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Breastfeeding attitudes of junior and senior nursing students

Eileen Riley
University of New Hampshire, Durham

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Abstract
The health benefits of a longer duration of breastfeeding for both mothers and infants have been identified in the literature. However, the breastfeeding rates for infants at six and twelve months old lag the Healthy People 2010 recommendations. Studies have shown that a nurse's attitude can influence breastfeeding duration rates yet nurses' attitudes and hospital practices do not always support breastfeeding mothers. Therefore it is vital that senior nursing their practice in order to support and encourage mothers. The Iowa Infant Feeding Attitude Scale was used in this study to collect data from junior nursing students before their maternal/child health course and senior nursing students after their maternal/child health course. The results of the study found a significant difference in the attitude scores between the juniors and seniors with the seniors having more positive attitudes toward breastfeeding. The evidence from this study supports the premise that education can improve attitudes toward breastfeeding.

Keywords
Health Sciences, Nursing

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Thesis Director, Pamela DiNapoli
Associate Professor of Nursing

Gene Harkless
Associate Professor of Nursing

Martha D. Leighton
Clinical Assistant Professor of Nursing

MAY 11, 2007
Date
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ABSTRACT

BREASTFEEDING ATTITUDES OF JUNIOR AND SENIOR NURSING STUDENTS

By

Eileen Riley

University of New Hampshire, May, 2007

The health benefits of a longer duration of breastfeeding for both mothers and infants have been identified in the literature. However, the breastfeeding rates for infants at six and twelve months old lag the Healthy People 2010 recommendations. Studies have shown that a nurse’s attitude can influence breastfeeding duration rates yet nurses’ attitudes and hospital practices do not always support breastfeeding mothers. Therefore it is vital that senior nursing students have positive attitudes toward breastfeeding as they begin their practice in order to support and encourage breastfeeding mothers. The Iowa Infant Feeding Attitude Scale was used in this study to collect data from junior nursing students before their maternal/child health course and senior nursing students after their maternal/child health course. The results of the study found a significant difference in the attitude scores between the juniors and seniors with the seniors having more positive attitudes toward breastfeeding. The evidence from this study supports the premise that education can improve attitudes toward breastfeeding.
CHAPTER I

INTRODUCTION

Breastfeeding has been recognized by pediatricians as the optimal form of infant nutrition, providing health benefits for both the mother and the infant (American Academy of Pediatrics, 2005). Given that breastfeeding rates in the United States fall below the Healthy People 2010 goals of 75% breastfeeding at birth; 50% continuing until the infant is six months of age; and 25% still breastfeeding at one year (US Department of Health and Human Services, 2000; Centers for Disease Control National Immunization Survey, 2003) it is essential that all professional nurses promote and support breastfeeding in their practice.

Background

The benefits of breastfeeding in health promotion and disease prevention have been recognized both internationally and by the United States. The World Health Organization (WHO) and the United Nations International Childrens Fund (UNICEF) in 1992 launched the Baby-Friendly Hospital Initiative (BFHI) to ensure that maternity care practices support breastfeeding. Since 1997 the American Academy of Pediatrics (AAP) has also recommended that all infants (with rare exceptions) be exclusively breastfed for the first six months of life. They further recommend that breastfeeding continue up to twelve months and even longer if mutually desired by the mother and infant.

A nurse’s attitude towards breastfeeding when providing care can influence a mother’s decision to continue breastfeeding, yet nurses do not always have positive
breastfeeding attitudes (Register, Eren, Lowdermilk, Hammond, & Tully, 2000; Barnett, Sienkiewicz, & Roberts, 1995). It is possible that exposure to negative or indifferent attitudes toward breastfeeding of other healthcare providers or hospital practices that can impede breastfeeding is a factor in the breastfeeding attitudes of nurses. If this is the case, it is possible that senior nursing students after completing their maternal child education course are best positioned to model supportive attitudes and promote breastfeeding continuation when they start practicing because nurses beginning their careers have not been exposed to negative breastfeeding attitudes. Determining the attitudes towards breastfeeding of junior nursing students before their maternal child health education and of senior nursing students after this education will provide information about whether the attitudes of nursing students change after having breastfeeding education. If senior nursing students attitudes towards breastfeeding are more positive after a maternal/child course that includes breastfeeding education they may be in a central position when they graduate to increase the number of mothers who breastfeed for the recommended length of time.

The benefits of breastfeeding for the infant include a decrease in the severity of diarrhea, respiratory infections, and ear infection among other infectious diseases. Longer durations of breastfeeding may provide a stronger protective effect against these infections. Breastfed infants also have an enhanced immune response that may continue after breastfeeding ends (Healthy People 2010). A longer duration of breastfeeding can also protect beyond infancy against obesity in childhood and adolescence (Sheilds, O’Callaghan, Williams, Najman, & Bor, 2006; Weyermann, Rothenbacher, & Brenner, 2006). Breastfeeding has also been associated with cognitive benefits (Angelsen, Vik,
Jacobsen, & Bakketeig, 2001; Evenhouse, & Reilly, 2005) and increasing the amount and duration of breastfeeding was shown to influence temperament and reduce behavioral problems in 4-5 year old children (Lui, Ma, MJ, 2006).

Breastfeeding has benefits not only for the infant but has been shown to improve maternal health, including a reduction in postpartum bleeding, earlier return to pre-pregnancy weight, reduced risk of premenopausal breast cancer, and reduced risk of osteoporosis, which continues long after the postpartum period (Healthy People 2010). Research also suggests that breastfeeding may have a protective role for breastfeeding mothers' in postpartum stress (Groer, Davis, & Hemphill, 2002).

As a response to the WHO/UNICEF and AAP’s recommendations the United States Department of Health and Human Services (USDHHS) Healthy People 2010 identified as important public health goals increasing the proportion of mothers’ who initiate breastfeeding to 75%, and those sustaining breastfeeding to six months and one year at 50% and 25% respectively. In an effort to advance these goals, a national breastfeeding policy established by US Surgeon General and known as the Blueprint for Action on Breastfeeding (USDHHS, 2000) was established in 2000 as an action plan for breastfeeding education, training, awareness, support and research. Included in this document under facilitation and support for breastfeeding is the recommendation that breastfeeding education be integrated into health profession schools.

Given this emphasis on breastfeeding promotion over the past 10-15 years the breastfeeding initiation rate in the United States has increased to a current rate of 70% from 64% in 1998. Yet a closer look at the statistics reveals that of the 70% who initiate breastfeeding only 59% were breastfeeding exclusively at seven days. In 1998 the
breastfeeding continuation rate at six months was only 29% and dropping further to 16% at one year. The current rates are 36% breastfeeding at six months with only 14% exclusively and 17% were breastfeeding at 12 months (CDC national immunization Survey, 2004). While the breastfeeding initiation rate has improved and the Healthy People 2010 goal of 75% looks attainable, the other goals of 50% breastfeeding at six months and 25% at one year do not and are far from the American Academy of Pediatricians recommendation of six months of exclusive breastfeeding with continued breastfeeding up to at least one year (AAP, 2005). A longer duration of breastfeeding can influence positively the health of infants even in industrialized countries (AAP, 1997) hence an emphasis on increasing the length of time a mother breastfeeds is essential. In order to continue to improve breastfeeding rates and duration, health care providers must support and encourage breastfeeding for mothers and their babies as recommended in the

HHS Blueprint for Action on Breastfeeding.

