

BREASTFEEDING KNOWLEDGE AND ATTITUDES OF BACCALAUREATE NURSING

STUDENTS BEFORE AND AFTER AN EDUCATIONAL INTERVENTION:

A PILOT STUDY

A Thesis

Presented to the faculty of the School of Nursing

California State University, San Marcos

Submitted in partial satisfaction of  
the requirements for the degree of

MASTER OF SCIENCE

in

Nursing

Family Nurse Practitioner

By

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THESIS SIGNATURE PAGE

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IN

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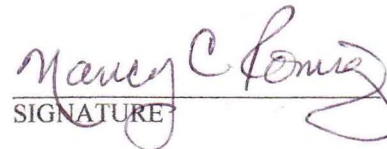
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Abstract

of

BREASTFEEDING KNOWLEDGE AND ATTITUDES OF BACCALAUREATE NURSING  
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*Statement of Problem*

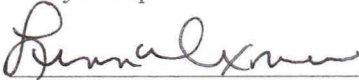
Breastfeeding has become a global initiative. In an effort to increase breastfeeding rates, the World Health Organization and UNICEF have made their recommendations to hospitals and birthing facilities on how to be designated as “baby-friendly”. The initiative calls for increased breastfeeding educational opportunities for nurses so they can provide mothers with the most up-to-date support and information on infant feeding. This study was conducted in an effort to discover the effectiveness of an evidence-based educational intervention among Baccalaureate nursing students at California State University San Marcos. Additionally, the study answered the question “do the demographic variables and the covariate (age, gender and experience with breastfeeding) predict their knowledge of and attitudes towards breastfeeding?”

*Sources of Data*

A non-probability, convenience sampling method was used to select the population of baccalaureate nursing students at California State University San Marcos for this study. A total of 70 students participated in the evidence-based educational intervention. The instruments used to measure the effectiveness of the educational intervention were the Newborn Feeding Ability Questionnaire (Creed, Cantrill & Cooke, 2008) and Iowa Infant Feeding Attitude Scale (De la Mora et al., 1997).

*Conclusions Reached*

The paired t-test showed a significant difference between the pre-test and post-test scores for both of the dependent variables: knowledge ( $t= 12.32$ ;  $p=.000$ ) and attitude ( $t=7.48$ ;  $p=.000$ ). These findings demonstrated the effectiveness of the hour and a half long evidence-based lecture that was presented, thus providing evidence in support of the hypothesis of this study. The regression analysis results revealed that age, gender and prior experience with breastfeeding were not significant predictors of knowledge; however, age, gender, and prior experience with breastfeeding did significantly predict BSN students’ attitudes towards breastfeeding in the pilot study sample.

  
\_\_\_\_\_, Committee Chair  
Dr. Linnea Axman DrPH, MSN, FNP-BC, FAANP

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## **CHAPTER ONE:INTRODUCTION**

The first hour of life is critical for a newborn. Not only is this a period of stabilization and transition into extrauterine life, but it is also a time to establish bonding and initiate breastfeeding. Skin-to-skin contact during the first hour of life is only one of the many factors that can influence the success of breastfeeding initiation and exclusivity for six months and beyond. Nurses are key players in breastfeeding success. Nurses are primarily responsible for initiating skin-to-skin contact post-delivery. They also provide mothers with lactation support until the time that they are discharged from the hospital; therefore, it is vital that all nursing staff in maternal-newborn, Neonatal Intensive Care and labor units, including nursing students, receive adequate training and education.

### **Background and Significance**

The Surgeon General's Call to Action to Support Breastfeeding report has stated that about 75% of mothers in the United States start out breastfeeding, but by the end of six months, the rates fall to 43% and only 22 % percent of infants are being breastfed by twelve months of age (U.S. Department of Health and Human Services (USDHHS), 2011, p.6). The surgeon general also acknowledged that, "breast milk is uniquely suited to the human infant's nutritional needs and is a live substance with unparalleled immunological and anti-inflammatory properties that protect against a host of illnesses and diseases for both mothers and children" (USDHHS, 2011, p.6).

In 2005, the American Academy of Pediatrics (AAP) released a policy statement that outlined the benefits of breastfeeding. This policy statement highlighted evidence that has shown that breastfeeding can significantly reduce the risk of many diseases for both mother and infant.

Specifically, breastfeeding has been shown to decrease the incidence of infectious diseases such as respiratory tract infections, the rates of Sudden Infant Death Syndrome (SIDS) and an infant's risk for acquiring the illnesses later in life. These illnesses have included type I and type II diabetes, lymphoma, leukemia, Hodgkin's disease, asthma, hypercholesterolemia, and obesity.

Human milk is uniquely superior for infant feeding and breastfeeding protects both mothers and infants from a variety of illnesses (USDHHS, 2011). The risk of acute otitis media in infants who are formula-fed is 100 percent higher than those who are exclusively breastfed during the first six months of life (USDHHS, 2011, p.1). Mothers who do not breastfeed have a higher risk for breast cancer and their risk for ovarian cancer is about 27 percent higher than women who had breastfed for a period of time.

Exclusive breastfeeding also has a financial impact on families. According to USDHHS (2011), "optimal breastfeeding practices could save more than \$1,200-\$1,500 in expenditures for infant formula in the first year alone" (p.3). Healthier infants also mean that families would not have to spend big amount of money on doctor's visits or hospitalizations due to infections and other illness.

Unfortunately, despite its significant benefits, infant feeding is subject to cultural barriers and social expectations. Barriers that prevent the initiation, exclusivity and duration of infant feeding include low maternal education, maternal age, being unmarried, low maternal income, race and maternal region of residence (Kavanagh et. al., 2012)

To promote breastfeeding, the World Health Organization (WHO) and United Nations Children's Fund (UNICEF) launched a global movement called the Baby-Friendly Hospital Initiative (BFHI). Initiated in 1991, the goal of the BFHI was to "encourage and recognize

hospitals and birthing centers that offer optimal levels of care for breastfeeding” (Baby-Friendly USA, 2010).

The BFHI published the Ten Steps to Successful Breastfeeding (Baby-friendly USA, 2010), which is a set of recommendations that hospitals and birthing centers should consider implementing in order to provide mothers with the best possible opportunity to breastfeed. According to the BFHI, the first step to becoming a “baby-friendly” facility is developing a written breastfeeding policy and routinely communicating it to all the healthcare staff members (Baby-Friendly USA, 2010). The second step described by the BFHI emphasizes the need to train all healthcare staff members. According to step two, “a designated health care professional should be responsible for assessing needs, planning, implementing, evaluating, and periodically updating competency-based training in breastfeeding and parent teaching for formula preparation and feeding for all health care staff caring for mothers, infants and/or young children” (Baby-Friendly USA, 2010). The initiative recommends at least 20 hours of breastfeeding education for the healthcare staff in order to get the baby-friendly designation.

### **The Problem**

Efforts to increase breastfeeding rates have demonstrated how important it is for nursing curriculums to offer breastfeeding education to their students; however, Chen and colleagues discussed the standardization of breastfeeding education in baccalaureate programs has not been established (Chen, et al as cited in Dodgson & Tarrant, 2007). Although infant feeding is discussed in maternal child health didactic curriculum, many nursing students do not get sufficient exposure to breastfeeding practices during their clinical rotations, and baccalaureate programs fall short in preparing student nurses to provide breastfeeding support to mothers

(Dodgson & Tarrant, 2007).

### **Purpose and Research Question**

The purpose of this research study was to assess the attitudes and knowledge of baccalaureate nursing students at one university in southern California before and after an evidence-based breastfeeding educational intervention. It aimed to answer the question “Do the variables, age, gender and “prior experience with breastfeeding” predict knowledge of and attitudes toward breastfeeding in a sample of BSN students at California State University San Marcos?”

