 in this systematic review of research. I did not limit the geographical

location of this research because this question can apply to nursing programs globally. I also did not limit this review to only students in a Bachelor of Science in Nursing (BSN) program because students in Associates Degree in Nursing (ADN) programs also will become RNs and will have the same role and scope of practice.

### **Inclusion Criteria**

After the search strategy was applied across CINAHL Complete, MEDLINE Complete, and PubMed, articles were reviewed against inclusion criteria. The qualification of articles was analyzed based on the fundamental components of the proposed research question: Does Breastfeeding Education in an Undergraduate Nursing Program Affect Student Knowledge and Attitudes Concerning Breastfeeding? Thus, articles were included if (a) the study population included undergraduate nursing students; (b) the study discussed breastfeeding education; (c) the study included students' attitudes and knowledge concerning breastfeeding as an outcome.

### **Exclusion Criteria**

After the duplication of articles between the databases were removed, articles were eliminated if they did not incorporate the components of the research question. If (a) the participants did not include undergraduate nursing students; (b) breastfeeding education was not discussed; (c) the study did not include commentary regarding students' attitudes and knowledge concerning breastfeeding; or (d) the study did not meet the preliminary criteria of the search limiters applied, they were excluded from this research.

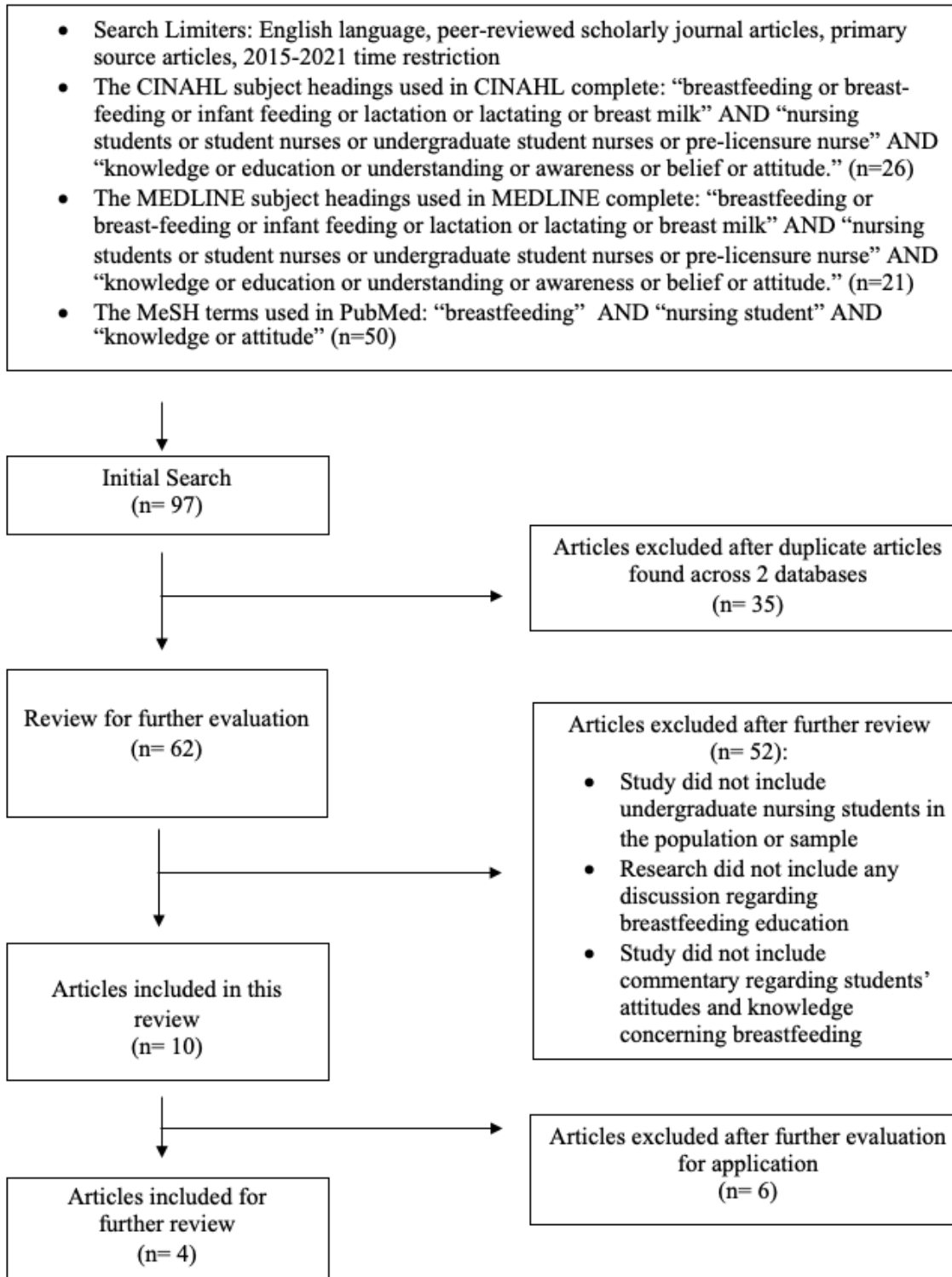
### **Search Results**

Initially, 97 total articles were retrieved between CINAHL Complete, MEDLINE Complete, and PubMed databases through the search strategy. CINAHL retrieved 26 articles, MEDLINE retrieved 21 articles, and PubMed retrieved 50 articles. After evaluating for

duplicated articles, 35 articles were removed. The remaining 62 articles were evaluated against inclusion and exclusion criteria. 52 articles were removed due to not fulfilling these requirements. This resulted in ten articles that fit the criteria for this systematic limited review of research. Figure 1 depicts a visual representation of this selection process.