Nurses spend a considerable amount of time with new mothers when compared to other health care providers and are therefore in a pivotal position to promote a longer duration of breastfeeding. Research has supported the premise that a nurse’s attitude can influence the duration of breastfeeding (Pugh, Milligan, Frick, Spaz, & Bonner, 2002; Sikorski, Renfrew, Pindoria, & Wade, 2005; Taveras, Capra, & Braveman, 2003). With a caution that even having a neutral attitude toward breastfeeding can negatively influence breastfeeding rates at six weeks (DiGirolamo, Laurence, Grummer-Strawn, & Fein, 2003). Therefore a positive attitude toward breastfeeding in nurses working with breastfeeding mothers both in acute care hospitals and in the community is important in order to increase the number of women who continue breastfeeding.
Providing adequate breastfeeding support must be preceded by positive attitudes toward breastfeeding since attitudes can influence behavior (Ajzen & Fishbein, 1980). Part of a person’s intention to perform a behavior, such as offering breastfeeding support, is determined by his or her attitude toward the behavior hence a positive attitude toward breastfeeding is necessary for nurses to exhibit supportive behaviors that encourage the continuance of breastfeeding. Attitudes in turn are determined by one’s beliefs about a behavior and exposure to information will produce changes in one’s beliefs which are necessary in order to influence behavior (Ajzen & Fishbein, 1980). The effect of education on improving attitudes toward breastfeeding has been demonstrated in several studies (Downie, Juliff, & Rakic, 2001; Ekstrom, Widstrom, & Nissen, 2005; Martens, 2000) therefore senior nursing students who have received breastfeeding education would be expected to have a more positive attitude toward breastfeeding than junior nursing students who have not had this education.

The HHS Blueprint for Action on Breastfeeding recommends that breastfeeding instruction should be part of the education in health profession schools since providers of maternal and child health care have a unique role in the promotion of breastfeeding. As a result of this knowledge students may attain a positive attitude toward breastfeeding even if they began their schooling with a negative or neutral attitude toward breastfeeding. Since the HHS identifies lack of support from health care providers as a barrier to breastfeeding it is imperative that nursing students receive current evidence based child health and health promotion education and positive clinical experiences with breastfeeding mothers in order to provide support for breastfeeding mother’s. Graduate nurses are in a critical position to model supportive attitudes and promote breastfeeding.
in their day to day practice. For nurses who choose to work in practice areas other than Maternity units, their undergraduate education may be their only exposure to breastfeeding instruction and experience. These nurses may interface with breastfeeding mothers in other settings such as pediatrics, community health, and medical surgical areas.

**Statement of Problem and Purpose**

Despite increased awareness of the benefits of breastfeeding and the rising breastfeeding initiation rate, the number of mothers who continue breastfeeding for the period of time that would offer optimal health benefits has remained low. The problem of nurses' negative or indifferent attitudes toward breastfeeding may affect their ability to provide the support mothers need in order to be successful in continued long term breastfeeding. Discontinuing breastfeeding early can compromise the health of infants and mothers. Several variables may predict the nurses' negative or indifferent attitude. The hospital unit environment may influence nursing practice, as does the length of time a nurse experiences negative attitudes toward breastfeeding from other nurses (Siddell, Marinelli, Froman, & Burke, 2003). Consequently it is imperative that if nurses are to continue to promote breastfeeding that graduating nursing students have a positive attitude toward breastfeeding as they begin their careers and that they continue to actively promote the continuation of breastfeeding in their practice.

While some research has assessed practicing nurses' attitudes toward breastfeeding, there is little in the literature about nursing students' attitudes toward breastfeeding either before or after their maternal child health curriculum. Establishing whether nursing students have generally positive, neutral or negative attitudes toward
breastfeeding and whether these attitudes are more positive after their maternal/child
health education will provide information on whether the current breastfeeding education
in schools of nursing is sufficient to improve the attitudes of students toward
breastfeeding. The purpose of this study is to identify whether the attitudes toward
breastfeeding of senior nursing students in a baccalaureate program who have completed
their maternal/child class and clinical are more positive than the junior nursing students
before this education and experience.
CHAPTER II

LITERATURE REVIEW

Introduction

A review of the literature from 1998-2006 was conducted utilizing the Cumulative Index to Nursing and Allied Health Literature (CINAHL); Educational Resource Information Center (ERIC); and Medline and PubMed electronic databases. The literature review was organized into the following categories based on variables that have heretofore been considered as influencing breastfeeding including: the influence health care providers can have on breastfeeding duration; studies of nurses and nursing students’ attitudes toward breastfeeding; new graduate nurses; the effect of education on breastfeeding attitudes; and breastfeeding education in nursing schools.

Nurses Influence

Several researchers have studied the influence health care professionals may have on maternal decisions regarding breastfeeding. In 2001 Lu, Lange, Slusser, Hamilton, & Halfon surveyed 1229 mothers on whether they felt that their health care provider encouraged breastfeeding. The results showed that provider encouragement significantly increased breastfeeding among mothers with varied social and economic backgrounds. Although a large sample size, this study does not address nurses alone but aggregates doctors and nurses. It was also not specified in this study whether or not nurses were conducting the classes. Nurses were found to influence the length of breastfeeding as
Pugh et al (2002) found in a study of 41 low-income women that those who received visits from community health nurses breastfed significantly longer than women who did not receive these visits. Zimmerman (1999) found similar results in an inner-city clinic where the duration of breastfeeding was greater for women who received breastfeeding education from their health care provider than those who did not receive the education.

Several other studies have documented the influence health care providers can have on the duration of breastfeeding. In 2005 Cochrane Review there was clear evidence of the effectiveness of professional support in prolonging any breastfeeding (Sikorski et al, 2005). Similar results were found in a randomized control trial supported by the Agency for Healthcare Research and Quality (AHRQ). A study of 1,163 mother-newborn pairs that looked at factors influencing continuation of breastfeeding showed that mothers were 40% less likely to discontinue breastfeeding at 12 weeks postpartum if they were encouraged by their clinician (either doctor, nurse or breastfeeding consultant, not specified) to breastfeed. One weakness of the study was that the mothers were not asked when the encouragement was received (Taveras et al 2003). Similarly, a 2004 prospective cohort study of 288 breastfeeding mothers found that mothers who were breastfeeding at 4 weeks but had discontinued by 12 weeks were more likely to report that their health care provider recommended formula supplementation (Tavares, Ruowei, Grummer-Strawn, Richardson, Marshall, Rego, Miroshnik, and Lieu, 2004). In this same study, providers were surveyed and those who considered their advice to mothers on the duration of breastfeeding as not very important were more likely to have mother-infant pairs who were not to be exclusively breastfed at 12 weeks (Tavares et al, 2004). In another Canadian study that investigated individualized support from a practicing
midwife both in the hospital and in the community it was found that this support increased breastfeeding duration (Porteous, Kaufman, & Rush, 2000). In this study of 52 breastfeeding mothers half were given increased access to breastfeeding support and half received the usual postpartum care. At four weeks, 100% of the intervention group was still breastfeeding while only 68% of the control group was. This study utilized a small sample size and does not address whether the intervention would have had an effect on longer breastfeeding durations at six or twelve months.

In contrast, Earle (2002) found in a qualitative study of 19 first time mothers that infant feeding decisions were made prior to or irrespective of, contact with healthcare professionals. These findings were from a small sample, and suggest that breastfeeding promotion should begin earlier in pregnancy or prior to conception. Similarly, Humenick, Hill, & Spiegelberg (1998) surveyed 341 women regarding their contacts with healthcare professionals. The results of this study found that first time mothers’ duration of breastfeeding was influenced by contact and encouragement by healthcare providers but that multiparous women experienced at breastfeeding acted independently of provider advice.

The results of these studies indicate that while the majority of the research points to increased support as important for the continuation of breastfeeding there is some evidence to the contrary. This suggests that more work in this area needs to be done.

**Nurses Attitude**

A neutral attitude of nurses towards breastfeeding can impact breastfeeding decisions as DiGirolamo et al (2003) found in a longitudinal survey of 1620 postpartum women that mothers who perceived nurses having a neutral or negative attitude towards...
breastfeeding were at significant risk for not breastfeeding at 6 weeks. This was true even when mother’s prenatal breastfeeding intentions, father’s feeding preference, and demographic and psychosocial variables were controlled for. Interestingly, a perceived neutral attitude towards breastfeeding by physicians did not significantly influence breastfeeding duration in this study, underlining the impact nurses attitudes can have on breastfeeding outcomes.

Twenty-four hour rooming-in for new mothers is an important step in the 10 Steps to Successful Breastfeeding created by the World Health Organization (WHO) and the United Nations Children’s Emergency Fund (UNICEF) in an effort to increase breastfeeding rates worldwide (WHO/UNICEF, 1998). Svensson, Matthiesen, & Widstrom (2005) conducted a study of 132 postpartum mothers to investigate whether mothers roomed-in with their babies at night and the influence staffs attitudes had toward this practice. The study found that 73% of the mothers who did not room-in with their infants were influenced by negative staff attitudes towards rooming-in (Svensson et al, 2005). Unfortunately in this study it was not specified whether staff was operationalized as nurses or other healthcare professionals.

