BREASTFEEDING INTENTIONS, ATTITUDES, KNOWLEDGE, AND EXPOSURE OF DIETETIC INTERNS AND THE ATTITUDES OF INTERNSHIP DIRECTORS

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A Thesis

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ABSTRACT

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Background. A lack of research exists regarding the attitudes, knowledge, exposure, and intentions of dietitians toward breastfeeding. The purpose of this study was to evaluate the antecedents of behavioral intention toward providing breastfeeding support in dietetic interns and to evaluate breastfeeding attitudes of internship directors.

Methods. A cross-sectional survey of dietetic interns and internship directors was completed using an online questionnaire composed of previously validated instruments for breastfeeding knowledge, exposure, and infant feeding attitude. For recruitment, the 239 internship directors were emailed to request their participation in the online survey and to forward the survey to their interns.

Results. A total of 119 (49.8%) directors and 440 interns participated in the study. Both interns and directors had positive breastfeeding attitudes, 70.9 ± 6.9 and 69.7 ± 8.2, respectively, (85-point scale) with no difference between groups ($p = 0.1268$). Interns showed strong breastfeeding knowledge and favorable intentions toward breastfeeding with scores of 11.7 ± 1.6 (14-point scale) and 49.0 ± 10.2 (60-point scale), respectively. High exposure to breastfeeding was found in 96% of interns. Attitude ($r = 0.396$, $p < 0.0001$), knowledge ($r = 0.265$, $p < 0.0001$), parental status ($r = 0.176$, $p = 0.0002$), and internship type ($r = 0.176$, $p = 0.0030$) had significant linear relationships with professional intention. Internship type was a significant factor ($r = 0.230$, $p < 0.0001$) associated with attitude; those in a health department or community program had highest attitude scores ($76.4 ± 5.1$). More interns, 92.2%, agreed that it is important to include breastfeeding training in the internship, than directors, 78.6% ($p < 0.0001$).
Conclusion. This study suggests that dietetic interns, the future registered dietitians of this country, are thoroughly prepared to promote and support breastfeeding in their future practice; their high professional intentions, positive attitudes to toward breastfeeding, high breastfeeding knowledge, and high previous exposure to breastfeeding support this conclusion. Dietetic internship directors have similar positive attitude toward breastfeeding, and report that their internship program provides sufficient resources to prepare dietetic interns for future promotion and support of breastfeeding.
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CHAPTER I
INTRODUCTION
Breastfeeding Recommendations and Goals

The American Dietetic Association and the American Academy of Pediatrics recommend exclusive breastfeeding for all infants until they reach six months of age (1, 2). After the first six months of life, it is recommended that infants be fed a combination of human milk and complementary foods until the infants reaches one year of age (1, 2). The American Academy of Pediatrics makes fifteen evidence based recommendations concerning infant feeding practice during the first year of life. These recommendations advise pediatricians and other health care professionals to advocate for all healthy term infants to be breastfed and to support lactation initiation and management.

The Healthy People (HP) 2010 objectives for breastfeeding include prevalence goals for both breastfeeding initiation and length of duration. The current goal for initiation of breastfeeding in the United States is 75% of all mothers (3). The goals for duration are for 50% and 25% of mothers to be breastfeeding at 6 months and at 1 year, respectively (3). According to the National Immunization Survey conducted by the Centers for Disease Control (CDC), in the year 2005, 74% of all mothers initiated breastfeeding with their infant, which nearly reaches the HP 2010 goal for breastfeeding initiation (4). The CDC also reported that 43% of infants were breastfed at six months of age, and 21% of infants were still breastfeeding at one year of age (4). While the rates of breastfeeding initiation and duration are progressing toward the HP 2010 goals, the modest goals have not been achieved and significant opportunity remains for increased duration of breastfeeding.
Though the nation on average is progressing toward the HP 2010 goals, individual states may have different rates of breastfeeding from the national average. Utah (92%), Alaska (88%), and Hawaii (88%) have significantly higher rates of breastfeeding initiation compared to the national average of 74% (4). In Utah, 70% and 34% of mothers are breastfeeding at six months and one year of age, respectively (4). In these three states, the HP 2010 goals are being met and exceeded. In contrast, a number of states have alarmingly low rates of breastfeeding initiation and duration, such as Kentucky, Louisiana, and Mississippi. In the state of Mississippi, only 48% of new mothers initiated breastfeeding, and only 20% and 9% continued to breastfeed until six months and one year of age (4). The states of Louisiana and Kentucky had only marginally better rates of breastfeeding initiation and duration than Mississippi. The data from individual states indicate that an effort is still to be made to improve the prevalence of breastfeeding in the United States.

**Role of Health Care Professionals in Breastfeeding**

Health care professionals have a prime opportunity to provide breastfeeding support to new mothers. The attitudes, knowledge, and intentions of those professionals toward breastfeeding influence breastfeeding prevalence when combined with hospital policies that promote breastfeeding (5). The most influential types of health care professionals are those who have the most contact with mothers in the early postpartum period such as physicians and nurses. Lactation consultants and dietitians may also play a significant role.

**Role of Registered Dietitians**

Registered dietitians are the experts on human nutrition throughout the life cycle, and when it comes to infant nutrition it is their professional responsibility to promote and support breastfeeding for its health benefits to both mother and infants (1). The American Dietetic
Association entreats dietitians to adopt strategies to promote and support breastfeeding with their practice of dietetics (1). Dietitians have many career opportunities to encourage breastfeeding initiation and duration including hospitals, other healthcare facilities, and public health settings. Registered dietitians maybe called upon to counsel and educate pregnant and postpartum women, subsequently providing the opportunity to promote the benefits of breastfeeding and supporting mothers confronting difficulties with lactation. Dietitians can also support increased breastfeeding duration by providing appropriate and timely information about weaning and introducing complementary foods.

Role of Physicians

There are two main types of physicians involved in the care of prenatal and postpartum women and their infants—obstetricians and pediatricians. An obstetrician provides care to the mother during the prenatal and postpartum periods as well as delivering the baby. Most mothers make the decision to breastfeed or formula feed before delivery of the baby, therefore an obstetrician has the opportunity to influence breastfeeding initiation (6). Pediatricians are physicians who specialize in the care of children from birth to early adulthood. A pediatrician has the opportunity to support breastfeeding and encourage increased duration of breastfeeding, while also promoting breastfeeding as the social norm.

Role of Nurses

Nurses are continually involved in the care of prenatal and postpartum women and their infants. A nurse is present at the obstetrician’s office, in the delivery room, in the hospital following delivery, and at the pediatrician’s office. Nurses have significantly more contact time with mothers during the prenatal and postpartum periods than physicians, providing the opportunity to
provide appropriate information and guidance to new mothers regarding breastfeeding and lactation (7, 8).

**Role of Lactation Consultants**

A lactation consultant is a health professional who specializes in the clinical management of breastfeeding (9). The lactation consultant is the expert on the art and science of lactation, including anatomy and physiology of lactation, the composition of human milk, breastfeeding techniques, and nutritional requirements for lactating women. Providing education and patient care related to lactation is the main responsibility of a lactation consultant (9).

**Statement of Problem**

A search of the available literature from Medline, CINHAL, and EBSCO produced very limited results when searching the topic ‘breastfeeding and dietitians.’ The significant lack of research regarding the attitudes, knowledge, and intentions of dietitians toward breastfeeding was startling. If dietitians are the experts on human nutrition, it is assumed that they have a positive attitude toward breastfeeding, knowledge of lactation management, and the intention to promote and support breastfeeding to their patients. The lack of scientific research regarding dietitians’ attitudes, knowledge, and intentions toward breastfeeding indicates that the scientific community has assumed that the dietitian hold these positions. In this era of evidenced based medicine, assumption is an unacceptable practice. The attitudes, knowledge, and intentions of a new generation of dietitians toward breastfeeding are not empirically known.

**Significance of Problem**

The attitudes, knowledge, and practices of both physicians and nurses toward breastfeeding have been measured repeatedly by researchers. For example, 35% of physicians surveyed either make no recommendation for infant feeding or recommend a combination of human milk
supplemented with formula (10). Karipis and Spicer found a significant knowledge deficit in nurses in the areas of lactation physiology, composition of human milk or formula, breastfeeding recommendations, and nutritional requirements for lactating women (11).

Only limited research exists about dietitians or dietetic interns, and the practices of registered dietitians in promoting breastfeeding have not been recorded. Potential knowledge deficits were evaluated by Payne et al in undergraduate dietetic students from an Australian university revealing considerable knowledge deficits; however, the study’s small sample size and a dissimilar population prevents the results from being generalized to dietetic interns from the United States (12). In 1989, Bagwell et al surveyed health professionals who treat Women, Infants, and Children (WIC) program patients and found that dietitians and nurses had more positive attitudes toward breastfeeding than physicians (13). The results cannot be generalized to dietetic interns in 2010, because the study targeted dietitians in breastfeeding-centric positions, in only one state, over 20 years ago. A significant gap remains in the literature, but targeting dietetic interns will appraise their intention to promote and support breastfeeding in their future practice.

Using a theoretical framework helps explain health behaviors. The Theory of Planned Behavior is a theoretical framework that supposes that a behavior is immediately determined by the person’s intention to perform or not perform the behavior (14). Behavioral intention can be determined by attitudes, subjective norms, and perceived behavioral control (14, 15). The antecedents of attitude are previous experiences and knowledge (16). The future promotion and support of breastfeeding by dietetic interns can be predicted by their intention to perform the behavior, which is determined by their attitude toward the behavior and is anteceded by their knowledge about and exposure to breastfeeding (14-16). Examining the intentions, attitudes,
knowledge, and exposures of dietetic interns related to breastfeeding will predict the probability of them promoting and supporting breastfeeding in their future practice. To study the intention to promote and support breastfeeding during internship training, both dietetic interns and their internship directors were surveyed. Surveying the dietetic internship directors in this research gave information on the attitudes of the registered dietitians who have significant influence on the future practice of a new dietitian.

![Diagram of the theory of planned behavior](image)

Figure 1. The theory of planned behavior (14, 16).

**Objectives**

The primary purpose of this study was to assess the antecedents of the behavioral intention to promote and support breastfeeding among dietetic interns. The secondary purpose of this study was to describe the infant feeding attitudes of dietetic internship directors, and assess the level of breastfeeding education offered in dietetic internships. The objectives of this study were:
1. To assess the breastfeeding knowledge, infant feeding attitudes, previous breastfeeding exposure, and future breastfeeding promotion and support intentions of dietetic interns.

2. To determine whether there is a relationship between the knowledge, attitudes, and previous breastfeeding exposure of dietetic interns and the intern's future breastfeeding promotion and support intentions.

3. To determine whether there is a relationship between demographics and future breastfeeding promotion and support intentions of dietetic interns.

