Breastfeeding Intention and Initiation Among Rural, Low-Income Native American and African American Adolescent Mothers in North Carolina: Testing the Theory of Planned Behavior

by

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Infant feeding practices can greatly impact a child's life with far reaching implications based upon decisions a mother makes for her newborn. Breastfeeding is the preferred method of infant feeding because of its association with health benefits to both the mother and child. The prevalence of breastfeeding among rural, low income, disadvantaged groups to include Native American (NA) and African American (AA) adolescent mothers is low. NAs and AAs bear a disproportionate burden of illness and health risks compared to other races and ethnic groups in the United States. Breastfeeding is a targeted public health strategy to improve the health of infants and children and decrease or eliminate the gap of health disparities among the maternal-child aggregate populations in our nation. The purpose of the study was to (1) test the Theory of Planned Behavior by examining the relationship of the components (attitudes, subjective norms, perceived control/ self-efficacy, and breastfeeding knowledge) to determine breastfeeding intention and initiation of rural, low-income Native American (NA) and African American (AA) adolescent mothers in rural communities in southeastern North Carolina; (2) determine the significant similarities and differences between breastfeeding and formula feeding adolescent groups related to the constructs; (3) explore the relationship of intention to initiation, and (4) examine the relationship between sociodemographic variables with

breastfeeding intention and initiation of adolescent mothers. The sample included 60 NA and 60 AA adolescents recruited through resources of care that were offered to prenatal clients in two public health departments. Findings included the constructs of the TPB were significant in predicting the probability of breastfeeding intention and breastfeeding initiation in rural, low-income NA and AA adolescent mothers. Overall total variance explained by the model related to the prediction of breastfeeding initiation at 4 days postpartum was 73% and correctly classified 92.2% of cases. Three control measures were found to be statistically significant, with Perceived Breastfeeding Control having the highest significance, followed by Negative Breastfeeding Sentiments and Social Professional Support. The model revealed a statistical significance in the relationship of breastfeeding intention and breastfeeding initiation at 4 days postpartum in rural, low-income NA and AA adolescent mothers. The strongest predictor of breastfeeding initiation was the Breastfeeding Control Scale. The Formula Feeding Group scored significantly higher on the Negative Breastfeeding Sentiments scale, whereas the Breastfeeding Group scored significantly higher on the Breastfeeding Control Scale and the Positive Breastfeeding Sentiment Scale. Significant differences were found related to ethnic groups, with NA adolescents initiating breastfeeding more often, being married more often, and living with a significant other more often than AAs. More adolescents who attended childbirth classes and breastfeeding classes breastfed than those who did not. Recommendations of the study included the utilization of the constructs of the TPB in development of research based assessments and interventions that promote breastfeeding behavior among rural, low-income NA and AA adolescent mothers, and identification of at-risk individuals for not breastfeeding and promoting programs to assist with providing help for resolving barriers to breastfeeding, and nurse educators emphasizing the importance of promoting breastfeeding among adolescents and vulnerable populations.

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Dedication

To my husband, Michael, daughter, Jennifer and son, Benjamin

For

Their love, support and encouragement

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CHAPTER ONE: INTRODUCTION

In this chapter, the following portions of the research study is presented: the introduction, the statement of the problem, the purpose of the study, the background and significance, and the research questions, the theory and conceptual framework utilized the operational definitions, the description of the measurement instruments, and the assumptions and limitations of the proposed research.

Statement of the Problem

Infant feeding practices can greatly impact a child's life with far reaching implications based upon the decisions a mother makes for her newborn. Breastfeeding is the preferred method of infant feeding because of its association with health benefits to both the mother and child. However, the prevalence of breastfeeding initiation among rural, low income, disadvantaged Native American and African American adolescent mothers is low. Breastfeeding rates for initiation, continuation, and exclusivity are lowest among the most vulnerable women and infants, especially the rural, low-income, Native American and African American adolescent mothers and infants (Centers for Disease Control [CDC], 2010; Engstrom & Meier, 2012). Breastfeeding is a targeted public health strategy to improve the health of infants and children and decrease the gap of health disparities among the maternal-child aggregate populations in our nation. Effective interventions are needed to change the current infant feeding trends in order to impact health of our total population. Research suggests that intervention strategies based upon empirically validated theories are potentially more effective in changing health behaviors based upon the theoretical explanation of how the intervention impacts the change. Research is needed to further inform nursing practice, policy development as well as continued and ongoing research

to gain optimal health and decrease or eliminate health disparities among vulnerable mothers and their infants.

Purpose of the Study

The purpose of the study was to (1) test the Theory of Planned Behavior by examining the relationship of the components (attitudes, subjective norms, perceived control/ self-efficacy, and breastfeeding knowledge) to determine breastfeeding intention and initiation of rural, low-income Native American (NA) and African American (AA) adolescent mothers in rural communities in southeastern North Carolina; (2) determine the significant similarities and differences between breastfeeding and formula feeding adolescent groups related to the constructs; (3) explore the relationship of intention to initiation; and (4) examine the relationship between sociodemographic variables with breastfeeding intention and initiation of adolescent mothers. Psychometrics of instruments used were gathered as they relate to the Native American and African American adolescent population. The findings of this study are perceived by the author to be valuable in the development of future research as well as interventions among rural, low-income Native Americans and African Americans in the continued promotion of breastfeeding as it relates to components that are most strongly associated with breastfeeding initiation and those components that were found to be barriers to breastfeeding.

Background and Significance

Human breast milk has far-reaching benefits for the health of infants to include superior nutrition, immunological properties and the facilitation of a strong bond between mother and baby (United States Department of Health and Human Services [USDHHS], 2012). Breastfed infants are less likely to develop respiratory, gastrointestinal, ear, and urinary tract infections

than are formula fed infants (USDHHS, 2012). These protective effects of breastfeeding against illnesses occur not only during infancy but also occur later in childhood. Research supports that breastfeeding is associated with a reduced risk for insulin-dependent diabetes mellitus (USDHHS, 2012), non-insulin-dependent diabetes (USDHHS, 2012; Pettitt, Forman, Hanson, Knowler, & Bennett, 1997), atopic diseases in childhood, and asthma in 6 year old children (USDHHS, 2012; Oddy, Holt, Sly, Read, Landau, Stanley, Kendall & Burton, 1999). Additionally, a relationship between breastfeeding and long term neurological development has been found in pre-term and full term infants during classic research studies of the 1990's (Lucas, Morley, Cole, Lister, & Leeson-Payne, 1992; Lanting, Fidler, Huisman, Touwen, & Boersma, 1994).

Moreover, breastfeeding has a significant economic impact on individuals, families and nations. An average cost savings of $1500 each year per family in formula as well as $13 billion costs savings due to decreased medical costs requiring fewer sick care visits, prescriptions and hospitalizations each year in the United States is estimated if mothers breastfeed their infants for at least 12 weeks (USDHHS, 2012).It is believed that breastfeeding may also contribute to a more productive workforce due to mothers of the infants missing fewer days of work due to a decrease in infant illness (USDHHS, 2012).

Breastfeeding rates are assessed by three measures: initiation, continuation and exclusivity. Initiation is defined as any breastfeeding such that the infant received any of the mother's milk for any length of time (CDC, 2010; Engstrom & Meier, 2012). The national and state levels fall short of the recommended Healthy People 2020 rate which is achieved by other developed countries such as the Scandinavian countries who reach approximately 100% of breastfeeding initiation rates (Engstrom & Meier, 2012). The women most likely to initiate

breastfeeding in the United States are white, married, well educated, more affluent, and older mothers (CDC, 2010). Only 59.7% of African American women in the United States initiated breastfeeding and lower rates of initiation are also observed in other vulnerable populations such as adolescents (59.7%), low income women (67%), and rural women (66.4%) (CDC, 2010; Engstrom & Meier, 2012).A study of North Carolina teens (ages 13- 17) across the state reported an overall 52% of breastfeeding initiation rate among White, Hispanic, and Black teen mothers, with white teen mothers initiating at 87%, black teen mothers initiating at 41% and Hispanic teen mothers initiating at 89% (Tucker, Wilson & Samandari, 2011).

Healthy People 2020 objectives call for an increase in the proportion of women who exclusively breastfeed in the United States (*Healthy People 2020*, 2011). Specifically, the goal of the Healthy People 2020 is to improve the health and well-being of women, infants, children and families through a group of initiatives, one of which is the health behavior of breastfeeding. The American Dietetic Association (ADA) has publicized their position (2009) of the belief that exclusive breastfeeding provides optimal nutrition as well as health protection for an infant's first 6 months of life and that breastfeeding with complementary foods from ages 6 months to 12 months is the ideal feeding pattern for infants (ADA, 2009). The position statement confirms that breastfeeding is an important public health strategy for improving infant and child morbidity and mortality, providing protection against common childhood infections, improving maternal morbidity as well as controlling health care costs. Breastfeeding is a concern impacting the individual mother and child and beyond to longer-term outcomes for society. Health disparities among minority races and low-income populations increase the importance of access to protective factors that are known to be available through the practice of breastfeeding (CDC, 2011; Hurst, 2007).

Prior research related to factors that affect infant feeding behavior indicated that breastfeeding knowledge, attitudes toward breastfeeding, social influences, and perceived breastfeeding control are associated with breastfeeding intentions(Avery & Magnus, 2011; Backstrom, Wahn, & Ekstrom, 2010; Cricco-Lizza, 2011). These studies, however, focused upon adult mothers, rather than adolescents. Research studies related to factors influencing breastfeeding behaviors among adolescents is limited. Even more limited is research on low-income minority and rural adolescent mothers. Current research of adolescent breastfeeding behavior is narrow in terms of sample size, study design as well as theoretical and conceptual frameworks. Demographic characteristics such as race, ethnicity, education, marital status and income have been found to be associated with the decision to breastfeed. The prevalence of breastfeeding among low-income, disadvantaged Native American and African American adolescents is low, according to current statistical data and the rates have been consistently lower for American Indian populations (Spieler, 2010).

A review of the research literature suggests that maternal age may be a factor associated with breastfeeding behavior among women. According to current data among aggregate populations for breastfeeding mothers from Healthy People 2020, the Center for Disease Control (CDC) as well as Hurst (CDC, 2011; Hurst, 2007; Healthy People 2020, 2011), younger women have lower rates of exclusive breast-feeding and tend to stop breastfeeding in the first month postpartum more often than do older women. Data regarding breastfeeding attitudes, intentions and practices among adolescent mothers is sparse, especially among multi-ethnic adolescents in rural areas of southeastern North Carolina. Little is known regarding how adolescent mothers make decisions about infant feeding, and the factors that influence these choices.

According to Mason and Roholt (2006), in North Carolina, some groups of women appear less likely than others to initiate breastfeeding. Demographic characteristics such as race, age, ethnicity, education, marital status and income have been associated with decisions to breastfeed. Current data suggests that women in North Carolina are less likely to breastfeed if they have lower income and less education, are unmarried, obese, depressed or if they smoke (Mason & Roholt, 2006). Among 115,000 to 119,000 births each year in North Carolina, there has been an increase in the numbers of infants who are being breastfed at 69.9% in 2003compared to 64.2% in 1999. Of the 69.9% who initiated breastfeeding in 2003, 47% continued to breastfeed eight weeks or longer compared to 40.3% in 1999. While North Carolina has experienced increases in breastfeeding initiation, the state remains lower than the Healthy People 2020 goals. A twelve year study from 1993 to 2005 of infants enrolled in the North Carolina Supplemental Nutrition Program for Women, Infants and Children (WIC) revealed the percent of infants who initiated breastfeeding had slowly improved from 26% in 1993 to 54.3% in 2005. However, the extent of changes varies with race and ethnicity. African Americans and Native Americans were shown to be the lowest race and ethnicity for initiation of breastfeeding their infants from 1993 to 2005, with Native Americans in North Carolina at the very lowest rate from 10% in 1993 and slowly rising to approximately 30% in 2005. African Americans initiated breastfeeding at a rate of approximately 16% in 1993 to 35% in 2005. Caucasian women in North Carolina initiated breastfeeding from approximately 35% in 1993 to 45% in 2005 and Hispanics increased breastfeeding initiation from 47% in 1993 to over 70% in 2005 (Mason & Roholt, 2006).