### **Data Extraction**

After reading the ten articles that met the criteria, data was collected on the authors, the year the study was published, the study design, the study population or sample, the data collection tools utilized, summary of results, and strength of the evidence. After collecting this data from the ten articles that fit the criteria, I completed a further evaluation and chose the four most applicable articles to further discuss in the results section. These four articles included, “An Innovative Educational Intervention to Improve Nursing Students' Knowledge, Attitudes, and Skills Surrounding Breastfeeding” by Rhodes and Burgess (2018); “Effects of an Educational Intervention on Baccalaureate Nursing Students' Knowledge and Attitude in Providing Breastfeeding Support to Mothers” by Davis and Sherrod (2015); “Implementing Health Policy Initiatives: An Effective Breastfeeding Teaching Strategy for Prelicensure Nursing Students” by Folker-Maglaya et al. (2020); and “Breastfeeding Knowledge and Attitudes of Baccalaureate Nursing Students in Taiwan: A Cohort Study.” by Yang et al. (2018).

**Figure 1***Selection Process of Included Studies*

## Results

### Characteristics of Identified Studies

Although ten articles met the criteria for this review of literature, four articles were chosen to further compare and contrast their components. The four articles included: “An Innovative Educational Intervention to Improve Nursing Students' Knowledge, Attitudes, and Skills Surrounding Breastfeeding” by Rhodes and Burgess (2018); “Effects of an Educational Intervention on Baccalaureate Nursing Students' Knowledge and Attitude in Providing Breastfeeding Support to Mothers” by Davis and Sherrod (2015); “Implementing Health Policy Initiatives: An Effective Breastfeeding Teaching Strategy for Prelicensure Nursing Students” by Folker-Maglaya et al. (2020); and “Breastfeeding Knowledge and Attitudes of Baccalaureate Nursing Students in Taiwan: A Cohort Study.” by Yang et al. (2018). These four articles evaluated a total of 499 undergraduate nursing students. Three of the studies occurred in the United States of America (Davis & Sherrod, 2015; Folker-Maglaya et al., 2020; Rhodes & Burgess, 2018) and one took place in Taiwan (Yang et al., 2018). Although the characteristics of each of the four sample populations had differences, all were undergraduate nursing students enrolled in a maternal-child nursing course. Two of the studies included undergraduate students from Bachelor of Science in Nursing (BSN) programs (Davis & Sherrod, 2015; Yang et al., 2018), and the other two included students attending Associates Degree in Nursing (ADN) programs (Folker-Maglaya et al., 2020; Rhodes & Burgess, 2018). None of the studies identified a specific nursing theory guiding the research.

### Purposes

All four studies had similar purposes guiding the research. Each article proposed that standard undergraduate nursing education does not prepare students to support breastfeeding

women, which negatively impact breastfeeding outcomes (Folker-Maglaya et al., 2020). Midwives provide the majority of breastfeeding support and education throughout most of the world, however, in the United States and Asian countries, such as Taiwan, registered nurses (RNs) are mostly responsible for these roles (Yang et al., 2018). All selected studies were in agreement that more needs to be done to increase breastfeeding knowledge and attitudes in students. The purpose of the first study was to evaluate how a breastfeeding workshop impacts student knowledge, skills, and attitudes concerning breastfeeding (Rhodes & Burgess, 2018). Similarly, the goal of the second study was to analyze how an evidence-based breastfeeding education intervention influences students' attitudes and knowledge about breastfeeding support (Davis & Sherrod, 2015). The third study strived to determine the effects of an evidence-based breastfeeding toolkit compared to standard nursing education to increase breastfeeding knowledge (Folker-Maglaya et al., 2020). Although the stated purpose of the third study did not include measuring student attitudes, like the other studies, the researcher does mention that increased breastfeeding knowledge correlates with more positive breastfeeding attitudes, showing that attitudes were still considered in this research (Folker-Maglaya et al., 2020). The aim of the last article was to investigate the change in breastfeeding knowledge and attitudes of nursing students in Taiwan after theoretical and clinical breastfeeding education (Yang et al., 2018).

### **Demographics of Identified Studies**

All four studies collected participants' ages and if they had prior breastfeeding experience before the educational interventions were applied. Overall, the majority of participants in the studies were young and reported not having prior experiences with breastfeeding. The first study reported that 91.4% of participants were between 18-24 years old, with 51% having no prior

breastfeeding experience, 46% having some breastfeeding experience due to a family member or friends, and only 2 students having breastfed before (Rhodes & Burgess, 2018). Similarly, the second study reported that 77.8% of participants were 18-25 years old, with 88.5% reporting never having assisted with breastfeeding, and 91.2% had never breastfed themselves or had a significant other breastfeed (Davis & Sherrod, 2015). The third study did not have any participants under the age of 20, and the majority of their participants were between 25-29 years old (Folker-Maglaya et al., 2020). This study also found that 61% of participants had no prior experience with breastfeeding (Folker-Maglaya et al., 2020). Lastly, the study in Taiwan found that the average age of participants was 20.51 years, with only 13% of students reporting having personal prior breastfeeding experience with a family member (Yang et al., 2018). This data supports that most undergraduate nursing students are less than 30 years old and have little to no previous experience regarding breastfeeding.

### **Study Designs**

While all of the studies in this systematic review of literature had similar purposes, there were various design types that were chosen to best suit each research question. The first study by Rhodes & Burgess (2018) can be classified as a before-after (pre-post) study with no control group (Aggarwal & Ranganathan, 2019). In this type of study, there is an intervention that is applied to a specific group, however, there is not a control group for comparison. The chosen sample for this study consisted of 69 undergraduate ADN students in the first semester of their senior year who agreed to participate. The intervention applied was a specialized breastfeeding education workshop designed and taught by an RN in graduate school and an international board-certified lactation consultant (IBCLC) on the first day of maternal-newborn clinicals. The RN and LBCLC taught 10 different clinical groups separately, with each group consisting of 6-8

students, to allow for more participation and engagement. The workshop lasted approximately 2.5 hours and included hands-on and didactic teaching strategies. Students participated in group discussions and interactive activities, such as role-play and games to reinforce information learned (Rhodes & Burgess, 2018).