4. To describe the infant feeding attitudes of dietetic internship directors.

5. To determine whether there is a relationship between infant feeding attitudes and knowledge, previous breastfeeding exposure, and demographics.

6. To describe the level of breastfeeding education offered in dietetic internships.
CHAPTER II
LITERATURE REVIEW

Benefits of Breastfeeding

Benefits to Infants

Breastfeeding is considered the optimal method of infant feeding because human milk imparts many advantages and benefits that are not available from any other form of infant feeding. According to the American Academy of Pediatrics, all methods of infant feeding are to be compared to the standard of the human milk feeding, because human milk contains the exact combination and proportion of nutrients needed for human infant growth, development, and continuing health (1, 2). The process of lactation and breastfeeding conveys health benefits for both the infant and the lactating mother. Many health benefits are rendered to infants through human breast milk. The breastfed infant has a decreased incidence of infectious diseases of infancy and childhood such as diarrhea, gastrointestinal illness, lower respiratory infections, otitis media, bacterial meningitis, and necrotizing enterocolitis, because human milk enhances the immune system (1). Breastfeeding also decreases the risk of developing chronic diseases later in life such as allergies, intolerances, childhood obesity, diabetes, and heart disease (1, 2). Breastfeeding also impacts development of the teeth and jaw, cognitive function, and promotes bonding with the mother (1, 2).

Benefits to Mothers

Breastfeeding also provides important health benefits for lactating mothers. The process of lactation facilitates the return of the mother’s body to its pre-pregnancy state through decreased postpartum bleeding, faster shrinking of the uterus, and possibly a faster return to pre-pregnancy weight (1, 2). Exclusive breastfeeding for an extended period of time produces lactational
amenorrhea, which delays menstruation conserving iron stores and possibly decreases the likelihood of pregnancy by suppressing ovulation (1). Some studies suggest that breastfeeding also might reduce the risk of diseases such as breast cancer, ovarian cancer, and osteoporosis (2). Enhanced maternal well-being is another benefit of breastfeeding; mothers who breastfed showed improved sleeping at night, lower blood pressure, and a decrease in postpartum depressive symptoms (1).

**Benefits to Communities**

Breastfeeding also provides benefits to both the family and community by supplying economic and environmental benefits. First, breastfeeding is more economic than commercial formula, because formula costs an average of $700 a year (17). Another economic benefit provided by breastfeeding is the healthcare cost savings it provides. If the HP2010 objective for breastfeeding was met, an estimated 3.6 billion dollars would be saved through the reduction of three diseases—otitis media, gastroenteritis, and necrotizing enterocolitis (18). A key environmental benefit of lactation is that it is a sustainable and renewable process that does not produce pollution (17).

**Barriers to Breastfeeding**

The first step in increasing the rate of breastfeeding is to identify the barriers that prevent breastfeeding initiation and continuation. Only once the barriers are identified can initiatives, policies, procedures, and educational materials be developed and utilized effectively. One of the biggest barriers is a lack of education of the benefits of breastfeeding prior to the birth of the infant (1, 2). Some women feel embarrassed or have a poor perception of breastfeeding (1, 2). Many women do not have social support from their husbands or family members (1, 2). Other barriers to breastfeeding include the need to go to work or attend school, short maternity leave,
or an unsupportive work environment (1, 2). Another barrier to breastfeeding is one created by health care providers. Physicians and nurses may not recommend human milk as the superior form of infant feeding, either due to a lack of knowledge or confidence concerning breastfeeding or a negative perception of breastfeeding (1, 2). Health care professionals are to be the source of information, guidance, and encouragement prior to breastfeeding initiation and throughout the breastfeeding process. A negative attitude held by a health care professional toward breastfeeding may decrease the likelihood of a mother initiating or continuing to breastfeed.

**Evaluation of Breastfeeding Intentions, Attitudes, Knowledge, and Exposure**

*Health Care Professionals*

The behaviors of health care professionals are impacted by their intentions, attitudes, knowledge, and experiences; measuring these variables allows researchers to predict whether a health care professional will perform a specific behavior related to the promotion and support of breastfeeding. Lazzaro, Anderson, and Auld found that a majority of health care professionals advocate breastfeeding as the optimal infant feeding method to mothers who have not chosen a method of infant feeding. Their research showed only 42% of physicians and fewer than 30% of other health professionals advocated breastfeeding to mothers who had decided to bottle-feed (19). Health care professionals do not consistently promote and support breastfeeding to all patients. Neutral or inconsistent messages about breastfeeding from health care professionals would increase the likelihood of shorter duration of breastfeeding (8). Thus, the promotion and support of health care professionals has an important impact on breastfeeding initiation and duration.
Dietitians

A limited number of articles exist concerning dietitians and their roles relating to breastfeeding. Four studies were found regarding dietitians and the factors influencing breastfeeding behaviors. In a survey of 390 maternity care staff employed by 18 Utah hospitals, Helm, Windham, and Wyse found that dietitians are appreciably underutilized. Only 2.1% of maternity care staff identified the dietitian as a source of providing breastfeeding assistance to new mothers even though dietitians have more knowledge and interest in breastfeeding as well as more positive attitudes toward breastfeeding than nurses (20). In a survey conducted in 1989 of 289 WIC health care professionals, dietitians scored significantly higher ($p < .05$) on both attitude and knowledge scales than nurses and physicians; however, all health care professionals had positive attitudes toward breastfeeding (13). In a survey of 27 undergraduate dietetics students attending an Australian university, a majority of respondents reported positive attitudes toward breastfeeding; however, 68% reported bottle feeding to be more socially acceptable and 40% agreed that bottle feeding was the easiest method of infant feeding (12). In a survey of 151 dietitians and nurses from New Brunswick conducted in 1998, the psychosocial determinants of attitude, subjective norm, perceived behavioral control, and perceived personal and professional norms were significantly correlated with the intention to recommend breastfeeding; the best predictors were attitude and subjective norm (14). A majority of dietetics students surveyed by Payne et al had personal and professional intentions to breastfeed and support breastfeeding at a professional level, but only a limited number believed their course work prepared them to provide breastfeeding support (12). The literature indicates that dietitians possess both knowledge and positive attitudes toward breastfeeding. The limitations of the above research are that the study by Bagwell et al was conducted 20 years ago and two of the other studies were
conducted outside the United States, so the results of these studies cannot be generalized to
dietetic interns in the United States.

**Physicians**

Physicians are viewed as the expert on health information by most patients. Therefore when a
physician does not recommend or support breastfeeding, a new mother may believe that formula
feeding is an equitable choice. Howard, Schaffer, and Lawrence in a survey of 116 obstetricians
from New York found that more than half of obstetricians surveyed believed that they are
primarily responsible for discussing infant feeding methods during the prenatal period, which
was associated with increased breastfeeding promotion and obstetrician participation in
breastfeeding management (6). In a cross-sectional survey of 478 Israeli physicians attending
academic conferences, physicians were found to have a positive attitude toward breastfeeding
and an awareness of the need to promote breastfeeding; however, breastfeeding knowledge was
lacking (21). The American Academy of Pediatrics’ Periodic Survey of Fellows found that in the
2004 survey of 875 pediatricians more pediatricians held negative opinions and attitudes toward
breastfeeding than the pediatricians surveyed in 1995 (22). Nakar et al indicated that physicians
reported personal experience as the major source of their breastfeeding knowledge (21).
Furthermore personal experience with breastfeeding was associated with superior breastfeeding
management shown in the study by Feldman-Winter et al (22).

**Nurses**

In a study of 50 mother-baby nurses from two metropolitan teaching hospitals, nurses were
found to have moderately positive attitudes toward providing breastfeeding support (23).
Attitudes could be improved by implementing interventions such as the process-oriented
breastfeeding training reported by Ekstrom, Widstrom, and Nissen in 10 municipalities in south-
western Sweden (24). In a study of 230 maternity nurses working in 20 hospitals in the
Midwest, Patton et al established that nurses with more education possess more knowledge about breastfeeding; a lack of knowledge and personal bias were barriers to breastfeeding support (25). Bernaix found nurses are generally knowledgeable, possess positive attitudes, have supportive social norms, and have strong intentions to provide breastfeeding support to new mothers, but breastfeeding mothers perceived that the nurses provided only a moderate degree of breastfeeding support. The intentions of nurses to provide breastfeeding support to new mothers were best predicted by the nurse’s attitudes and social norms, while the best predictor of supportive behavior was the nurse’s knowledge about breastfeeding (23). Therefore, the lack of knowledge impacts breastfeeding support and the aim of intervention should be to improve nurses’ knowledge about breastfeeding.

**College Students**

In a survey of 590 high school and college students from Alabama, 70% of students viewed embarrassment to breastfeeding as a reason not to breastfeed (26). Tarrant and Dodgson found in a study of 403 Chinese university students that students believed that both formula feeding and breastfeeding would provide equal benefits to an infant, in contrast American students who participated in the study by Forrester, Wheelock, and Warren believed that breastfeeding is healthier and more convenient than formula feeding (26, 27). Kang, Song, and Im found in a survey of 341 Korean undergraduate university students that students scored low on breastfeeding knowledge questions, but students in health related fields had higher knowledge scores (28). High breastfeeding knowledge and positive attitudes toward breastfeeding were associated with exposure to breastfeeding and intention to breastfeed (27). In a survey of 161 students from the University of North Dakota, Marrone, Vogeltanz-Holm, and Holm found a positive relationship between breastfeeding knowledge and positive attitudes toward
breastfeeding, moreover previous exposure to breastfeeding was associated with positive attitudes toward breastfeeding (29). In general, college students with positive attitudes toward breastfeeding, moderate breastfeeding knowledge, and previous exposure to breastfeeding had strong intentions to breastfeed their future children.

**College Students in Pre-Health Professional Majors**

Due to their future involvement in breastfeeding management, positive attitudes and high knowledge regarding breastfeeding are desired in college students in pre-health professional majors. A survey of 31 pediatricians in training in a suburban hospital were found to have favorable breastfeeding attitudes and moderate knowledge about lactation management, but only 14% felt confident to manage common breastfeeding problems (30). In a qualitative study of 12 student nurses, students reported that personal experiences with both family and community significantly influenced the development of breastfeeding attitudes and beliefs. Student nurses with early exposure to breastfeeding had the most knowledge and expressed strongest convictions about the benefits of breastfeeding (31). Dodgson and Tarrant performed a breastfeeding educational intervention with 273 Chinese baccalaureate nursing students, and found that participants who underwent the intervention had more knowledge, positive attitudes and beliefs, and more breastfeeding promotion behaviors following the didactic interaction and 8-week perinatal clinical rotation than those who did not (16). A possible conclusion that could be drawn from this research was that previous exposure significantly impacted the knowledge and attitudes of college students in pre-health professional majors.