Barriers common to women in North Carolina who do not initiate breastfeeding is a lack of knowledge among the general population and healthcare professionals about the risks of not

breastfeeding. Inconsistent and inaccurate information about how to breastfeed confuses mothers and discourages them from initiating or continuing with breastfeeding. Concerns for new mothers often leading to early discontinuation of breastfeeding include fear of pain, fear of inadequacy of milk supply, lack of support and care for her own needs, and a perception of not having enough time to nurse. Hospital practices can interfere with early establishment of breastfeeding. Additionally, separating mother and infant diminishes the mother's chance of learning to recognize early feeding cues and of emptying the breasts frequently enough to foster optimal milk production (Mason & Roholt, 2006). Other factors that can decrease breastfeeding initiation rate among women in North Carolina are cited to be limited family or community support for breastfeeding during the critical postpartum period (Mason & Roholt, 2006).

The current research study in rural North Carolina was designed to increase the knowledge about the specific determinants of low-income, rural African American and Native American adolescents' behaviors regarding infant feeding. This knowledge may assist nurses in roles of nurse educators, nurse clinicians, advanced practice nurses and policy makers as well as other health care providers in responding appropriately to the needs of these mothers as they make decisions about how to feed their infants. Additionally, the results of this study provided information for interventions of health behaviors and breastfeeding and will inform future studies. The health of the infants of these mothers can be positively impacted through the increased prevalence of breastfeeding.

Research indicates that intervention strategies based upon empirically validated theories are potentially more effective in changing health behaviors because theory provides the explanation of how proposed interventions work to bring about the change. The Theory of Planned Behavior shaped the current study in the findings that will inform the development of

interventions of health care and health promotion in the area of perinatal care as it relates to infant feeding strategies for improved health. This theory worked upon the premise that the best way to target behavior is to measure intention, which in turn is seen to be a function of four independent variables: attitudes, subjective norm (influence of significant others), perceived control and self-efficacy.

Prior to the development of an intervention, these constructs needed to be measured in the population of interest (rural, low-income African American and Native American adolescent mothers) with a measurement tool based upon the Theory of Planned Behavior. This tool based upon the constructs of the Theory of Planned Behavior was developed by Janke (1994) and has been utilized within the adolescent population (Janke, 1994). To the author's knowledge, the BAPT developed by Janke (1994) has not been utilized within a rural, low-income, disadvantaged African American and Native American adolescent population.

Theoretical/ Conceptual Model

The constructs of the Theory of Planned Behavior by Icek Ajzen (1989) were utilized during this quantitative research related to infant feeding attitudes, intentions and breastfeeding initiation among rural, low-income and disadvantaged African American and Native American adolescents between 16 and 19 years of age in southeastern North Carolina. This theory was tested as a framework for explaining and predicting human behaviors based upon the factors of attitude toward behavior, subjective norm, perceived behavioral control, self-efficacy and knowledge to behavioral intention and actual behavior of breastfeeding (Ajzen, 1971; Ajzen, 1989). Outcome variables were behaviors that were determined by an intention. The *intention* was defined as an indicator of how hard people are willing to try, to put forth the effort to perform a behavior (Ajzen, 1989).

Attitude toward a behavior was defined as "the degree to which the person has a favorable or unfavorable evaluation of the behavior in question" (Ajzen, 1989, p. 251). Cognitive structures which underlie attitudes are beliefs and values that people place on consequences of performing the behavior. These attitudes are determined by a person's behavioral beliefs along with the evaluations of the anticipated behavioral outcomes. Individuals who possess strong beliefs and positively valued consequences of performing a behavior have a positive attitude toward the behavior. Persons who hold strong beliefs with negatively valued consequences have a negative attitude toward the behavior (Ajzen, 1989; Ratananugool, 2001). The behavior in this case is breastfeeding.

Subjective norm refers to a person's perception of social influence to perform or not to perform a behavior (breastfeeding) (Ajzen, 1989). A person's normative beliefs along with his or her motivation to comply with significant others result in a subjective norm regarding the behavior (breastfeeding).

Perceived behavioral control has similarities with self-efficacy and is thought to directly affect an intention. Perceived behavioral control refers to an individual's perception of his or her ability to control barriers that may impede performing a behavior (Ajzen, 2006). Perceived control is determined by control beliefs or perceptions of the available resources and opportunities to complete the behavior combined with perceived facilitation or the importance of those factors that may help or hinder performing the behavior (breastfeeding).

Research Model Diagram

Theory of Planned Behavior

Figure 1

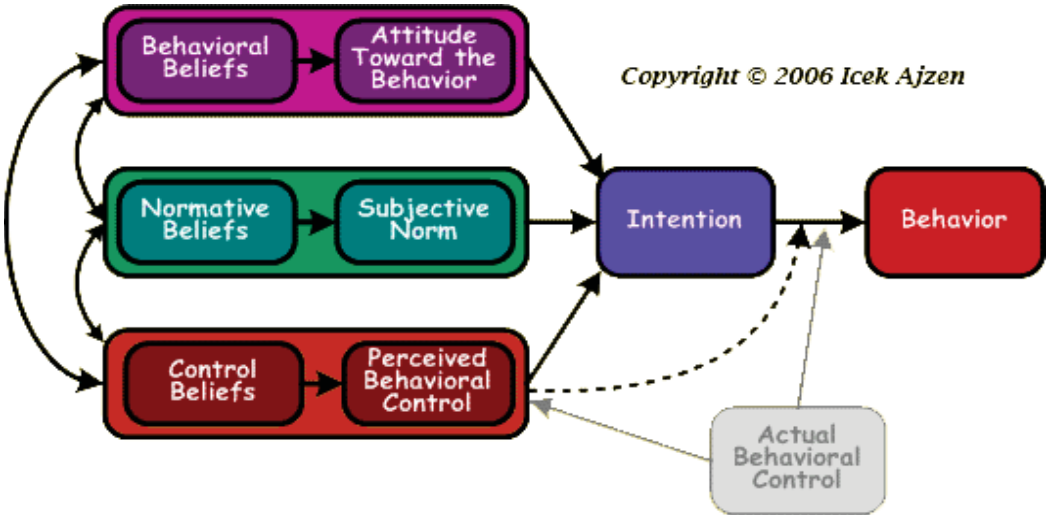
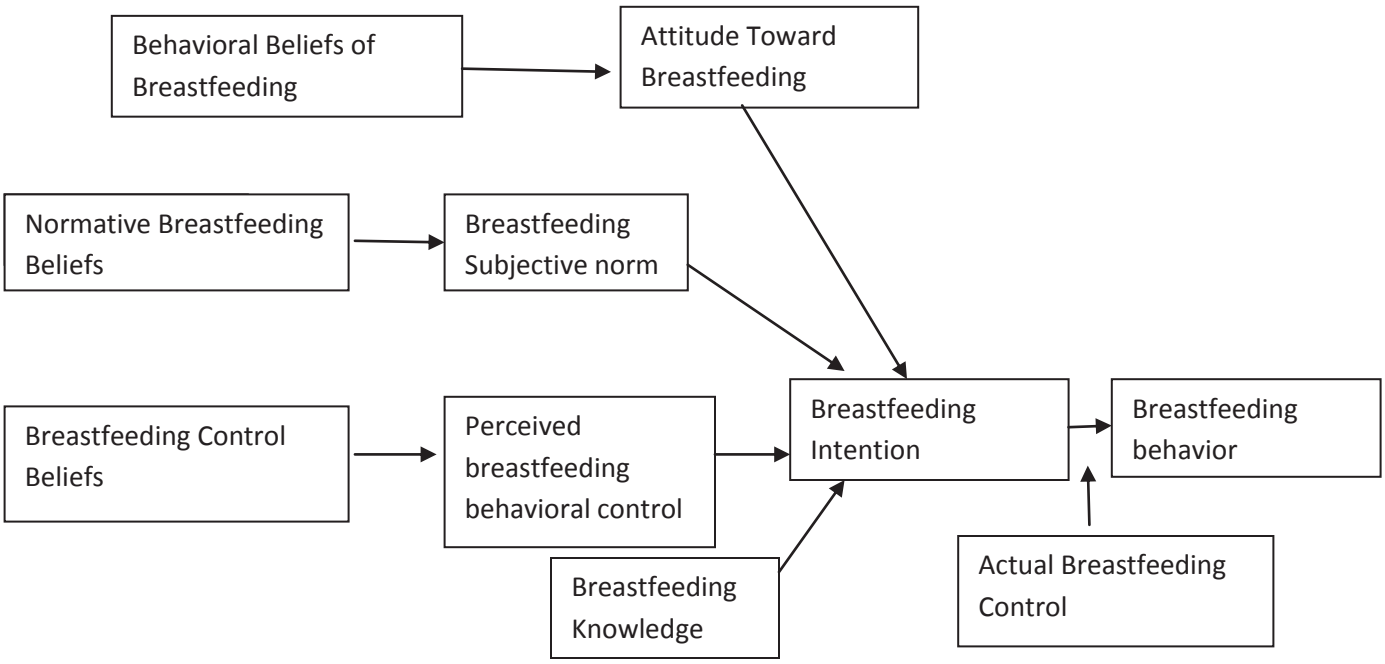


Figure 1. Ajzen's Theory of Planned Behavior from "Ajzen, I. (1989). Attitude structure and behavior. In R. A. Pratknis, S. J. Breckler,& A. G. Greenwald (Eds.), *Attitude structure and function* (pp. 241-274). New Jersey: Lawrence Erlbaum Associates, Inc., Publishers."Ajzen, I. (2006). *Theory of Planned Behavior Diagram*http://people.umass.edu/ajzen/tpb.diag.

Figure 2: Herndon Model 2014 adapted from Icek Ajzen (2006).



Conceptual/ Operational Definitions

The following specific definitions were utilized for the study:

1. Breastfeeding initiation included the decision to breastfeed, feeding any amount of breastmilk to the infant. Breastfeeding was operationally defined to include the frequency of nursing, and the frequency in supplemental formula given to an infant over the course of a day (Ratananugool, 2001). An adolescent mother's infant feeding behavior was defined as follows: a) full breast-feeder- a woman who feeds her infant with only breastmilk or breastmilk with water or vitamins; b) partial breast-feeder- a woman who feeds her infant by breastmilk with supplemental formula; c) formula-feeder- a woman who feeds her infant with formula only (Ratananugool, 2001).

2. Breastfeeding knowledge was conceptually defined as the mother's possession of information regarding breastfeeding to include: breastfeeding practices, milk supply, breastfeeding physiology, nutrition during lactation, causes and prevention of breastfeeding problems, and contraception during breastfeeding (Ratananugool, 2001). This construct was measured with the Breastfeeding Knowledge Scale score.

3. Attitude toward breastfeeding was defined as the degree to which an adolescent mother had a favorable or unfavorable evaluation of breastfeeding behavior. This definition parallels Ajzen's definition of attitude toward behavior (Ajzen, 1989; Ajzen, 2006). Attitude toward breastfeeding was operationally defined as the total score of the Breastfeeding Attrition Prediction Tool Subscale for attitudes(Janke, 1994; Ratananugool, 2001; Lewallen, 2006).Total scores were obtained by multiplying the strength of each breastfeeding belief by the

corresponding outcome evaluation and summing the resulting products across all beliefs(Janke, 1994).

4. Subjective norm regarding breastfeeding was defined according to Ajzen (1989) as an adolescent mother's perception of influences from her social networks to perform or not to perform breastfeeding behavior. Subjective norm was determined by the mother's normative beliefs or the likelihood that important referent persons or groups would approve or disapprove of breastfeeding behaviors (Ajzen & Madden, 1986). This was then weighted by the woman's motivation to comply with the referent (Janke, 1994). Subjective norm regarding breastfeeding was operationally defined as the total score obtained from summing scores of items on the sub-scale of the Breast-Feeding Attrition Prediction Tool (Janke, 1994; Ratananugool, 2001; Lewallen, 2006).