The design type of the second study analyzed was a randomized controlled trial (Davis & Sherrod, 2015). Similar to the first study, this type of design includes an experimental intervention, however, this study had a comparison group and participants were chosen randomly. This is a valuable design because having a control group allows for researchers to compare data and can analyze if the intervention was more effective or not. Additionally, randomization eliminates bias between groups and allows for more accurate results (Hariton & Locascio, 2018). Davis & Sherrod (2015) evaluated a sample of 113 BSN students enrolled over two semesters in a nursing maternal child course. The sample was randomly assigned to either an experimental group, which consisted of 56 students, or a control group, consisting of 57 students. Both groups participated in an hour-long evidence-based breastfeeding PowerPoint lecture which took approximately 1 hour to complete. Next, the experimental group participated in a 10-20 minute simulation role-play scenario with a standardized patient (SP), where students practiced communication with the mother, a postpartum assessment, and taught breastfeeding positions. The comparison group watched a 45-minute video “In Our Hands” created by Rush University Medical Center that included breastfeeding education and scenarios with patients. Both groups then participated in post-intervention debriefing. It is important to note that even though there were two groups that researchers defined as an “experimental” and “control” group in this study, the control group received a comparison intervention rather than not receiving anything, potentially making the control not as effective.



Similar to the study by Davis & Sherrod (2015), the study by Folker-Maglaya et al. (2020) also included a clinical trial with a control group, however this study did not include randomization. This is categorized as a controlled clinical trial (Aggarwal & Ranganathan, 2019). Although there was not a specific randomization process between the two groups Folker-Maglaya et al. (2020) provided valuable data because their comparison group was a true control group that did not receive any additional intervention. The sample for this study included 102 senior ADN students enrolled in a maternal-newborn nursing course. Students were chosen to be in the control group if they were enrolled in the class for the first half of the semester, which consisted of 49 students. Students were chosen to be a part of the experimental group if they were enrolled in the course for the last half of the semester, which included 53 students. The control group received the standard breastfeeding education the school provided, while the experimental received the breastfeeding toolkit education developed using the United States Breastfeeding Committee core competencies, and which included 80 minutes of independent study time, 60 minutes of class time, and 75 minutes of clinical time. The independent study time included a PowerPoint to review, the class time included a review of skills objectives, and the clinical time included a case-study and activities such as role-play with props.

The last article reviewed was considered a prospective cohort study (Yang et al., 2018). In this design type, no interventions were applied, instead, researchers just observed the effects of the current breastfeeding education longitudinally at two different time points. The sample for this study included 215 BSN students enrolled in a maternal-child course at a university in Taiwan. Within this sample, two different cohorts were studied. Both cohorts received the same education but had data collected at different times. Cohort one consisted of 111 students, that had data collected one time before and one time after receiving theoretical breastfeeding education.

Cohort two consisted of 104 students with data collected one time after receiving theoretical breastfeeding education, and one time after their clinicals were over. In summary, cohort one was surveyed before the education, then cohort one and two were surveyed at the same time after the education but before clinical, then cohort two was surveyed again after clinical. The breastfeeding education included 3 hours of classroom learning and 6 hours of laboratory-based skills learning, and clinicals consisted of one week (40-hours) in the postnatal unit (Yang et al., 2018).

### **Measurement of Student Breastfeeding Knowledge and Attitudes**

Although the four studies evaluated breastfeeding knowledge and attitudes of undergraduate nursing students, researchers used various tools to collect their data. The first study utilized a pre-workshop and post-workshop survey with reflection questions. These questions were created and reviewed by the IBCLC/RN and the course coordinator and were approved by the institutional review board at the study site. Before the educational workshop, students answered three reflection questions. One was a multiple-choice question about previous experience with breastfeeding, and the other two were open-ended questions about their current attitudes related to breastfeeding, and what they thought the nurse's role was. After the workshop, students answered three open-ended questions regarding knowledge gained, application of knowledge to clinical practice, and if their attitudes or beliefs changed. After the post-workshop reflection, students also evaluated the overall effectiveness of the workshop with two additional questions. These questions were based on a 5-point likert scale, where strongly disagree (most negative impression) is 1, and strongly agree (most positive impression) is 5 (Rhodes & Burgess, 2018).

The second study utilized the Australian Breastfeeding Knowledge and Attitude Questionnaire (ABKAQ) as a survey tool that was accessed by participants through a program called Qualtrics (Davis & Sherrod, 2015). All 113 participants had to fill out a pre-test survey before the lecture, and a post-test survey within 7 days after their intervention. Unlike the first study, the pre and post-tests were identical and included 36 questions to evaluate knowledge and 18 questions to evaluate attitude. However, this survey was similar to the survey in the first study in the way that each question was based on a 5-point likert scale. Participants filled out a demographic survey consisting of 9 questions before the pre-test which took approximately one minute to finish. The pre-test and post-test surveys took about 10 minutes each to complete (Davis & Sherrod, 2015).

The tool utilized in the third study was a questionnaire that came from a 2004 study by Marzalik and was accessed by students through Qualtrics (Folker-Maglaya et al., 2020). Students completed a pre-test on the first day of the course and a post-test at the end of the 4-week course. Like the second study, the pre and post-tests consisted of identical questions. The tests included a total of 15 questions, with 3 items that addressed anatomy and physiology, 4 items about the risks of formula feeding, and 8 items about breastfeeding support. Answer options were true, false, or unsure. Before the pre-test, students completed a demographic survey. This survey also assessed if students had any previous experience related to breastfeeding (Folker-Maglaya et al., 2020).

The last study utilized the same survey tool as the second study, which was the ABKAQ, however researchers used the short-form version, called the ABKAQ-SF (Yang et al., 2018). The survey tool was translated to Chinese and included 20 questions related to knowledge and 12 questions related to attitude. Answer choices had similarities to the three other studies. The 20

knowledge questions included multiple-choice answers such as correct, incorrect, and don't know. For every correct answer, students received one point, with 20 being the highest score. Like the first and second studies, the attitude questions were based on a 5-point likert scale. Along with evaluating knowledge and attitudes, demographic information was obtained such as gender, age, prior experience with breastfeeding, and perceptions of public breastfeeding (Yang et al., 2018).