**Parents**

The research evaluating the attitudes, knowledge, and intentions of parents to breastfeed has been conducted primarily with mothers. Half of breastfeeding mothers have decided upon an infant feeding method prior to conception, while only a third of formula feeding mothers had
decided an infant feeding method prior to conception (32). These decisions are important, because the intention to formula feed or breastfeed will result in the intended behavior in a majority of mothers (33). Of the 31 women who were undecided about an infant feeding method prior to delivery, 80% left the hospital formula feeding their infant (33).

Mothers who chose to breastfeed their infant were aware of the nutritional superiority of breast milk, the health benefits associated with breast milk, and that breastfeeding is cheaper than formula feeding (33). Many mothers chose bottle-feeding, because they perceived breastfeeding as inconvenient and saw formula feeding as an easier option (32). In a survey of 170 mothers, breastfeeding mothers were found to have significantly higher attitudinal scores that favored breastfeeding compared to mothers who choose to formula feed (65.0 ± 8.3 vs. 55.1 ± 7.9, respectively) (33). In a survey of 103 adolescent mothers, those with higher attitude and confidence scores were more likely to continue breastfeeding until four weeks postpartum (34).

Survey Research

The two types of survey research are the interview and the self-administered questionnaire. The interview in which the researcher asks the participant the survey questions can either be performed face to face or by telephone. High response rate, less incomplete data, and greater effectiveness for obtaining sensitive information are advantages of interviews. Disadvantages of interviews include high cost and time intensiveness, which may contribute to smaller sample sizes. Telephone interviews decrease the cost and amount of time to administer an interview; however, the sample may be biased due to telephone access, caller ID, or unlisted numbers. Self-administered questionnaires can be dispensed by home delivery, mail delivery, or in a web-based format. Delivery and/or collection of a questionnaire directly to/from a participant by a researcher increase survey response rates. Mail-based surveys are mailed to a participant’s home
with a method for the participant to return the survey by mail. The more inconvenient the method of returning the survey, the less likely the completed questionnaire will be returned. Web-based surveys are administered to participants through the internet and may be accessed from email or from a website. Web-based surveys are cheaper than traditional mail surveys. Self-administered surveys are less expensive and faster than interviews, but have an increased likelihood of low response rates and incomplete data. Self-administered questionnaires allow for increased sample sizes as budgets and time allow (35).

**Web-Based Surveys**

Web-based surveys are less expensive than mail surveys and allow instant distribution of the questionnaire (35, 36). In a survey of 450 dental professionals, an 18 day web-based survey administration period combined with three reminders resulted in a 64.4% response rate (36). Schleyer and Forrest found that the web-based survey used was 38% less expensive than a comparative mail survey (36). In a 2001 survey of 3,606 Midwestern university students, McCabe found that a web-based survey had a higher response rate than a mail survey (63% vs. 40%, respectively). McCabe also found no significant differences in sample characteristics between web-based and mail survey samples (37). In a population study of 50,000 Swedish women, the overall response rate was 45.6%, while asking survey questions from easiest question to hardest question increased the response rate by 6% (38).

**Summary and Purpose**

Breastfeeding is the optimal method of infant feeding; however, the United States is not currently reaching the HP2010 goals for breastfeeding initiation and duration. The behaviors of health care professionals to promote breastfeeding and participate in breastfeeding management influence choices of the mother-infant dyad. Generally, health professionals have positive
attitudes toward breastfeeding and intend to promote breastfeeding, but knowledge deficits exist in all health care professions. A noteworthy gap in the literature exists for dietitian’s attitudes, knowledge, exposure, and intentions to promote and support breastfeeding. Web-based surveys offer an inexpensive and prompt method for collecting data from dietetic interns and dietetic internship directors. The main purpose of this study was to evaluate the behavioral intentions toward breastfeeding promotion and support of dietetic interns by measuring the antecedents of attitudes, knowledge, and exposure. The secondary purpose of this study was to describe the breastfeeding attitudes of internship directors and assess the level of breastfeeding education provided by internships.
CHAPTER III
METHODOLOGY

Research Design

The research conducted was a cross-sectional survey, which is a non-experimental descriptive research method. The online survey measured the attitudes, knowledge, exposure, and intentions toward breastfeeding of dietetic interns. The survey also evaluated the infant feeding attitudes of dietetic internship directors, and assessed the breastfeeding education provided by internships. Approval for this study was granted by the Bowling Green State University, Human Subject Review Board, approval number H10T290Gx2 (Appendix A).

Participants

To be eligible for the study, participants were either dietetic interns or dietetic internship directors. Dietetic interns had completed a Didactic Program in Dietetics (DPD) accredited by the Commission on Accreditation for Dietetics Education (CADE) of the American Dietetic Association (ADA) and were currently participating in a dietetic internship. A dietetic internship is a post-baccalaureate supervised practice program that provides 1200 supervised practice hours to individuals who have completed the required DPD course work (39). The ADA website lists a total of 239 dietetic internship programs across the United States with approximately three to twenty students per program. When annual enrollment for each dietetic internship program was calculated, there were a total of 2,885 possible dietetic interns at the time the survey was administered (40). A dietetic internship can be completed as a stand-alone experience or in combination with an advance degree program (39). Students in Coordinated Programs in Dietetics were not eligible for inclusion.
Dietetic internship directors were registered dietitians who were in the position of coordinating a dietetic internship. The criterion for inclusion as a dietetic internship director participant was current employment as a dietetic internship director. Dietetic internship directors of Coordinated Programs in Dietetics were not eligible for inclusion.

For recruitment, all 239 dietetic internship directors in the United States were contacted to request their participation and also their interns’ participation in the survey. A contact was made by sending an email requesting their participation in this survey on breastfeeding knowledge, attitudes, and intentions (Appendix B). The internship directors forwarded the original email to their students. During the survey administration period, a message was posted to the Dietetic Internship Directors Listserv encouraging the directors to participate and pass on the email to their interns.

Experimental Procedures

Instrument

The survey filled out by dietetic internship directors consisted of three sections (Appendix C). The first section was to collect demographic information, including gender, internship type, and state. The second section measured the internship director’s attitudes about infant feeding using the Iowa Infant Feeding Attitude Scale (IIFAS) used with permission of the authors. The third section consisted of a short series of questions developed by the researcher to determine the level of breastfeeding education.

The survey filled out by dietetic interns consisted of six sections (Appendix D). The first section was to collect demographic information, including age, gender, internship type, and state. The second section was a self-evaluation of the intern’s previous exposure to breastfeeding. Each participant was asked three questions measuring breastfeeding exposure adapted from the
questionnaire used by Tarrant and Dodgson (27). Then each participant was asked whether he/she was a parent. If the participant was a parent, then he/she was asked whether he/she breastfed his/her own children. The questions measuring exposure were scored by assigning one point for each answer of ‘yes’ and zero points for each answer of ‘no’ or ‘I don’t know.’ The range of possible breastfeeding exposure scores was zero to four. High breastfeeding exposure was categorized as a score of two to four, while low breastfeeding exposure was categorized as a score of zero to one (27).

The third section of the student survey consisted of the measurement of the interns’ attitudes toward infant feeding. The Iowa Infant Feeding Attitude Scale (IIFAS), a survey that has been tested for reliability and validity in several studies of women in the United States, was used to assess the dietetic interns’ infant feeding attitudes (41). The IIFAS consists of 17 attitude questions, and participants were requested to respond to each item using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) (41). The items were approximately divided in half between items worded favorable toward breastfeeding and those worded favorable toward formula feeding (33). An attitude score was calculated from the equally weighted sum of the response for each individual item. Items favorable to formula feeding were reverse scored (i.e. 1=5, 2=4, 4=2, and 5=1) (33). The attitude scores could range from a low score of 17 which indicates more positive attitudes toward formula feeding, to a maximum score of 85 which indicates more positive attitudes toward breastfeeding (33, 41).

The fourth section of the student survey evaluated the interns’ infant feeding knowledge. A 14-item scale assessed the interns’ fundamental understanding of infant feeding using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) to respond to each question (27).
Breastfeeding knowledge scores were determined by assigning one point for each correct answer.

The fifth section of the student survey evaluated the interns’ professional intentions to promote and support breastfeeding. Although a few questionnaires exist in the literature that examined intention, none of these were applicable to evaluating professional intention to promote and support breastfeeding. Therefore, the roles and responsibilities of registered dietitians regarding breastfeeding outlined in the ADA position paper were used (1). The interns’ intention to perform the behaviors were evaluated on a scale of 1-10, where one equaled no intention to perform the behavior and ten equaled a strong intention to perform the behavior.

The sixth section evaluated the level of breastfeeding education provided by internships. The questionnaire was developed by the researcher, and consisted of four questions. Participants were requested to respond to each item with either a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree) or a yes/no format.

**Administration Protocol**

The survey was administered in a web based format using Snap survey software. The initial email to dietetic internship directors allowed them to reply to the email with a ‘no’ in the title to indicate if they were not going to participate (Appendix B). After the initial email to dietetic internship directors, three reminder emails were sent to individuals who had not responded. Schleyer and Forrest obtained a 64.4% response rate with a web-based survey when they sent three reminder emails (36). The first reminder was sent on the fifth day following the original message, followed by two further reminders on the twelfth and fifteenth days after the original message (Appendix E) (36). The survey administration period ended 18 days after the original
message was sent to participants. A $50 gift card incentive was offered to one dietetic intern and one internship director following completion of the survey (Appendix F).

Statistical Procedures

The data were exported from Snap survey software for all questionnaire items into an Excel spreadsheet that was then imported into SAS (Statistical Analysis Software) for analysis. Descriptive statistics were computed for several of the variables and associations were computed between attitudes, knowledge, professional intentions to promote and support breastfeeding, breastfeeding exposure, and demographic characteristics. ANOVAs with Tukey’s multiple comparisons were performed to see if professional intention differed for different levels of internship type, breastfeeding region, whether the participant was breastfed as a child, parental status, whether the participant’s child was breastfed, and gender. Professional intention was also regressed on infant feeding attitude, breastfeeding knowledge, and age. ANOVAs with Tukey’s multiple comparisons were performed to see if infant feeding attitude differed for different levels of participant’s role and internship type. Chi-Square tests were performed with the questions that evaluated the presence of breastfeeding education in the internship. Outcomes were considered significant if $p < .05$. 
CHAPTER IV

RESULTS

Response Rate

A total of 119 (49.8%) of the 239 invited dietetic internship directors returned the survey and were included in the study. Of the internship directors who did not participate, 30 (12.4%) responded with an automatic reply email indicating they were out of their office during the time of the study, 5 (2.1%) responded that their internship was not currently in session, and 3 (1.2%) responded that they did not wish to participate. Of the 2,885 possible dietetic interns who may have received the recruitment email, 440 (15.1%) dietetic interns participated. Due to the actuality that only half of dietetic internship directors participated in the study, the assumption can be made that only half of the dietetic interns received the recruitment email. The sample size for dietetic interns can be estimated to be 1,460 interns resulting in a response rate of 30.1%. The data obtained from six respondents who did not specify whether they were internship directors or dietetic interns were excluded from statistical analysis.