5. Perceived breastfeeding control was defined as an adolescent mother's perception of ease or difficulty of performing breastfeeding behavior and it was assumed to reflect past experience as well as anticipated impediments and obstacles, which parallels along with Ajzen's definition of perceived behavioral control (Ajzen, 2006). Perceived breastfeeding control was operationally defined as the total score obtained from summing scores of items on the sub-scale of the Breast-Feeding Attrition Prediction Tool (Janke, 1994;Ratananugool, 2001; Lewallen, 2006).

6. Breastfeeding intention was defined as the intention that an adolescent mother forms at any time to breastfeed her infant. The intention refers to the extent of how motivated the mother is to try, or how much of an effort they were planning to exert in order to perform the behavior

(Ajzen, 1989). Breastfeeding intention was operationally defined as the total score on the *Infant-feeding Intention Scale*.

Measurement Instruments

Assessment Tools for the Quantitative research study included the following:

1) Personal Information Questionnaire (22 items pertaining to research question 3);

2)Infant Feeding Intention Scale (Nommsen-Rivers & Dewey, 2008) (5 items pertaining to research questions 1- 3);

3) Breast-Feeding Attrition Prediction Tool (Janke, 1994) (114 items pertaining to research question 1);

4) Breast-Feeding Knowledge Scale (Ratananugool, 2001; Giles, Conner, McClenahan & Mallet, 2010) (20 items pertaining to research question 1);

5) Postpartum Screening Question (1 item pertaining to research question 2 and 3); and

6) Breastfeeding or Formula Feeding Postpartum Form (28 or 26 items pertaining to supplemental data collection).

Research Questions

In the attempt to investigate and explore infant feeding attitudes and beliefs within the rural, low-income Native American and African American adolescent mothers, the following research questions were examined:

1. How well do the constructs of the Theory of Planned Behavior (attitudes, subjective norms, and perceived control/ self-efficacy), along with knowledge of breastfeeding predict the

probability of maternal intention to breastfeed her infant until one month of age and breastfeeding behavior at 4 days postpartum in rural, low income Native American and African American adolescent mothers?

2. What are the similarities and differences between breastfeeding and formula feeding adolescent groups and Negative Breastfeeding Attitudes, Positive Breastfeeding Attitudes, Social Professional Support and Perceived Breastfeeding Control or Self-efficacy?

3. What is the relationship of sociodemographic variables with breastfeeding intention and initiation?

4. Is prenatal breastfeeding intention related to breastfeeding initiation at 4 days postpartum in rural, low-income Native American and African American adolescent mothers?

5. What are the psychometric properties of the instruments used as they relate to the Native American and African American adolescent population?

Limitations

Due to the criteria for sample selection and the use of a convenience sample in southeastern North Carolina, the findings from this study cannot be generalized to all adolescent mothers. The results can only be applied to Native American and African American adolescent mothers in rural communities in southeastern North Carolina. The results should be viewed with caution due to the correlational design and should not be considered a causal relationship.

Summary

In this chapter, the statement of the problem, the purpose of the study, background and significance, research questions, conceptual framework/ theoretical framework, definitions and limitations are described. The purpose of the study was to test the Theory of Planned Behavior by examining the relationship of the components (attitudes, subjective norms, perceived control/

self-efficacy, and breastfeeding knowledge) to determine breastfeeding intention and initiation of rural, low-income Native American(NA) and African American (AA) adolescent mothers in rural communities in southeastern North Carolina, to examine the relationship between sociodemographic variables with breastfeeding intention and initiation of adolescent mothers, to determine the significant similarities and differences between breastfeeding and formula feeding adolescent groups related to the constructs and to explore the relationship of intention to initiation.

The Theory of Planned Behavior (Ajzen, 1989) was adapted as a conceptual framework for this quantitative study. The findings of this study increased understanding and knowledge of attitudes, subjective norms, perceived control, self-efficacy and knowledge as it related to intention and initiation of breastfeeding among rural, low-income African American and Native American adolescents that was shown in the study to significantly predict adolescent breastfeeding initiation in first born infants by 4 days postpartum. This knowledge has the potential to assist nurses to develop more relevant interventions and educational programs among this aggregate group to support adolescent mothers' breastfeeding behavior, improving overall infant and child outcomes in this setting. Additionally, the patterns of intention and initiation as it relates to positive and negative beliefs of infant breastfeeding identified may serve as baseline data for future research.

CHAPTER TWO: AN INTRODUCTION TO THE LITERATURE

The American Dietetic Association (ADA) publicized their position (2009) of the belief that exclusive breastfeeding provides optimal nutrition as well as health protection for an infant's first 6 months of life and that breastfeeding with complementary foods from ages 6 months to 12 months is the ideal feeding pattern for infants (ADA, 2009). The position statement confirms that the promotion of breastfeeding is an important public health strategy for improving infant and child morbidity and mortality, providing protection against common childhood infections, improving maternal morbidity as well as controlling health care costs. The benefits of breastfeeding include an association of reduced risk of otitis media, gastroenteritis, respiratory illness, sudden infant death syndrome, necrotizing enterocolitis, obesity, as well as hypertension (ADA, 2009). The benefits of breastfeeding associated with improved maternal outcomes include an association with reduced risk of ovarian cancer, breast cancer, type 2 diabetes, as well as postpartum depression (ADA, 2009). All of these reductions in acute as well as chronic health issues help to decrease health care expenses and loss of time from work.

The importance of the Healthy People 2020 goals and objectives for the health and well-being of women, infants, children and families through the health behavior of breastfeeding can be appreciated in the statement by Regina M. Benjamin, M.D., M.B.A., Vice Admiral, U.S. Public Health Service Surgeon General:

> *The time has come to set forth the important roles and responsibilities of clinicians, employers, communities, researchers, and government leaders and to urge us all to take on a commitment to enable mothers to meet their personal goals for breastfeeding.*
>
> (Center for Disease Control, 2011)

Methods

Medline Ovid, PubMed, and CINAHL databases were originally searched from the year 2002 to September, 2011 and again up to year 2014 using combinations of terms *adolescents and breastfeeding, breastfeeding and African Americans, breastfeeding and Native Americans, Theory of Planned Behavior* and *health disparities.* The search was limited to peer-reviewed, full text articles from studies published in English. In addition, studies referenced in relevant published articles and reviews were assessed. To be selected for inclusion, a study was required to meet one or more of the following criteria: (1) a focus on adolescents and breastfeeding; (2) a focus on minorities, health disparities and breastfeeding; (3) a focus on the Theory of Planned Behavior and the constructs; and (4) articles published in peer reviewed journals. The initial search generated 2288 studies. Upon closer review of the articles in the original literature review, all but 35 articles were excluded.

Research articles were excluded that focused upon pregnancy, disparities, breastfeeding promotion or interventions or minority populations and did not speak solely to breastfeeding attitudes, beliefs and practices or infant feeding practices. Articles were also excluded if the article was not deemed a scholarly article. Of the 35 research articles, 6 focused upon general attitudes, beliefs and interventions of health care professionals; 2 focused upon peer support; 13 focused upon adolescent breastfeeding; 8 focused on breastfeeding promotion in low-income and minority populations; 3 focused upon biopsychosocial factors related to the success of breastfeeding promotion; and 3 focused upon cultural aspects and factors related to breastfeeding. Exceptions of the above criteria included one classical research literature article from 1986 that added depth and underpinned the research topic. Five governmental reviews and data collections examined current statistics of breastfeeding success among United States

Governmental agencies and one position statement was referenced. One IOM report was utilized to underpin the disparities and minority population issues facing our nation as it relates to maternal child health issues.

Review of the Literature

The following review reported the findings from the current body of nursing knowledge from research related to breastfeeding among rural, low-income Native Americans, African American adolescents, and factors impacting the initiation of breastfeeding such as attitudes to breastfeeding, beliefs, subjective norms, knowledge of breastfeeding, support, behavioral control, and intention.

Breastfeeding Behavior Among Minorities and Low-Socioeconomic Groups

According to the Center for Disease Control (CDC) (2006), breastfeeding rates differed substantially by race, socioeconomic level as well as other demographic factors. The CDC analyzed data from the 2004National Immunization Survey (NIS) which indicated that 71.5% non-Hispanic white children were ever breastfed compared to 50.1% of non-Hispanic black children. Among those ever breastfed, 53.9% of non-Hispanic white and 43.2% of non-Hispanic black children continued breastfeeding until at least age 6 months. Among both races, children were more likely to have ever breastfed if they were ineligible for the North Carolina Supplemental Nutrition Program for Women, Infants and Children (WIC), had mothers who were greater than 20 years of age, were married, had at least some college education, lived in the West or urban areas, or were above the federal poverty level (Scanlon, Grummer-Strawn, Chen, Molinari & Perrine, 2011; CDC, 2006).

A research study conducted by Lee, Rubio, Elo, McCollum, Chung and Culhane (2005) examined the relationship between sociodemographic factors, maternal characteristics, and

intention to breastfeed among low-income, inner-city pregnant women. Women in Philadelphia health centers were surveyed at the time of their prenatal care visits regarding their plans on whether to breastfeed their infant (n= 2,690). Fifty-three percent of the respondents indicated they planned to breastfeed their infant. In logistic regression models, immigrant black and foreign born Hispanics as well as island born Puerto Rican women were significantly more likely to report that they intended to breastfeed than non-Hispanic whites. Lower education, not living with the baby's father, multiparous pregnancy, and smoking were negatively and independently associated with the intention to breastfeeding. Maternal age, household income, public housing, and depressive symptoms were not significant predictors of breastfeeding intention in adjusted multivariate models. Significant differences were documented in breastfeeding intention in the sample of low-income, inner-city women to include the higher likelihood of anticipated breastfeeding among the immigrant sub-groups compare to non-Hispanic white women. An unexpected finding of the study was the higher likelihood of anticipated breastfeeding among native-born, non-Hispanic African American women than among the non-Hispanic white respondents. Authors recommendations included the importance of intentions as predictors of future behavior and that more focus needs to be directed toward a better understanding of why some mothers intend to breastfeed while others do not (Lee, et al., 2005).

According to Wamback and colleagues, (Wambach, Campbell, Gill, Dodgson, Abiona, & Heinig, 2005), recent research emphasized the importance of cultural influences on breastfeeding practices. Current research indicated the least likely women to breastfeed were young, low-income members of ethnic minority races and those who lacked support for breastfeeding. Women at risk for premature cessation were found to decide to breastfeed later in their pregnancy, demonstrated a negative attitude toward breastfeeding and positive attitudes about

bottle feeding, and had a low confidence in their ability to breastfeed. Research indicated a lower breastfeeding knowledge score, perceived insufficient milk supply and plans to work outside the home was associated with early weaning. Studies indicated that additional support measures such as peer counseling and paternal support may increase breastfeeding initiation and duration rates among low-income and diverse populations (Wambach, et al., 2005).

Breastfeeding Among Adolescents

This review built upon a study by Wambach and Koehn (2004) and an unpublished dissertation by Ratananugool (2001). Wamback and Koehn reported findings of a pilot study of the influencing factors in disadvantaged urban pregnant adolescents' decision making regarding infant feeding choices. The researchers utilized focus group interviews guided by questioning based upon the Theory of Planned Behavior (TPB) with teens ranging in ages from 14- 18 years, the majority being African American. Experiences of infant feeding decision making among the pregnant adolescents were summarized in two major themes: benefits versus barriers of breastfeeding and bottle feeding and independent choice versus social influences. Common threads in the two themes were ambivalence and uncertainty. Findings indicated that adolescents had both positive and negative attitudes toward methods, with many expressing their desire to combine breast and bottle feeding. While many reported the health benefits of breastfeeding, they identified barriers of pain, public exposure and the complexity of breastfeeding. Adolescents maintained that choice of feeding method was their own, although social and family influences were evident. Authors concluded that their findings suggested adolescents needed education on decision making (Wambach & Koehn, 2004).