### **Research Variables**

In this study, the independent variable was the breastfeeding education intervention. The dependent variables included attitudes and knowledge, which were measured by two instruments, the Newborn Feeding Ability Questionnaire (Cantrill, Cooke & Creedy, 2008) and the Iowa Infant Feeding Attitude Scale (De La Mora et al., 1999). The demographic variables that were collected from the student participants included age and gender (male, female, transgender); these variables were also used as independent variables in a prediction model. The students’ prior breastfeeding experience was used as an independent variable (predictor) also described as a covariate. Prior experience encompass the following: living with an immediate family member (e.g. mother, sister, wife) who is currently breastfeeding or has breastfed, working in a maternal-infant unit, or being constantly surrounded by a friend or acquaintance who is currently breastfeeding or has breastfed.

### Theoretical Model

The theoretical model that guided this study was the Theory of Reasoned Action (Ajzen & Madden, 1986). According to Ajzen and Fishbein, “the immediate antecedent of any behavior is the intention to perform the behavior in question” (as cited in Ajzen & Madden, 1986). The stronger the person’s intention, the more likely it is that the behavior will be performed. The theory goes on to explain that intention is determined by the attitude towards the behavior and subjective norms (see Figure 1). Ajzen and Fishbein defined the attitude towards the behavior as the person’s own evaluation whether the behavior in question is favorable or unfavorable (as cited in Ajzen & Madden, 1986). Ajzen and Fishbein defined the concept of subjective norm as the external or social pressure to perform or not to perform the behavior in question (as cited in Ajzen & Madden, 1986).

Figure 1. Theory of Reasoned Action by Ajzen & Fishbein (1980)

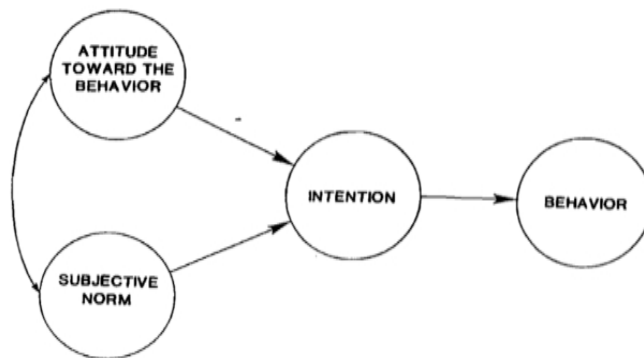


FIG. 1. Theory of reasoned action.

Note: Permission to use obtained from author. (Ajzen & Madden, 1986) (Appendix D)

This conceptual model was appropriate for this research study because one of the variables that were measured was attitude, which was explained by the theory as a major determinant if a behavior is going to be performed. In this case, the behavior involved was the



ability to effectively provide lactation support to mothers. The TRA eventually evolved into the Theory of Planned Behavior. It is founded on the constructs of the TRA, but Ajzen and Fishbein added the concept of perceived behavioral control, which is basically the person's perceived self-efficacy to perform the behavior (as cited in Ajzen & Madden, 1986). The TRA has been used previously in research studies pertaining to infant feeding. One study that was conducted by Showalter (2012), also aimed to evaluate the efficacy of a teaching intervention that the researcher had designed.

### **Importance of Research**

By including a more in-depth breastfeeding educational intervention in the nursing curriculum, student nurses will be better prepared to provide effective lactation support and management to mothers. Breastfeeding has been shown to positively affect the health of infants and mothers, so much so that it has become a global initiative supported by organizations such as the American Academy of Pediatrics, World Health Organization, and Healthy People 2020. Therefore, it is vital that nurses and healthcare providers be educated about and supportive of this cause.

## CHAPTER TWO: LITERATURE REVIEW

### Introduction

There have been numerous studies conducted to assess the effectiveness of different educational interventions among physicians, midwives and nurses. However, there is a limited amount of research that focuses on nursing students in the United States; thus, this research will fill a gap in nursing research.

The databases utilized for the literature review included PubMed and CINAHL. The key words and phrases that were utilized included breastfeeding, education, educational intervention. Nine research articles were found and reviewed for relevance.

### Theoretical Framework

Bernaix, Beaman, Harris, Miller and Schmidt (2010) conducted a quasi-experimental study to measure the effectiveness of a self-paced study module that aimed to improve the breastfeeding knowledge, attitude and beliefs of maternal-newborn nurses ( $n=240$ ) across thirteen hospitals in the Midwestern and East Coast states. The Theory of Reasoned Action (Ajzen & Madden, 1986) guided the study.

The 64-item Nursing Support for Breastfeeding Questionnaire (NSBQ) (Bernaix, 2000) measured the two determinants stated by the TRA: attitudes and subjective norms (as cited in Bernaix et al., 2010). In order to measure knowledge, the 50-item Breastfeeding Comprehensive Knowledge Survey developed by Harris and Miler (2005) (as cited in Bernaix et al., 2010) was used.

The pre-test scores between the experiment and control group were not significantly different with respect to knowledge and the TRA constructs. When correlation analysis was

performed on the pre-intervention data, the results indicated that pre-test knowledge was related to the age of the nurse, the years of experience and the amount of prior breastfeeding education received (Bernaix et al., 2010). The pre-test scores revealed that belief scores were positively correlated with the pre-test attitudes, pre-test behavioral beliefs and the intention to offer lactation support to mothers (Bernaix et al., 2010). These findings supported the TRA constructs, that attitudes and beliefs can be used to predict whether or not a behavior is going to be performed by a person or a group of people.

After the self-study module intervention, the post-test knowledge scores for the experiment group increased by 14%, while the control group only increased by 1% (Bernaix et al., 2010). These results provided evidence in support of the effectiveness of the educational strategy. The authors recommended the inclusion of this type of educational intervention in the Baccalaureate nursing curriculum. The authors also acknowledged the limitation of the study by suggesting that future studies should replicate this study with a bigger and more diverse sample. Additionally, they recommended that future research designs include an evaluation of the intervention's effect on the nurses' actual behaviors (Bernaix et al., 2010).

### **Knowledge and Attitude as Variables**

Cantrill, Creedy, and Cooke (2003) assessed the knowledge of Australian midwives and established the validity and reliability of the Breastfeeding Knowledge Questionnaire for the Australian context. The results of the postal questionnaire study revealed that the participants over the age of 30, possessing International Board Certified Lactation Consultant (IBCLC) qualifications and having personal breastfeeding experience of more than three months achieved higher knowledge scores. Moreover; although the midwives had an adequate amount of

knowledge about breastfeeding, there were deficits in some important areas; these areas included management of low milk supply, immunological value of human milk, and management of a breast abscess during breastfeeding.

Personal experience with breastfeeding does not always reflect an adequate knowledge base. Hellings and Howe (2000) claimed that “relying on personal experience as the primary source of information may narrow the focus of assistance that is made available to patients or may limit the strategies to solve problems that the clinician did not experience” (p. 268). A study by Cantrill, Creedy, and Cooke (2003) also found that personal experience does not necessarily mean that a midwife is ready to provide lactation support to mothers.

Spear (2004) conducted a descriptive study among maternal-newborn nurses ( $n=151$ ) to measure their knowledge, attitude and beliefs with regard to providing breastfeeding support to adolescent mothers in the southeastern part of the United States. The study aimed to see if there was any difference between nursing specialties (labor, NICU, post-partum, pediatrics and public health), as well as the nurses' educational level in relation to their breastfeeding knowledge. The study found that NICU nurses ( $n=20$ ) had the lowest mean attitude score of 13.65 ( $p < .01$ ), while labor and delivery nurses ( $n=34$ ) had better attitude scores compared to post-partum nurses ( $n=25$ ): 16.38 vs. 15.12 ( $p < .01$ ). It was suspected that this was because labor and delivery nurses routinely have a less sustained contact with adolescent breastfeeding mothers than post-partum nurses, and thus a more positive attitude (Spear, 2004, p. 181).