As these studies suggest, health care providers can influence and support the continuation of breastfeeding in new mothers. As supportive behavior towards breastfeeding can be predicted by a nurse’s attitude towards breastfeeding (Bernaix, 2000) and public attitudes toward breastfeeding have not improved from 1999 (Li, Rock, Grummer-Strawn, 2007) it is essential that nurses have a positive attitude towards breastfeeding in order to provide supportive counseling and practices.
A major barrier to breastfeeding can be the non-supportive attitudes and behaviors of maternity nurses (Patton, Beaman, Csar, & Lewinski, 1996). There have been a limited number of studies that have evaluated breastfeeding attitudes in nurses or nursing students. In one qualitative study of student nurses' attitudes and beliefs about breastfeeding Cricco-Lizza (2006) interviewed twelve nursing students prior to their maternal child nursing course. Most of the students were ambivalent about whether nurses promoting breastfeeding would be forcing their own views on mothers. The interviews also revealed that the students' personal experiences with breastfeeding influenced their breastfeeding attitudes and beliefs (Cricco-Lizza, 2006).

In 1995 Barnett et al surveyed 2,209 health professionals about breastfeeding attitudes. The authors found that hospital nurses were most likely to have negative beliefs about breastfeeding. Although this study was conducted over ten years ago, it has a large sample size and one of only two that assessed the attitudes toward breastfeeding of hospital nurses in the United States. It is possible however that with the current practice changes in the past 10 years that these negative beliefs have improved.

A negative attitude toward breastfeeding was described in a study of 134 pediatric office nurses. (Register et al, 2000). The study states that many of the nurses had negative attitudes toward breastfeeding with attitude scores ranging from 10-30 with 30 being the most positive. The study participants were nurses from a variety of educational backgrounds including masters, bachelor, associate, and diploma prepared nurses yet attitudes and education level was not correlated. This study also reports that office nurses give the majority of breastfeeding advice to breastfeeding mothers looking for support which underlies the importance of positive attitudes for nurses in all settings. Although
this study did not address hospital nurses specifically it is important that nurses in the community also have positive attitudes toward breastfeeding in mothers receive support and encouragement to continue breastfeeding after they leave the hospital.

The relationship between attitude and other variables such as knowledge and experience with breastfeeding has also been studied. Bernaix (2000) surveyed fifty maternal/newborn nurses and 136 breastfeeding mothers to identify factors influencing nurses' ability to provide effective support to breastfeeding mothers. Nurses' breastfeeding attitudes, subjective norms (social pressures), and intentions to provide breastfeeding support were compared with the actual support provided. Attitudes of the nurses toward breastfeeding were not measured specifically but results showed a moderately positive attitude towards providing breastfeeding support. Significant predictors of a nurse's supportive behavior were breastfeeding knowledge and attitude. (Bernaix, 2000). This study supports the premise that improving attitudes towards breastfeeding in nurses will increase supportive behavior and therefore duration of breastfeeding.

Attitudes toward breastfeeding of nursing students along with physicians, nurses, and medical students in Taiwan were compared in a study by Chen, Shu, & Chi (2001). The results showed that nurses had a more positive attitude than both physicians and student nurses. Attitude scores for physicians were higher that those of the student nurses and the scores of the medical and nursing students were the same. In-service education improved the knowledge scores, but not the attitude in this study.

Most of the research related to nurses' attitudes toward breastfeeding supports the premise that nurses' attitudes influence the support given and breastfeeding duration. Past
studies indicate that nurses’ attitudes toward breastfeeding can be negative yet there is a
dearth of recent data regarding this subject suggesting more research is needed in this
area.

**Hospital Practices**

Hospital practices have also been shown to affect the initiation of breastfeeding in
the hospital setting (Philipp, Malone, Cimo, & Merewood, 2001) and the overall duration
of breastfeeding (Merten, Dratva, & Ackermann-Liebrich, 2005; DiGirolamo, Grummer-
Strawn, & Fein, 2001). The Baby Friendly Hospital Initiative (BFHI) created by the
WHO and UNICEF is based on the 10 steps to successful breastfeeding which
summarizes the practices hospitals need to adopt to support breastfeeding
(WHO/UNICEF, 1998). Although the BFHI was created in 1991 the first hospital to be
designated Baby Friendly (BF) in the United States was not until 1996 (Merewood &
Philipp, 2001) and currently there are only 55 BF designated hospitals in the US (Baby
Friendlyusa.org/eng/03.html, 2006).

**New Graduates**

The fact that there are still comparatively few hospitals in the US that are
designated as complying with all of the recognized practices that can affect breastfeeding
initiation and duration is concerning given that new graduate nurses may be influenced
by organizational practices as well as the practices of more experienced staff (Ellerton
& Gregor, 2003; Maben, Latter, & Macleod, 2006). Researchers Ellerton & Gregor,
(2003) interviewed 11 new graduates in a longitudinal study after three months practicing
in an acute care setting, and again at six months and one year. At three months after
graduation this study found that the institution had more impact on the new nurses than
did their academic preparation. In addition, these new graduates tended to adopt the routines and practices of the unit without question and relied on more experienced nurses as resource guides (Ellerton & Gregor, 2003). Five new graduate nurses in another related study who were asked to reflect on their first six months of professional practice revealed similar themes. The new graduates all shared feeling caught between the ideals they had been taught in school and the need to adapt to the institutionally modified practice standards of the real world (Duchscher, 2001). Although both of these studies offered small sample sizes they reflect the pressure new graduates may feel to adapt to the norms and practices of the unit.

Maben et al (2006) conducted another related study in which a total of 26 final year nursing students filled out questionnaires on their views and ideals for practice. The subjects were then interviewed at 4-6 and 11-15 months after graduation to elicit the extent to which the ideals and values were implemented in practice. Findings from the interviews indicated that organizational and structural constraints as well as professional forces which included obeying covert rules and poor nursing role models sabotaged the implementation of the nursing values held by the new graduates (Maben et al, 2006).

Though these studies did not evaluate attitudes in the new graduates or nurses specifically they reflect socialization into the professional nursing role that may not reflect the best practice standards but rather the norms of the organization and nursing staff. New graduate nurses may have more difficulty resisting these discouraging influences in terms of breastfeeding promotion if they begin their practice with neutral or negative attitudes toward breastfeeding.
Education and Attitudes

There have been mixed findings on whether breastfeeding education affects breastfeeding attitude in nurses. In a study of 298 nurses who worked in maternal and child health care units were interviewed after 37% attended a program to equip the nurses with the knowledge and skills to promote and support breastfeeding mothers. More positive and supportive attitudes toward breastfeeding and improved knowledge were found in the nurses who had participated in a Baby Friendly Hospital Initiative (BFHI) training than those nurses who did not (Owoaje, Oyemade, & Kolude, 2002). The intervention sample in this study was significantly less than the control group however. In another study on the effect of breastfeeding education on nurses knowledge and attitude toward breastfeeding Siddell et al. (2003) surveyed 30 neonatal intensive care unit (NICU) nurses both before and after a breastfeeding education session. The findings of this study suggest that attitudes and knowledge toward breastfeeding were also improved after the educational intervention. This study evaluated NICU nurses only not other maternal child health nurses and had a small sample size after attrition which may limit the reliability of the results. An increase in positive and supportive breastfeeding attitudes were also found in the 80 nurses and midwives after they participated in a Lactation Advisor Programme (LAP) Participants in this study also exhibited an increase in knowledge and confidence in breastfeeding management (Downie et al. 2001). This study
Although several studies found education to affect both the knowledge and attitudes toward breastfeeding in nurses, Martens (2000) did not. This researcher evaluated the effectiveness of breastfeeding education intervention on nursing staff beliefs and baby friendly hospital initiative compliance. Martens found that while education increased breastfeeding rates and BFHI compliance, it did not change breastfeeding beliefs, indicating that some change can be made at a hospital without necessarily changing deeply entrenched staff attitudes (Martens, 2000). This study also consisted of a sample of only 18 nurses but does have similar findings to the study by Chen, Shu, & Chi (2000) who found that education improved knowledge but not the attitudes toward breastfeeding.