Demographics

Frequencies for all demographic variables of the sample of dietetic interns are shown in Table 1. Of the 440 dietetic interns who participated, 95.9% were female and 4.1% were male. The age of dietetic intern participants ranged from 21 to 60 years old, with a majority (82.9%) of participants being 21-29 years old. A majority of dietetic interns were in internships at a college/university (55.7%) or a hospital/medical center (34.1%), while fewer participants were in health department/community internships (5.5%), other types of internships (4.5%), and school districts (0.2%). There were participants from all five regions of the country. A majority (86.8%) of the dietetic interns were not parents, but 13.2% of dietetic interns were parents.
Table 1. Dietetic interns demographic characteristics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>95.9</td>
</tr>
<tr>
<td>Male</td>
<td>4.1</td>
</tr>
<tr>
<td>Age</td>
<td></td>
</tr>
<tr>
<td>21-24 years</td>
<td>55.1</td>
</tr>
<tr>
<td>25-29 years</td>
<td>27.8</td>
</tr>
<tr>
<td>30-39 years</td>
<td>9.6</td>
</tr>
<tr>
<td>40-49 years</td>
<td>5.2</td>
</tr>
<tr>
<td>50-59 years</td>
<td>1.8</td>
</tr>
<tr>
<td>&gt;60 years</td>
<td>0.5</td>
</tr>
<tr>
<td>Parent</td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>13.2</td>
</tr>
<tr>
<td>No</td>
<td>86.8</td>
</tr>
<tr>
<td>Type of Internship</td>
<td></td>
</tr>
<tr>
<td>College or University</td>
<td>55.7</td>
</tr>
<tr>
<td>Hospital or Medical Center</td>
<td>34.1</td>
</tr>
<tr>
<td>U.S. Military</td>
<td>0.0</td>
</tr>
<tr>
<td>Health Department or Community</td>
<td>5.5</td>
</tr>
<tr>
<td>School District</td>
<td>0.2</td>
</tr>
<tr>
<td>Other</td>
<td>4.6</td>
</tr>
<tr>
<td>Internship Location</td>
<td></td>
</tr>
<tr>
<td>Northeast b</td>
<td>22.1</td>
</tr>
<tr>
<td>Southeast c</td>
<td>20.0</td>
</tr>
<tr>
<td>Midwest d</td>
<td>29.1</td>
</tr>
<tr>
<td>Southwest e</td>
<td>8.6</td>
</tr>
<tr>
<td>West f</td>
<td>20.2</td>
</tr>
<tr>
<td>Total</td>
<td>100.0</td>
</tr>
</tbody>
</table>

a There was missing data from one subject for this variable.
b Consists of the following states: CT, ME, MA, NH, RI, VT, DE, MD, NJ, NY, PA, DC
c Consists of the following states: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV
d Consists of the following states: IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI
e Consists of the following states: AZ, NM, OK, TX
f Consists of the following states: AK, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY

Frequencies for all demographic variables for the sample of dietetic internship directors are shown in Table 2. Of the 119 internship directors who participated, only one participant was male. The sampled internship directors directed internships at a college/university (49.6%), a hospital/medical center (37.0%), a health department/community internship (7.6%), and other types of internships (5.9%). The sample included no internship directors who directed U.S.
military or school district based internships. However, the distribution of the remaining four internship types represented the population of all dietetic internship directors in the United States listed on the ADA’s website’s list of Accredited Dietetic Internship Programs fairly well (40). The internship locations were almost evenly distributed across all five regions of the country.

Table 2. Gender, type of internship, and internship location of dietetic internship directors

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Sample</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
<td>(n)</td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>99.1</td>
<td>(117)</td>
</tr>
<tr>
<td>Male</td>
<td>0.8</td>
<td>(1)</td>
</tr>
<tr>
<td>Type of Internship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or University</td>
<td>49.6</td>
<td>(59)</td>
</tr>
<tr>
<td>Hospital or Medical Center</td>
<td>37.0</td>
<td>(44)</td>
</tr>
<tr>
<td>U.S. Military</td>
<td>0.0</td>
<td>(0)</td>
</tr>
<tr>
<td>Health Department or Community</td>
<td>7.6</td>
<td>(9)</td>
</tr>
<tr>
<td>School District</td>
<td>0.0</td>
<td>(0)</td>
</tr>
<tr>
<td>Other</td>
<td>5.9</td>
<td>(7)</td>
</tr>
<tr>
<td>Internship Location</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Northeast</td>
<td>21.4</td>
<td>(25)</td>
</tr>
<tr>
<td>Southeast</td>
<td>19.7</td>
<td>(23)</td>
</tr>
<tr>
<td>Midwest</td>
<td>23.9</td>
<td>(28)</td>
</tr>
<tr>
<td>Southwest</td>
<td>12.8</td>
<td>(15)</td>
</tr>
<tr>
<td>West</td>
<td>22.2</td>
<td>(26)</td>
</tr>
<tr>
<td>Total</td>
<td>49.8</td>
<td>(119)</td>
</tr>
</tbody>
</table>

* a Consists of all dietetic internship directors in the United States listed on the ADA’s website’s list of Accredited Dietetic Internship Programs (40).
* b There was missing data from one or two subjects for these variables.
* c Consists of the following states: CT, ME, MA, NH, RI, VT, DE, MD, NJ, NY, PA, DC
* d Consists of the following states: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV
* e Consists of the following states: IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI
* f Consists of the following states: AZ, NM, OK, TX
* g Consists of the following states: AK, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY
* h Percentage of all internship directors (n=239).

Breastfeeding Attitude, Knowledge, Exposure, and Future Intention

The mean scores for attitude, knowledge, and intention are summarized in Table 3. The mean infant feeding attitude score for dietetic interns was 70.9 ± 6.9 from a range of 17 to 85. Dietetic internship directors had a mean infant feeding attitude score of 69.7 ± 8.2. The mean breastfeeding knowledge score of dietetic interns was 11.7 ± 1.6 from a range of 0 to 14. The
mean professional intention score of dietetic interns was 49.0 ± 10.2 from a range of 6 to 60. For the six factors determining professional intention to promote and support breastfeeding, the intention to provide breastfeeding information (9.4 ± 1.3) had the highest mean score, while the intention to conduct breastfeeding research (6.4 ± 2.9) had the lowest mean score.

Table 3. Mean score for infant feeding attitude, breastfeeding knowledge, and professional intention of dietetic interns and internship directors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Possible Range</th>
<th>Dietetic Interns</th>
<th>Sample</th>
<th>Dietetic Internship Directors</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infant Feeding Attitude a</td>
<td>17-85</td>
<td>70.9</td>
<td>6.9</td>
<td>17-85</td>
<td>69.7</td>
</tr>
<tr>
<td>Breastfeeding Knowledge</td>
<td>0-14</td>
<td>11.7</td>
<td>1.6</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Professional Intention</td>
<td>6-60</td>
<td>49.0</td>
<td>10.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provide breastfeeding information</td>
<td>1-10</td>
<td>9.4</td>
<td>1.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Involve patient’s friends and family</td>
<td>1-10</td>
<td>8.6</td>
<td>1.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Remove breastfeeding barriers</td>
<td>1-10</td>
<td>8.1</td>
<td>2.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborate with others</td>
<td>1-10</td>
<td>8.2</td>
<td>2.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Advocate for breastfeeding policies</td>
<td>1-10</td>
<td>8.3</td>
<td>2.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct breastfeeding research</td>
<td>1-10</td>
<td>6.4</td>
<td>2.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* A high score indicates more positive attitudes to breastfeeding, while a low score indicates more positive attitudes toward formula feeding.

The most dietetic intern participants (30.3%, n = 133) were from states with > 50% of children breastfed at six months (Table 4). A large proportion of participants were also from states with 30-39% (28.0%, n = 123) and 40-49% (27.6%, n = 121) of children breastfed at six months, respectively. The fewest number of dietetic intern participants were from states with < 30% of children breastfed at six months (14.1%, n = 62).

The dietetic interns had relatively high exposure to breastfeeding (Table 4). Most dietetic interns (67.4%, n = 296) had been breastfed as children, while only 27.1% (n = 119) were not breastfed and 5.5% (n = 22) did not know whether or not they had been breastfed. A majority of dietetic interns (97.1%, n = 427) knew someone who had breastfed, while only 2.9% (n = 13) of interns did not know someone who had breastfed. A majority of dietetic interns (95.0%, n = 417)
had witnessed a woman breastfeeding, while only 5.0% (n = 22) had never witnessed a woman breastfeeding. Of dietetic interns who are parents, 96.5% (n = 55) breastfed their child, while only 3.5% did not breastfeed their children. A majority of dietetic interns (96.1%) had high exposure to breastfeeding.

Table 4. Breastfeeding exposure of dietetic interns

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>%</td>
</tr>
<tr>
<td>Home State based upon Breastfeeding Duration Rate a</td>
<td></td>
</tr>
<tr>
<td>Region A: &gt; 50% of Children Breastfed at 6 months b</td>
<td>30.3</td>
</tr>
<tr>
<td>Region B: 40-49% of Children Breastfed at 6 months c</td>
<td>27.6</td>
</tr>
<tr>
<td>Region C: 30-39% of Children Breastfed at 6 months d</td>
<td>28.0</td>
</tr>
<tr>
<td>Region D: &lt; 30% of Children Breastfed at 6 months e</td>
<td>14.1</td>
</tr>
<tr>
<td>Was participant breastfed?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td></td>
<td>I don’t know</td>
</tr>
<tr>
<td>Do you know someone who has breastfed?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Have you ever witnessed a woman breastfeeding?</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>If Parent, any children ever breastfed? f</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>No</td>
</tr>
<tr>
<td>Breastfeeding Exposure Score g</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>Low</td>
</tr>
</tbody>
</table>

a Regions based upon the Percent of Children Breastfed at 6 Months of Age by State in 2006 from the National Immunization Survey, which was the most recent breastfeeding prevalence data at the time of survey administration.
b Consists of the following states: CA, CO, HI, ID, MN, MT, NH, NJ, OR, UT, VT, WA, WY
c Consists of the following states: AK, AZ, CT, DC, KS, MA, ME, MD, NY, NE, NM, NV, RI, SD, TX, WI, VA
d Consists of the following states: DE, FL, GA, IA, IL, IN, MI, MO, NC, ND, PA, SC, TN
e Consists of the following states: AL, AR, KY, LA, MS, OH, OK, WV
f There was missing data from one subject for this variable.
g Participants were asked up to four questions concerning breastfeeding exposure, depending on parental status. High breastfeeding exposure was categorized as a score of two to four, while low breastfeeding exposure was categorized as a score of zero to one.