Although most participants ( $n=151$ ) in the Spear (2004) study had an adequate amount of knowledge and a positive attitude towards breastfeeding, some of the nurses were not aware of the nutritional differences between breast milk and formula and educating patients about feeding

time restrictions (Spear, 2004). Additionally, participants expressed skepticism about the possibility of a young mother successfully breastfeeding her newborn (Spear, 2004). Spear (2004) also pointed out that the findings from this study demonstrate the necessity for programs like the Baby-friendly Initiative, especially for those staff with direct involvement with breastfeeding mothers.

Since breastfeeding has become a global initiative, similar studies have been conducted to evaluate the effectiveness of incorporating breastfeeding education into other disciplines' curriculums, such as nutrition and dietetics. Kavanagh, Habibi, Lou, Murphy and Nicklas (2012) conducted a cross-sectional survey to measure the knowledge, attitudes and prior breastfeeding exposure among undergraduate university students ( $n=248$ ), who are enrolled in an introductory nutrition class. Kavanagh et al. (2012) found that although they had some knowledge about breastfeeding, the attitude is somewhat neutral due to the belief that breastfeeding can be an inconvenient, restrictive and painful experience for working mothers (p. 556). This study also raised the issue of breastfeeding in public. About half of the males in their sample agreed, "public breastfeeding is embarrassing" (Kavanagh et al., 2012). This study demonstrated that there was still lot of work to be done in improving the public perception of breastfeeding. Although it is generally more accepted nowadays, many people are still uncomfortable with the idea about public breastfeeding, or may have a varying opinion based on the mother's discretion when feeding.

Payne and Radcliffe (2011) conducted a pre-test/intervention/post-test research study among nutrition and dietetics graduates. The pre-test was done in 2005 ( $n=27$ ), while the post-test was conducted in 2010 ( $n=34$ ) (Payne & Radcliffe, 2011). They found that a breastfeeding

educational intervention embedded into a curriculum cannot only help increase knowledge, but it also has “engendered a strong interest in work involving breastfeeding” (Payne & Radcliffe, 2011). In 2005, the pre-intervention percentage score on the nine true or false questions was 39% ( $p=0.02$ ), while the 68% of the participants in 2010 achieved a score of 78% or more post-intervention (Payne & Radcliffe, 2011). This shows one of the long-term effects of providing students with a proper breastfeeding education: Not only does it add to their knowledge base, it can also spark their interest in pursuing a career where they can provide lactation and nutritional counseling.

Dodgson and Tarrant (2007) studied the effectiveness of an educational intervention among undergraduate nursing students in Hong Kong. Their research design was quasi-experimental with a non-equivalent control group. The intervention group underwent 10 hours of didactic training and an 8-week perinatal clinical rotation (Dodson and Tarrant, 2007). The study was based on the Theory of Planned Behavior (Ajzen & Madden, 1986), which is a more evolved version of the Theory of Reasoned Action (Ajzen & Madden, 1986) as discussed earlier.

According to Dodgson and Tarrant (2007), a student nurse’s intention to perform evidence-based breastfeeding promotion behaviors could be predicted based on their prior knowledge, experiences, beliefs and attitudes. After the educational intervention, the control group scored significantly lower than the intervention group with regard to knowledge.

A similar study conducted by Showalter (2012) found that during the pre-test, only 17% of the senior nursing students that were surveyed ( $n=46$ ) would support breastfeeding a baby of more than 12 months of age. After the educational intervention on infant feeding, the post-test showed an increase in agreement to 64% (Showalter, 2012). This finding may have been

reflective of the US society's perception of mothers who were breastfeeding a baby of more than 12 months of age. When a mother was seen feeding an older baby, it was sometimes stigmatized or looked down upon. Showalter (2012) claimed that this could have been due to the uncertainty or lack of knowledge of the most up-to-date clinical guidelines and recommendations on infant feeding (p.72).

In Cairo, Egypt, an exploratory descriptive study was conducted to assess the breastfeeding knowledge and attitude of 110 baccalaureate nursing students. Ahmed and El Guindy (2011) utilized the Breastfeeding Knowledge Questionnaire adapted from Brodribb et al. (2008) as an instrument to measure knowledge, while the Iowa Infant Feeding Attitude Scale (IIFAS) by De La Mora et al. (1999) was used for the attitude variable. The study found that although about 70% of the students were confident in their ability to provide lactation support, their knowledge scores were low and their breastfeeding attitudes neutral (Ahmed & El Guindy, 2011, p.372). These finding suggests there may have been a discrepancy between how efficient the students thought they were in providing assistance to breastfeeding mothers and their actual knowledge to properly do so.

The research studies presented demonstrate a need for continuing research on targeted breastfeeding education in BSN curriculums. This research study has begun to fill a gap in nursing research around BSN students' knowledge and attitudes about infant feeding, specifically breastfeeding.

## **CHAPTER THREE: METHODOLOGY**

### **Introduction**

Nurses are often tasked with the responsibility of assisting the mother to initiate breastfeeding for the first time. The Newborn Feeding Ability Questionnaire (Cantrill, Cooke & Creedy, 2008) and the Iowa Infant Feeding Attitude Scale (De La Mora et al., 1999) were considered appropriate questionnaires to assess BSN students' knowledge of and attitudes towards breastfeeding. The one group pretest-posttest design was chosen to measure the effectiveness of the educational intervention.

### **Hypothesis**

The hypothesis for this research study was: "The evidence-based education intervention, American Academy of Pediatrics Breastfeeding Support and Promotion (2012) as modified for this study, will increase breastfeeding knowledge of and improve the attitudes about breastfeeding in a sample of BSN students at California State University San Marcos."

### **Research Question**

In addition to the research hypothesis, a research question was asked, "Do the variables age, gender and "prior experience with breastfeeding" predict knowledge of and attitudes towards breastfeeding in a sample of BSN students at California State University San Marcos?"

### **Identification of Setting**

The research study was conducted at California State University San Marcos (CSUSM) School of Nursing at San Marcos, California and its satellite campus at Temecula, California. CSUSM is one of the twenty-three universities in the CSU system. Some of the undergraduate



programs offered at CSUSM include nursing, psychology, business administration, kinesiology and liberal studies. The School of Nursing first opened its doors to the first cohort in the fall of 2006. Currently, there are three tracks to obtaining a Bachelor of Science in Nursing: traditional/generic BSN accelerated BSN and RN-BSN. The intervention took place in a classroom setting.

### **Research Design**

The research design was a quasiexperimental one-group pretest—posttest design. By utilizing this type of design, the effectiveness of the education intervention could be evaluated.

### **Population, Sampling, and Sample**

The target population was composed of two cohorts during two separate semesters. ABSN Temecula Cohort 7 in the fall of 2014 with a class size of 48 students and the traditional BSN Cohort 9 at San Marcos in the summer of 2014, with a class size of 44.

The sample was selected in a non-random manner using convenience sampling. The Inclusion criteria included BSN students at CSUSM who are enrolled in the Maternal Child Health Nursing didactic and clinical course in summer and fall of 2014.

In order to determine the sample size for this study, an a priori analysis was performed using the G\* Power 3.1 software (Faul, Erdfelder, Lang & Buchner, 2007). The calculated desired sample size for this study was 58 students in order to achieve the power of .78 with an effect size of .30 in a dependent (matched pairs) t-test analysis with a significance level of .10 and adding 20% for loss factors.

## Measurement Methods

Permission to use the IIFAS and NFA questionnaires was obtained from the respective instrument developers (Appendix A).