Ratananugool (2001) explored a prospective, longitudinal study in an effort to enhance understanding of patterns of breastfeeding behaviors among Thai adolescent mothers and the

factors influencing these behaviors. The TPB developed by Ajzen (1989) was utilized as the conceptual model for the study. The TPB provided a framework for explaining and predicting human behaviors based upon the factors of attitude toward behavior, subjective norm, perceived behavior control and behavioral intention (Ratananugool, 2001). The author utilized TPB in measuring intentions which may lead to actions or may be modified to fit changing situations (Ratananugool, 2001). Findings included the constructs of the TPB accounted for 35.4% of the total variability in breastfeeding intentions among Thai adolescents. The author recommended that the research be validated with new samples in different settings. Moreover, four of the variables to include breastfeeding intentions, perceived breastfeeding problems, subjective norms and breastfeeding knowledge were found to be the best predictors of breastfeeding, partial breastfeeding and formula feeding (Ratananugool, 2001).

Theories, Concepts and Tools Utilized in the Literature

Research conducted based upon empirically validated theories were thought to be more effective in altering health behaviors due to theory serving as an explanation of how an intervention works to change behavior. The following paragraphs are devoted to the exploration of theories utilized in the scholarly work of breastfeeding behaviors and promotion of breastfeeding behaviors.

An unpublished dissertation by Ratananugool (2001) explored a prospective longitudinal study in an effort to enhance understanding of patterns of breastfeeding behaviors among Thai adolescent mothers and the factors influencing these behaviors. The Theory of Planned Behavior (TPB) developed by Ajzen in 1985 was utilized as the conceptual model for the study. Although the population of the study was of a different nationality, this study was relevant based on the adolescent population studied as well as the theory utilized. This theory provided a framework

for explaining and predicting human behaviors based upon the factors of attitude toward behavior, subjective norm, perceived behavior control and behavioral intention (Ratananugool, 2001). The author utilized TPB in measuring intentions which lead to actions or may be modified to fit changing situations (Ratananugool, 2001).

The author found preliminary evidence for the applicability for TPB with breast feeding behaviors among Thai adolescent mothers. At the time of this study, there were no other published research articles revealing the utility of TPB in adolescent breastfeeding behavior. At 3 months postpartum, adolescent mothers' breastfeeding behaviors were most influenced by breastfeeding intention, perceptions of breastfeeding problems, perceived breastfeeding control and perceived social support. Health care providers were identified as the most influential persons in supporting breastfeeding efforts. Perceived behavioral control was found significant and had a direct effect on breast feeding intentions and behaviors. The author recommended that the research be validated with new samples in different settings (Ratananugool, 2001).

Theory of Planned Behavior

The Theory of Planned Behavior has been utilized by many researchers and has been found to have the potential to shape interventions. This theory works on the premise that the most effective manner to target behavior is through measuring *intention* which in turn is seen to be a function of four independent variables: *attitudes, subjective norm, perceived control* and *self-efficacy*. Janke (1994) has developed an instrument called the *Breastfeeding Attrition Prediction Tool (BAPT)* that is based upon the Theory of Planned Behavior and measures these constructs. This scale is useful in conducting research that would support data findings that later could be utilized in the development of interventions that are based upon empirical research data collected on the targeted population.

The BAPT

Attitudes toward breast-feeding, subjective norms and perceived breastfeeding control were measurements that the BAPT focused upon based upon the Theory of Planned Behavior. Items contained in the tool were developed from Janke's personal clinical experience, a review of the literature and through semi-structured interviews with postpartum women. Content validity was estimated by a panel of 10 nurses in lactation clinics. The tool was presented to 248 postpartum women. The principal component procedure with varimax rotation was performed for assessing construct validity. Item loading of attitude, subjective norm, and control ranged from .30- .70, .31- .75, and .41- .76. Additionally, construct validity was confirmed by a known group comparison between first time mothers and multiparas with prior successful experience breastfeeding. Reliabilities or Chonbach's alpha coefficient were .80 for overall instrument, .79-.83 for attitudes, .85 for subjective norm, and .81 for perceived breastfeeding control (Janke, 1994).

A study by Dick, Evans, Arthurs, Barnes, Caldwell, Hutchins and Johnson (2002) tested the reliability and validity of the BAPT among 29 women who planned to breastfeed for at least 8 weeks. Subjects completed the in a hospital interview and again during a telephone interview at 8 weeks postpartum. Based upon discriminate function analysis, the BAPT was an effective predictor of 78% of women who stopped breastfeeding prior to 8 weeks postpartum and 68% of those who were still breastfeeding. Based upon the study, the BAPT was said to be an adjunct for the clinician in identification of women at risk for early breastfeeding cessation (Dick, Evans, Arthurs, Barnes, Caldwell, Hutchins & Johnson, 2002).

Constructs of The Theory of Planned Behavior

Attitudes Toward Breastfeeding

A study by Giles, Conner, McClenahan and Mallet (2010) was conducted employing the TPB to predict and explain young people's motivations to breastfeed with the insight to designing interventions to positively promote breastfeeding among adolescents. Thirty-six senior schools in Northern Ireland participated (N= 2021) with a cross-sectional survey and followed up with a telephone call. Findings included that having been breastfed as a child and having seen a mother breastfeeding significantly correlated with intention among males and females. The TPB constructs were all significantly correlated with intention among males and females (Giles, Conner, McClenahan & Mallet, 2010).

Subjective Norm

Social norms, influenced by culture and the woman's context of culture were found to significantly impact breastfeeding initiation by Atchan and colleagues (2011). The media was cited to influence attitudes as well as public opinion. Sexualization of the breast has resulted in conflicting social and sexual values for women. The authors found gaps in the literature in focusing on women having their first baby who have decided not to initiate breastfeeding. The importance of this subgroup is said to be due to the fact that women having their first baby may experience confidence and commitment in a different way than mothers who have a past experience of infant feeding (Atchan, Foureur & Davis, 2011).

According to Atchan, Foureur and Davis (2011), common influencing factors in the intention and initiation of breastfeeding included previous exposure to breastfeeding, attitudes toward breastfeeding, personality, self-concept, the influence of the partner, mother or peer group and accessibility to infant formula. Age, income, and education level may also have had

an impact on the promotion of breastfeeding (Atchan et al., 2011). Social norms significantly impacted breastfeeding initiation and these norms are influenced by culture and the woman's social context. Cultural beliefs varied among aggregate groups in the United States in regard to breastfeeding. The effect of support increased confidence for breastfeeding, while absence of support decreased confidence in women for breastfeeding practices. Sources of support for breastfeeding varied according to age, social class, ethnic groups or culture. The media has historically influenced attitudes and public opinion as well (Atchan et al., 2011).

A study by Dyson and colleagues (2010) examined the psychosocial factors influencing infant feeding intention among pregnant teenagers who were expecting their first baby and living in deprived urban areas in England. This study utilized mixed methods including a quantitative questionnaire based on the TPB. The findings of the study indicated that moral norms were identified as most predictive of all predictive variables influencing teenage intention to formula feed or to breastfeed. Breastfeeding was viewed as a morally inappropriate behavior by most of the teenagers, with formula feeding being perceived as the appropriate behavior. Authors concluded that existing breastfeeding promotion activities were believed to be insufficient in reaching teenagers experiencing deprivation in England without effective strategies to change the negative underlying moral norms toward breastfeeding (Dyson, Green, Renfrew, McMillan, & Woolridge, 2010).

Breastfeeding also occurs within the context of an extended family in which grandmothers brought their own infant feeding practices and beliefs to their support of new mothers. Mothers needed and wanted this support, but advice and concerns may have reflected cultural beliefs that did not promote breastfeeding practices. Research indicated that by including grandmothers in conversations about breastfeeding practices, breastfeeding initiation

may be successful through enhancing the grandmothers' knowledge as well as the support for breastfeeding (Grassley & Eschiti, 2008).

Perceived Breastfeeding Control

Ratananugool's (2001) research increased understanding of patterns of breastfeeding behaviors among Thai adolescent mothers and the factors influencing these behaviors (Ratananugool, 2001). At 3 months postpartum, adolescent mothers breastfeeding behaviors were most influenced by perceptions of breastfeeding problems, perceived breastfeeding control and perceived social support. Perceived behavioral control was found significant and had a direct effect on breast feeding intentions and behaviors (Ratananugool, 2001).

McMillan and colleagues' findings revealed significant predictors of strong intention to breastfeed. Significance was found in positive attitudes, high perceived behavioral control, high moral norms to breastfeed and a strong self-identity as a 'breastfeeder', explaining 72% of the variance in intention to breastfeed (McMillan, Conner, Woolridge, Dyson, Green, Renfrew, Bharj & Clark, 2008).

Dennis conducted a literature review on breastfeeding initiation and duration from 1990 to 2000 (2002). Her findings concluded that although the health benefits of breastfeeding were well documented and initiation rates had increased by 2000, most mothers weaned prior to the recommended sixth month postpartum due to perceived difficulties rather than maternal choice. Women least likely to breastfeed included young, low-income, of minority ethnic background, were unsupported, employed full time, and had negative attitudes and low confidence in their ability to breastfeed (Dennis, 2002).

A literature review on modifiable factors that positively influenced breastfeeding duration to 6 months postpartum was conducted by Meedya and colleagues (2010) and found factors that

were reported to be positively associated with prolonged breastfeeding were categorized as socio-demographic factors, biophysical factors and psychosocial factors (Meedya, Fahy & Kable, 2010). Biophysical factors that were found to influence the duration of breastfeeding included intrapartum experiences, early breastfeeding practices and perceived milk supply. Perceived insufficient milk supply was one of the most common reasons that women ceased breastfeeding (Meedya et al., 2010).

Breastfeeding Intention

A study conducted by Alexander, O'Riordan and Furman (2010) compared the breastfeeding intentions and attitudes of pregnant low-income inner city teens and non-teens to determine if age was a significant determinant of intent to breastfeed in this population. The results indicated in a population at high risk for choosing not to breastfeed (95% African American, 94% single and median age 22) there was no significant explanatory effect of age on breastfeeding intention. Authors' findings included that the support of the father of the baby significantly influenced breastfeeding intent among participants, suggesting that paternal involvement would be integral to the success of breastfeeding (Alexander, O'Riordan and Furman, 2010).

A literature review conducted by Atchan and colleagues (2011) explored the factors that affected the infant feeding decision. Findings suggested that reasons not to initiate breastfeeding were varied and complex, but tended to be mother-centered as opposed to infant centered. Common influencing factors included: previous exposure to breastfeeding/ attitude to breastfeeding, personality and self-concept, influence of partner/ mother/ peer group and accessibility to artificial baby milk. This review indicated that the woman's partner was the primary influencing factor in the infant feeding decision and practice (Atchan et al., 2011). The

review also revealed that women may have based their decisions on perception of the partner's preference rather than actual knowledge of the partner's preference. An attitude that many partners of women share was the opprobrium for women breastfeeding in public (Atchan, et al., 2011).

Perceived Social Support

Perceived social support was another factor found in the literature that affected infant feeding decisions. A qualitative descriptive study by Wambach and Cohen (2009) examined breastfeeding experiences of urban adolescent mothers using a combination of focus groups and interviews with 23 adolescents ages 14- 18. Half of the adolescents were breastfeeding and the other half had weaned their infant within the past six months. Findings revealed that mothers chose to breastfeed mainly for infant health reasons, closeness and bonding. Positive and negative events, barriers and facilitators to continued breastfeeding and types of support received during breastfeeding illuminated the experience of the adolescents. Among mothers who weaned, a combination of primary and secondary problems to include perceptions of insufficient milk supply, nipple/ breast pain, time demands, problems with pumping, and feeling overwhelmed and frustrated led to weaning. Many mothers who weaned reported not seeking out available help and conveyed regrets surrounding this decision, while those mothers who breastfed past six weeks reported significant emotional, informational and instrumental support from family, friends, school, and their babies. Authors concluded that adolescent mothers may need additional support and education in efforts to breastfeed. Due to the fact that infants of adolescent mothers may be at risk socially and health wise, it is doubly important to give them the best start in life through breastfeeding. Continuing emphasis on improving breastfeeding

rates and duration are important to the health of adolescent mothers and infants of adolescent mothers (Wambach & Cohen, 2009).