Ekstrom et al (2005) studied whether process-oriented breastfeeding training altered attitudes to breastfeeding in midwives and nurses. Process-oriented breastfeeding training includes not only education but reflection on personal breastfeeding experiences which the researchers felt would give the nurses insight into negative, compromising memories of breastfeeding and therefore not transfer such experiences to the breastfeeding mother (Ekstrom et al, 2005). The results of this study showed that while attitudes toward breastfeeding tend to be stable over time, attitudes toward breastfeeding improved in nurses who experienced process-oriented training. Process-oriented training includes reflections on personal breastfeeding experience as well as traditional breastfeeding training. These changes in attitudes could be related to the nature of the training as “It has been suggested that the nurse or midwife who introduces the breastfeeding mother to the art of breastfeeding brings her own feeding history into the situation” (Ekstrom et al, 2005 p. 429).
Given that positive attitudes toward breastfeeding are important in providing breastfeeding support to mothers, breastfeeding curriculum in schools of nursing must include nursing students examining their own attitudes toward breastfeeding and identifying personal biases that could directly or indirectly be communicated to the breastfeeding mother.

Undergraduate Breastfeeding Education

Nurses play an important role in the promotion of breastfeeding and the attainment of Healthy people 2010 goals. The U.S. Department of Health and Human Services (USDHHS) Blueprint for Action on Breastfeeding, a framework for increasing breastfeeding rates and promoting effective breastfeeding practices includes the recommendation that breastfeeding education be part of the curricula for health profession schools (USDHHS, 2000). Some studies have shown that nurses do not receive the majority of their breastfeeding information from their undergraduate education. In Register et al’s 2000 study of knowledge and attitudes in pediatric office staff, only 46% of respondents reported having received breastfeeding education in their school of nursing (Register et al, 2000). In Chen’s 2001 study of breastfeeding attitudes and knowledge of health professionals and students 68.6% of the 126 student nurses in Taiwan reported they had received breastfeeding education in school. Yet attitudes toward breastfeeding of the student nurses were less positive than the attitudes for nurses and physicians suggesting that the education received may contribute to more positive attitudes.

There are few studies that address breastfeeding education in nursing programs in general or specifically baccalaureate nursing programs. Freed, Clark, Harris, &
Lowdermilk (1996) surveyed 272 nursing students enrolled in either Bachelor of Science in Nursing (BSN) or Associate degree (AD) programs about the type, amount, and mode of breastfeeding instruction in their program. 70 percent of the students surveyed had completed their maternity rotation while 30 percent had not started their maternity rotation at the time of the survey. Results showed that only one fourth of students who had completed their maternity class received breastfeeding information during clinical activities. In addition, only 25 percent had received any experience related to breastfeeding during clinical. Interestingly, having completed their maternity rotation did not improve students’ knowledge of breastfeeding or accuracy of clinical advice. In terms of the differences between the AD and BSN programs, AD students were more likely to have observed a mother breastfeeding or counseling a mother about feeding choices or lactation problems. The BSN students were more likely to agree that exclusive breastfeeding is the most beneficial form of infant nutrition and to agree that their nursing program adequately prepared them to support breastfeeding mothers (Freed et al, 1996). Although this is an older study, it is included in this review as there are a small number of studies of breastfeeding instruction and nursing students' knowledge of breastfeeding.

A more recent study of baccalaureate nursing students' breastfeeding knowledge describes 80 junior and senior nursing students who have completed their obstetrics course which is described as similar to a maternal/child health course (Spear, 2006). The results showed scores ranged from 35-85 out of 100 with a mean of 60. Most did not know some basic breastfeeding recommendations and 41% opposed breastfeeding in public which draws question to the students’ attitude toward breastfeeding. These findings compare with a study by Chiu, Gau, Kuo, & Chung in 2003 which investigated
clinical performance examination in breastfeeding instruction for nursing baccalaureate students. Results of this study reveal that only 26.67% of the 60 students passed the clinical examination in breastfeeding (Chiu et al, 2003). These studies indicate that breastfeeding education in nursing schools is not always adequate or effective.

The effect of a breastfeeding educational intervention for baccalaureate nursing students was analyzed in a recent study not yet published (abstract only available). Dodgeson & Tarrant (2007) compared breastfeeding knowledge, attitudes and intention to perform breastfeeding promotion behaviors in students who received 10 hours of didactic instruction and an 8-week clinical with a control group who did not. Attitudes toward breastfeeding and formula feeding were not significantly affected by the intervention, yet the knowledge scores were significantly lower in the group that did not receive the education (Dodgeson & Tarrant, 2007). The control group in this study was not equivalent which may have affected the results yet corroborates with the findings by Chen et al (2000) and Martens (2000) that education does not always change attitudes.

The character of the education provided may affect whether attitudes improve along with increased knowledge as breastfeeding training that includes reflection on both personal and professional experience with breastfeeding has resulted in more positive attitudes toward breastfeeding (Ekstrom et al, 2005). In addition, nursing students may require help identifying their attitudes towards breastfeeding by reflecting on how their own experiences with breastfeeding affect their ability to promote breastfeeding (Cricco_Lizza, 2006).

Breastfeeding education should be incorporated into the curricula of baccalaureate
schools of nursing (Chen et al, 2001; Patton et al, 1996) yet some nurses have reported that their major source of breastfeeding information is not from their general nursing education and the education received is not always effective. If an undergraduate breastfeeding education curriculum does not address students’ attitudes, it may not be effective in promoting supportive breastfeeding practices.

Spatz (2005) describes a case study model for breastfeeding education for undergraduate nursing students. The course is one of several case study courses that students can choose from. Although very intensive with classroom and clinical experiences, the author describes the method but does not study knowledge or attitudes towards breastfeeding before or after the course. Students rated the overall quality of this course from 3.3 to 4.0 on a scale with 4 equaling the highest possible quality. Even more positively, some graduates have kept in contact with the instructor and related how they have made changes in practice (Spatz, 2006) which suggests that the nature of the instruction provided may inspire new nursing graduates to influence their practice settings.

Disparity between the current goals for and actual breastfeeding rates in the U.S. supports the need to assess breastfeeding education outcomes in university nursing programs. Exploring the attitudes of students toward breastfeeding will help prevent student nurses past experiences from negatively influence their ability to promote breastfeeding continuation (Cricco-Lizza, 2006).

Studies have shown that nurses need a positive attitude as well as accurate knowledge to effectively support breastfeeding (Bernaix, 2000; Chen et al, 2001; Ekstrom et al, 2005; Patton et al, 1996). Against the backdrop of this knowledge, it is crucial that
nursing students completing their baccalaureate education have a positive and supportive attitude towards breastfeeding in order to provide accurate, non biased support for all breastfeeding mothers.

**Research Questions**

The research reviewed to date describes that nurses’ attitudes toward breastfeeding are not always positive yet positive attitudes are necessary in order to demonstrate behaviors that support and promote breastfeeding. Studies that examined whether education changes the attitudes toward breastfeeding of practicing nurses have revealed varied results with several showing a change in attitude and others only increased knowledge without an attitudinal change. The limited research on nursing students’ attitudes toward breastfeeding suggests that nursing students may not have positive attitudes toward breastfeeding. In addition, studies that have evaluated the breastfeeding education in schools of nursing have revealed mixed results in terms of students’ knowledge and attitudes. There is a deficiency in the published research that identifies whether nursing students attitudes toward breastfeeding change after their maternal/child health theory and clinical course. Based on this premise, the aims of this study are to answer the following research questions:

1) Do junior and senior baccalaureate nursing students have a generally positive, negative, or neutral attitude toward breastfeeding as measured by the Iowa Infant Feeding Attitude Scale?