**Knowledge about breastfeeding.** The Newborn Feeding Ability (NFA) questionnaire (Cantrill et al., 2008) was used to measure the student's knowledge about breastfeeding initiation. It is a self-report questionnaire consisting of 21-item Likert-type scale, that assessed their knowledge about the emotional and physiological benefits of doing skin to skin, indication of effective suckling, and work practices that can interfere with the ability of the newborn to feed (Cantrill et al., 2008). The responses range from 1=strongly disagree to 5=strongly agree.

Evidence in support of the reliability and validity of this instrument has been reported (Cantrill et al, 2008). The construct validity was determined by an exploratory factor analysis and principle component analysis; the predictive validity was determined through hierarchical regression (Cantrill et al., 2008). The reported reliability was Cronbach's  $\alpha$  of 0.87 ( $n = 1107$ ).

**Attitudes towards breastfeeding.** The students' attitudes towards breastfeeding were measured by the Iowa Infant Feeding Attitude Scale (De la Mora, Russell, Dungy, Losch & Dusdieker, 1999). It is a 17-item self-report Likert-type scale that ranges from 1=strongly disagree to 2=strongly agree.

There were three studies conducted to establish the reliability and validity of the Iowa Infant Feeding Attitude Scale (De la Mora, Russell, Dungy, Losch & Dusdieker, 1999). The researchers aimed to examine if there was a relationship between the demographic characteristics of the participants and their attitude scores (De la Mora et al., 1999). The first study ( $n=125$ ) had an alpha of .86, while the second study ( $n=130$ ) had an alpha of .85. The third study ( $n=725$ ) had

an alpha of .68. The authors felt this low alpha was due to the more positive breastfeeding attitude of the samples in the third study, reducing the variability of the scores (De la Mora et al., 1999). Though there were some inconsistencies in the outcomes of the three studies, the IIFAS was found to have a high internal consistency in study one ( $\alpha = .86$ ) and study two ( $\alpha = .85$ ), providing evidence in support of its reliability (De la Mora et al., 1999).

### **Intervention**

According to the CDC Guide for Breastfeeding Education by Shealy et al. (2005), professional education is defined as “any program that improve the knowledge, skills, attitudes or behaviors of healthcare providers on the importance of breastfeeding, the physiology and management of lactations, or counseling relating to breastfeeding”.

The intervention for this study was an hour and fifteen minute long didactic class, comprised of a Powerpoint lecture and some hands-on demonstration using infant dummies to exemplify the types of latch and how to properly assist mothers during feedings. Breastfeeding Support and Promotion (2012) was derived from the American Academy of Pediatrics speaker’s kit. It included evidence-based content on breastfeeding, which was modified to meet the hour and fifteen minute long lecture time allowed. Permission to use the speaker’s kit was requested from AAP and was granted (Appendix A). The exact same intervention format was used for both semesters to avoid any differences in knowledge content. The researcher conducted the educational intervention. An International Board Certified Lactation Consultant was consulted to help mentor the researcher on how and which information must be delivered for the most accurate and evidence-based educational intervention. The researcher obtained permission from,

collaborated and consulted with the didactic Maternal-Child Health Nursing instructor for scheduling and curriculum approval.

### **Data Collection**

Prior to beginning the educational intervention, permission to conduct the project was received from the CSUSM Institutional Review Board (IRB) (Appendix E). Each participant signed an informed consent (Appendix F). The pre-test was given immediately before the intervention, and the post-test was administered immediately after the intervention.

Demographics and information on prior experiences of breastfeeding (yes/no) were collected with the pre-test (Appendix B). The paper questionnaires and consents were kept inside a locked file cabinet in a locked office in the CSUSM School of Nursing.

### **Data Coding and Scoring**

The NFA is a 21-item 5-point Likert scale (1=strongly disagree, 2=disagree, 3=not sure, 4=agree, 5=strongly agree), with a possible total score of 105. The higher the score reflect higher breastfeeding knowledge (Cantrill, Cook & Creedy, 2008). According to De la Mora et al. (1997), the IIFAS items number 3,5,7,9,12,13,15 and 16 are scored using the regular scale (1=strong disagreement, 2= disagreement, 3=neutral, 4=agreement, 5=strong agreement). Items number 1,2,4,6,8,10,11,14 and 17 are reverse-scored (5=strong disagreement, 4=disagreement, 3=neutral, 2= agreement, 1=strong agreement). The scores are the added and the higher scores reflect a more positive attitude towards breastfeeding (De la Mora et al., 1999). For the independent variables, the coding was as follows: gender (0=male, 1=female, 3=transgender) and prior exposure (0=yes, 1=no).

**Data Analysis**

Because this is a pilot study, the significance level was set at  $p \geq .10$  for all the analytical techniques, unless otherwise noted. The variables knowledge and attitude were considered as the interval level of measurement. All the demographics were nominal, except for age, which was considered interval.

**Data management and cleaning.** SPSS Version 20 software was used to analyze the data. Frequency distributions were examined and data entry errors were identified and corrected.

**Descriptive statistics.** The mean (and standard deviation), median, and/or mode for the independent variables (age, gender, and prior experience with breastfeeding) were calculated. Frequency distributions were used to determine if the data were normally distributed.

**Representativeness of the sample.** The demographics of the two cohorts were obtained and were compared with demographics for the target cohort populations at the CSUSM School of Nursing. The Accelerated BSN Temecula cohort had a total of 49 students at the beginning of the semester. Twenty-three students were <25 years of age, 19 students were 26-36 years old, 3 students were 37-47 years old, 3 students were 48-55 years old, and no one was over 55 years old. There were 7 male and 42 female students in Accelerated BSN cohort.

In the traditional BSN cohort, the initial total number of students was 43. Thirty-six students were < 25 years of age, 5 students were 26-36 years old, 2 students were 37-47 years old, one student was between 48-55 years old, and no one was over 55 years of age. There are 7 males and 36 females in the traditional BSN cohort. After comparing the aggregate characteristics of the target population to the obtained sample, a statistically significant difference was not found.

**Hypothesis.** The hypothesis for this research study was: The evidence-based education intervention, American Academy of Pediatrics Breastfeeding Support and Promotion (2012) as modified for this study, will increase breastfeeding knowledge of and improve the attitudes towards breastfeeding in a sample of BSN students at California State University San Marcos.

The paired t-test was used to determine if there was a difference between the pre-test and post-test knowledge and attitude scores (Polit & Beck, 2012, p.415).

**Research Question.** The research question was: Do the variables age, gender and “prior experience with breastfeeding” predict BSN students’ knowledge of and attitudes towards breastfeeding? A multiple regression analysis was used to answer this research question. A Multiple linear regression simultaneously examined the relationship between the predictor variables (age, gender, prior experience with breastfeeding) and the dependent variables (knowledge and attitudes) in two separate analyses.

### **Bias**

A research study that relies on self-report is vulnerable to response set bias. In this study, participants may have altered their true opinion in an attempt to look good or be desirable in the eyes of other people (Polit & Beck, 2012). There are certain instruments that can be utilized to address this type of bias such as the Marlowe Crowne Social Desirability Scale (1960); however, to avoid respondent burden, it was not included in this study.

### **Ethical Consideration**

In collaboration with the OB instructor at CSUSM, the evidence-based intervention became a part of the maternal-child health curriculum for both cohorts. Since the intervention was requirement for this course, there were no incentives offered in exchange for participation.

The pre-test and post-tests were conducted for the research purpose only, and did not translate into points for the class. To ensure the ethical and voluntary nature of the research, the participants were asked to sign an informed consent form to grant the researcher access to their pre-test and post-test scores for analysis. The scores were not given to the OB instructor. IRB approval was obtained from the CSUSM IRB prior to any data being collected.

### **Summary**

The one-group pretest—posttest design was the appropriate design to evaluate the effectiveness of the educational intervention. The NFA and IIFAS have both demonstrated reliability and validity in previous studies concerning the measurement of knowledge about and attitudes towards breastfeeding.