According to Wambach et al., (2005), research conducted over two decades supports the need for health care providers to continue to examine the breastfeeding related messages they give to mothers, verbal and non-verbal. The impact of health care professionals in supporting breastfeeding had improved, but increased efforts were needed in medical and nursing educational preparation in order to improve care of breastfeeding mothers. Methods of treating common problems of breastfeeding had progressed, yet further research was needed related to prevention of serious problems such as insufficient milk syndrome and nonexclusive breastfeeding. Breastfeeding among vulnerable populations had increased in general, however more rigorous trials were needed to promote breastfeeding in minority, low-income and adolescent populations, according to Wambach (2005). Support efforts were cited as needed and that these should be offered to mothers' significant others, including fathers and grandmothers. Healthcare professionals were said to need further continued education on lactation management, especially in areas of cultural practices, medication use in lactating women, and managing breastfeeding and employment. Further research was encouraged to identify effective methods of education to empower health care providers in their efforts to support breastfeeding clients through collaboration, leadership and practice (Wamback et al., 2005).

Building on previous research, Wambach and colleagues (2011)conducted a randomized controlled trial (N= 289) of breastfeeding support and education for adolescent mothers to determine if an education and counseling intervention provided by a lactation consultant- peer counselor team increased breastfeeding initiation and duration up to six months postpartum among adolescent mothers. The intervention was initiated during the second trimester of

pregnancy and extended through 4 weeks postpartum and was significant in positively influencing breastfeeding duration within the experimental group, but not breastfeeding initiation or exclusive breastfeeding rates (Wambach, Aaronson, Breedlove, Domian, Rojjanasrirat &Yeh, 2011).

A descriptive study by Spear (2004) examined the attitudes, knowledge and beliefs of maternal child nurses related to the practice of breastfeeding among adolescent mothers. Findings of this study revealed that nurses were generally knowledgeable about breastfeeding and supportive of breastfeeding among adolescent mothers. Some of the nurses did not have knowledge of the nutritional differences between breast milk and infant formula, continued the practice of imposing time limits for feedings at the breast and indicated skepticism regarding the potential for success for adolescent breastfeeding because of immaturity and lack of commitment (Spear, 2004).

Breastfeeding Knowledge

Juliff and colleagues (2007) conducted a study to determine the knowledge and attitudes toward breastfeeding of adolescent rural and metropolitan secondary school male and female students (N=1845). Study results indicated that Western Australian adolescent secondary school students have less than ideal knowledge of breastfeeding. Female students were found to be more positive than male students regarding attitudes of breastfeeding. The comparison of rural to metropolitan students found that the metropolitan students had higher breastfeeding knowledge and were more positive toward breastfeeding than the rural students. Study suggestions were that breastfeeding and lactation information needs to be addressed earlier than in adolescence in order to increase knowledge and promote positive attitudes (Juliff, Downie, & Rapley, 2007).

Breastfeeding Among Adolescent Populations

A 3 year retrospective study was conducted by Glass, Tucker, Stewart, Baker and Kauffman (2010) in Amarillo Texas, where teen pregnancy rates were high to determine breastfeeding practices among adolescent females immediately after delivery and again at 6 weeks postpartum. The retrospective chart review focused on adolescents between ages 13 and 18 between January 2006 and December 2008 (n= 543). Study findings revealed that at hospital discharge, 59.3% initiated breastfeeding, but this dropped to 22.2% at the 6 week postpartum appointment. Over 27% of all study participants did not follow up for the 6 week postpartum evaluation (Glass, Tucker, Stewart, Baker and Kauffman, 2010). Recommendations for future studies included further research on adolescent first time mothers and attitudes regarding breastfeeding.

Although health care professionals as well as others may question adolescent mothers' maturity and commitment to breastfeeding, adolescent mothers were found to be physiologically able to lactate as well as their adult counterparts and without any ill effects to their own physical growth and development. The benefits of breast milk were found to be especially important in this vulnerable population because infants of adolescent mothers were hospitalized in the first year of life more often than are infants of adult mothers, often for infections such as gastrointeritis (Wambach et al., 2005). Research indicated that adolescent attitudinal, social, ethnic/ racial, perceived control, and commitment factors were influential in the choice to breastfeed or formula feed.

Wamback asserted that experiences and challenges of adolescent mothers were similar in nature to adult women, including physical breast discomforts, concerns regarding insufficient milk, and fatigue. Issues thought to be more specific to adolescent mothers included modesty

issues, maintenance of breastfeeding after returning to school, trouble expressing breast milk, and maternal sleep interruptions. Adolescents reported positive aspects of breastfeeding to include the closeness of the nursing relationship or bonding ease. Reasons for weaning identified among adolescents included improper latching on, a demanding, unsettled or rejecting infant, insufficient milk supply and *baby liking the bottle better*. Social issues among adolescent mothers weaning the infant included inaccurate advice, relatives' and doctors' advice to quit, embarrassment and work or school barriers. Wambach et al., (2005) reported that very few clinical trials focused on promotion and support of breastfeeding in adolescent populations had been conducted. The authors advocated increased clinical trials using developmentally appropriate interventions which were said to be needed to enhance breastfeeding initiation and duration among adolescent mothers (Wambach et al., 2005).

McGregor and Hughes (2010) conducted a review of qualitative studies (N= 9) to study the breastfeeding experiences of mothers from disadvantaged groups (teenage mothers and women from low socioeconomic backgrounds). McGregor and Hughes concluded that breastfeeding support needed to be culturally specific for aggregate groups in order to meet the needs of the desired population. Effective policies should be implemented in all areas that treat pregnant or new mothers and the staff should be suitably trained to provide effective support and care to mothers who desire to establish breastfeeding. It was said to be important to include social networks of women in studies to gain insight into key information regarding perceptions surrounding breastfeeding practices in order to support breastfeeding as the social norm (McGregor & Hughes, 2010).

Nelson (2009) conducted a study to investigate the attitudes, beliefs and concerns of pregnant and postpartum adolescents regarding breastfeeding among low-income minority

women. Through focus groups and content analysis techniques, themes emerged of "They say it's healthy"; "It hurts"; "Breastfeeding is the mother's choice"; "The baby comes first"; "Breastfeeding leads to dependency". Clinical implications of the study included that adolescents could be encouraged to breastfeed, but required appropriate education beyond what they had heard from others. The study findings suggested that in the postpartum hospital setting, adopting a sensitive, initially hands-off approach to supporting breastfeeding might be more accepted to this population than tactile assistance. Following the initial establishment of a milk supply, various levels of breastfeeding should be considered as potentially acceptable infant feeding patterns (Nelson, 2009).

Breastfeeding Among Native Americans

A research study conducted by Stevens, Hanson, Prasek and Elliott (2008) found that Native Americans in South Dakota had much lower rates of breastfeeding even though the breastfeeding rate of the general population mirrored that of the national rate. The findings concluded that breastfeeding may be particularly important for the tribal communities because of its ability to alleviate health problems such as infant mortality and diabetes, which have been particularly devastating to the Native Americans in South Dakota. Moreover, the authors found that the economic benefits could also be measurable to the advantages of the practice of breastfeeding for this aggregate group (Stevens, Hanson, Prasek & Elliott, 2008).

Rhodes, Hellerstedt, Davy, Pirie and Daly (2008), examined the attitudes and practices of breastfeeding in a Native American population in Minnesota. Demographic, behavioral, and attitudinal correlates of breastfeeding initiation and duration were studied. The factors that were positively associated with breastfeeding initiation included positive breastfeeding attitudes and social support for breastfeeding from the woman's husband/ boyfriend and from the woman's

mother. Factors positively associated with breastfeeding at 2 weeks postpartum were support from the woman's mother and positive attitudes about breastfeeding. Moreover, the prenatal use of traditional Native American medicines were significantly associated with breastfeeding at 6 months postpartum, indicating that traditional Native American practices complement breastfeeding and confirmed its importance (Rhodes, Hellerstedt, Davy, Pirie & Daly, 2008). An ethnographic qualitative study was conducted by Dodgson and Struthers (2003) which focused on the Ojibwe (Chippewa) Native Americans from the Great Lakes region of the United States in an effort to understand breastfeeding practices. Historically, most of the practices had been taught and handed down through methods of storytelling and because the infant feeding practices of women were not seen as important as other aspects of indigenous culture. Decision making included the consultation of family and respected elders in the community. Findings of the study included the *forced assimilation of indigenous people* which caused a breakdown and barrier to native customs and tradition. Ojibwe children were removed from families and placed in boarding schools, which continued into the 1930s, and breastmilk was replaced by formula. In the 1950s and 1960s, breastfeeding practices were associated with poverty. The North Carolina Supplemental Nutrition Program for Women, Infants and Children (WIC) program gave impoverished women a choice to formula feed or breastfeed. The tradition of the Ojibwe people has been passed on despite cultural destruction to include the values of holism, balance and harmony, where humans have responsibility to family, community, and nature. Breastfeeding was historically understood by the Ojibwe people to prevent postpartum hemorrhage, child spacing, and infant health. Breastfeeding women were given special status in their community due to their important contribution to the well-being of the future generation. Breastmilk was considered to be a "*gift and a medicine a mother gives to her child"* (Dodgson & Struthers,

2003, p. 57). The knowledge of the anti-infective properties of breastmilk was evident due to the practices of using breastmilk to treat eye and ear infections (Dodgson et al., 2003).

Insight into breastfeeding practices during the study included babies being placed on the breast immediately after birth and nursed on demand, breastfeeding into the second year of life and until the woman became pregnant again. There were no taboos associated with sexual intercourse during lactation. Wet nursing practices were common when mothers were unable to nurse their infant. Wet nursing was practiced by other lactating women when a mother was unable to nurse their babies (Dodgson et al., 2003).

A research study conducted by Wright, Naylor, Wester, Bauer and Sutcliffe (1997) between years 1988 to 1990 regarding infant feeding practices and perceptions among the Navajo women in order to determine how Navajo women feed their infants and on what basis they made feeding decisions. The research was conducted in three communities in order to reflect diversity in lifestyles on the reservation: a rural community, an economically developed area on the reservation and a town on the southeastern edge of the reservation. Findings revealed that 81% of the women interviewed breastfed, although 62% started formula in the first week after delivery. Fifty percent of the women had stopped breastfeeding at two months postpartum. Although the rates at the time of this study were not particularly low compared to national standards, the data were of interest to the researchers due to the high rate of infant morbidity. As late as the 1970s, the Navajo infant mortality due to respiratory and gastrointestinal illnesses was 2.8 and 8.2 times higher, respectively, than the national average (Wright, Naylor, Wester, Bauer & Sutcliffe, 1997). Navajo traditional beliefs supported breastfeeding with the exception of when the *infant chose the bottle.* A high percentage of Navajo women initiated breastfeeding, although perceived barriers to breastfeeding were cited as employment and concern for having

enough milk fostered the early introduction of formula, resulting in a short duration of breastfeeding. Many healthcare practices were not supportive of breastfeeding at the time of this study. Relatives were influential in infant feeding decisions but were rarely sources of advice regarding nursing problems (Wright et al., 1997).

Breastfeeding Among African Americans

Lewallen and Street explored issues related to initiating and sustaining breastfeeding in African American women (2010). The qualitative design utilized focus groups guided by Leininger's theory of cultural diversity and universality in three different regions of a southeastern United States. Themes identified from the data collected included reasons to initiate or stop breastfeeding, useful and non-useful advice, and cultural issues related to breastfeeding perceived to be unique among African Americans. Three overall themes included perceived lack of knowledge of information about benefits and management of breastfeeding, negative aspects regarding breastfeeding in public and lack of support system for continuation of breastfeeding. Lewallen and Street concluded that women need to be taught early during pregnancy of the benefits of breastfeeding and offered continued support and teaching once breastfeeding initiation had begun (Lewallen & Street, 2010).