Table 5 summarizes the relationship between professional intention and the possible predictors of intention. There were no significant differences in mean professional breastfeeding intention scores among the breastfeeding regions (p = 0.9783), whether the participant was
breastfed as a child ($p = 0.6230$), or whether the participant’s own child was breastfed or not ($p = 0.9909$). There was a significant linear relationship between professional intention and infant feeding attitude ($r = 0.396, p < 0.0001$) and between professional intention and breastfeeding knowledge ($r = 0.265, p < 0.0001$). A positive correlation exists between the infant feeding attitude and breastfeeding knowledge of dietetic interns and their professional intention to promote and support breastfeeding. There was no linear relationship between professional intention and age ($p = 0.0687$). There were significant differences in mean professional breastfeeding intention scores between the levels of parental status ($p = 0.0002$), internship type ($p = 0.0030$) and gender ($p = 0.0362$). Dietetic interns in health department/community had significantly higher professional intentions (53.5 ± 7.0) than interns in hospital/medical center internships (45.0 ± 14.2). Dietetic interns who were parents (53.6 ± 7.6) had significantly higher professional intentions than participants who were not parents (48.3 ± 10.4). Significantly higher professional intentions were found in female interns (49.2 ± 10.1) compared to male dietetic interns (44.1 ± 10.6).
The relationship of infant feeding attitude with breastfeeding knowledge, breastfeeding exposure, participant’s role, and internship type is summarized in Table 6. There was a significant linear relationship between infant feeding attitude and breastfeeding knowledge (r = 0.563, p < 0.0001) and between infant feeding attitude and breastfeeding exposure (r = 0.287, p
There was no significant difference in mean infant feeding attitude scores between interns and directors \( (p = 0.1268) \). Type of internship had a significant relationship with infant feeding attitude score \( (p < 0.0001) \). Participants in health department/community internships had significantly higher mean infant feeding attitude scores \( (76.4 \pm 5.1) \), than participants in college/university, hospital/medical center, and other types of internships.

Table 6. Relationship between infant feeding attitude and breastfeeding knowledge, breastfeeding exposure, participant’s role, and internship type

<table>
<thead>
<tr>
<th>Variable</th>
<th>R²</th>
<th>p</th>
<th>n</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding knowledge</td>
<td>0.318</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Breastfeeding exposure</td>
<td>0.082</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participant’s Role</td>
<td>0.004</td>
<td>0.1268</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietetic Intern</td>
<td>440</td>
<td>70.9</td>
<td>6.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dietetic Internship Director</td>
<td>106</td>
<td>69.7</td>
<td>8.2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Internship Type</td>
<td>0.053</td>
<td>&lt;0.0001</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>College or University</td>
<td>302</td>
<td>70.9</td>
<td>7.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospital or Medical Center</td>
<td>190</td>
<td>69.2</td>
<td>5.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Health Dept. or Community</td>
<td>34</td>
<td>76.4</td>
<td>5.1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other (^5)</td>
<td>26</td>
<td>70.9</td>
<td>7.9</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\(^1\) Possible Range 17-85  
\(^2\) Regression  
\(^3\) ANOVA with Tukey’s  
\(^4\) Includes both internship directors and dietetic interns  
\(^5\) Includes one participant from a school district.  
* Significant at \( p < .01 \).  
\(^a,b\) Tukey’s grouping with a different letter indicates that the mean is statistically different. Tukey’s grouping with the same letter indicates that the mean is not statistically different.

Breastfeeding and Internships

Table 7 summarizes the dietetic interns’ and internship directors’ beliefs concerning the presence and importance of breastfeeding education in the dietetic internship process. Significantly more \( (p < 0.0001) \) dietetic interns (92.2%) agreed or strongly agreed that it was important to include breastfeeding training during the dietetic internship than internship directors (78.6%). Strong agreement or agreement that it is important for dietetic interns to have exposure to breastfeeding women during the internship was reported by 90.5% of interns and 91.4% of directors. The presence of a Women, Infants, and Children (WIC) program rotation was reported by 87.6% (n = ...
of dietetic interns, while 96.2% (n = 102) of internship directors reported the presence of a WIC rotation in the internship they directed ($p = 0.0311$). The opportunity for interns to have exposure to breastfeeding women was reported by 75.5% (n = 332) of dietetic interns, while 13.2% reported no opportunity for exposure and 11.4% did not know if an opportunity was presented. A significantly higher ($p = 0.0006$) percentage of internship directors (92.5%) reported that the internship they direct provides an opportunity for interns to have exposure to breastfeeding women than the percentage of dietetic interns (75.5%).

Table 7. Dietetic interns and internship directors attitudes of breastfeeding education in dietetic internships

<table>
<thead>
<tr>
<th></th>
<th>Interns %</th>
<th>Interns (n)</th>
<th>Directors %</th>
<th>Directors (n)</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Participants</strong></td>
<td>78.7</td>
<td>(440)</td>
<td>21.3</td>
<td>(119)</td>
<td></td>
</tr>
<tr>
<td>It is important to include breastfeeding training during the dietetic internship.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA or A</td>
<td>92.2</td>
<td>(400)</td>
<td>78.6</td>
<td>(92)</td>
<td>&lt;0.0001*</td>
</tr>
<tr>
<td>SD, D, or N</td>
<td>7.8</td>
<td>(34)</td>
<td>21.4</td>
<td>(25)</td>
<td></td>
</tr>
<tr>
<td>It is important for dietetic interns to have exposure to breastfeeding women during the internship.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA or A</td>
<td>90.5</td>
<td>(392)</td>
<td>91.4</td>
<td>(95)</td>
<td>0.7973</td>
</tr>
<tr>
<td>SD, D, or N</td>
<td>9.5</td>
<td>(41)</td>
<td>8.7</td>
<td>(9)</td>
<td></td>
</tr>
<tr>
<td>My internship provides a WIC rotation.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>87.6</td>
<td>(382)</td>
<td>96.2</td>
<td>(102)</td>
<td>0.0311**</td>
</tr>
<tr>
<td>No</td>
<td>10.3</td>
<td>(45)</td>
<td>3.8</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>I Don’t Know</td>
<td>2.1</td>
<td>(9)</td>
<td>0.0</td>
<td>(0)</td>
<td></td>
</tr>
<tr>
<td>My dietetic internship provides an opportunity for interns to have exposure to breastfeeding women.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>75.5</td>
<td>(332)</td>
<td>92.5</td>
<td>(98)</td>
<td>0.0006*</td>
</tr>
<tr>
<td>No</td>
<td>13.2</td>
<td>(58)</td>
<td>3.8</td>
<td>(4)</td>
<td></td>
</tr>
<tr>
<td>I Don’t Know</td>
<td>11.4</td>
<td>(50)</td>
<td>3.8</td>
<td>(4)</td>
<td></td>
</tr>
</tbody>
</table>

1 For both dietetic interns and directors, all subjects did not answer all questions.
2 Chi-Square test performed.
* Significant at $p < .01$.
** Significant at $p < .05$. 
A significant gap in the current literature exists concerning the attitudes, knowledge, exposure, and intentions of dietitians to promote and support breastfeeding. The primary purpose of this study was to aid in bridging that gap by assessing the antecedents of the behavioral intention to promote and support breastfeeding in dietetic interns. The secondary purpose of this study was to describe the infant feeding attitudes of dietetic internship directors, and assess the level of breastfeeding education offered in dietetic internships.

According to the Theory of Planned Behavior, intentions to perform a behavior lead to performance of the behavior (14-16); the strong intention to promote and support breastfeeding of dietetic interns is important, because they will be advocates for breastfeeding and this will be needed to improve the breastfeeding duration rates in the United States. Finding that a positive correlation exists between the breastfeeding knowledge and exposure of dietetic interns and their infant feeding attitudes fits within the theoretical framework of the Theory of Planned Behavior. According to the Theory of Planned Behavior, both exposure and knowledge are antecedents of attitude, which is a predictor of intention (16). Professional intention was positively correlated with infant feeding attitude (r = 0.396, \( p < 0.0001 \)) and breastfeeding knowledge in dietetic interns (r = 0.265, \( p < 0.0001 \)), which is comparable to results, found by Tarrant and Dodgson, who found a strong relationship (\( p < 0.001 \)) between high intention to breastfeed and increased breastfeeding attitude and knowledge scores (27). In the research of Daneault, Beaudry, and Godin, who measured the predictors of professional intention in registered dietitians and nurses, intention was significantly correlated with attitude (r = 0.65, \( p < 0.001 \)) (14).
The mean infant feeding attitude scores for dietetic interns and dietetic internship directors indicate positive attitudes toward breastfeeding on the Iowa Infant Feeding Attitude Scale (IIFAS) which is consistent with previous finding showing that breastfeeding mothers have more positive attitudes toward breastfeeding and score higher on the IIFAS than mothers who chose to formula feed (33, 41). However, the dietetic interns and directors scored higher on the IIFAS (70.9 ± 6.9 and 69.7 ± 8.2, respectively) than breastfeeding mothers (66 ± 7; 65.0 ± 8.3) (33, 41), formula feeding mothers (55.1 ± 7.9) (33), and breastfeeding and formula feeding mothers combined (58 ± 11, 59 ± 11) (41). Positive attitudes toward breastfeeding have also been found in previous research with other health professionals and college students in pre-health professional fields of study, with registered dietitians having the most favorable attitudes (13, 16, 23). Because dietetic interns have more positive attitudes toward breastfeeding than their patients and possibly than other health care professionals, dietetic interns are well positioned to provide breastfeeding guidance and support.

There was no statistical difference in infant feeding attitude scores between dietetic interns and dietetic internship directors. Finding no statistical difference in infant feeding attitude scores between dietetic interns and dietetic internship directors suggests that dietetic interns may have positive attitudes toward breastfeeding similar to practicing RDs. Participants in health department/community internships had significantly higher mean infant feeding attitude scores than participants in college/university, hospital/medical center, and other types of internships. Being an intern or internship director at a health department/community internship resulted in more positive attitudes toward breastfeeding. The increase in positive attitudes has two possible explanations; either participants in health department/community internships chose that type of internship due to an already positive attitude toward breastfeeding or the learning experience
provided by health department/community internships promotes more positive attitudes toward breastfeeding. Many health department/community internships are highly involved with WIC, which may also contribute to more positive attitudes toward breastfeeding.

Dietetic interns had high breastfeeding knowledge scores; the mean breastfeeding knowledge score was 11.7 ± 1.6 (83.5% correct). Previous studies have found that undergraduate college students and dietitians have good knowledge about breastfeeding with scores that were somewhat lower than in the present study. For example, American university students had 67% of breastfeeding knowledge questions correct, Hong Kong university students had 71% correct, pediatricians in training had 53% correct, undergraduate dietetic students in Australia had 65% correct, and registered dietitians (in 1993) had 79.6 % breastfeeding knowledge questions correct (12, 13, 27, 29, 30). The strong breastfeeding knowledge scores of dietetic interns demonstrate that their education and internships are preparing them to be qualified to promote and support breastfeeding.