## CHAPTER FOUR: RESULTS

### Introduction

This chapter provides the results of the one-group pretest—posttest study that aimed to measure the effectiveness of an evidence-based breastfeeding educational intervention among BSN students. This study also provides an answer the question “Do the variables age, gender, and “exposure to breastfeeding” predict knowledge of and attitudes towards breastfeeding in a sample of BSN students at CSUSM?”

A post-hoc power analysis was performed using the G\* Power 3.1 software (Faul, Erdfelder, Lang & Buchner, 2007). For the paired t-tests, the effect size was calculated using the mean difference of the pre and posttest results and standard deviation of the difference. For the NFA two tailed test, the effect size of 1.41 (measured in standard deviation units), with an alpha error probability of .01 and sample size of 70, the power comes out to be 1.00. For the IIFAS two tailed test, the effect size of .89, with an alpha error probability of .01 and sample size of 70, the power comes out to be .99.

The post hoc power analysis of the multiple regression findings using the IIFAS and covariate “prior experience”, utilized the effect size of .11 with, alpha error probability of .01, and sample size of 70. The resulting power was determined to be .55, which means that there was a 55% chance of obtaining this result from the target population with an effect size of .11, and 45% chance that this finding was a result of statistical error.



## Sample

A total of 70 students (out of 76 possible participants) turned in a completed packet with a signed informed consent, pre-test and post-test forms; therefore, the total sample size for this study was 70 BSN students (n=70). The demographics for the sample are provided in Table 1.

Table 1

*Demographic characteristics of the studied sample (n=70)*

Age (years), mean±SD (range)	26.67 ± 6.9 (20-53)
Gender, frequency (%)	
Female	59 (84.3%)
Male	11 (15.7%)
Transgender	0 (0%)
Experience with breastfeeding	
No	46 (65.7%)
Yes	24 (34.3%)

The studied sample (n=70) had a mean age of 26.67 years, with the range of 20-53 years old. Most of the participants were female (84.3%), while only 15.7% were male; no participant identified as transgender. Most participants claimed to have no experience with breastfeeding (65.7%), which implies that they had never lived with an immediate family member (e.g. mother, sister, wife) who is currently breastfeeding or has ever breastfed, worked in a maternal-infant unit; or, they have never been surrounded by a friend or acquaintance who is currently breastfeeding or has ever breastfed.

## Data Collection and Preparation

Two identical one-hour and 15 minute evidence-based classes were conducted in front of the target cohorts during the Summer 2014 and Fall 2014 semesters (total participants between the two semesters were 70 students). The knowledge variable was measured using the Newborn

Feeding Ability Questionnaire (Cantrill et al., 2008), while the students' attitude towards breastfeeding was measured using the Iowa Infant Feeding Attitude Scale (De La Mora et al., 1999). Packets with an informed consent, pre-test and post-test forms were distributed prior the presentation (Appendix C, D, F). Participants were given 15 minutes to answer the pre-test and another 15 minutes to answer the post-test questionnaires. Data were collected and locked in a file cabinet in a locked office in the CSUSM School of Nursing. The questionnaires were manually scored and results were transferred into an Excel spreadsheet. Data items were checked for entry errors, outliers or inconsistencies. The IBM SPSS version 20 software (2011) was utilized for data analysis.

## Results

Descriptive statistics determined the mean, median, mode and standard deviation of the dependent variables (pre-test and post-test knowledge and attitude scores) (Table 2).

Table 2

*Descriptive Statistics of pre-test and post-test scores (n=70)*

	NFA pre	IIFAS pre	NFA post	IIFAS post
Mean	78.51	66.53	90.51	71.87
Median	77.00	66.50	93.00	72.00
Mode	77	68	94	69a
Std. Deviation	8.324	6.790	8.649	7.161
Skewness	.595	.427	-.120	-.479

Each variable was evaluated for normality. All were normally distributed except for the IIFAS post-test, which was only slightly negatively skewed. Otherwise, all assumptions were met for the paired t-test.

## Hypothesis

The hypothesis for this research study was:

The evidence-based education intervention, American Academy of Pediatrics Breastfeeding Support and Promotion (2012) as modified for this study, will increase breastfeeding knowledge of and improve attitudes towards breastfeeding in a sample of BSN students at California State University San Marcos.

The effectiveness of the intervention, American Academy of Pediatrics Breastfeeding Support and Promotion (2012) modified version, was assessed using a paired t-test, comparing the pre and post-test results of the Newborn Feeding Ability Questionnaire, the instrument used to measure the knowledge variable. A significant difference was found between and posttest scores ( $t= 12.32$ ;  $p=.000$ ) indicating that the educational intervention increased the participants' breastfeeding knowledge by 12 % on average (Tables 3 & 4).

Similar tests were conducted using the pre and post-test results of the Iowa Infant Feeding Attitude Scale. These results also demonstrated a statistically significant difference ( $t=7.48$ ;  $p=.000$ ), from pretest to posttest indicating an improvement of 5% on average in attitude after participating in the intervention (Tables 3 & 4).

Table 3

*Paired Sample Statistics for Pre-test and Post-test Scores*

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	NFApre	78.51	70	8.324	.995
	NFApost	90.51	70	8.649	1.034
Pair 2	IIFASpre	66.53	70	6.790	.812
	IIFASpost	71.87	70	7.161	.856

Table 4

*Paired Sample Test of Pre-test and Post-test NFA and IIFAS*

	M	SD	95% CI		t	df	sig. (2 tailed)
			Lower	Upper			
NFApre-NFApost	12.00	8.149	-13.943	-10.057	-12.320	69	.000
IIFASpre- IIFASpost	5.343	5.980	-6.769	-3.917	-7.475	69	.000

Note. CI= confidence interval, M=mean, SD=standard deviation

**Research Question**

Do the variables age, gender, and “prior experience with breastfeeding” predict knowledge of and attitudes towards breastfeeding in a sample of BSN students at California State University San Marcos?”

**Knowledge.** A multiple regression analysis was performed. The resulting statistical model demonstrated that age, gender and “prior experience with breastfeeding were not statistically significant as predictors of knowledge as measured by the Newborn Feeding Ability Questionnaire posttest scores ( $F=1.72$ ;  $p=.173$ ).

**Attitudes.** A multiple regression was conducted using age, gender and “prior experience with breastfeeding” as a predictor of attitudes towards breastfeeding as measured by post-test IIFAS scores.

Using the  $p < .10$  as the level of significance for the study, the model was statistically significant ( $F=2.50$ ,  $p=.067$ ). The  $R^2$  of .10 indicated that the age, gender, and “experiences with breastfeeding” explained approximately 10% of the variance in post-test attitude scores. Upon evaluation of the contribution of the individual predictors, only prior experience with

breastfeeding was significant ( $t=2.62$ ,  $p=.011$ ), as opposed to the variables age ( $t=.25$ ;  $p=.807$ ) and gender ( $t=.662$ ;  $p=.512$ ).

### **Summary**

In order to measure the effectiveness of a breastfeeding educational intervention, a paired t-test was conducted. The results demonstrated a significant difference between the pre-test and post-test scores for both the NFA and IIFAS questionnaires.

Multiple regression analyses were used to assess whether or not the variables age, gender and the covariate prior experience with breastfeeding were predictive of the students' knowledge and attitude. Results suggest that these variables do not predict knowledge about breastfeeding; however, "experiences of breastfeeding" may be predictive of BSN students' attitude towards breastfeeding.

## CHAPTER FIVE: DISCUSSION

### Introduction

Breastfeeding is a global initiative that requires participation and commitment from healthcare professionals such as nurses and other healthcare providers. It has been proven to be extremely beneficial to mothers and newborns for the time during and for many years after the newborn has stopped breastfeeding. Since many hospitals and birthing facilities are seeking the Baby-Friendly designation, nurses are expected to have a wider base of knowledge when it comes to lactation (Baby-Friendly USA, 2010); therefore, preparing baccalaureate-nursing students to assist mothers with issues around lactation is crucial to the success of any breastfeeding initiative.