2) Is there a significant difference between the attitudes of junior nursing students who have not started their maternal/child health nursing course as compared to senior nursing students who have completed this course?
CHAPTER III

METHODS

Conceptual Framework

Based upon the research questions above the conceptual framework chosen for this study is Ajzen and Fishbein’s Theory of Reasoned Action (TRA) (Ajzen and Fishbein, 1980) which explains the relationship between attitude toward a behavior or concept and intention to perform that behavior. The goal of this theory is to understand and predict an individual’s behavior and how a person’s belief influences their attitudes and intentions which in turn predict behavior (Ajzen & Fishbein, 1980). Although the TRA includes subjective norms or social pressures in addition to attitudes as a function of intention, this study will only measure attitudes as one determinant of intention. To utilize the TRA in this study, attitudes toward breastfeeding are measured to determine the likelihood that supportive behaviors that promote breastfeeding will be performed. In addition, determining whether there is a difference in attitude toward breastfeeding between junior and senior nursing students will establish whether the maternal child health education received affects the students beliefs which determine attitude (Ajzen & Fishbein, 1980).

The TRA was developed by Izek Ajzen and Martin Fishbein as a model to predict and understand human behavior. “The theory is based on the assumption that human beings are usually quite rational and make systematic use of the information available to them” (Ajzen & Fishbein, 1980, p.5).
Fishbein's and Ajzen's (1975) model assumes that a casual chain exists that links beliefs that have been formed from information that is available to the individual’s attitudes, and attitudes to intentions, and intentions to their behavior. An attitude is viewed as a learned attribute that guides or influences behavior. Beliefs ultimately determine an individual’s behavior and can be formed from prior personal experience or from information from an outside source (Fishbein & Ajzen, 1975).

One assumption of the TRA is that a person's intention to perform a behavior is a predictor of whether the person will actually perform the behavior. If there is an opportunity to act, then intention will result in behavior (Ajzen & Fishbein, 1980). Intention is a function of two factors: (1) the person’s attitude toward performing the behavior and (2) a general subjective norm concerning the performance of the behavior. Attitude and subjective norm are both a function of beliefs. Subjective norms are based on beliefs that others think a person should or should not perform a certain behavior. The subjective norm is the person’s perception of the pressure that society places on him/her to perform or not to perform a certain behavior. An individual will be more willing to perform a certain behavior if he or she thinks important others think he or she should perform it (Ajzen & Fishbein, 1980). Although this study does not evaluate subjective norms, they could become part of the nursing culture where the new graduate eventually works, as he or she assimilates into the culture of the workplace.

According to the TRA attitude toward a concept or behavior is a person’s general feeling of favorableness or unfavorableness toward a concept or behavior. Attitude is based on the assumption that behavioral beliefs form a person’s attitude toward a behavior and that if someone believes that performing a certain behavior will result in a
positive outcome they will have a more positive attitude about that behavior. Ajzen & Fishbein (1980) suggest measuring attitude using standard scaling methods such as a Likert scale where respondents score approximately 20 items on a five point scale from strongly agree to strongly disagree Ajzen & Fishbein, 1980). The instrument utilized in this study is a Likert scale developed to measure breastfeeding attitudes.

A person’s attitude toward a behavior is determined by his or her beliefs about that behavior. Beliefs about a concept or behavior in turn may be formed by life experiences from direct observation, information from outside sources, or self-generated through inference (Ajzen & Fishbein, 1980). Salient beliefs are the beliefs that a person holds toward a behavior or concept at any given time. A person can attend to no more than five to nine salient beliefs at a time and these are the beliefs that determine attitude. Consequently, in order to influence intention and therefore behavior, it is necessary to change a person’s salient beliefs (Ajzen & Fishbein, 1980).

The TRA explains that the exposure to new information can result in a change in beliefs (Ajzen & Fishbein, 1980) therefore information that not supporting breastfeeding will lead to negative consequences or that supporting breastfeeding will lead to positive consequences may lead to a more positive attitude toward breastfeeding. In this study, the new information would be the education and experience from the maternal/child health class and related clinical experiences.

On the other hand The TRA explains that sometimes information can be given that does not change salient beliefs (Ajzen & Fishbein, 1980), this may be why some studies have shown an increase in knowledge of breastfeeding after education without a corresponding change in attitude (Chen et al, 2000; Dodgeson & Tarrant, 2007; Martens,
Nursing students who have not received any maternal child health education may have positive, negative or neutral attitudes toward breastfeeding. In order to change a sufficient number of salient beliefs there is a need to first elicit from a person what those salient beliefs are (Ajzen & Fishbein, 1980) and then provide evidenced based information to challenge those beliefs. This may be why process oriented breastfeeding has been more successful in changing attitudes toward breastfeeding because nurses have a chance to verbalize their own experiences with breastfeeding (Ekstrom, 2005) that lead to the formation of beliefs (Ajzen & Fishbein, 1980).

The TRA has been found to be useful in predicting breastfeeding behavior and utilized in several studies on breastfeeding knowledge and attitude (Bernaix, 2000; Kang, Song, & Im, 2005). Utilizing this theory, since there is a relationship between attitudes and behavior, a person must have positive attitudes toward breastfeeding in order perform the behaviors that provide adequate breastfeeding support and encouragement. If students have negative or neutral attitudes toward breastfeeding, education must be provided that not only improves knowledge but attitudes as well since a change in behavior cannot be expected without a change in attitude (Ajzen & Fishbein, 1980). Positive attitudes toward breastfeeding can be fostered by providing effective education and positive clinical experiences with breastfeeding mothers to undergraduate nursing students.

**Definition of Terms**

Breastfeeding- The act of providing milk to an infant at the mother’s breast (Tabers, 1997)
Junior Nursing Students- Persons enrolled in the second half of their junior year in a baccalaureate nursing program before any classroom or clinical experiences in maternal child health nursing.

Senior Nursing Students- Persons enrolled in the final semester of a baccalaureate nursing program after having both classroom and clinical experiences in maternal child health nursing.

Attitude- “an individual’s positive or negative evaluation of a concept, object or behavior” (Ajzen and Fishbein, 1980).

Attitude toward breastfeeding- The expressed positive, negative, or neutral opinion toward breastfeeding as measured by the *Iowa Infant Feeding Attitude Scale*.

Maternal-Child Health Course- Course titled “care for the childbearing-rearing family” at the university the nursing students attend that includes a theoretical component in the classroom as well as clinical experiences in the care of families throughout pregnancy, birth and child rearing.

### Data Collection

**Design**

This survey study used a questionnaire to obtain information about junior and senior nursing students’ attitudes toward breastfeeding. A convenience sample of all junior and senior baccalaureate nursing students at the beginning of a semester was utilized for the study. The junior nursing students had not started their maternal/child health course yet and the senior students had all completed the maternal/child health course. In their maternal/child health class the students receive approximately 22 hours of didactic general maternity content. Focused study on breastfeeding takes place during
clinical and students spend about 90 hours providing direct patient care. The instructor ratio is 1:8 and students are socialized about breastfeeding by the clinical instructor, staff, and the lactation specialist at the hospital.

The questionnaire had not been used on nursing students before hence a pilot study was conducted of 15 senior baccalaureate nursing students in a different university to test for reliability of the instrument with nursing students.

Setting

Junior and senior baccalaureate nursing students were surveyed over two consecutive days on the campus of a public university in the northeast United States. The junior nursing students were attending the first class of the semester of a didactic component of either a community health, psychiatric, or maternity course. The students in the maternity course had not had any lecture or clinical at the time the questionnaire was completed. The senior nursing students were all in one clinical decision making class at the time the questionnaires were distributed.

Procedures

Approval to conduct the study was received through the university’s internal review board prior to data collection. A total of seventy juniors and seventy-five seniors were available to fill out the questionnaire with an expected response rate of about 50%.

Students were given an explanation of the study, a guarantee that responses would be anonymous, that participation was voluntary and that it would not affect their grade in the class. All students were then asked either at the beginning of or during a nursing class to participate in the study. Consent of the participants was indicated by completion of the questionnaire. The questionnaires were collected by the researcher as soon as the students
finished the questionnaires for the junior nursing students. The senior nursing students were asked to put the completed questionnaires in a pile to be collected at the end of class by the instructor for the class and were mailed to the researcher. Questionnaires that were not complete or that had more than one response given were excluded.