The dietetic interns surveyed had high exposure to breastfeeding and breastfeeding women regardless of the breastfeeding rate in the intern’s home state. A majority of dietetic interns knew someone who had breastfed, had witnessed someone breastfeeding, and had breastfed their own child if they were a parent. Dietetic interns had more exposure to breastfeeding than American university students in the study by Marrone, Vogeltanz-Holm, and Holm, which reports that only 82% university students had witnessed someone breastfeeding in public (29). This research suggests that people who choose to become dietitians may have more exposure to breastfeeding and breastfeeding mothers.

The high intention to of dietetic interns to promote and support breastfeeding is supported by the results of Payne et al where undergraduate dietetic students reported a commitment to
breastfeeding at a personal and professional level (12). It is encouraging to see that dietetic interns have very high intentions to provide breastfeeding information to expectant mothers and their families, to collaborate with others who support breastfeeding, and to advocate for policy change. Public policy plays a key role in eliminating the barriers to breastfeeding. For example, the Healthy Hunger-Free Kids Act of 2010 (Public Law 111–296) provided funding to further promote breastfeeding in the Women, Infants, and Children (WIC) program (42). Finding that dietetic interns intentions to conduct breastfeeding research was not quite as high as their other intentions to support breastfeeding was not surprising, because young professionals are less experienced with conducting research and have not developed the confidence to perform their own research. However, breastfeeding research is important because it directs public policy and delineates the benefits of breastfeeding (1).

For dietetic interns, high professional intention to promote and support breastfeeding was related to type of internship, parental status, and gender. Dietetic interns in health department/community internships had greater professional intentions than interns from hospital/medical center internships. Health department/community internships may have higher intentions, because many of these internships are directly involved with public health programs providing direct contact with breastfeeding women. Hospital/medical center internships may also have lower professional intentions, because the internship program is focused on the clinical aspect of dietetics. Higher intentions to promote and support breastfeeding were found in dietetic interns who were parents. Increased intentions by parents are to be expected, because parents have addressed their personal decision on breastfeeding and have more opportunity for exposure to breastfeeding. Tarrant and Dodgson found that in university students attitude, breastfeeding status, and knowing someone who breastfed were independently and positively associated with
future breastfeeding intentions (27). Female interns had greater intention to promote and support breastfeeding than male interns, which may be due to male interns being less comfortable with breastfeeding. Tarrant and Dodgson found that gender had no association with breastfeeding intention in contrast to this study. However, since males are a minority in the field of dietetics, male dietetic interns would have needed to be extensively sampled to determine the actual intentions of the population (27). No relationship was found between professional intention and the breastfeeding regions which suggests that the breastfeeding rate in the intern's home state does not influence their professional intention to promote and support breastfeeding.

A majority of dietetic internship directors reported that their internship provides a WIC rotation and an opportunity for interns to have exposure to breastfeeding women. Internship directors reported providing breastfeeding education as a component of the dietetic internship, but significantly fewer dietetic interns reported that they had experienced breastfeeding education in their internship. The perceived lack of breastfeeding education in the internship by interns may indicate that some internship programs are not providing adequate training in breastfeeding during the internship process. However, as internship programs have different start dates and schedules, interns may not have experienced the breastfeeding education provided by the program at the time the survey was administered. Another factor contributing to the impression that internships are not providing adequate breastfeeding training is that significantly more interns than directors believe that breastfeeding training is an important part of the dietetic internship experience. If directors do not believe that providing breastfeeding education is an important part of the internship process, they may chose to minimize the presence of breastfeeding education in their program. Addressing the gaps in the internship process may be a
critical pathway to providing an internship experience that encourages dietetic interns to promote and support breastfeeding in their future practice.

The response rate of 49.8% of dietetic internship directors was within the expected range of response rates (33-53%) reported in previous research with health care professionals including registered dietitians (13, 14, 19, 20, 30). The response rate by these internship directors corresponds with previously published response rates and includes a considerable number of participants from across the United States.

The demographic characteristics of the sample of dietetic interns and internship directors were apparently representative of the population. A majority of the dietetic intern participants were female which was expected because the field of dietetics consists of predominately female professionals. The frequency of dietetic students of each gender was similar to the 89% female and 11% male found by Payne et al (12). The American Dietetic Association (ADA) website lists the names of dietetic internship directors of Accredited Dietetic Internship Programs in the United States, with only one director on that list who is male (40). Thus, it was anticipated that only one internship director who participated would be male. Likewise, when Lazzaro, Anderson, and Auld surveyed WIC health professionals 100% of the registered dietitians surveyed were female (19). Payne et al and Tarrant and Dodgson found that 81.5% of dietetic students and 94.4% of undergraduate students were 17-25 years old, which is comparable to the majority of dietetic intern participants being 21-29 years old (12, 27).

A majority (86.8%) of dietetic intern participants were not parents, which is similar to results of Williams and Hammer who found that 79% of pediatricians in training were not parents (30). Young professionals in this age range are not expected to have parenting experience. None of the previous research had surveyed dietetic interns or directors, so type of
Internship had not been previously collected. The distribution of internship types is representative of the population surveyed, and there are significantly more internships located at colleges/universities and hospitals/medical centers than any other type of internship. Finding that participants were from all five regions of the country is important, because it indicates that the sample is representative of interns and directors across the United States and not just a sample of one area of the country. The sample of dietetic interns was representative of the population and comparable to previous studies of college students including students studying dietetics.

Limitations

Though this study provides insight into the breastfeeding attitudes, knowledge, exposure, and intentions of dietetic interns, there are limitations. One limitation was selection bias, because internship directors that were biased toward breastfeeding may have been the only ones to respond to the survey and encourage their interns to participate. It is unlikely that all interns in the U.S. received the email inviting them to take the survey, especially for those internship sites where the directors did not choose to participate. Because the number of interns who actually received the survey is unknown, the response rate of dietetic interns is only an estimate. Secondly, the results cannot be generalized to all registered dietitians, because even though the directors are registered dietitians they are a highly specific subset of registered dietitians. However, a large number of interns and a high percentage of directors completed this survey. Finally, finding that male interns have lower intentions to promote and support breastfeeding than female interns may not be accurate, because men are a minority in the profession of dietetics and to accurately determine the intentions of male interns they should have been over-sampled.
Conclusions

Dietetic interns intend to promote and support breastfeeding in their future practice; their positive attitudes toward breastfeeding, high breastfeeding knowledge, and high previous exposure to breastfeeding support the conclusion that dietetic interns intend to promote and support breastfeeding. Dietetic internship directors have similar positive attitudes toward breastfeeding, and report that their internship program provides ample resources to prepare dietetic interns for future promotion and support of breastfeeding. Further research is needed to determine the factors that cause interns from health department/community internships to have higher professional intentions toward breastfeeding and more positive attitudes toward breastfeeding. Dietetic internship directors need to encourage interns to conduct breastfeeding research in their future practice, as dietetic interns have the lowest intentions to engage in breastfeeding research. This study suggests that dietetic interns, the future registered dietitians of this country, are thoroughly prepared to promote and support breastfeeding in their future practice.
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APPENDIX A: HSRB APPROVAL LETTER
May 11, 2010

TO:         Cynthia Mitchell
            Food & Nutrition

FROM:       Hillary Harms, Ph.D.
            HSRB Administrator

RE:         HSRB Project No.: H10T290GX2

TITLE:      Breastfeeding Attitudes of Dietetic Interns and Internship Directors

You have met the conditions for approval for your project involving human subjects. As of May 7, 2010, your project has been granted final approval by the Human Subjects Review Board (HSRB). This approval expires on April 26, 2011. You may proceed with subject recruitment and data collection.

The final approved version of the consent document(s) is attached. Consistent with federal OHRP guidance to IRBs, the consent document(s) bearing the HSRB approval/expiration date stamp is the only valid version and you must use copies of the date-stamped document(s) in obtaining consent from research subjects.

You are responsible to conduct the study as approved by the HSRB and to use only approved forms. If you seek to make any changes in your project activities or procedures (including increases in the number of participants), please send a request for modifications immediately to the HSRB via this office. Please notify me, in writing (fax: 372-6916 or email: hsr@bgusu.edu) upon completion of your project.

Good luck with your work. Let me know if this office or the HSRB can be of assistance as your project proceeds.

Comments/Modifications:
Please add text equivalent to the HSRB approval/expiration date stamp at the "footer" area of the electronic consent documents (see attached for specific text).

c: Dr. Rebecca Pobocik

Research Category: EXEMPT #2
Dear Dietetic Internship Director:

My name is Cynthia Mitchell and I am a master's student in Family and Consumer Sciences at Bowling Green State University. I am conducting a thesis study about dietetic interns’ intentions to promote and support breastfeeding and dietetic internship directors’ attitudes toward breastfeeding. You are being asked to participate, because of your experience as a dietetic internship director.

The results of this study will inform the profession by identifying the breastfeeding attitudes, knowledge, exposure, and intentions of dietetic interns and the attitudes of internship directors. Consequently, this research will allow for adjustments in training dietetic interns. There are limited direct benefits to participants; however, the participants will help to further develop the dietetics profession.

This study will request that you forward the following email to your dietetic interns and complete a short survey evaluating the attitudes toward breastfeeding of dietetic internship directors. I estimate that completion of the survey will take approximately 5 minutes. An option for entering a drawing for a $50 gift card will be available upon completion of the survey.

Your participation in this study is completely voluntary. You are free to withdraw consent and to discontinue participation at any time, and you can refrain from answering any questions without penalty or explanation.

Information you provide will remain confidential and your identity will not be revealed. All data will be directly uploaded in SNAP Survey Software system and the researchers are the only ones who will have access to the results. Survey information will be deleted after it has been statistically analyzed. Please remember to clear your browser’s cache and page history after you submit the survey in order to protect your privacy. Some employers use tracking software to monitor and record keystrokes, mouse clicks, and web sites visited. This could impact the confidentiality of your responses. Therefore, you may wish to complete the survey on your home computer or a public computer.

The anticipated risks to you are no greater than those normally encountered in daily life.

If you have any questions or comments about this study, you can contact me at (419) 490-5614 (clutes@bgsu.edu) or Dr. Rebeca Poboci, RD, my project advisor, at (419) 372-7849 (poboci@bgsu.edu). You may also contact the Chair, Human Subjects Review Board, Bowling
Green State University, (419) 372-7716 (hsrb@bgsu.edu), if any problems or concerns arise during the course of the study.

Taking this survey indicates your willingness to voluntarily participate in this research study and acknowledges that you have been informed that your confidentiality will be maintained.

To participate go to the following link and complete the short survey.