A study examining prenatal breastfeeding self-efficacy and infant feeding decisions among African American women (2011) used a mixed methods approach and utilized a black feminist philosophy to keep the women's experiences as the central focus. Findings included that both women who intended to formula feed and those who intended to breast feed demonstrated confidence in their ability to breast feed. Four themes emerged that were related to self-efficacy including performance accomplishments, vicarious experiences, verbal persuasions, and physiological reactions. Themes of social embarrassment and feelings of regret were also

identified. The authors concluded that although African American women in the study rated themselves overall as confident with breastfeeding, several narratives about the actual feeding choices indicated ambivalence. Conclusions revealed the needed continual support of African American women planning to breast feed (Robinson & Vande Vusse, 2011).

A research study that sought to identify barriers to breastfeeding among high risk inner city African American mothers used audio taped focus groups moderated by an experienced International Board Certified Lactation Consultant. Three focus groups included twenty high-risk, inner city, expectant and delivered mothers. Results of the study included findings of self-perception, themes of low self-efficacy with fear of social isolation and limited expression of positive self-esteem. Relationship issues and social support themes included formula as a cultural norm, worries about breastfeeding in public, and challenging family relationships. Structural and environmental factors themes included negative postpartum hospital experiences and lack of support after going home. The new themes found in this study not found in previous research included self-esteem and self-efficacy themes as well as fear that breastfeeding would suffocate the infant. Authors concluded that the findings of the study created a context for future analysis and could be utilized to understanding barriers to breastfeeding among African American high risk inner city women (Furman, Banks & North, 2012).

A study designed to assess the degree to which women's intentions to breastfeed prior to delivery translated to actual breastfeeding at hospital discharge and to investigate the predictors of breastfeeding in a minority inner-city population of a majority of African American women found that only three in four women who intended to breastfeed prior to delivery were breastfeeding at hospital discharge. However, one in ten women previously not intending to breastfeed did so. In a multivariable analysis, older mothers and those with a lower parity were

more likely to breastfeed at discharge and also to breastfeed exclusively (Hundalani, Irigoyen, Braitman, Matam & Mandakovic-Falconi, 2012).

Breastfeeding and Health Disparities

The National Institutes of Health defined health disparities as "the difference in the incidence, prevalence, mortality, and burden of disease and other adverse health conditions that exist among specific population groups in the United States". The Office of Minority Health and Health Disparities working definition of health disparities was defined as "significant difference or inequalities in health that exist between whites and racial/ ethnic minorities" (North Carolina Department of Health and Human Services, 2012). According to the American Dietetic Association (ADA) (2009), the overall breastfeeding rates were increasing. However, disparities persisted based upon socioeconomic status, maternal age, country of origin and geographic location. Moreover, factors such as hospital practices, knowledge, beliefs, and attitudes of mothers and their families, as well as access to breastfeeding support could influence initiation, duration and the practice of exclusive breastfeeding an infant (ADA, 2009). Disparities in healthcare was defined by the IOM as racial or ethnic differences in the quality of healthcare that were not related to access related factors or clinical needs, preferences, or appropriateness of the intervention (IOM, 2003).

Disparities reviewed and cited by the Institute of Medicine of the National Academies in *Unequal Treatment: Confronting racial and ethnic disparities in healthcare* (2003) include a summary of published literature revealing that racial and ethnic minorities experienced a lower quality of health services and were less likely to receive routine medical procedures than were white Americans (IOM, 2003). These differences were linked with greater mortality among minority patients (IOM, 2003). Findings of the IOM summary (2003) included that racial and

ethnic disparities in healthcare existed and were associated with worse outcomes in many cases and this was unacceptable. Some of the health systems interventions recommendations included promoting consistency and equity of care through evidence-based guidelines, integrating cross-cultural education into the training of all current and future health professionals, including measures of racial and ethnic disparities in performance measurement and monitoring the progress toward elimination of disparities in healthcare and to research further to identify sources of racial and ethnic disparities (IOM, 2003).

Research has noted a rural disadvantage in breastfeeding initiation. Results indicated that associations observed for rural-urban breastfeeding initiation differed based upon maternal/ ethnicity as well as poverty status, and were likely reflective of differences in economic resources, work environments, and social support among the rural minority population of postpartum women (Sparks, 2010). According to the Centers for Disease Control (CDC, 2006), the racial and socioeconomic disparities in breastfeeding revealed for the year 2004, 71.5% of white and 50.1% of black children were ever breastfed. The greatest percentage point difference between races was among children in rural areas, whereas the smallest percentage point differences were among children ineligible for WIC, children residing in the Northeast, and children born to married mothers.

Risk and Social Justice

According to the Centers for Disease Control, (2011), there were five outcome indicators which profile the extent to which infants in a state in our nation were breastfed which are the outcome measures to include *ever breastfed; breastfeeding at 6 months; breastfeeding at 12 months; exclusively breastfeeding at 3 months;* and *exclusively breastfeeding at 6 months.* Important process indicators recognized by the CDC were said to be elements of breastfeeding-

friendly communities (CDC, 2011). Breastfeeding was a concern impacting the individual mother and child and beyond to longer-term outcomes for society. Health disparities among minority races and low-income populations increased the importance of access to protective factors that are known to be available through the practice of breastfeeding (CDC, 2011; Hurst, 2007).

Breastfeeding Behaviors in the General Population

A data synthesis by Thulier and Mercer (2009) to identify the variables associated with breastfeeding duration revealed that demographic factors that influenced breastfeeding duration were race, age, marital status, education, socioeconomics and the *Special Supplemental Nutrition Program for Women, Infants, and Children* (WIC) status. The biological variables consisted of insufficient milk supply, infant health problems, maternal obesity, and the physical challenges of breastfeeding, maternal smoking, parity and method of delivery. Social variables included paid work, family support, and professional support. Maternal intention, interest, and confidence in breastfeeding were psychological variables. The authors concluded that breastfeeding was a complex phenomena and the duration was influenced by many demographic, physical, social and psychological variables (Thulier & Mercer, 2009).

Gaps in the Literature

The current review of the literature indicated that there was a gap in literature for adolescent breastfeeding behaviors, attitudes and beliefs among certain minority populations in rural areas specific to prediction in breastfeeding initiation and duration as well as intervention studies to support efforts of initiation and duration (McMillan, et al., 2008; Wambach et al., 2009). According to Atchan and colleagues, (2011), there was a research literature gap exclusively focusing on women having their first baby who had decided not to initiate

breastfeeding. According to these authors, this group was important because women having their first baby may have been able to develop confidence and commitment in a different way to mothers who had a past experience of infant feeding (Atchan, et al., 2011). Smith, Coley, Labbok, Cupito and Nwokah (2012) found that breastfeeding among adolescents depends on a complex interplay of multiple factors, including having made an informed choice and having the skills, support and experiences needed to sustain the belief that breastfeeding is the best choice for them and their baby given their life situation (Smith, Coley, Labbok, Cupito & Nwokah, 2012). The complexity of factors that impact adolescent decision making regarding infant feeding is important in the development of interventions to support this aggregate group. Many studies recorded related to breastfeeding and some have focused upon adolescents, however, there was found to still be a need to increase breastfeeding among first time, adolescent mothers and there was no research studies to the author's knowledge that focused upon vulnerable, rural adolescent women of Native American and African American ethnic origins. The issues surrounding the importance of breastfeeding have remained real issues in the everyday lives of women and infants (Lewallen et al., 2010) and are underscored by the low rate of breastfeeding in the adolescent minority populations (Wambach, et al., 2005).

Summary

In summary, breastfeeding remains to be a public health and national priority that is perceived to prevent morbidity and mortality for infants as well as morbidity for mothers of infants during the perinatal period and beyond to later years in life for mother and baby. Much has been researched and has been made known related to the specific benefits of this practice as well as the rate of the practice. Research literature indicates that there is still a need to focus on high risk groups that are at risk for not breastfeeding such as adolescent populations as well as

the minority and low-income, rural populations. Through the findings of nursing research, interventions may be developed in order to address efforts of breastfeeding among these specific groups, thereby improving health among their infants.

CHAPTER THREE: METHODOLOGY

This chapter describes the methodology utilized in the study. The description includes the research design, setting, population and sample, data collection procedures, protection of human subjects, pilot study, instruments and data analysis procedures. This chapter describes the research methodology utilized to address the research questions.

Research Design, Setting and Sample

Research Design

The study design used for this research was a non-experimental, descriptive and exploratory prospective survey design. This study explored the breastfeeding behaviors of rural, low income Native American and African American adolescent mothers from the prenatal period and at 4 days postpartum in order to study attitudes and beliefs related to infant feeding intention and breastfeeding initiation.

Setting

The setting for this research was a largely rural southeastern North Carolina region comprised mostly of Robeson County residents. The southeastern North Carolina counties had a diverse population comprised of approximately 39% Native American and Alaska Native American, 35% Caucasian, 25% African American as well as a growing Hispanic aggregate population. Native Americans and Alaskan Natives make up only 1.3% of North Carolina's population as a whole, whereas African Americans make up approximately 21.8% of North Carolina's population as a whole. Robeson County's population is unique in that it is over two thirds minority as well as rural, making it a highly vulnerable population. According to the Adolescent Pregnancy Prevention Campaign of North Carolina, the teen pregnancy rate for Robeson County in year 2010 was 80.0 per 1000 teenage girls ages 15- 19 years with an actual

number of pregnancies in 2010 to this age group of 432. The same year, there was a 26.9 % repeat pregnancy rate. In 2009, there were 2,522 total births in Robeson County, with 1,677 to Medicaid recipients and 498 to mothers ages less than 20 (North Carolina Department of Health and Human Services, 2011).

Rural Measurement and Classification

According to the United States Census Bureau, urban areas are defined as those areas that are densely populated and have a population of at least 50,000 people. Smaller urban clusters are those areas that are densely populated and have populations of at least 25,000. Rural areas are all of those areas located outside of urban areas and urban clusters (United States Department of Commerce, US Census Bureau, 2012). According to the Office of Management and Budget's Definition of Core Based Statistical Areas (Metro and Non-Metro), counties are designated as either metropolitan or not metropolitan. A county that has a city within it with a population of 50,000 or more is automatically defined as metropolitan, and that metropolitan classification counts for the entire area of the county, even if some outlying portions are less densely populated. Bordering counties that are economically tied to that central county (based upon commuting patterns) are also classified as metropolitan. Within this definition, there is also a category for micropolitan areas, which are counties with a town with a population of 10,000 or more. In this case, the whole county is classified as micropolitan. Counties that are neither metropolitan nor micropolitan are called *noncore.* The metropolitan counties are classified as urban and the micropolitan and noncore counties are classified as rural (The White House, Office of Management and Budget, 2012). According to the North Carolina Rural Economic Development Center, 85 of North Carolina's 100 counties can be classified as rural based upon the population density (North Carolina Rural Economic Development Center, 2012). Under all

of these definitions, Robeson County and Columbus County would both be considered a rural county.

In regards to education, the counties lag behind North Carolina's average, in that the high school graduation rate is at 70.9% for Robeson and 78.1% for Columbus, compared to 84.5% for North Carolina in 2008- 2012, with those holding a Bachelor's degree or higher are at 12.9% for Robeson and 11.6% for Columbus of the population. The average median household income is approximately $30,167 for Robeson and $35,182, which leaves 31.9% of the population below the poverty rate for Robeson and 24.5% for Columbus, compared to 16.8% for North Carolina as a whole for years 2008-2012 (North Carolina State Center for Health Statistics [NCSCHS], 2014).