This pilot study hypothesized that an evidence-based breastfeeding intervention would improve the knowledge of and attitudes towards breastfeeding in baccalaureate nursing students. It also questioned if the demographic variables, age and gender, and “prior experience with breastfeeding” would predict the knowledge of and attitudes towards breastfeeding in a sample of BSN nursing students. The following section, discusses the major findings in this pilot study.

### Breastfeeding Knowledge and Attitudes

The hypothesis for this research study was: “The evidence-based education intervention, American Academy of Pediatrics Breastfeeding Support and Promotion (2012) as modified for this study, will increase breastfeeding knowledge of and improve the attitudes about breastfeeding in a sample of BSN students at California State University San Marcos.”

The paired t-test showed a significant difference from pretest to posttest for both dependent variables, “breastfeeding knowledge” ( $t= 12.32$ ;  $p=.000$ ) and “attitudes towards

breastfeeding” ( $t=7.48$ ;  $p=.000$ ). These findings provide beginning evidence in support of the effectiveness of the one hour and fifteen minute long evidence-based lecture that was presented by the investigator.

Research literature has shown that baccalaureate nursing students may have some knowledge of breastfeeding and may be aware of the importance of breastfeeding (Kavanagh, 2012); however, the pre-test scores in this study showed that many students were not knowledgeable about some topics such as the specifics of skin-to-skin and milk/colostrum transfer. The evidence-based lecture in this project emphasized the importance of skin-to-skin in initiating breastfeeding, and the effectiveness of this information was apparent in the post-test scores. The lecture also covered topics such as the benefits of breastfeeding to mother and newborn, how to properly assess the latch and milk transfer, and how to manage issues such as mastitis and engorgement.

Kavanagh and colleagues (2012) conducted a cross-sectional survey study, which utilized undergraduate nutrition students as the sample population ( $n=248$ ). Findings revealed that students had some knowledge about breastfeeding, but their attitudes were considered somewhat neutral. The authors believed this finding was due to some of the participants’ belief that breastfeeding was an inconvenient, restrictive and painful experience for working mothers. This same belief may have been operating in this current study and was reflected in the lower scores obtained during the pre-test.

Findings similar to those in this pilot project have been found in other studies such as the study by Dodgson and Tarrant (2007). In their quasi-experimental interventional design that used

a non-equivalent comparison group, the comparison group ( $n=162$ ) scored much lower on the knowledge survey than compared the group that received the intervention ( $n=111$ ).

### **Prediction of Breastfeeding Knowledge and Attitudes**

To answer the question “do the demographic variables and the covariate (age, gender and prior experience with breastfeeding) predict their knowledge and attitudes towards breastfeeding?” a regression analysis was conducted.

In this study, multiple regression analysis found that the variables “age”, “gender” and “prior experience with breastfeeding” were not significant predictors of “breastfeeding knowledge”. However, when “age”, “gender” and, “prior experience with breastfeeding” were regressed on the dependent variable, “attitudes towards breastfeeding”, the model was significant; although, only “experiences with breastfeeding” was found to be a significant predictor of attitudes.

Having a positive attitude towards breastfeeding is paramount in determining whether or not a nursing student will be able to successfully provide lactation education to mothers. Ajzen and Fishbein (1977) (authors of the Theory of Reasoned Action) defined the attitude towards the behavior as the person’s own evaluation whether the behavior in question is favorable or unfavorable (as cited in Ajzen & Madden, 1986). When the attitude is positive, the intention is there and it is more likely that the behavior will be performed.

Other studies in the past have attempted to correlate prior experience and breastfeeding knowledge. Cantrill, Creedy, and Cooke (2003) conducted a postal questionnaire study ( $n=3500$ ) that assessed the knowledge of Australian midwives and established the validity and reliability of the Breastfeeding Knowledge Questionnaire for the Australian context. The results of the postal



questionnaire study revealed that the participants over the age of 30, possessing IBCLC qualifications and having personal breastfeeding experience of more than three months achieved higher knowledge scores. They found that age, qualifications and experience translate to higher knowledge, but they did not address whether or not these characteristics could predict the participants' knowledge. They also found that a midwife with personal experience alone did not necessarily translate into readiness to provide lactation support to new mothers.

Hellings and Howe (2000) conducted a study 15 years ago that assessed the breastfeeding knowledge of Nurse Practitioners and Nurse Midwives (n=670) using postcard questionnaires. Although this study is dated, the investigators made an important point that “relying on personal experience as the primary source of information may narrow the focus of assistance that is made available to patients or may limit the strategies to solve problems that the clinician did not experience” (p. 268). This finding demonstrated the importance of annual breastfeeding competencies at birthing facilities and lactation clinic. Although a clinician may have years of prior experience, it does not mean that the clinician will be able to educate mothers based on the most accurate and up-to-date recommendations.

In 2011, Payne and Radcliffe also conducted a pre-test/ post-test intervention research study among nutrition and dietetics graduates. The five year longitudinal study found that a breastfeeding educational intervention embedded into a curriculum could not only help increase knowledge, but it also “engendered a strong interest in future work involving breastfeeding” (Payne & Radcliffe, 2011). This study provides further support for the belief that BSN programs must incorporate lactation training into their curriculums.

**Limitations**

Although there are several limitations to a one-group pretest-posttest design, it may be a good choice for educational interventions in which the baseline knowledge is collected and data is obtained immediately after the intervention (Polit & Beck, 2012).

Limitations in this study included self-report and possible testing sensitization from pretest to posttest (threat to internal validity) (Polit & Beck, 2012). Additionally, a convenience sample was used; therefore, the sample may not have been representative of the target population; however, after comparing the aggregate information of the target cohorts and the demographics obtained from the sample, no significant differences were found. Finally, a one-group pretest—posttest design may not provide strong enough evidence to support causal inference for the intervention being tested; but, despite its possible limitations “it may be reasonable to infer that the intervention is the most plausible explanation for knowledge gains” (Polit & Beck, 2012, p.219).

**Generalizability**

Although non-probability samples may not be representative of the population from which they are drawn (Polit ad Beck, 2012), the goal of a pilot study is not generalizability. What can be said is that the findings from this study may be generalized to a sample of baccalaureate nursing students with the similar demographic characteristics in the southwest United States.

**Implications for Nursing Practice/Policy/Research**

This pilot study has provided beginning evidence in support of the educational intervention, American Academy of Pediatrics Breastfeeding Support and Promotion (2012) as modified for this study, specifically with regards to BSN students’ attitudes towards

breastfeeding. Research evidence has shown that an improved attitude towards a phenomenon can make a difference in knowledge, attitudes, and practice.

Curriculums may incorporate goals and outcomes from the Baby friendly Initiative and the Health People 2020. According to Healthy People 2020, the goal is to increase the proportion of infants who are ever breastfed, from 74.0 % in 2006, to 81.9% by the year 2020 (USDHHS, 2015). Another goal is to have more live births in facilities that provide lactating mothers with the proper recommendations and support that they need to breastfeed, from 2.9% in 2007 to 8.1% (USDHHS, 2015). By incorporating breastfeeding education into the BSN curriculum, nursing students will have a better understanding why breastfeeding is the best way to feed an infant, which possibly may turn them into advocates; this will be a useful skill enhancing safety and effectiveness and may enhance the new graduates' marketability.

Advance practice nurses will also benefit from educational opportunities offered by programs such as the Baby-Friendly Initiative, especially those that work in Midwifery, Pediatrics, Neonatology and Family Practice. Consistency of information being provided is vital to avoiding frustration and confusion among new mothers. APNs must be able to provide the most accurate and up-to-date recommendations, as well as know how to manage potential problems and poor outcomes.