Here is the link to the survey:
Insert link

Respectfully,
Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614
Dear Dietetic Intern:

My name is Cynthia Mitchell and I am a master’s student in Family and Consumer Sciences at Bowling Green State University. I am conducting a thesis study about behavioral intentions toward breastfeeding promotion and support. You are being asked to participate due to your role as a dietetic intern.

The results of this study will inform the profession by identifying the breastfeeding attitudes, knowledge, exposure, and intentions of dietetic interns and the attitudes of internship directors. In addition, this research will allow for adjustments in training dietetic interns. There are limited direct benefits to participants; however, the participants will help to further develop the dietetics profession.

This study will request that you complete a short survey evaluating your intentions to promote and support breastfeeding. I estimate that completion of the survey will take approximately 10 minutes. An option for entering a drawing for a $50 gift card will be available upon completion of the survey.

Your participation in this study is completely voluntary. You are free to withdraw consent and to discontinue participation at any time, and you can refrain from answering any questions without penalty or explanation.

All data will be directly uploaded in SNAP Survey Software system and the researcher is the only person that will have access to the results. Survey information will be deleted after it has been statistically analyzed. Information you provide will remain confidential and your identity will not be revealed. Please remember to clear your browser’s cache and page history after you submit the survey in order to protect your privacy. Some employers use tracking software to monitor and record keystrokes, mouse clicks, and web sites visited. This could impact the confidentiality of your responses. Therefore, you may wish to complete the survey on your home computer or a public computer.

The anticipated risks to you are no greater than those normally encountered in daily life.

If you have any questions or comments about this study, you can contact me at (419) 490-5614 (clutes@bgsu.edu) or Dr. Rebecca Pobocik, my project advisor, at (419) 372-7849 (pobocik@bgsu.edu). You may also contact the Chair, Human Subjects Review Board, Bowling Green State University, (419) 372-7716 (hsrb@bgsu.edu), if any problems or concerns arise during the course of the study.

Taking this survey indicates your willingness to voluntarily participate in this research study and acknowledges that you have been informed that your confidentiality will be maintained.
To participate go to the following link and complete the short survey.

Here is the link to the survey:

Insert link

Respectfully,
Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614
Dear Dietetic Internship Director:

My name is Cynthia Mitchell and I am a master’s student in Family and Consumer Sciences at Bowling Green State University. I am conducting a thesis study about dietetics and breastfeeding. You have been contacted, because you are a dietetic internship director.

You are being asked to participate by (1) forwarding the following email to your dietetic interns, and (2) completing a short survey that will take approximately 3-5 minutes.

An option for entering a drawing to win $50 gift card will be available upon completion of the survey.

To complete the survey, please click on the following link:
http://survey.bgsu.edu/surveys/FCS/bfbbehaviors/bfbbehaviors.htm

If you do not wish for yourself or your interns to participate, please respond to this email by entering the word no in the subject line of the email.

If you have any questions about this survey you may ask either me or my thesis advisor, Dr. Rebecca Pobocik, PhD, RD (pobocik@bgsu.edu).

Your participation is greatly appreciated. Thank you!

Respectfully,

Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614

Dear Dietetic Intern:

My name is Cynthia Mitchell and I am a master’s student in Family and Consumer
Sciences at Bowling Green State University. I am conducting a thesis study about breastfeeding. You have been contacted, because you are a dietetic intern.

You are being asked to participate by completing a short survey that will take approximately 5-7 minutes. An option for entering a drawing to win a $50 gift card will be available upon completion of the survey.

To complete the survey, please click on the following link:
http://survey.bgsu.edu/surveys/FCS/bfbehaviors/bfbehaviors.htm

Your participation is greatly appreciated. Thank you!

If you have any questions about this survey you may ask either me or my thesis advisor, Dr. Rebecca Pobocik, PhD, RD (pobocik@bgsu.edu).

Respectfully,

Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614
APPENDIX C: INSTRUMENT USED WITH DIETETIC INTERNSHIP DIRECTORS
Breastfeeding Behavioral Intentions Survey

Letter of Informed Consent

Dear Dietetic Internship Director:

My name is Cynthia Mitchell and I am a master’s student in Family and Consumer Sciences at Bowling Green State University. I am conducting a thesis study about dietetic interns’ intentions to promote and support breastfeeding and dietetic internship directors’ attitudes toward breastfeeding. You are being asked to participate, because of your experience as a dietetic internship director or intern.

The results of this study will inform the profession by identifying the breastfeeding attitudes, knowledge, exposure, and intentions of dietetic interns and the attitudes of internship directors. Consequently, this research will allow for adjustments in training dietetic interns. There are limited direct benefits to participants; however, the participants will help to further develop the dietetics profession.

Dietetic Internship Directors are requested to forward the information about this study to their current dietetic and complete a short survey evaluating the attitudes toward breastfeeding of dietetic internship directors. I estimate that completion of the survey will take approximately 3-5 minutes. Dietetic Interns are requested to complete a short survey evaluating their intentions to promote and support breastfeeding, which will take approximately 5-7 minutes. An option for entering a drawing to win a $50 gift card will be available upon completion of the survey.

Your participation in this study is completely voluntary. You are free to withdraw consent and to discontinue participation at any time, and you can refrain from answering any questions without penalty or explanation.

Information you provide will remain confidential and your identity will not be revealed. All data will be directly uploaded in SNAP Survey Software system and the researchers are the only ones who will have access to the results. Survey information will be deleted after it has been statistically analyzed. Please remember to clear your browser’s cache and page history after you submit the survey in order to protect your privacy. Some employers use tracking software to monitor and record keystrokes, mouse clicks, and web sites visited. This could impact the confidentiality of your responses. Therefore, you may wish to complete the survey on your home computer or a public computer.

The anticipated risks to you are no greater than those normally encountered in daily life.
If you have any questions or comments about this study, you can contact me at, (419) 490-5614 (clutes@bgsu.edu) or Dr. Rebecca Pobocik, PhD, RD, my project advisor, at (419) 372-7849 (pobocik@bgsu.edu). You may also contact the Chair, Human Subjects Review Board, Bowling Green State University, (419) 372-7716 (hsrb@bgsu.edu), if any problems or concerns arise during the course of the study.

Taking this survey indicates your willingness to voluntarily participate in this research study and acknowledges that you have been informed that your confidentiality will be maintained.

Respectfully,
Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614

DIRECTIONS: For each item, please indicate your response by selecting the appropriate button. When you have finished, click on the “Submit” button at the bottom of the page to send your responses. Click “Next” to continue

Section 1: Demographic Information

1. I am a:
   - Dietetic Intern
   - Dietetic Internship Director

2. Select the region that includes the state where your internship is located.
   - Northeast (Consisting of the following states: CT, ME, MA, NH, RI, VT, DE, MD, NJ, NY, PA, DC)
   - Southeast (Consisting of the following states: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV)
   - Midwest (Consisting of the following states: IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI)
   - Southwest (Consisting of the following states: AZ, NM, OK, TX)
   - West (Consisting of the following states: AL, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY)
3. Select the type of internship that best describes your internship:
   - College or University
   - Hospital or Medical Center
   - U.S. Military Internship
   - Health Department or Community Internship
   - School District
   - Other

4. Gender:
   - Male
   - Female

Section 2: Breastfeeding Attitudes (IIFAS)

DIRECTIONS: For each of the following statements, please indicate how much you agree or disagree by selecting the response that most closely corresponds to your opinion.

SD = strong disagreement
D = disagreement
N= neutral
A = agreement
SA= strong agreement

1. The nutritional benefits of breast milk last only until the baby is weaned from breast milk.
   SD D N A SA

2. Formula-feeding is more convenient than breastfeeding.
   SD D N A SA

   SD D N A SA

4. Breast milk is lacking in iron.
   SD D N A SA

5. Formula-fed babies are more likely to be overfed than are breast-fed babies.
   SD D N A SA

6. Formula-feeding is the better choice if a mother plans to work outside the home.
   SD D N A SA
7. Mothers who formula-feed miss one of the greatest joys of motherhood.
   SD  D  N  A  SA

8. Women should not breastfeed in public places such as restaurants.
   SD  D  N  A  SA

9. Babies fed breast milk are healthier than babies who are fed formula.
   SD  D  N  A  SA

10. Breast-fed babies are more likely to be overfed than formula-fed babies.
    SD  D  N  A  SA

11. Fathers feel left out if a mother breast-feeds.
    SD  D  N  A  SA

12. Breast milk is the ideal food for babies.
    SD  D  N  A  SA

13. Breast milk is more easily digested than formula.
    SD  D  N  A  SA

14. Formula is as healthy for an infant as breast milk.
    SD  D  N  A  SA

15. Breastfeeding is more convenient than formula feeding.
    SD  D  N  A  SA

16. Breast milk is less expensive than formula.
    SD  D  N  A  SA

17. A mother who occasionally drinks alcohol should not breast-feed her baby.
    SD  D  N  A  SA

Section 3: Internship Breastfeeding Education

1. It is important to include breastfeeding training during the dietetic internship
   SD  D  N  A  SA

2. It is important for dietetic interns to have exposure to breastfeeding women during the internship.
   SD  D  N  A  SA
3. My internship provides a WIC rotation.
   a. Yes
   b. No
   c. I don’t know

4. My dietetic internship provides an opportunity for interns to have exposure to breastfeeding women.
   a. Yes
   b. No
   c. I don’t know

Thank you for participating in this survey!

Please click the “Submit” Button to complete the survey. After you have submitted the survey, you will have the opportunity to enter the drawing for a $50 gift card.
APPENDIX D: INSTRUMENT USED WITH DIETETIC INTERNS
Breastfeeding Behavioral Intentions Survey

Bowling Green State University

Letter of Informed Consent

Dear Dietetic Intern:

My name is Cynthia Mitchell and I am a master’s student in Family and Consumer Sciences at Bowling Green State University. I am conducting a thesis study about dietetic interns’ intentions to promote and support breastfeeding and dietetic internship directors’ attitudes toward breastfeeding. You are being asked to participate, because of your experience as a dietetic internship director or intern.

The results of this study will inform the profession by identifying the breastfeeding attitudes, knowledge, exposure, and intentions of dietetic interns and the attitudes of internship directors. Consequently, this research will allow for adjustments in training dietetic interns. There are limited direct benefits to participants; however, the participants will help to further develop the dietetics profession.

Dietetic Internship Directors are requested to forward the information about this study to their current dietetic and complete a short survey evaluating the attitudes toward breastfeeding of dietetic internship directors. I estimate that completion of the survey will take approximately 3-5 minutes. Dietetic Interns are requested to complete a short survey evaluating their intentions to promote and support breastfeeding, which will take approximately 5-7 minutes. An option for entering a drawing to win a $50 gift card will be available upon completion of the survey.