Instrument

The instrument utilized for this study was the Iowa Infant Feeding Attitude Scale (IIFAS) which has been used to measure breastfeeding attitudes of mothers and fathers. The IIAFS was chosen for this study as it has been evaluated and shown to be reliable in determining attitudes toward breastfeeding. This study measured students’ attitudes and the scales that are geared toward health professionals were not relevant for students who were not practicing nurses yet. The scale was also chosen because it is parsimonious with only 17 questions and can be completed in a short amount of time maximizing the number of subjects willing to participate.

The IIFAS is a 17 item questionnaire that consists of attitude questions (see appendix) that participants respond to on a 5 point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with 3 being neutral. Items are worded so that approximately half of the questions are reversed coded (i.e. 1=5, 2=4, 4=2, and 5=1). The items that are reverse coded are worded so that they are favorable to formula-feeding while the remaining items favor breastfeeding. A total attitude score is then computed by adding up the responses to the individual statements and can range from 17, reflecting positive bottle-feeding attitudes and a more negative attitude toward breastfeeding to a high of 85, reflecting a very positive breastfeeding attitude.
The IIFAS has been tested for reliability and validity in two studies by the developers (De la Mora, Russell, Dungy, Losch, & Dusdieker, 1999). The IIFAS was found in these studies to be highly reliable with a Cronbach's alpha of 0.86 and 0.85 in two separate studies. Validity for the instrument was indicated through the scores on the IIFAS to predict the choice of feeding method. Women who intended to breastfeed their infants had more positive attitudes toward breastfeeding with mean scores of 64.84 and 65.61 for the two studies than for women who intended to bottle-feed with mean scores of 48.61 and 50.02. Ability of the scores on the IIFAS to predict duration of breastfeeding has also been analyzed and mothers with more positive attitudes toward breastfeeding were found to breastfeed for longer durations even after removing the influence of demographic characteristics of the women. These findings demonstrate that the scores on the IIFAS are related to actual breast-feeding behavior, and not simply to behavioral intentions (De la Mora et al, 1999).

**Pilot study**

While the IIFAS has not been used to measure the attitudes toward breastfeeding of nurses or nursing students the developers of the scale believe that the IIFAS is useable with a wide variety of populations and encourage its use for this purpose (De la Mora et al, 1999). A pilot study was conducted to determine the reliability of the instrument to determine breastfeeding attitudes in undergraduate nursing students. The IIIFS was given to 17 senior baccalaureate nursing students at a public university in a different state. The questionnaire was given to the students by a colleague of the researcher after an explanation of the study; clarifying that participation was voluntary and would not affect their grade for the class. Approval for the study was obtained through the
university's internal review board prior to data collection and completion of the questionnaire by the student indicated consent. Fifteen out of the seventeen questionnaires received were included in the pilot study. Two were not included for incomplete answers. Chronbach's coefficient alpha was calculated to determine the internal consistency with which the items within the scale measure the same concept by simultaneously comparing each item in the scale with the others (LoBiondo-Wood, Haber, 2006) for the IIAFS. An alpha of .83 was obtained indicating the scale is highly reliable.
CHAPTER IV

RESULTS

Seventy-one (n= 73) questionnaires were distributed to the junior nursing students and a total of seventy-one were returned for a response rate of 97%. Two of the questionnaires were not included for incomplete answers for a total of 69 junior respondents. Seventy-five (n=73) questionnaires were distributed to the senior class and twenty-five were returned for a response rate of 34%. Again, two were not included for incomplete answers for a total of 23 senior respondents.

The scores for the junior nursing class ranged from a low of 41 to a high of 78 with a median of 55. The scores for the senior class ranged from a low of 50 to a high of 80 with a median of 62. The highest possible score was an 80 which indicates a very positive breastfeeding attitude and the lowest score possible was a 17 which indicates a very negative breastfeeding score. A score of 51 indicates a neutral attitude toward breastfeeding. A paired Ttest was calculated using a sample of juniors to create equal groups. The mean for the juniors was 57.7 and for the seniors 63.22 with a difference of 5.52 which was significant at (p< .012).

Between group differences for each of the items on the scale (opinions to statements on the IIAFS) was explored to identify which statements had greater differences between the junior and senior responses. The greater the difference between the score on each item indicates that the attitude toward breastfeeding in relation to the
statement was either more positive or more negative. A response that scored a four or a five indicates a positive breastfeeding attitude and therefore these scores were selected to identify positive changes in breastfeeding attitudes when analyzing the data. The statement with the largest increase in percentage (26 points) of respondents scoring a 4 or a 5, which is indicative of a positive breastfeeding attitude, was #2 “Formula-feeding is more convenient than breastfeeding”. This question is reverse coded so that students who selected strongly disagree with the statement would receive 5 points and students who chose disagree would receive 4 points. There were four statements where the percentage of respondents who scored a 4 or a 5 increased 22 points. These included; #5 “Formula-fed babies are more likely to be overfed than are breastfed babies”; #15 “Breastfeeding is more convenient than formula feeding” and two reverse coded statements: #4 “Breast milk is lacking in iron”; and #14 “Formula is as healthy for an infant as breast milk”. The reverse coded statements are worded so that a participant who strongly agreed with the statement would receive 5 points and those who agreed with the statement would receive 4 points.

There were several statements where the percentage of respondents scoring a four or a five was essentially unchanged from the junior students to the senior students. Statement #3 “Breastfeeding increases mother-infant bonding” was answered positively by most of the respondents (95% of juniors and 91% of seniors scored a 4 or 5). Statement #16 “Breast milk is less expensive than formula” where again most of the respondents answered positively (87% of juniors and seniors scored a 4 or 5). There was also no change between the junior and senior responses in the reverse coded statement #6 “Formula-feeding is the better choice if a mother plans to work outside the home”
where 65% of both juniors and seniors disagreed or strongly disagreed with this statement. Similarly, in response to the reverse coded statement # 8 “Women should not breastfeed in public places such as restaurants” 60% of both juniors and seniors disagreed or strongly disagreed.” Only 30% of both juniors and seniors disagreed or strongly disagreed with statement #17 “A mother who occasionally drinks alcohol should not breastfeed” demonstrating that this statement had the lowest breastfeeding attitude score for both the juniors and the seniors.

The statement with the smallest increase in positive breastfeeding attitude scores was “Babies fed breast milk are healthier than babies who are fed formula” where 52% of the junior class and 60% of the senior class agreed or strongly agreed.

When comparing the junior and senior responses, in two of the statements the percentage of seniors who scored a 4 or a 5, indicating a more positive breastfeeding attitude was lower than that of the junior respondents. In responding to the statement “Mothers who formula-feed miss one of the greatest joys of motherhood” 47% of the juniors agreed or strongly agreed while only 30% of the seniors did. Correspondingly, the reverse coded statement “Fathers feel left out if a mother breastfeeds” 69% of the juniors disagreed or strongly disagreed with this while only 39% of the senior respondents did.

Discussion

The findings in this study demonstrate a significant increase in the mean scores on the IIAFS (p>.012) from the junior nursing students to the senior nursing students. This supports the premise that knowledge from participating in the maternal/child health course positively changed the attitudes of the nursing students toward breastfeeding.
While this study did not measure knowledge along with attitudes, the results of this study support previous research demonstrating that education may improve breastfeeding attitudes (Downie et al, 2001; Owoaje et al, 2002; Siddell, 2003). While the students had generally positive attitudes toward breastfeeding, the junior scores imply a more neutral attitude as compared to the senior students.

The improved attitudes toward breastfeeding in this study were in contrast to some studies that have shown an increase in knowledge about breastfeeding without a corresponding improvement in attitude (Chen et al, 2000; Martens, 2000). This discrepancy may be related to the type of education and information provided as a further examination of the differences in the responses between the junior and senior nursing students demonstrates.

**Individual Statements**

The evidence from this study suggests that increased knowledge through education may improve attitudes toward breastfeeding. Examining the statements in the questionnaire and the differences between the juniors and the seniors may provide evidence that relates to specific content or clinical experiences received in the maternal/child health course. This examination of the statements revealed an improved attitude toward breastfeeding in the seniors for several statements, yet five were unchanged and two even changed toward a more negative breastfeeding attitude in the seniors.