### **Major Findings**

Overall, the results of all four studies displayed that implementing breastfeeding-specific educational interventions in undergraduate nursing programs improved breastfeeding knowledge and attitudes of nursing students. Since the first study by Rhodes & Burgess (2018) utilized multiple-choice and open-response questions, qualitative and quantitative data was collected. Analysis of answers displayed that the majority of the students had positive beliefs regarding breastfeeding before the workshop, however, some were unsure of the nurse's role as an advocate for breastfeeding. One participant said, "I am not entirely sure what a nurse's role may be..." (Rhodes & Burgess, 2018, p. 200). After the workshop, students reported feeling more confident in their knowledge. Many students said their positive beliefs were reinforced or strengthened, and one student had a positive change, stating that they were now more supportive of breastfeeding. Overall, participants strongly agreed (4.87/5) the content would be useful for clinical, and also strongly agreed (4.84/5) the workshop was an effective way to learn breastfeeding content (Rhodes & Burgess, 2018).

In the second study, a paired samples t-test was completed to compare the mean pre-test and mean post-test scores of all students (Davis & Sherrod, 2015). Knowledge about

breastfeeding significantly increased from an average score of 3.33 to 4.13 and attitudes about breastfeeding also increased from an average score of 3.58 to 3.86 (Davis & Sherrod, 2015).

Folker-Maglaya et al. (2020) reported that the average pre-test scores for both groups were statistically the same, indicating the students had similar starting knowledge. Average post-test scores increased in both groups, meaning that all students improved their knowledge. Although both groups improved their scores, the experimental group scored significantly higher ( $M = 12.34$ ) than the control group ( $M = 10.73$ ) on the post-test, indicating that the toolkit was more effective than standard breastfeeding education (Folker-Maglaya et al., 2020). In the control group, students with previous experience had lower growth scores ( $M = 2.43$ ) than students without experience ( $M = 4.00$ ). In the experimental group, growth scores were not related to experience, which demonstrated that the toolkit increased knowledge for all students regardless of prior experience (Folker-Maglaya et al., 2020).

The last study revealed that there were significant increases in knowledge and attitude scores in both cohort groups, however, the amount of improvement was slightly different between the groups. Results indicated that cohort one's knowledge increased by 29% compared to cohort two's, which increased only by 17% (Yang et al., 2018). For attitudes, both groups had approximately the same growth of 5% (Yang et al., 2018). One interesting finding was that students in cohort one were 14 times more likely to be in the higher knowledge group for the pre-test if they had prior experience, however, after the theoretical breastfeeding education, previous experience did not impact scores. This could indicate that this learning was beneficial for all students regardless of experience, similar to the results of the third study (Yang et al., 2018).

Ultimately, the aim of this review of literature was to understand the influence of breastfeeding-specific education in undergraduate nursing programs on student breastfeeding

knowledge and attitudes. After gathering data from different studies and analyzing findings, as represented entirely in Table 1, it is evident that the results adequately met the purpose of this review. Overall, the results of the studies displayed how breastfeeding-specific education can be a valuable way to increase breastfeeding knowledge and attitudes in undergraduate nursing students.

**Table 1***Extended Review of Literature*

Title	Authors	Country	Design Type	Sample	Data Collection Tools	Summary of Results
Effects of an Educational Intervention on Baccalaureate Nursing Students' Knowledge and Attitude in Providing Breastfeeding Support to Mothers.	Davis & Sherrod, 2015	United States of America	Randomized cohort study	The sample for the study consisted of 113 students (N = 113) in a Bachelor of Science in Nursing Program at a public university in the United States. All participants were enrolled over two semesters in a Nursing Maternal Child course. The sample was randomly assigned to either an experimental group (N =56 students) or a control group (N=57 students). Both groups participated in an hour-long breastfeeding PowerPoint lecture. After the lecture, the experimental group participated in a 10-20 minute simulation role-play scenario with a standardized-patient, and the control group watched a 45-minute video that included scenarios. Both groups then had a post-intervention debrief.	The survey tool utilized was the Australian Breastfeeding Knowledge and Attitude Questionnaire (ABKAQ) and was accessed by participants through Qualtrics. The survey included 36 questions to evaluate knowledge and 18 questions to evaluate attitude. Each question was based on a 5-Point Likert Scale, where strongly disagree is 1, and strongly agree is 5. The reliability of the survey was determined by Cronbach's Alpha. Participants filled out a demographic survey consisting of 9 questions before the pretest which took approximately one minute to finish. The pretest and posttest surveys took about 10 minutes each to complete. All 113 participants had to fill out a pretest survey before the lecture, and a posttest survey within 7 days after their intervention.	The majority of participants in this study were female (84.1%), white (64.6%), and between 18-25 years old (77.8%). The researcher conducted a paired samples t-test to compare the mean pretest and mean posttest scores of all students. The test results displayed that knowledge about breastfeeding significantly increased from an average score of 3.33 to 4.13 and attitudes about breastfeeding also increased from an average score of 3.58 to 3.86. Overall, these results reveal that evidence-based educational interventions improved the students' breastfeeding knowledge and attitudes toward breastfeeding.
Use of a Web-based Education Program Improves Nurses' Knowledge of Breastfeeding.	Deloian et al., 2015	United States of America	Longitudinal randomized cohort study	The sample for this study included 7570 participants (N = 7570) that completed at least one pretest or posttest on the Breastfeeding Basics website in the United States. Of the total participants, 3106 were nursing students, 3736 were nurses, and 728 were nurse practitioners or midwives. The Breastfeeding Basics website was a free resource and consisted of 7 different modules related to breastfeeding. Completing all of the modules took participants approximately 2-4 hours, however, participants could log off to take breaks and come back to the place they left off. This web-based program was designed because there are few educational opportunities for busy bedside nurses and throughout packed nursing curriculum and to gain more knowledge specifically about breastfeeding.	The survey tool utilized in this study was provided before and after each module on the Breastfeeding Basics website, which was developed by multiple physicians with assistance from various hospitals. For each module, there were 3 identical pretest and posttest questions to evaluate knowledge gained. The questions are multiple-choice and have varying numbers of correct answers, with 12-16 possible correct answers for each pretest and posttest. Total scores were calculated by adding the number of correct answers by the participants and dividing it by the total possible answers. For modules with low test scores (less than 80%), researchers looked at specific questions to see knowledge gaps. Additionally, demographic data was collected from participants account profiles. SPSS software version 20 was used to analyze data.	Most participants were female and were required to complete the modules for work or school. There was not a significant difference between nurses and nurse practitioners/midwives pretest scores, however, all were significantly higher than the nursing student scores. Nursing students, males, and participants that completed the course for a requirement were characteristics associated with lower pretest scores. Being older, female, and having past breastfeeding experience was associated with higher pretest scores. Participants had the best baseline knowledge about barriers/benefits of breastfeeding (87.5%) and the lowest in anatomy and physiology (60%). Overall, median posttest scores were significantly higher than pretest scores, indicating learning occurred for all groups.