The educational intervention for this project (AAP's Breastfeeding Support and Promotion, 2012 as modified for this study) addressed some of the above issues by emphasizing that breastfeeding is a convenient, cost-effective and environmentally friendly method of infant feeding. According to USDHHS (2011), "optimal breastfeeding practices could save more than \$1,200-\$1,500 in expenditures for infant formula in the first year alone" (p.3). Healthier infants

also mean that families won't have to spend so much on doctor's visits or hospitalizations due to infections and other illness.

It also discussed the importance of pumping and hand expression even when mothers return to the workplace. The lecture presentation included a video about community resources available to working mothers who are trying to breastfeed. APN's must know what resources are available out in the community, especially those who work in the ambulatory setting. The Health People 2020 aims to increase the proportion of employers that have onsite lactation rooms from 25% to 38% by 2020. This will encourage mothers to keep the exclusivity of breastfeeding even as they return to the workforce.

### **Recommendations for Future Research**

The one group pretest—posttest design is subject to the threat of testing sensitization. Future research should utilize two-group pretest-posttest or repeated measures experimental or quasi-experimental designs in which one group functions as a control or comparison group and that incorporate random selection or assignment to the intervention and control/comparison groups. Replication and further exploration using the intervention as modified for this study is recommended.


### **Summary**

This pilot study has demonstrated beginning evidence in support of the effectiveness of the evidence-based infant feeding intervention, American Academy of Pediatrics Breastfeeding Support and Promotion (2012) as modified for this study, to increase BSN students' knowledge of and improve their attitudes towards breastfeeding. It also has filled the gap in research and current literature.

The paired t-test revealed a statistically significant difference from pretest to posttest with regard to knowledge and attitude scores. Additionally, a multiple regression analysis revealed that “age”, “gender” and “prior experience with breastfeeding” were not reliable predictors of the BSN students’ knowledge about breastfeeding; however “experiences of breastfeeding”, was a significant predictor of BSN students’ attitude towards breastfeeding in the convenience sample.

Ultimately, the goal is to increase breastfeeding rates worldwide. As it was put by the World Health Organization (2014), “if every child was breastfed within an hour of birth, given only breast milk for their first six months of life, and continued breastfeeding up to the age of two years, about 800 000 child lives would be saved every year”. The major findings of this study support formalized breastfeeding education in schools of nursing. Raising breastfeeding knowledge may increase breastfeeding success rates and improve infant health worldwide.

## Appendix A

**From:** Delamora, Arlene [SOE] <adelamor@iastate.edu>   
**Subject:** FW: IIFAS copy request  
**Date:** October 10, 2013 9:34:32 AM PDT  
**To:** Ana Gomez

[Hide](#)

2 Attachments, 1.1 MB

Save ▾

Quick Look

Hi Camila,

I've attached a couple of things. One is the article that describes the IIFAS and its properties and the other is a condensed version of the paper along with a copy of the scale in a word doc. I went to Cal State LA as an undergraduate – which campus are you at? Small world.

Let me know if you have any questions about the paper or the scale.

Arlene

Arlene de la Mora, Ph.D.  
Research Scientist  
Research in Studies in Education (RISE)  
School of Education  
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E005 Lagomarcino Hall  
Ames, IA 50011

Voice: 515.294.6919

Fax: 515.294.6206

Email: [adelamor@iastate.edu](mailto:adelamor@iastate.edu)

**From:** Ruth Cantrill  
**Subject:** Re: Permission to obtain copy of NFA and BIP  
**Date:** November 14, 2013 3:20:11 AM PST  
**To:** Ana Gomez

[Hide](#)  
[Inbox - Gmail](#)

---

Dear Ana

You certainly have permission to use the questionnaires from the Newborn Feeding Ability questionnaire and the Breastfeeding Initiation Practices scale.

They can be found in the international breastfeeding journal on line as extra material for the article.

Look forward to reading your research on the topic

Kind regards

Ruth

On Tue, Nov 12, 2013 at 6:17 AM, Ana Gomez <[camgomez09@gmail.com](mailto:camgomez09@gmail.com)> wrote:

Hello Dr. Cantrill,

My name is Camila Gomez. I'm a graduate student in the MSN-FNP program at California State University San Marcos. I am currently working on my graduate thesis about the breastfeeding attitudes and knowledge of BSN students.

I'm wondering if you would be able to lend me a copy of the Newborn Feeding Ability questionnaire and the Breastfeeding Initiation Practices scale so I can use them as tools for my research. I will send you a copy of my thesis as soon as it is done.

Thank you so much in advance!

Sincerely,

Camila Gomez RN, BSN

--

Ruth Cantrill

Phone Ext 57284  
Mobile 0438987261

**From:** Amanda Cozza  
**Subject:** RE: Permission to use the AAP Speaker's Kit  
**Date:** December 16, 2013 12:57:54 PM PST  
**To:** Ana Gomez

Hide  
Inbox - Gmail **4**



Hi Ms Gomez:

Many thanks for getting back to me.

By way of this e-mail, permission is granted to present the *AAP Breastfeeding Speaker's Kit* to a class of 40+ BSN students so you are able to assess their knowledge and apply your findings in your thesis.

This permission is granted nonexclusively for one-time use and educational purposes only and is limited to projection through an overhead. Rights granted do not apply to revised editions, foreign language editions, or any versions via electronic media.

Feel free to contact me if you have questions, and best wishes with your thesis.

Kind regards,  
Amanda

[See More](#) from Ana Gomez

**From:** Ana Gomez  
**Subject:** Permission to use TRA graphic  
**Date:** December 12, 2013 3:58:01 AM PST  
**To:** aizen@psych.umass.edu

Hide  
2 

Hello Prof. Ajzen,

I would like to obtain your permission to use your graphic of the TRA found on the "Prediction of

Goal-Directed Behavior: Attitudes, Intentions and Perceived Behavioral Control" (Ajzen & Madden, 1986) article for my Master's Thesis titled *Assessing the Breastfeeding Knowledge and Attitude of Baccalaureate Nursing Students before and after an Educational Intervention*. I will be citing your article to give you credit for the graphic and as a reference for the framework. Thank you for your consideration.

Ana Camila Gomez RN, BSN, PHN  
CSUSM School of Nursing  
MSN cohort 4



**Appendix B****Breastfeeding Knowledge and Attitudes of BSN students before  
and after an Educational Intervention: A Pilot Study****Demographics:****Gender**

- Male
- Female
- Transgender

**Age in years:** \_\_\_\_\_

**Prior experience with breastfeeding**

**\*\*Living with an immediate family member (e.g. mother, sister, wife) who is currently breastfeeding or has breastfed, working in a maternal-infant unit, or being constantly surrounded by a friend or acquaintance who is currently breastfeeding or has breastfed.**

- Yes
- No

**Appendix C****Newborn Feeding Ability Questionnaire**

This questionnaire asks about newborn feeding ability.