The statement that formula-feeding is more convenient than breastfeeding had the largest positive attitude change from the juniors at 26% disagreeing or strongly disagreeing with this statement to the seniors at 52% disagreeing or strongly disagreeing.
This may have occurred through lecture and/or positive experiences with breastfeeding mothers in clinical where the students observed that formula feeding is not more convenient. This change in attitude is also revealed in the increase in respondents who agreed with the statement that breastfeeding is more convenient than formula-feeding, from 26% of juniors to 48% of seniors.

There were two additional statements that revealed a similar improvement in attitudes from juniors to seniors. From 43% of juniors to 65% of the senior students disagreed or strongly disagreed with the statement that breast milk is lacking in iron. Further, from 34% of juniors to 56% of the seniors disagreed or strongly disagreed with the statement that formula is as healthy for an infant as breast milk. This indicates that the students learned about the nutritional benefits of breast milk and the fact that it is healthier than formula.

The statement that formula-fed babies are more likely to be overfed than breastfed babies and the reverse coded statement that breast-fed babies are more likely to be overfed than formula-fed babies had similar increases in percentages indicating a more positive breastfeeding attitude in the seniors. However only 61% of the seniors agreed or strongly agreed with the first statement which is worded to be more favorable toward breastfeeding while 87% disagreed with the second statement which is worded to be more favorable toward formula-feeding.

Given that 78% of the juniors and 95% of the seniors agreed or strongly agreed with the statement that breast milk is the ideal food for babies implies that many of the students already knew about and agreed with this fact. This was reinforced for those who did not agree with this fact through the maternal/child health course. In comparing this to
a similar statement that extends the notion that breast milk is ideal to the fact that breastfed babies are healthier than formula-fed babies, 52% agreed or strongly agreed with this statement before their maternal child health course increasing only slightly to 60% in the senior class. This result may be explained in part by Cricco-Lizza’s (2006) study of nursing students’ attitudes toward breastfeeding where students “acknowledged the benefits of breastfeeding but described formula-feeding as an equivalent alternative” (Cricco-Lizza, 2006, p.319).

There were several statements that did not have any change in the breastfeeding attitude scores between the juniors and seniors. The statements worded to be more favorable toward breastfeeding were that breastfeeding increases mother-infant bonding, and that breast milk is less expensive than formula. 95% of the juniors agreed or strongly agreed with the increase in mother-infant bonding and 87% agreed with the cost statement. Therefore the students may have had these positive breastfeeding attitudes prior to beginning their maternal/child health course.

There were three reverse coded statements that did not show an improved attitude after the maternal/child health course. The first was that formula feeding is the better choice if the mother plans to work outside the home. 65% of the juniors came into the course disagreeing or strongly disagreeing with this statement which is fairly positive. However, since working outside the home has consistently been identified as a barrier to continued breastfeeding (Khoury, Moazzem, Jarjoura, Carothers, &Hinton, 2005; Scott, Binns, Oddy,& Grahm, 2006; Taveras et al, 2003), this would be one area that could receive more attention.
Approximately 40% of juniors and seniors agreed with the statement that mothers should not breastfeed in public places. This is similar to Spear’s (2006) study where 41.3% of junior and senior nursing students who had completed their maternal/child health course stated that women should not breastfeed in public places (Spear, 2006). This finding may reflect what Cricco-Liza (2006) discovered in her qualitative study of nursing students attitudes toward breastfeeding where most of the students interviewed felt there was societal discomfort in the US with public breastfeeding. Incorporating breastfeeding as the norm into the maternal/child health curriculum will facilitate more positive attitudes toward breastfeeding in public. In view of the fact that knowledge has been associated with positive attitudes toward breastfeeding in public (Spear, 2006) education may help improve this perception.

The junior and senior students seemed to have the most difficulty with the statement that a mother who occasionally drinks alcohol should not breastfeed her baby. The lowest breastfeeding attitude score was reflected in these responses as only 30% of both juniors and seniors disagreed with this statement. While agreeing with this may seem to go against the recommendation that pregnant mothers do not drink any alcohol and the fact that alcohol passes through to breast milk, students may be drawing on this information when responding to this statement.

The two statements that showed a more negative attitude toward breastfeeding in the seniors as opposed to the juniors were that mothers who formula-feed miss one of the great joys of motherhood and the reverse coded statement that fathers feel left out if a mother breastfeeds. These statements are similar in that they both encompass an emotional aspect of breastfeeding. The reason for this change is puzzling but may reflect
some of the experiences with breastfeeding families in the clinical area. The results show that the change in percent of students scoring a 4 or 5 went from 47% of juniors to only 30% of seniors agreed that formula feeding mothers miss out on one of the joys of motherhood. In addition, from 69% of juniors to again only 30% of seniors disagreed that fathers feel left out when mothers breastfeed. The change in attitude for this statement in particular draws question to whether students viewed fathers as feeling left out in breastfeeding families. These concepts may be difficult to incorporate into a maternal/child health curriculum but give evidence as to what needs to be addressed in conference after students’ clinical experiences in maternal/child health. Students may not be aware of their feelings about or interpretations of what they are witnessing. It is also possible that the students have been negatively influenced by the maternity staff’s attitude as they move through their clinical experience.

The scores for the junior and senior nursing students on the IIFAS revealed generally positive attitudes toward breastfeeding in the students and improved attitudes in the seniors after their maternal child education. The seniors gained the most knowledge in evidence based breastfeeding facts and the health benefits of breastfeeding. The areas of weakness illuminated by this study incorporate the emotional aspects of breastfeeding which may reflect how students are interpreting the interactions in breastfeeding families that they come in contact with in the clinical area.

**Implications for Nursing Education**

The results of this study provide evidence for enriching a maternal/child curriculum that promotes positive attitudes toward breastfeeding in nursing students. While a curriculum that incorporates the best practices for breastfeeding promotion
clearly improves the attitudes of nursing students toward breastfeeding, there is some evidence that clinical experiences with breastfeeding mothers are limited (Chiu et al, 2003; Freed et al, 1996). If this is the case, an effort to increase the number of positive experiences with breastfeeding mothers may improve attitudes even further.

Incorporating additional models of breastfeeding education into a maternal/child health curriculum may facilitate enhanced clinical experiences with breastfeeding families and therefore attitudes toward breastfeeding. One such model described in the literature is the breastfeeding case study model developed by Spatz (2005) where students can choose from several case study courses depending on their career goals. The students then receive extended classroom and clinical experiences with breastfeeding including time with breastfeeding mothers in the classroom setting (Spatz, 2005).

The results from this study that revealed fewer seniors than juniors felt that breastfeeding enhances mother-infant bonding and more seniors felt fathers feel left out if a mother breastfeeds reflects a key component of breastfeeding education where students’ attitudes can be improved. The concern is that the attitudes reflected in these statements may not have been learned in a classroom but rather during clinical experiences with breastfeeding families. This poses a challenge for the maternal/child health educator as he or she may not be aware what the student is witnessing or learning from breastfeeding families and/or staff nurses. At the same time, the student also may not be aware of the negative messages about breastfeeding they are assimilating during their clinical experiences. One method that may be valuable in reframing or clarifying what students are witnessing incorporates a concept from process-oriented breastfeeding education. Process-oriented breastfeeding training was developed by Swedish educators...
as a method to increase breastfeeding knowledge and attitudes in nurses. The nurses would reflect on their personal and professional breastfeeding experiences. While originally utilized for practicing nurses and midwives this approach could be modified for students to reflect on what they have experienced, their feelings about their experiences and to process this information. This would give the educator an opportunity to clarify and dispel any erroneous conclusions the students may make as feelings may affect perceptions of what happens in the environment and how we react (Lindgren, Brulin, Holmlund, & Athlin, 2005).

Another similar model that might be useful in the maternal/child clinical component involves process-oriented group discussions for nursing students developed by another Swedish educator. In this model one student shares a clinical situation and is supported and challenged by the other students in the group and the instructor in order to assist the student in increasing his or her understanding of the clinical situation both cognitively and emotionally. A further purpose of the model is to give the student emotional support by encouraging him or her to reflect on their experiences and feelings and therefore increase the students self-awareness (Lindgren et al, 2005). While this model was developed for all clinical situations not specifically maternal/child health, it may be one way to assist nursing students in identifying and reflecting on their attitudes and beliefs about breastfeeding (Cricco-Lizza, 2006).