Title	Authors	Country	Design Type	Sample	Data Collection Tools	Summary of Results
Implementing a Breastfeeding Toolkit for Nursing Education.	Folker-Maglaya et al., 2018	United States of America	Controlled clinical trial (not randomized)	The sample for the study consisted of 114 students (N = 114) attending a community college associate degree nursing program in the United States. All participants were senior students enrolled in a maternal-newborn nursing course. 54 students (N = 54) were in the control group, which received standard breastfeeding education in a 1-hour postpartum lecture as preparation for clinical. 60 students (N=60) were in the intervention group, which received the breastfeeding toolkit education which totaled lasting approximately 3.08 hours. The toolkit was developed using faculty input and the United States Breastfeeding Committee core competencies. The toolkit consisted of a evidence-based education including voice-over presentations, a video, interactive lecture, role-play activities, demonstrations, and optional case study.	The survey tool was derived from Marzalik's 2004 questionnaire to measure breastfeeding knowledge and was accessed through Qualtrics. This tool was found to be reliable with Cronbach's Alpha. The pretest and posttest consisted of 12 identical questions. Of the 12 questions, 25% of items addressed anatomy and physiology, 25% of items were about the risks of formula feeding, and 50% related to breastfeeding support. Answer options were multiple-choice as true, false, or unsure. Before the pretest, students filled out a demographic survey, which also assessed if students had previous experience with breastfeeding. The pretest was taken on the first day of the course, and the posttest was taken at the end of the course.	The researcher calculated the mean number of correct items, and mean improvement scores for each group. Results showed that the pretest and posttest scores were not significantly different between the two groups, meaning groups had similar scores on their tests. However, average improvement scores from the pretest to the posttest was significantly different, showing that both groups gained knowledge. Although both groups improved, the experimental group had significantly more growth ( $M = 2.97$ ) than the control group ( $M = 2.02$ ), indicating the toolkit was beneficial to their learning. While students improved, posttest results were still somewhat low for the entire sample. Additionally, students with previous experience had lower change scores, which may indicate they rely on experience instead of evidence.
Implementing Health Policy Initiatives: An Effective Breastfeeding Teaching Strategy for Prelicensure Nursing Students.	Folker-Maglaya et al., 2020	United States of America	Controlled clinical trial (not randomized)	The sample for the study consisted of 102 senior students (N = 102) enrolled in a maternal-newborn nursing course. This study was done a year after the pilot study, "Implementing a Breastfeeding Toolkit for Nursing Education" at the same community college associate degree nursing program. Although it was done at the same program, the sample consisted of different students since it was done one year later. 49 students (N = 49) were in the control group, which received standard breastfeeding education. 53 students (N=53) were in the intervention group, which received the breastfeeding toolkit education. Due to the results of the pilot study, some changes were made to the toolkit, such as more emphasis on evidence-based support, longer role-play, addressing misconceptions, moving the online portion to in-person, and increasing the number of survey questions.	The tool utilized in this study came from Marzalik's 2004 questionnaire and was accessed by students through Qualtrics. The Cronbach's Alpha found this survey to be reliable. Although this study utilized the same survey as the pilot study, a few more items were added. The pretest and posttest consisted of 15 identical questions. Of the questions, 3 of the items addressed anatomy and physiology, 4 of the items were about the risks of formula feeding, and 8 items were about breastfeeding support. Answer options were true, false, or unsure. Before the pretest, students completed a demographic survey. This survey also assessed if students had any previous experience related to breastfeeding. The pretest was taken on the first day of the course, and the posttest was taken at the end of the 4-week course. Statistic Analysis Software (SAS) version 22 was used for data analysis.	The average pretest scores for both groups were statistically the same, indicating the students had similar starting knowledge. Average posttest scores increased in both groups, meaning that all students improved their knowledge. Although both groups improved their scores, the experimental group scored significantly higher ( $M = 12.34$ ) than the control group ( $M = 10.73$ ) on the posttest, displaying the toolkit was more effective than standard breastfeeding education. In the control group, students with previous experience had lower growth scores ( $M = 2.43$ ) than students without experience ( $M = 4.00$ ). In the experimental group, growth scores were not related to experience, showing that the toolkit increased knowledge for all students regardless of prior experience. Overall, scores improved on the commonly missed question in the pilot study, showing toolkit changes were effective.