According to the Robeson County Partnership for Children, for the years 2008-2009, 32% of all Robeson County mothers initiated breastfeeding; 27% breastfed for at least 6 weeks; and only 7% breastfed for at least 6 months (Robeson County Partnership for Children, 2012). The overall breastfeeding initiation rate of 33.4% (Robeson County) and 34.0% (Columbus County) was reported for the rural counties for all ages of women delivering babies for the year 2010 (North Carolina Department of Health and Human Services[NCDHHS], 2014) compared to 74.9% in North Carolina and 76.5% nationally as a whole (Center for Disease Control [CDC], 2014). The North Carolina Pregnancy Risk Assessment Monitoring System Survey Results from the year 2009 indicated for women under the age of 20, 64.1% initiated breastfeeding (North Carolina State Center for Health Statistics, 2012).A recent study of North Carolina teens (ages 13- 17) across the state reported an overall 52% of breastfeeding initiation rate among White, Hispanic, and Black teen mothers , with white teen mothers initiating at 87%, black teen mothers initiating at 41% and Hispanic teen mothers initiating at 89% (Tucker et al., 2011). At the

present time, there are no recent studies reporting the breastfeeding rate of only African American and Native American adolescents in southeastern North Carolina rural counties.

Sample

The target population of this study was adolescents between the ages of 16 and 19 of Native American and African American racial backgrounds and of low income up to 185% Federal Poverty Level based upon the North Carolina Division of Public Health Sliding Fee Scale for 101%-250% of poverty. This took into account the family income (North Carolina Division of Public Health, 2012). The sample was a convenience sample recruited through resources of care that were offered to prenatal clients in two public health departments to include The North Carolina Women Infant and Children Program (WIC) services because of the large number of pregnant women seen through these clinics, regardless of which obstetric provider was treating the client. The sample size included 60 Native American adolescents and 60 African American adolescents. In one of the local public health departments, at any given time, there were approximately 650 Medicaid eligible pregnant women who were enrolled in The North Carolina Women Infant and Children Program (WIC) services. Due to the large percentage of minority population of Robeson County, (two-thirds of the county's population), most of these women were of minority racial background. One hundred and twenty Native American and African American women were enrolled into this research study between March and August, 2013. The subjects were interviewed at 4 days postpartum beginning in July 2013 and continuing until November, 2013. An overall nine month period of time was the overall length of the time span of the study.

Inclusion and Exclusion Criteria

Criteria for inclusion included1) English speaking; 2) adolescent primiparous; 3) Native American or African American; 4) ages 16 to 19 years old; 5) with voluntarily assent or consent to participate in the study for the completion of questionnaires prenatally and subsequent surveys to be completed during the postpartum 4 day time frame; 6) must have delivered a normal singleton newborn vaginally; and 7) have had a definite address or be able to be reached by telephone in order to continue in the research study at 4 days postpartum. Exclusion criteria consisted of 1) mothers who planned to give babies up for adoption; 2) mothers who had cesarean section deliveries; 3) mothers who had fetal demise; 4) mothers who did not meet above inclusion criteria. The rationale of inclusion and exclusion criteria was based upon the literature review. Studies in the literature showed that multiparous women were different than first-time mothers on breastfeeding behavior as well as factors influencing behavior (Dennis, 2002). Moreover, premature and low birth weight infants were less likely than full term infants to receive breast milk because the physical conditions of both mothers and babies such as mother-infant separation, maternal stress, and that the neonatal intensive care environment could hinder the initiation of breast feeding (Hurst, 2007). Complications of pregnancy such as known Human Immunodeficiency Virus status and severe illness of the mother excluded the participant due to complications of or contraindications to breastfeeding. Finally, mothers who gave birth by cesarean section were excluded due to being less likely to breastfeed than those who did not (Hurst, 2007).

Protection of Human Subjects

The study was approved by the East Carolina University Institutional Review Board and by the Robeson County Department of Public Health, the Columbus County Department of

Public Health and the Health Directors for the counties. A verbal explanation regarding the purpose of the study, the method of the study, the potential risks and benefits of the participants of the study, the right to refuse participation or to withdraw at any time, and the protection of confidentiality were explained to the participants prior to their enrollment. The participants were informed that there were no known risks for participation in the study. The adolescent mothers were able to ask questions at any time during the study. Participants' names were not attached to the surveys. A code number was utilized instead on all questionnaires. A list linking the code numbers and the participants' names were accessible only to the Principal Investigator and kept in a locked file in the Principal Investigator's office. The names of the participants were shredded at the end of the data collection.

Data Collection Procedures and Instrumentation

Once East Carolina University Institutional Review Board approval was obtained, (see Appendix O) the researcher met with the Robeson County Department of Public Health and the Columbus County Department of Public Health who also granted permission for the study. The Principal Investigator conducted a training of Pregnancy Care Managers, The North Carolina Women Infant and Children Program department staff and other key leaders involved in identifying potential participants. The Principal Investigator made initial contact with participants during their visits to the public health departments during prenatal care visits. Time allotted for the first questionnaire was 20 minutes and the Principal Investigator read the questionnaires in order to expedite the process and to ascertain participants' understanding of the questions. The participants were informed that there was no cost to participate. The Principal Investigator enrolled participants into the study in a private office to maintain confidentiality. The Principal Investigator verbally explained the purpose and the nature of the study and assured

participants that all data would be kept confidential by the Principal Investigator. Informed consent or participant assent was obtained at this point of time. The participants were informed to feel free to ask any questions, to refuse to answer any questions that made them feel uncomfortable, and that they could decline to participate at any time during the study.

Once informed consent or assent had been obtained, the initial questionnaires were completed in the private office with facilitation of the Principal Investigator. During this time, participants were asked to complete the first packet of questionnaires: the *Personal Information Questionnaire,* the *Infant Feeding Intention Scale*, the *Breast-Feeding Attrition Predictive Tool* (BAPT) and the *Breastfeeding Knowledge Questionnaire*. The initial questionnaires took approximately 20 minutes to complete. During this first interview, the Principal Investigator read the questions to the subject and recorded the subject's response. The subjects had a copy of the questionnaires to follow along during the process. The first encounter booklet of questionnaires was given a code number and the personal information was kept separately with the code number to protect participants' identity and to maintain confidentiality. The research code book with a listing of the code numbers and the participants' name was only accessible to the Principal Investigator and kept in a locked cabinet in the Principal Investigator's office until after the close of the data collection. The incentive items were distributed after the initial data collection was completed. Incentives of $10 Wal-Mart gift cards and personal gift item were offered at the first encounter and information was discussed during this time with the participants regarding the incentives for the second postpartum questionnaire to include a $20 Wal-Mart gift card.

The Principal Investigator called participants at the time of their Estimated Date of Confinement of due date to obtain information regarding infant births of participants. The PI contacted the participants at 4 days postpartum for the second encounter and the participants

were interviewed regarding breast-feeding and/ or formula feeding behaviors either by telephone or by home visit. During this call/visit, the *Postpartum Screening Question*, the *Breastfeeding* or *Formula Feeding Postpartum Form*, and the *Breastfeeding Knowledge Questionnaire* were administered. The *Breastfeeding Knowledge Questionnaire* was administered for a second time at the 4th day postpartum to measure any difference that might have occurred up to the postpartum period related to breastfeeding knowledge or breastfeeding attitudes of the participants. The incentives were mailed to those participants who completed the questionnaire over the telephone. After this point in time, the code book as well as the data was taken to the Principal Investigator's home office and kept in a locked file cabinet. At the close of the East Carolina University Institutional Review Board study data collection, the code book and personal information of the participants were shredded.

Survey Tools

A total of six survey tools were used in the study. Four survey tools were administered at the time of participant enrollment and three tools were administered at 4 days postpartum. The following paragraphs describe the survey tools and the psychometrics of each tool if applicable in great detail. Assessment Tools for the Quantitative research study included the following:

1) *Personal Information Questionnaire*; 2) the *Infant Feeding Intentions Scale* (Nommsen-Rivers, Cohen, Chantry & Dewey, 2010) ; 3) the *Breastfeeding Attrition Predictive Tool* (BAPT) (Janke, 1994); 4) the *Breast-Feeding Knowledge Questionnaire*(Ratananugool, 2001; Giles et al., 2007); 5) the *Postpartum Screening Question;* and*6)* the *Breastfeeding or Formula Feeding Postpartum Form*. Three of the tools/ forms were developed by the author for

general data collection. *Table 1* lists the research instruments as well as research question that each tool is related to in terms of data gathering.

Table 1

Research Instruments

	Instrument	# Items	Administration	Q #
1.	Personal Information Questionnaire Developed by PI.	22	Time 1 Prenatal	3
2.	Infant Feeding Intention Scale (Nommsen-Rivers, et al., 2009; Nommsen-Rivers, et al., 2010). Modified by PI.	5	Time 1 Prenatal	1, 2, 3
3.	Breastfeeding Attrition Prediction Tool *NBS* Used as is with Revised directions For participants. (Janke, 1994).	114 total items 15 belief items 15 importance items *PBS* 14 belief items 14 importance items *SPS*12 Opinion of Others 12 Care of Opinion of Others *BCS*10 Perceived Breastfeeding Control items	Time 1 Prenatal	1
4.	Breastfeeding Knowledge ScalePostnatal (4 d pp) (Ratananugool,2001; Giles,et al., 2007). Combined and modified By PI.	20	Time 1 Prenatal and Time 2	1
5.	Postpartum Screening Question Developed by PI.	1	Time 2 Postnatal (4 d pp)	2, 3
6.	Breastfeeding or Formula Feeding Developed by PI	28/ 26	Time 2 Postnatal (4 d pp)	Supplemental Data

The Personal Information Questionnaire

This Personal Information questionnaire contained 22 items pertinent to the research questions and independent variables. The data included background data of subjects including age, family income, educational level, and number of people living in home. This tool was developed by the Principal Investigator for the current study and included information related to marital status, living status and if they plan to keep the baby or give the baby up for adoption. The questionnaire was administered at the time of enrollment prenatally.

The Infant Feeding Intention Scale

The adolescent mother's intention to breastfeed was measured with the *Infant Feeding Intention Scale* (Nommsen-Rivers et al., 2010), which contains 5 items pertaining to the planned intention of the method of infant feeding. The scale contains five-point responses with *strongly disagree* to *strongly agree.* Total scores of higher numbers (total score ranges from 0 to 8) indicated a strong intention to breastfeed. This tool was developed by Nommsen-Rivers et al., (2010) in order to compare ethnic groups and to understand sociodemographic disparities in breastfeeding rates and shown to be a valid, simple tool for quantitatively assessing the strength of intentions to initiate and sustain exclusive breastfeeding (Nommsen-Rivers et al., 2010).The tool was modified by the Principal Investigator in order to measure intention of one month postpartum, which is the nearest time of the study assessment in the postnatal period. Internal consistency reliability estimates of.90 were reported in two samples of women, one sample of 88 women in their third trimester of pregnancy and a sample of 170 low-income, multi-ethnic primiparae women. Construct validity was demonstrated by a significant association between

Infant Feeding Intention score and both planned and actual breastfeeding exclusively duration (Nommsen-Rivers et al., 2010).

The Breast-Feeding Attrition Prediction Tool

Attitudes toward breastfeeding (negative breastfeeding attitudes and positive breastfeeding attitudes), subjective norms or Social Professional Support and perceived breastfeeding control or self-efficacy were measured by the *Breast-Feeding Attrition Prediction Tool* (BAPT) developed by Janke (1994) based on the Theory of Planned Behavior. The BAPT was developed by Janke (1994) based on the theory of planned behavior which explains behavior as a function of attitudes, subjective norm, and perceived control. The BAPT subscales are positive and negative attitudes toward breastfeeding, family and professional expectations, as well as perceived ability to be successful in breastfeeding. This tool was modified by the Principal Investigator within the instructions in the scales in order to ensure understanding of instructions by adolescent participants. A six point Likert type scale was used for all items. For the Negative Sentiment Breastfeeding Scale and the Positive Breastfeeding Sentiment Scale, each belief item was paired with an outcome evaluation item or *degree of importance*. Additionally, the Social Professional Support Scale each item was paired with an outcome evaluation item (Janke, 1995). For these scales, in order to present the findings, both the belief aspect as well as the evaluation of importance of the items were analyzed and considered.