**Study Limitations**

One of the limitations of this study is that it is not a longitudinal study. The data is from a convenience sample of junior and senior nursing students obtained at the same time. A longitudinal study would survey junior nursing students before their
maternal/child health course and then survey the same students again after this course. This would provide more accurate information as to how breastfeeding attitudes had changed after completion of the course. An additional limitation is the unequal sample sizes of 69 junior respondents and 23 senior respondents and may not reflect the attitudes toward nursing of the senior class. It is also a possibility that the seniors who returned the questionnaires had a more positive breastfeeding attitude than those who did not. Another limitation of the study is that didactic content can be controlled but the degree to which the hospital and/or clinical instructor focuses on breastfeeding may vary and therefore there is a need for standard didactic education in the curriculum which can be delivered in the form of a supplemental module or simulated education. Finally, the population surveyed was a homogeneous population from an undergraduate university and may limit the ability to generalize the results.

**Further Research Recommendations**

Further research on the attitudes of nursing students toward breastfeeding is recommended. Ideally, a longitudinal study with the same nursing students before and after their maternal/child health course would provide more specific information on the attitude change as a result of this course. Exploring the relationship of personal experience with breastfeeding and attitudes in nursing students would also provide additional information for nurse educators as several studies have revealed a relationship between personal experience and attitudes toward breastfeeding (Barnett et al, 1995; Cricco-Lizza, 2006; Humenick et al, 1998; Patton et al, 1995).

In view of the fact that nurses have the opportunity to offer support and advice to breastfeeding mothers in a variety of settings, and that nurses have been shown to be
influential in the duration of breastfeeding (Pugh et al, 2002; Sikorski et al, 2005; Taveras et al, 2003; Zimmerman, 1999) it is critical that graduating nurses have positive attitudes toward breastfeeding. Positive attitudes toward breastfeeding will be developed through evidence based breastfeeding education and clinical experiences and will promote a duration of breastfeeding to ensure improved health outcomes for mothers and infants. The inspiring results from this study provide evidence that this is possible as nursing students demonstrated more positive attitudes toward breastfeeding after their maternal/child health course.
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APPENDICES
APPENDIX A

TABLES AND FIGURES

Table 1 Comparison of the breastfeeding attitudes of junior and senior nursing students

<table>
<thead>
<tr>
<th>Description</th>
<th>% of Junior Nursing Students Scoring a 4-5</th>
<th>% of Senior Nursing Students Scoring a 4-5</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The benefits of breast milk last only as long as the baby is breast fed</td>
<td>78%</td>
<td>95%</td>
</tr>
<tr>
<td>2. Formula feeding is more convenient than breastfeeding</td>
<td>26%</td>
<td>52%</td>
</tr>
<tr>
<td>3. Breastfeeding increases mother-infant bonding</td>
<td>95%</td>
<td>91%</td>
</tr>
<tr>
<td>4. Breast milk is lacking in iron</td>
<td>43%</td>
<td>65%</td>
</tr>
<tr>
<td>5. Formula fed babies are more likely to be overfed than breast fed babies</td>
<td>39%</td>
<td>61%</td>
</tr>
<tr>
<td>6. Formula feeding is the better choice if the mother plans to go out to work</td>
<td>65%</td>
<td>65%</td>
</tr>
<tr>
<td>7. Mothers who formula feed miss one of the great joys of motherhood</td>
<td>47%</td>
<td>30%</td>
</tr>
<tr>
<td>8. Women should not breastfeed in public places such as restaurants</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>9. Breastfed babies are healthier than formula fed babies</td>
<td>52%</td>
<td>60%</td>
</tr>
<tr>
<td>10. Breast fed babies are more likely to be overfed than formula fed babies</td>
<td>60%</td>
<td>87%</td>
</tr>
<tr>
<td>11. Fathers feel left out if a mother breastfeeds</td>
<td>69%</td>
<td>39%</td>
</tr>
<tr>
<td>12. Breast milk is the ideal food for babies</td>
<td>78%</td>
<td>95%</td>
</tr>
<tr>
<td>13. Breast milk is more easily digested than formula</td>
<td>56%</td>
<td>69%</td>
</tr>
<tr>
<td>14. Formula is as healthy for an infant as breast milk</td>
<td>34%</td>
<td>56%</td>
</tr>
<tr>
<td>15. Breastfeeding is more convenient than formula</td>
<td>26%</td>
<td>48%</td>
</tr>
<tr>
<td>16. Breast milk is cheaper than formula</td>
<td>87%</td>
<td>87%</td>
</tr>
<tr>
<td>17. A mother who occasionally drinks alcohol should not breastfeed her baby</td>
<td>30%</td>
<td>30%</td>
</tr>
</tbody>
</table>

* Items reversed scored to calculate total infant feeding attitude score

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Figure 1: Theory of Reasoned Action for breastfeeding attitudes adapted from Ajzen & Fishbein (1980).

Beliefs about breastfeeding → Attitude toward breastfeeding → Intention to support breastfeeding → Behaviors that support breastfeeding

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APPENDIX B

IRB APPROVAL LETTER

University of New Hampshire
Research Conduct and Compliance Services, Office of Sponsored Research
Service Building, 51 College Road, Durham, NH 03824-3585
Fax: 603-862-3564

18-Dec-2006

Riley, Eileen
Nursing, Hewitt Hall
24 Old Homestead Road
Groton, MA 01450

IRB #: 3849
Study: Breastfeeding Attitudes of Junior and Senior Nursing Students
Approval Date: 11-Dec-2006

The Institutional Review Board for the Protection of Human Subjects in Research (IRB) has reviewed and approved the protocol for your study as Exempt as described in Title 45, Code of Federal Regulations (CFR), Part 46, Subsection 101(b). Approval is granted to conduct your study as described in your protocol.

Researchers who conduct studies involving human subjects have responsibilities as outlined in the attached document, Responsibilities of Directors of Research Studies Involving Human Subjects. (This document is also available at http://www.unh.edu/osr/compliance/irb.html.) Please read this document carefully before commencing your work involving human subjects.

Upon completion of your study, please complete the enclosed pink Exempt Study Final Report form and return it to this office along with a report of your findings.

If you have questions or concerns about your study or this approval, please feel free to contact me at 603-862-2003 or Julie.simpson@unh.edu. Please refer to the IRB # above in all correspondence related to this study. The IRB wishes you success with your research.

For the IRB,
Julie F. Simpson
Manager

cc: File
DiNapoli, Pamela

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**APPENDIX C**

**IOWA INFANT FEEDING ATTITUDE SCALE**

**DO NOT SIGN YOUR NAME**

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 clearly corresponds to your opinion. (1 = strong disagreement, 2 = disagreement, 3 = neutral, 4 = agreement, 5 = strong agreement). You may choose any number from 1 to 5.

<table>
<thead>
<tr>
<th>Statement</th>
<th>SD</th>
<th>D</th>
<th>N</th>
<th>A</th>
<th>SA</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The nutritional benefits of breast milk last only until the baby is weaned from breast milk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>2. Formula-feeding is more convenient than breast-feeding.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>3. Breast-feeding increases mother-infant bonding.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>4. Breast milk is lacking in iron.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>5. Formula-fed babies are more likely to be overfed than are breast-fed babies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>6. Formula-feeding is the better choice if a mother plans to work outside the home.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>7. Mothers who formula-feed miss one of the great joys of motherhood.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>8. Women should not breast-feed in public places such as restaurants.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>9. Babies fed breast milk are healthier than babies who are fed formula.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>10. Breast-fed babies are more likely to be overfed than formula-fed babies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>11. Fathers feel left out if a mother breast-feeds.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>12. Breast milk is the ideal food for babies.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>13. Breast milk is more easily digested than formula.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>14. Formula is as healthy for an infant as breast milk.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>15. Breast-feeding is more convenient than formula-feeding.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>16. Breast milk is less expensive than formula.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>17. A mother who occasionally drinks alcohol should not breastfeed her baby.</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>


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