Title	Authors	Country	Design Type	Sample	Data Collection Tools	Summary of Results
Attitudes, Practices, and Knowledge About Human Lactation Among Nursing Students.	Linares et al., 2018	United States of America	Descriptive cross-sectional study	The sample for this study included 135 nursing students (N = 135) at a state university in Kentucky. Nursing students in this sample were of varying education levels, including undergraduate, DNP, and PhD students. 793 students were initially recruited using the College of Nursing student email, and 135 students responded and were used as the sample. The purpose of the survey was to identify current knowledge, attitudes, and lactation practice among a sample of nursing students. After data was collected, the sample was divided into two separate groups based on whether the student had already completed a course that provided breastfeeding content	This study utilized a survey developed for a previous research study by Seidel et al. (2013). The survey included 50 items. Six items were related to demographics and 44 items were items regarding breastfeeding knowledge, practices, and opinions. 32 of the answer choices used a 5-Point Likert Scale, where strongly disagree is 1, and strongly agree is 5. The other 6 items had yes or no answer options. Data was collected using Research Electronic Data Capture (REDCap) tools, which is a web-based application created to aid in the process of gathering data for research studies.	The majority of the respondents were white, female, undergraduate students, and between 18-30 years old. Approximately 30.4% of participants had children. Results displayed that a great majority of nursing students (79%) recognize that breastfeeding is the preferred method of infant feeding and offers benefits to the baby (99%) and the mother (95%). Additionally, 79% of students said breastfeeding is normal for their family. Results also showed that students that had taken a 2-hour breastfeeding course during their nursing education had significantly higher knowledge and attitudes concerning breastfeeding. Students with children also had improved knowledge and attitudes compared to students without children. More than half of students (53%) said they would be interested in taking an advanced breastfeeding course in the future.
Breastfeeding knowledge, attitudes, intentions, and perception of support from educational institutions among nursing students and students from other faculties: A descriptive cross-sectional study.	Natan et al., 2018	Israel	Descriptive cross-sectional study	The sample for this study consisted of 200 female students (N = 200) from a university in Israel. Of those students, 100 were nursing students, and 100 were from other programs at the university. Inclusion criteria were female students fluent in Hebrew who were pregnant, mothers, or of child-bearing age (18-46). All students completed a questionnaire regarding breastfeeding knowledge, intentions, attitudes, and thoughts about the institutions support for breastfeeding	The research tool utilized was a questionnaire created by Kavanagh et al. (2012), and permission was granted by the authors. The questionnaire was tested for internal and external validity and was translated into Hebrew for the students. Three women's health content experts made changes and adjusted the questions to meet the needs of the study. The final questionnaire used consisted of 53 items. 11 items were related to demographics, 6 items were about past breastfeeding experience, 8 items were about faculty support of breastfeeding, 12 items were related to attitudes, 3 items related to intentions to breastfeed, and 2 were about breastfeeding role models. Lastly, 11 items were knowledge-based, and answer choices were either correct or incorrect. Each correct answer was a point, with a maximum total score of 11. Overall, this questionnaire took approximately 10 minutes to complete. SPSS software version 25 was used for statistical analysis.	There were no sociodemographic differences between the two groups that were statistically significant, besides employment. Less nursing students were employed compared to other students. Nursing students also had more previous experience breastfeeding (69%) compared to other students (49%). The average age for the sample was 30, and the majority of participants were married. Overall, results showed that nursing students have more knowledge about breastfeeding ( $M = 10$ ) than other students ( $M = 8.79$ ). Nursing students were also more likely to view the faculty and the atmosphere on campus as supportive of breastfeeding. Both groups had similar moderately positive scores regarding attitudes towards breastfeeding, suggesting that more importance should be placed on improving nursing students' attitudes and not only their knowledge.

Title	Authors	Country	Design Type	Sample	Data Collection Tools	Summary of Results
An Innovative Educational Intervention to Improve Nursing Students' Knowledge, Attitudes, and Skills Surrounding Breastfeeding	Rhodes & Burgess, 2018	United States of America	Before-after (pre-post) study without control group	The sample of this study consisted of 69 undergraduate nursing students (N = 69) in the first semester of their senior year. On the first day of their maternal newborn clinical, the students participated in a breastfeeding education workshop lasting approximately 2.5 hours. The workshop was designed and taught by a graduate-level nursing student who is a registered nurse (RN) and an international board-certified lactation consultant (IBCLC). This nurse taught 10 different clinical groups separately, with each group consisting of 6-8 students, to allow for more participation and engagement. The workshop included hands-on and didactic teaching strategies. The students participated in group discussions and interactive activities, such as role-play and games to reinforce information learned.	Preworkshop and postworkshop reflection questions were created and reviewed by the IBCLC/RN and the course coordinator and were approved by the institutional review board at Townson University. Before the educational workshop, students answered three reflection questions. One was a multiple-choice question about previous experience with breastfeeding, and the other two were open-ended questions about their current attitudes related to breastfeeding, and what they thought the nurse's role was. After the workshop, students answered three open-ended questions regarding knowledge gained, application of knowledge to clinical practice, and if their attitudes or beliefs changed. After the postworkshop reflection, students also evaluated the overall effectiveness of the workshop with two additional questions. These questions were based on a 5-Point Likert Scale, where strongly disagree (most negative impression) is 1, and strongly agree (most positive impression) is 5.	Results about the effectiveness of this study included both qualitative and quantitative data. 91.4% of students were 18-24 years old, and 51% of students reported no previous experience with breastfeeding. The majority of the students stated having positive beliefs regarding breastfeeding before the workshop, however, some also stated they were unsure of the nurse's role as an advocate for breastfeeding. One specifically said, "I am not entirely sure what a nurse's role may be..." After the workshop, students reported feeling more confident in their knowledge. Many students said their positive beliefs were reinforced or strengthened, and one student had a positive change, stating that they were now more supportive of breastfeeding. Overall, participants strongly agreed (4.87/5) the content would be useful for clinical, and also strongly agreed (4.84/5) the workshop was effective to learn breastfeeding content.
Using Simulation to Teach Breastfeeding Management Skills and Improve Breastfeeding Self-Efficacy.	Webber et al., 2021	United States of America	Randomized control-trial (RCT)	The sample included 76 nursing students (N = 76) enrolled in the Maternal Child Health rotation at a mid-western university in the United States. These 76 students participated in the simulation and completed both surveys, one after the simulation experience, and one after completing clinicals. Before simulation, students listened to a 1-hour breastfeeding lecture. Next, students were randomly assigned to either a high-fidelity breast model (n = 13) or low-fidelity (n = 11) breast model for their simulation. Students participated in debriefing afterward. The purpose of the two groups was to see if there would be any qualitative differences in student responses based on the breast-model used in simulation.	The tool used to gather qualitative responses was a questionnaire with 4 open-ended responses relating to their experiences such as what they learned, how it impacted confidence, how they feel about being a breastfeeding advocate. Students completed the questionnaire right after their simulation experience, and again after they finished their clinical rotation. Along with the 4 initial questions, an additional question was added to the questionnaire that students completed after clinical that asked about how they felt the simulation prepared them. Before the simulation, demographic data was collected.	Demographic results displayed that most of the participants were female (87%), and the average age was approximately 22.83 years old. Student responses to the questionnaires were reviewed for themes independently by each faculty researcher. After independent review, faculty met to compare, and four main themes were found: breastfeeding techniques, student confidence, breastfeeding advocacy, and simulation experience responses. Overall, student responses between the high-fidelity and low-fidelity models were not significantly different. Both groups expressed that the simulation increased their confidence, knowledge, and attitudes regarding breastfeeding. This study suggests that using simulation with either a low or high-fidelity breast model is a great tool for breastfeeding education.