*Please circle the number ① beside your answer.*

**What is your opinion regarding the following statement about newborn suckling ability**

**1** A normal full term infant is born with instinctive reflex ability to breastfeed effectively?

1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**A healthy newborn baby (*who is not sedated by any drugs*) kept in continuous skin-to-skin contact with the mother immediately after birth,**

**2** Will develop predictable, coordinated feeding behaviors within minutes of birth

1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**3** Can instinctively find the nipple without help and attach correctly to the breast

1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**4** Will be guided to the nipple by their sense of smell

1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**What is your opinion regarding the benefits of continuous skin-to-skin contact for newborn babies and their mother?**

**5** Skin-to-skin contact is important to help stabilize newborn breathing

1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**6** A newborn's heart rate is stabilized by skin-to-skin contact

1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**7** Skin-to-skin contact is important to prevent heat loss in newborn babies

1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

- 8 A newborn's blood sugar levels are stabilized by skin-to-skin contact  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 9 Skin-to-skin contact helps the flow of colostrum after birth  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 10 Uninterrupted skin-to-skin contact immediately after birth is important for newborn breastfeeding performance  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 11 A mother is more likely to accept and feel warm toward her baby if skin-to-skin contact happens immediately after birth  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 12 Hours of continuous skin-to-skin contact can help a newborn baby learn to feed  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**To know the baby is getting colostrum at the first breastfeed, it is important that:**

- 13 Midwives and mothers can hear the baby swallowing colostrum  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 14 Midwives and mothers can see the baby swallowing  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

**What is your opinion regarding the statement that:**

- 15 Separation of a newborn from the mother at birth can cause harmful stress to the baby  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 16 Birth trauma may interfere with the proper coordination of an infant's natural sucking reflexes  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

- 17** Interrupting skin-to-skin contact within 15-20 minutes of delivery seriously disturbs the suckling reflexes for correct attachment  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 18** \*There is no time immediately after delivery to allow uninterrupted skin-to-skin contact until the first breastfeed  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 19** \*Prevention of heat loss by wrapping the baby is of higher priority than skin-to-skin contact to initiate feeding behaviors.  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 20** \*Time required for skin-to-skin contact to breastfeed interferes with completion of required legal documentation  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree
- 21** \*Most mothers want to be cleaned up immediately after delivery rather than hold their baby  
1 strongly disagree 2 disagree 3 not sure 4 agree 5 strongly agree

Reversed scoring (\*)

### Appendix D

## The Iowa Infant Feeding Attitude Scale

For each of the following statements, please indicate how much you agree or disagree by circling the number that most closely corresponds to your opinion. The number “1” indicates strong disagreement, whereas “5” indicates strong agreement. You may choose any number from 1 to 5.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Strongly Disagree</b>	<b>Disagree</b>	<b>Neutral</b>	<b>Agree</b>	<b>Strongly Agree</b>

- \* 1. The nutritional benefits of breast milk last only until the baby is weaned from breast milk.

1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

- \* 2. Formula feeding is more convenient than breast-feeding.

1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

3. Breast-feeding increases mother-infant bonding.

1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

- \* 4. Breast milk is lacking in iron.

1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

5. Formula-fed babies are more likely to be overfed than breast-fed babies.

1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

- \* 6. Formula feeding is the better choice if a mother plans to work outside the home.

1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

7. Mothers who formula feed miss one of the great joys of motherhood.

1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

- \* 8. Women should not breast-feed in public places such as restaurants.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
9. Babies fed breast milk are healthier than babies who are fed formula.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
- \* 10. Breast-fed babies are more likely to be overfed than formula fed babies.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
- \* 11. Fathers feel left out if a mother breast-feeds.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
12. Breast milk is the ideal food for babies.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
13. Breast milk is more easily digested than formula.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
- \* 14. Formula is as healthy for an infant as breast milk  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
15. Breast-feeding is more convenient than formula feeding.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
16. Breast milk is less expensive than formula.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree
- \* 17. A mother who occasionally drinks alcohol should not breast-feed her baby.  
1 strongly disagree 2 disagree 3 neutral 4 agree 5 strongly agree

(\*)Reverse scoring

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## Appendix E



California State University  
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Institutional Review Board for the Protection of Human Subjects(IRB) California State University San Marcos  
Tel: 760-750-4029 irb@csusm.edu www.csusm.edu/irb

### Human Subjects Research Approval Form

IRB #: 2014-087

To: Linnea Axman  
Ana Gomez

Project Title: **Breastfeeding Knowledge and Attitudes of BSN students before and after an Educational Intervention: A Pilot Study**

This letter certifies that the above referenced project was reviewed and approved by the University's Institutional Review Board in accordance with the requirements of the Code of Federal Regulations on Protection of Human Subjects(45 CFR 46), including its relevant subparts.

#### Continuing Review

This approval is valid through the expiration date shown below. If this research project will extend beyond that date, a continuing review application must be submitted at least 30 days before this expiration using the Continuing Review form available on the IRB website. ([www.csusm.edu/irb](http://www.csusm.edu/irb))

#### Modifications to Research Protocol

Changes to this protocol (procedures, populations, locations, personnel, etc.) must be submitted and approved by the IRB prior to implementation using the Minor Modification Form available on the IRB website.

#### Unanticipated Outcomes/Events

The CSU San Marcos IRB must be notified immediately of any injuries or adverse conditions.

*Approved Information Sheet or Consent Form(s) are attached. Only approved consent forms may be used to obtain participant consent.*

Approval Date: 6/19/2014

Expiration Date: 6/18/2015

Susan Thompson  
IRB Chair

#### The California State University

Bakersfield • Channel Islands • Chico • Dominguez Hills • East Bay • Fresno • Fullerton • Humboldt • Long Beach • Los Angeles • Maritime Academy • Monterey Bay  
• Northridge • Pomona • Sacramento • San Bernardino • San Diego • San Francisco • San Jose • San Luis Obispo • San Marcos • Sonoma • Stanislaus

## Appendix F



California State University  
SAN MARCOS

School of Nursing California State University San Marcos 333 S. Twin Oaks Valley Road San Marcos, CA 92096-0001  
Tel. #: 760-750-7550 Fax #: 760-750-3464 www.csusm.edu/nursing/index.html

### Consent for Access to Pre and Post-test Results

Ana Camila Gomez RN, BSN, a Master of Science in Nursing- Family Nurse Practitioner student at California State University San Marcos School of Nursing, is conducting a study on infant feeding.

**Main Objective:** To find out if an evidence-based educational intervention on infant feeding will increase breastfeeding knowledge and change the attitudes of BSN students at California State University San Marcos. It also aims to find out if demographic characteristics and prior experience with breastfeeding can predict a student's knowledge and attitude towards breastfeeding.

**Procedure:** This informed consent will grant the researcher access to the pre-test and post-test scores for the purpose of analysis. Students answer the pre-test questionnaires at the beginning of the class. The researcher will conduct an hour and fifteen minute long evidence-based educational intervention about infant feeding. The presentation will utilize a Powerpoint presentation based on the recommendations by the American Academy of Pediatrics (2012). A post-test will then be administered to measure the immediate effectiveness of the teaching.

**Risk and Inconveniences:** Risks are no greater than those found in everyday university classroom activities. There is a very slight chance that student scores may be revealed to others; however, there are no identifiers (e.g., names) on the questionnaires; therefore, scores cannot be linked to individual participants.

**Safeguards:** The paper questionnaires and consents will be kept in separate drawers in a locked file cabinet in a locked office at the CSUSM School of Nursing. Only the investigator and thesis committee chair will have access to the data and analysis.

**Benefits:** Participation in the educational intervention will satisfy requirements of the maternal child health course curriculum whether or not the student chooses to allow their scores to be used to evaluate the intervention for the study. It is possible that participants will receive no additional benefit from participating.

**Questions?** Please contact Camila Gomez at 951.760.2173, or through email at gomez067@cougars.csusm.edu. Additionally, you may contact her thesis chair, Dr. Linnea Axman @ 619.813.5732 or by email at laxman@csusm.edu. If you have any questions about your rights as a research participant, you may contact CSUSM's Institutional Review Board at 760.750.4029.

I consent to answering the pre-test and post-test questionnaires, and for my answers and scores to be used in this research study.

\_\_\_\_\_  
Participant's name

\_\_\_\_\_  
Participant's signature

\_\_\_\_\_  
Date

\_\_\_\_\_  
Researcher's signature

This document has been approved by  
the Institutional Review Board at  
California State University San Marcos  
Expiration Date: June 18, 2015



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