Your participation in this study is completely voluntary. You are free to withdraw consent and to discontinue participation at any time, and you can refrain from answering any questions without penalty or explanation.

Information you provide will remain confidential and your identity will not be revealed. All data will be directly uploaded in SNAP Survey Software system and the researchers are the only ones who will have access to the results. Survey information will be deleted after it has been statistically analyzed. Please remember to clear your browser’s cache and page history after you submit the survey in order to protect your privacy. Some employers use tracking software to monitor and record keystrokes, mouse clicks, and web sites visited. This could impact the confidentiality of your responses. Therefore, you may wish to complete the survey on your home computer or a public computer.

The anticipated risks to you are no greater than those normally encountered in daily life.
If you have any questions or comments about this study, you can contact me at, (419) 490-5614 (clutes@bgsu.edu) or Dr. Rebecca Pobocik, PhD, RD, my project advisor, at (419) 372-7849 (pobocik@bgsu.edu). You may also contact the Chair, Human Subjects Review Board, Bowling Green State University, (419) 372-7716 (hsrb@bgsu.edu), if any problems or concerns arise during the course of the study.

Taking this survey indicates your willingness to voluntarily participate in this research study and acknowledges that you have been informed that your confidentiality will be maintained.

Respectfully,
Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614

BGSU HSRB-APPROVED FOR USE
ID #: H10T290GX2
EFFECTIVE: 5-7-10
EXPIRES: 4-26-11

DIRECTIONS: For each item, please indicate your response by selecting the appropriate button. When you have finished, click on the “Submit” button at the bottom of the page to send your responses. Click “Next” to continue

Section 1: Demographic Information

1. I am a:
   - Dietetic Intern
   - Dietetic Internship Director

2. Select the region that includes your home state.
   - Region A (Consisting of the following states: CA, CO, HI, ID, MN, MT, NH, NJ, OR, UT, VT, WA, WY)
   - Region B (Consisting of the following states: AK, AZ, CT, DC, KS, MA, ME, MD, NY, NE, NM, NV, RI, SD, TX, WI, VA)
   - Region C (Consisting of the following states: DE, FL, GA, IA, IL, IN, MI, MO, NC, ND, PA, SC, TN)
   - Region D (Consisting of the following states: AL, AR, KY, LA, MS, OH, OK, WV)
3. Select the region that includes the state where your internship is located.
   - Northeast (Consisting of the following states: CT, ME, MA, NH, RI, VT, DE, MD, NJ, NY, PA, DC)
   - Southeast (Consisting of the following states: AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, WV)
   - Midwest (Consisting of the following states: IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, WI)
   - Southwest (Consisting of the following states: AZ, NM, OK, TX)
   - West (Consisting of the following states: AL, CA, CO, HI, ID, MT, NV, OR, UT, WA, WY)

4. Select the type of internship that best describes your internship:
   - College or University
   - Hospital or Medical Center
   - U.S. Military Internship
   - Health Department or Community Internship
   - School District
   - Other

5. Gender:
   - Male
   - Female

6. Age in years: (fill in the blank)

Section 2: Breastfeeding Exposure

1. Were you breastfed as a baby?
   a. Yes
   b. No
   c. I don’t know

2. Do you know someone who has breastfed?
   a. Yes
   b. No
   c. I don’t know

3. Have you ever witnessed a woman breastfeeding?
   a. Yes
   b. No
   c. I don’t know
4. Are you a parent?
   a. Yes
   b. No
   c. I don’t know
      *(If yes go to question 4b)*

4.b. Have any of your children ever been breastfed?
   a. Yes
   b. No
   c. I don’t know

**Section 3: Breastfeeding Attitudes (IIFAS)**

DIRECTIONS: For each of the following statements, please indicate how much you agree or disagree by selecting the response that most closely corresponds to your opinion.

\[ \text{SD} = \text{strong disagreement} \]
\[ \text{D} = \text{disagreement} \]
\[ \text{N} = \text{neutral} \]
\[ \text{A} = \text{agreement} \]
\[ \text{SA} = \text{strong agreement} \]

1. The nutritional benefits of breast milk last only until the baby is weaned from breast milk.
   \[ \text{SD} \quad \text{D} \quad \text{N} \quad \text{A} \quad \text{SA} \]

2. Formula-feeding is more convenient than breastfeeding.
   \[ \text{SD} \quad \text{D} \quad \text{N} \quad \text{A} \quad \text{SA} \]

   \[ \text{SD} \quad \text{D} \quad \text{N} \quad \text{A} \quad \text{SA} \]

4. Breast milk is lacking in iron.
   \[ \text{SD} \quad \text{D} \quad \text{N} \quad \text{A} \quad \text{SA} \]

5. Formula-fed babies are more likely to be overfed than are breast-fed babies.
   \[ \text{SD} \quad \text{D} \quad \text{N} \quad \text{A} \quad \text{SA} \]

6. Formula-feeding is the better choice if a mother plans to work outside the home.
   \[ \text{SD} \quad \text{D} \quad \text{N} \quad \text{A} \quad \text{SA} \]

7. Mothers who formula-feed miss one of the greatest joys of motherhood.
   \[ \text{SD} \quad \text{D} \quad \text{N} \quad \text{A} \quad \text{SA} \]
8. Women should not breastfeed in public places such as restaurants.
   SD  D  N  A  SA

9. Babies fed breast milk are healthier than babies who are fed formula.
   SD  D  N  A  SA

10. Breast-fed babies are more likely to be overfed than formula-fed babies.
    SD  D  N  A  SA

11. Fathers feel left out if a mother breast-feeds.
    SD  D  N  A  SA

12. Breast milk is the ideal food for babies.
    SD  D  N  A  SA

13. Breast milk is more easily digested than formula.
    SD  D  N  A  SA

14. Formula is as healthy for an infant as breast milk.
    SD  D  N  A  SA

15. Breastfeeding is more convenient than formula feeding.
    SD  D  N  A  SA

16. Breast milk is less expensive than formula.
    SD  D  N  A  SA

17. A mother who occasionally drinks alcohol should not breast-feed her baby.
    SD  D  N  A  SA

Section 4: Breastfeeding Knowledge

1. For a baby, formula feeding is healthier than breastfeeding.
   SD  D  N  A  SA

2. The baby sucking on the mother’s breast is painful.
   SD  D  N  A  SA

3. Breastfed babies are smarter than babies who are not breastfed.
   SD  D  N  A  SA

4. There is no difference between breast milk, cow’s milk, and soy milk.
   SD  D  N  A  SA
5. Breastfeeding alone provides sufficient nutrition in the first few months of life for the baby.
   SD  D  N  A  SA

6. Nicotine, caffeine, alcohol, and medicine are passed from the mother’s body to breast milk.
   SD  D  N  A  SA

7. Most women make enough breast milk to adequately feed the baby.
   SD  D  N  A  SA

8. The breastfeeding woman should avoid eating certain foods.
   SD  D  N  A  SA

9. Babies who are formula fed have more illnesses than babies who are breastfed.
   SD  D  N  A  SA

    SD  D  N  A  SA

11. Breastfeeding helps protect babies from having allergies.
    SD  D  N  A  SA

12. A woman who has small breasts cannot breastfeed.
    SD  D  N  A  SA

13. Some babies have allergies to cow’s milk.
    SD  D  N  A  SA

14. Breastfeeding should be started as soon as possible after the baby is born.
    SD  D  N  A  SA

Section 5: Professional Intentions

DIRECTIONS: For each of the following statements, select the number that best represents your intention to perform the activity.

1 = no intention
10 = strong intention
1. As a dietitian, I intend to provide up-to-date, practical information to pregnant and postpartum women about breastfeeding.

2. As a dietitian, I intend to involve a woman’s family and friends in breastfeeding education and counseling.

3. As a dietitian, I intend to advocate for the removal of institutional barriers to breastfeeding.

4. As a dietitian, I intend to collaborate with community organizations and others who promote and support breastfeeding.

5. As a dietitian, I intend to advocate for policies that position breastfeeding as the norm for infant feeding.

6. As a dietitian, I intend to initiate or partner with researchers in the conduct of empirical research about breastfeeding.

Section 6: Internship Breastfeeding Education

1. It is important to include breastfeeding training during the dietetic internship

2. It is important for dietetic interns to have exposure to breastfeeding women during the internship.

3. My internship provides a WIC rotation.
   a. Yes
   b. No
   c. I don’t know
4. My dietetic internship provides an opportunity for interns to have exposure to breastfeeding women.
   a. Yes
   b. No
   c. I don’t know

Thank you for participating in this survey!

Please click the “Submit” Button to complete the survey. After you have submitted the survey, you will have the opportunity to enter the drawing for a $50 gift card.
APPENDIX E: REMINDER EMAIL TO DIETETIC INTERNSHIP DIRECTORS
Dear Dietetic Internship Director:

My name is Cynthia Mitchell and I am a master’s student in Family and Consumer Sciences at Bowling Green State University. I am conducting a thesis study about dietetics and breastfeeding. For those of you who have already completed the survey and contacted your interns, we thank you very much; please disregard this email.

If you have not completed the survey this is a reminder that you are being asked to participate by (1) forwarding the following email to your dietetic interns, and (2) completing a short survey that will take approximately 3-5 minutes. The survey will be available online for (#) more days.

To complete the survey, please click on the following link:
http://survey.bgsu.edu/surveys/FCS/bfbehaviors/bfbehaviors.htm

Please note: If you do not wish for yourself or your interns to participate, respond to this email by entering the word no in the subject line of the email so you can be removed from our mailing list.

Your participation is greatly appreciated. Thank you!

Respectfully,

Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614
Dear Dietetic Intern:

My name is Cynthia Mitchell and I am a master’s student in Family and Consumer Sciences at Bowling Green State University. I am conducting a thesis study about breastfeeding. You have been contacted, because you are a dietetic intern.

You are being asked to participate by completing a short survey that will take approximately 5-7 minutes. An option for entering a drawing to win a $50 gift card will be available upon completion of the survey.

To complete the survey, please click on the following link:
http://survey.bgsu.edu/surveys/FCS/bfbehaviors/bfbehaviors.htm

Your participation is greatly appreciated. Thank you!

If you have any questions about this survey you may ask either me or my thesis advisor, Dr. Rebecca Pobocik, PhD, RD (pobocik@bgsu.edu).

Respectfully,

Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614
APPENDIX F: LETTER TO GIFT CARD WINNERS
Dear Insert participant name,

Thank you for completing my short survey about breastfeeding last month. Your time and participation is greatly appreciated. Following completion of the survey, you were entered in a drawing to win a $50 Visa gift card.

Congratulations, you were selected to receive the $50 Visa gift card! The gift card is enclosed with this mailing. Again, thank you for your participation.

Respectfully,

Cynthia L. Mitchell, RD
Bowling Green State University
1600 E. Wooster Street
Bowling Green, OH 43403
clutes@bgsu.edu
(419).490.5614