Title	Authors	Country	Design Type	Sample	Data Collection Tools	Summary of Results
Breastfeeding knowledge and attitudes of baccalaureate nursing students in Taiwan: A cohort study.	Yang, et al., 2018	Taiwan	Longitudinal cohort study	The sample for this study included 215 students (N = 215) in a Bachelor of Science in Nursing Program at a private university in Taiwan. Within the 215 students, two different cohorts were studied. Cohort One consisted of 111 students (n = 111) and Cohort Two consisted of 104 students (n = 104). Cohort One completed their pretest before receiving theoretical breastfeeding education, and their posttest after receiving the education. The theoretical education included 3 hours of classroom learning and 6 hours of laboratory-based skills learning. Cohort Two completed their pretest after receiving their theoretical breastfeeding education (when Cohort One did their posttest) and completed their posttest once they finished 40 clinical hours in the postpartum unit.	The survey tool utilized was a revised Chinese version of the Australian Breastfeeding Knowledge and Attitude Questionnaire Short-Form (ABKAQ-SF). The purpose of this survey was to see how theoretical education and clinical experiences contributed to students' knowledge and attitudes concerning breastfeeding. The revised survey included 20 questions related to knowledge and 12 questions related to attitude. The 20 knowledge questions included multiple-choice answers such as correct, incorrect, and don't know. For every correct answer, students received one point, with 20 being the highest score. The attitude questions were based on a 5-point Likert Scale, where strongly disagree is 1, and strongly agree is 5. Higher scores indicated more positive attitudes. Along with evaluating knowledge and attitudes, demographics was obtained such as gender, age, prior experience with breastfeeding, and perceptions of public breastfeeding. Data was analyzed using IBM-SPSS software version 24.	Demographic data displayed that the average age of participants was 20.51 years, and all were single without children. Only 13% reported having prior personal experience related to breastfeeding. Overall, results showed that there were significant increases in knowledge and attitude scores in both cohort groups, however, the amount of improvement was slightly different between the groups. In regards to knowledge, Cohort One student knowledge increased by 29% compared to Cohort Two, which increased only by 17%. For attitudes, both groups had roughly the same growth of 5%. One interesting finding is that students in Cohort One were 14 times more likely to be in the higher knowledge group for the pretest if they had prior experience, however, after the theoretical breastfeeding education occurred, previous experience did not impact scores. This could indicate that this learning is beneficial for all students regardless of experience.
Expectations and experiences of nursing students in supporting new mothers to breastfeed: A descriptive qualitative study.	Yang, et al., 2019	Taiwan	Descriptive qualitative study	The sample for the study consisted of 30 participants (N = 30) living in Taiwan. Within the sample of 30, there were 4 different participant groups. The first was a group of 8 (n = 8) fourth-year nursing students in a Bachelor of Science in Nursing Program at a private university. The second group included 6 Maternal-Child nursing staff (n = 6) from the same university. The third group included healthcare staff in the maternal unit at the hospital, which consisted of 2 head-nurses (n = 2) and 2 staff nurses (n = 2). Lastly, 12 mothers (n = 12) that had received care on the unit agreed to participate in the study. Interviews were completed by the participants. The nursing students completed 9 hours of classroom and laboratory preparation and 4-weeks of Maternal-Child clinical rotations before participating in the interviews.	Researchers used interviewing as their tool to collect qualitative data about the participants. The purpose of the interviews was to explore expectations and experiences of nursing students in supporting breastfeeding mothers, and also gain insight from nursing teachers, healthcare staff, and mothers about their opinions on the nurse's role. Not all participants could attend the same interviews so focus groups of 4-12 individuals were completed, as well as small group interviews for those that could not come to the focus groups. The same topics were covered. In this study, 2 focus groups and 7 small group interviews were completed to collect data. Interviews were recorded, transcribed, and translated into English. The transcribed data was stored in word documents and later analyzed for major themes using the thematic approach by quirkos software.	3 major themes emerged: high expectations, the reality is different, and improving confidence in students. All participants had high expectations for the nurses' role in breastfeeding support. Students and teachers expected the nurse to provide education to mothers. Mothers and healthcare staff said that establishing trust was expected of the nurse. Students' and mothers' responses also suggested that the reality is different, as students were nervous about how to answer questions and mothers said they wanted their questions answered in an individualized way. The last theme was improving confidence in nurses. Students reported that their confidence grew over time and wish they had more opportunities to "refresh and practice skills." Overall, this study suggests nursing students did not feel prepared to support breastfeeding women before clinical, and more should be done in nursing programs to increase confidence and communication skills before clinical.

## Discussion

After completing this small scale review of literature and examining ten different studies, it is clear that undergraduate nursing programs could do more to prepare students to provide adequate breastfeeding support and education. While breastfeeding is crucial to support infant growth and development (Yang et al., 2018), breastfeeding rates continue to fall short of meeting national recommendations and standards (Webber et al., 2021). Evidence supports the presumption that breastfeeding rates are highly influenced by registered nurses' knowledge and attitudes regarding breastfeeding (Natan et al., 2018). Since nurses are with mothers from birth until discharge from the hospital (Deloain et al., 2015) and spend a great deal of time with mothers compared to other healthcare workers (Linares et al., 2018), having knowledge and positive breastfeeding attitudes contributes to effective breastfeeding initiation and maintenance. Although nurses play a critical role in breastfeeding initiation and length of breastfeeding, education is not a priority for basic undergraduate nursing education (Folker-Maglaya et al., 2018). All ten studies recognized the gap in nursing education and supported implementing additional breastfeeding-focused education into nursing programs to increase student knowledge and support positive attitudes regarding breastfeeding. Although the studies utilized different styles of education, such as web-based learning, simulation experiences, lectures, videos, role-play, case studies, or a mixture of multiple styles, the overall results depict that all styles were beneficial in increasing student breastfeeding knowledge.

These findings have multiple implications for current nursing practice. First, nursing directors and faculty have the duty to recognize common education gaps within undergraduate nursing curriculum and reflect on if their programs provide sufficient breastfeeding education. Next, nursing programs should consider implementing additional breastfeeding education if they

realize their programs are not supplying their students with adequate education. Although utilizing simulations and interactive activities have been shown to have amazing benefits for breastfeeding education (Webber et al., 2021), if programs have limited funds or time, studies show that a web-based program is an option that is cost-effective, easily available, and allows for education to be done by students at home instead of during class time (Deloian et al., 2015).

Some limitations that these studies share is that many had small sample sizes and were completed within a single nursing program. Additionally, multiple studies had samples that were not randomized. Many of these studies also did not have a control or comparison group. In future studies, it would be interesting to compare different breastfeeding educational programs within a randomized population to determine which type of learning, web-based, simulation, role-play, case studies, or others, have the greatest impact on student knowledge and attitudes. Although this review supported that there are many types of breastfeeding education programs effective in increasing student knowledge and attitudes, a study comparing education modalities would help determine which type of program is most effective.

### **Conclusion**

Being a Tiny Tusk intern this past year has been an incredible experience. While completing my responsibilities and duties as an intern, I strengthened my organizational skills, communication techniques, problem-solving skills, and ethical reasoning, and learned how to be more independent and accountable. I also increased my foundational knowledge about breastfeeding, and now feel more capable to provide adequate education and support to breastfeeding mothers. Additionally, the literature review and project allowed me to explore a topic I was interested in, and recognize implications for current and future nursing practice.

Overall, my role as a Tiny Tusk intern provided me with many amazing experiences and is something I will always remember when reflecting on my time in college.

## References

Arkansas Department of Health. (2017). *Breastfeeding information and support*.

<https://www.healthy.arkansas.gov/programs-services/topics/breastfeeding-information-and-support>

Aggarwal, R., & Ranganathan, P. (2019). Study designs: Part 4 - interventional studies.

*Perspectives in Clinical Research*, 10(3), 137-139.

[https://doi.org/10.4103/picr.PICR\\_91\\_19](https://doi.org/10.4103/picr.PICR_91_19)

Centers for Disease Control & Prevention. (2020). *Breastfeeding facts*.

<https://www.cdc.gov/breastfeeding/data/facts.html>

Davis, A., & Sherrod, R. A. (2015). Effects of an educational intervention on baccalaureate nursing students' knowledge and attitude in providing breastfeeding support to mothers.

*International Journal of Childbirth Education*, 30(4), 8–12.

<http://web.a.ebscohost.com/ehost/pdfviewer/pdfviewer?vid=4&sid=f6a27e77-970f-498a-a09a-e1b69e9671ea%40sdc-v-sessmgr01>

Deloian, B. J., Lewin, L. O., & O'Connor, M. E. (2015). Use of a web-based education program

improves nurses' knowledge of breastfeeding. *JOGNN: Journal of Obstetric,*

*Gynecologic & Neonatal Nursing*, 44(1), 77–86. [https://doi.org/10.1111/1552-](https://doi.org/10.1111/1552-6909.12534)

[6909.12534](https://doi.org/10.1111/1552-6909.12534)

Folker-Maglaya, C., Pylman, M. E., Couch, K. A., Spatz, D. L., & Marzalik, P. R. (2018).

Implementing a breastfeeding toolkit for nursing education. *The Journal of Perinatal &*

*Neonatal Nursing*, 32(2), 153–163. <https://doi.org/10.1097/JPN.0000000000000330>

Folker-Maglaya, C., Pylman, M. E., & Marzalik, P. R. (2020). Implementing health policy

initiatives: An effective breastfeeding teaching strategy for prelicensure nursing students.

*Journal of Doctoral Nursing Practice*, 13(2), 156–163. <https://doi.org/10.1891/JDNP-D-19-00055>

Hariton, E., & Locascio, J. J. (2018). Randomised controlled trials - the gold standard for effectiveness research: Study design: Randomised controlled trials. *BJOG: An International Journal of Obstetrics and Gynaecology*, 125(13), 1716-1716. <https://doi.org/10.1111/1471-0528.15199>

Linares, A. M., Parente, A. D. N., & Coleman, C. (2018). Attitudes, practices, and knowledge about human lactation among nursing students. *Clinical Lactation*, 9(2), 59–65. <https://doi.org/10.1891/2158-0782.9.2.59>

Natan, M. B., Haikin, T., & Wiesel, R. (2018). Breastfeeding knowledge, attitudes, intentions, and perception of support from educational institutions among nursing students and students from other faculties: A descriptive cross-sectional study. *Nurse Education Today*, 68, 66–70. <https://doi.org/10.1016/j.nedt.2018.05.026>

Rhodes, B., & Burgess, A. (2018). An innovative educational intervention to improve nursing students' knowledge, attitudes, and skills surrounding breastfeeding. *Teaching & Learning in Nursing*, 13(4), 197–201. <https://doi.org/10.1016/j.teln.2018.05.003>

Webber, E., Wodwaski, N., & Courtney, R. (2021). Using simulation to teach breastfeeding management skills and improve breastfeeding self-efficacy. *Journal of Perinatal Education*, 30(1), 19–28. <https://doi.org/10.1891/J-PE-D-20-00013>

Yang, S.-F., Schmied, V., Burns, E., & Salamonson, Y. (2018). Breastfeeding knowledge and attitudes of baccalaureate nursing students in taiwan: A cohort study. *Women and Birth: Journal of the Australian College of Midwives*, 32(3), e334–e340. <https://doi.org/10.1016/j.wombi.2018.08.167>



Yang, S.-F., Burns, E., Salamonson, Y., & Schmied, V. (2019). Expectations and experiences of nursing students in supporting new mothers to breastfeed: A descriptive qualitative study.

*Journal of Clinical Nursing (John Wiley & Sons, Inc.)*, 28(11/12), 2340–2350.

<https://doi.org/10.1111/jocn.14836>