The BAPT was composed of 114total items divided into the four parts and included additional fill-in-the blank questions after the scales as mentioned earlier. The attitudinal scale had two parts. The first part consisted of items that measured the beliefs concerning the consequences of breastfeeding and bottle feeding. In this part, there were two subscales: Negative Breastfeeding Sentiment (NBS) and Positive Breast-feeding Sentiment (PBS). These

items reflected a person's value of each consequence. The NBS and the PBS attitudinal scores were obtained by multiplying the strength of each belief by its corresponding outcome evaluation and summing the results across all beliefs in the subscale. The higher score of each sub-scale indicated the greater positive breastfeeding or negative breastfeeding attitudes.

Attitudinal items of Negative Breastfeeding Sentiment included 15 belief items and 15 corresponding importance evaluation items. Positive Breastfeeding Sentiment included 14 belief items and 14 corresponding importance evaluation items. Social and Professional Support Scale or subjective norm included 12 *opinion of others* items and 12 corresponding evaluation *care of opinion of others* items. The higher the score, the greater support for breast-feeding was affirmed. The perceived Breast-feeding Control scale or self-efficacy included 10 items. An example of an item in perceived breast-feeding control is "I am confident I can breastfeed" (Janke, 1994, p. 101.) The higher scores indicated a greater sense of control the adolescent mother had over her ability to breast-feed.

Psychometric Properties of the BAPT

The items for the BAPT were originally developed from Janke's personal clinical experience, a review of the literature, and semi-structured interviews with postpartum women. Content validity was estimated by a panel of 10 nurses in lactation clinics (Janke, 1992). The tool was originally pre-tested in 248 postpartum women. The principal component procedure with varimax rotation was performed for assessing construct validity. Item loading of attitude, subjective norm, and control ranged from .30- .70, .31- .75, and .41- .76 respectively in the original development. Additionally, construct validity was confirmed by a known group comparison between first time mothers and multiparas with prior successful experience in breastfeeding. In previous studies, reliabilities or Cronbach's alpha coefficient were .80 for the

overall instrument, .79- .83 for attitudes, .85 for subjective norm, and .81 for perceived breast-feeding control (Janke, 1994). A stepwise discriminate analysis was done to determine predictive validity.

The Breast-Feeding Knowledge Scale (BKS)

Breast-feeding knowledge was measured by the Breast-Feeding Knowledge Scale, which was developed by combining knowledge scales utilized by Ratananugool (2001) and Giles, et al., (2007). Permission was obtained to utilize these scales in the current study and these scales were combined by the Principal Investigator. This scale had 20 items and was based on the two original scales in the literature and the previous investigator's clinical experience (Ratananugool, 2001;Giles, et al., 2007). Five of the items were related to participant attitudes of breastfeeding and 15 of the items were related to the knowledge of breastfeeding of participants. Content of the items in the scale included an agree/ disagree check- off list of benefits or risks and barriers for breastfeeding. The higher the score, the greater the breastfeeding information an adolescent mother possesses. The questionnaire items proved to be reliable in analyses by Ratananugool, (2001) and Giles, et al., (2007) and provided strong support for the predictive power of the theory of planned behavior and an acceptable level of reliability. The Cronbach's alpha coefficient for the Ratananugool, (2001) study was reported at .55 in the pilot study.

The Postpartum Screening Question

The Postpartum Screening Question was administered at 4 days postpartum and was asked to the participant to answer one question regarding the best description of how the participant feeds her infant from a continuum of "breast milk only" to "completely bottle fed or no breast milk at all". This question was developed by the current Principal Investigator based upon the literature review in order to collect relevant data for the current study.

The Breastfeeding or Formula Feeding Postpartum Form

The Breastfeeding or Formula Feeding Postpartum Form was administered at 4 days postpartum. This form included questions regarding how the participant had fed and is feeding her baby and the assistance received in making her decision on how she is feeding her baby. The Breastfeeding portion included 27 questions and the Formula portion included 25 questions. This form was developed by the current Principal Investigator and the development was informed through the literature review.

Evaluation of all instruments utilized in this study were conducted with the first 5 subjects enrolled and completed for the two surveys increments in the study as pilot subjects for evaluating the instruments. Content validity was determined by assessing whether or not participants understood items or had confusion about wording. All instruments were found to be validated for use in the current study in July, 2013.

Data Analysis Procedures

All of the study variables were entered into and analyzed with the IBM SPSS 19 statistical analysis program. All of the categorical study variables were summarized with frequencies and percentages, while means and standard deviations were used to summarize the continuous variables. Multiple regression was used to predict the infant feeding intention score using the theory of planned behavior constructs and breastfeeding knowledge. Differences between African American and Native American adolescents were assessed with the chi-square statistic for the categorical variables, and the one-way analysis of variance for the continuous variables. Pearson correlations were used to explore the relationships between intention and each of the Theory of Planned Behavior measures and knowledge separately for the African

Americans and the Native Americans. One way analysis of variance was used to explore the relationship between intention and the occurrence of breastfeeding at 4 days postpartum for the African Americans and the Native Americans. Pearson correlations, chi-square, and one-way analysis of variance were used to explore whether any other of the study variables are related to intention and breastfeeding occurrence at 4 days postpartum in African American and Native American adolescents. Statistical significance was evaluated with a p-value $\leq .05$. The psychometrics of instruments used was gathered as they related to the Native American and African American adolescent population.

Timeline of the Study

The study began in March, 2013 when final approval by the East Carolina University Institutional Review Board was granted and continued until November, 2013 when participants had completed two time contacts via clinic encounter and telephone or home visit. Enrollment of 120 participants was completed from March to August, 2013, within six months of the beginning of the study. The 4 day postpartum contacts were completed from July to November, 2014, within a 5 month period. The process encompassed a nine month total study time with participants. All data was collected by the Principal Investigator. There was a total of 102 participants (85%) who completed the study in its entirety for the postpartum contact. Two participants experienced fetal demise and 16 were lost to follow up related to disconnected phone numbers and transient clients. Data analysis was completed with consultation from a professional statistician. The study statistical analysis was completed in December, 2013.

CHAPTER 4: FINDINGS

This chapter presents analyses and findings of the study guided by the research questions discussed in chapter one. Six sections are included in this chapter. The first section addresses descriptions of the sample. The second section focuses on how well the combination of the theory of planned behavior constructs and breast-feeding knowledge predict the probability of maternal breastfeeding intention until one month of age and breastfeeding initiation at four days postpartum in rural, low-income African American and Native American adolescent mothers. The third section examines the similarities and differences between breastfeeding and formula feeding adolescent groups and the constructs of the Theory of Planned Behavior (Negative Breastfeeding Attitudes, Positive Breastfeeding Attitudes, Social Professional Support and Perceived Breastfeeding Control or self-efficacy). The forth section focuses on the relationship of socio-demographic variables with breastfeeding intention and initiation. The fifth section focuses on the relationship of breastfeeding intentions on breastfeeding initiation at four days postpartum in rural, low-income African American and Native American adolescents. The sixth section focuses on the psychometric properties of the instruments utilized in the research study as they relate to the African American and Native American adolescent population.

Description of Sample

The sample population was composed of African American and Native American adolescents, ages 16- 19, residing in two rural counties in the southeastern region of North Carolina. Table 2 presents the characteristics of the 102 participants who completed the study. The sample included slightly more Native Americans than African Americans, with an average age of 18.6 years. Over half the adolescents were high school graduates, and 20 percent reported

education after high school. Twenty eight participants (27%) were either married or living with their significant other, and the others were either living at home with their mother or with another family member. Only twelve percent of the subjects were breastfed themselves, and 54% reported not knowing any friends or family members who had breastfed their infants. Over 80 percent reported receiving breastfeeding materials and advice at their prenatal clinic.

Table 2

Characteristics of Study Sample (N=102)

Characteristic	n	%
Ethnicity		
Native American	53	52
African American	49	48
Mother's age (years)		
16	12	12
17	16	16
18	27	26
19	47	46
Mother's education (years)		
8 - 9	12	12
10- 11	34	33
12	36	35
>12	20	20
Living arrangements		
Married	13	13
Significant other	15	15
Own Mother	58	57
Other Family Member	16	16

Table 2
Continued

Characteristic	n	%
Partners' education (years)		
6 – 9	6	6
10 - 11	31	30
12	44	43
>12	17	17
Did not know	4	4
Employment status		
Work	35	34.3%
Did not work	67	65.7%
In school before and during pregnancy		
Yes	59	57.8%
No	43	42.2%
Number of people living in home		
1 – 2	20	19.6%
>2	55	53.9%
Attended child birth classes		
Yes	28	27.4%
No	74	72.5%
Attended breastfeeding classes		
Yes	27	26.4%
No	75	73.5%
Breastfed as an infant		
Yes	12	11.8%
No	90	88.2%
Number of family and friends that you know who have breastfed		
None	55	53.9%
≥1	47	46.1%

Research Question 1

This section presents the findings of research question number one: 1. How well do the constructs of the Theory of Planned Behavior (attitudes, subjective norm, and perceived control/ self-efficacy), along with knowledge of breastfeeding predict the probability of maternal intention to breastfeed her infant until one month of age and breastfeeding initiation at 4 days postpartum in rural, low income African American and Native American adolescent mothers?

Prediction of Infant Feeding Intention at One Month of Age

Multiple regression was utilized to predict the dependent variable of infant feeding intention at one month of age using the theory of planned behavior constructs (PBS = positive breast-feeding sentiment, NBS = negative breast-feeding sentiment , SPS = social and professional support, and BCS = perceived breast-feeding control)and breastfeeding knowledge as the predictor or independent variables. Preliminary analyses were conducted to ensure no violation of the assumptions of normality, linearity, multicollinearity and homoscedasticity.

Table 3 shows the intercorrelations for infant feeding intention (dependent variable) and the predictor variables. The variable that correlated most strongly with infant feeding intention was BFC (breastfeeding control/self-efficacy; r = .82). Two other predictors also had substantial correlations with intention, NBS (negative breastfeeding sentiment; r = -.65) and SPS (social and professional support; r = .61). PBS (positive breastfeeding sentiment; r = .23) and breastfeeding knowledge (r = .41) had the smallest correlation with intention. The lowest correlations, all less than .30, involved correlations of positive breastfeeding sentiment with the three other theory of planned behavior constructs. All of the intercorrelations were statistically significant. The summary of the multiple regression for predicting infant feeding intention from the five predictor variables is given in Table 4. The total variance explained by the five predictors was 73.4%, F

(5, 96) = 52.96, p< .001. Three variables made a unique and statistically significant contribution to explaining the variance in infant feeding intention. Of those three variables, breastfeeding control (BCS) made the largest unique contribution (beta = .494), negative breastfeeding sentiment (NBS) the second largest contribution (beta = .310) and social professional support (SPS) the smallest contribution (beta = .212).

Table 3

Intercorrelations for Infant Feeding Intention and Theory of Planned Behavior Constructs and Breastfeeding Knowledge (N = 102)

Variables	IFIS	NBS	PBS	SPS	BCS	BKS
IFIS						
NBS	-.65**					
PBS	.23*	.25				
SPS	.61**	-.27	.47			
BCS	.82**	-.70	.22*	.60**		
BKS	.41**	-.34	.36	.45**	.51**	

Note: BKS = Breastfeeding Knowledge Scale, PBS = Positive Breastfeeding Sentiment, NBS = Negative Breastfeeding Sentiment, SPS = Social and Professional Support or Subjective Norm Scale, BCS = Perceived Breastfeeding Control Scale, IFIS = Infant Feeding Intention Scale, BFI = Breastfeeding Initiation.

* p< .05; ** p < .01

Table 4

Multiple Regression Summary for Theory of Planned Behavior Constructs and Breastfeeding Knowledge Predicting Infant Feeding Intention

Variable	B	SE B	β	t	p
NBS	-.006	.979	-.31	-3.38	.001
PBS	.004	.002	.13	1.72	.089
SPS	.006	.002	.21	2.89	.005
BCS	.092	.018	.49	4.98	<.001
BKS	-.014	.011	-.08	-1.27	.206

Note: BKS = Breastfeeding Knowledge Scale, PBS = Positive Breastfeeding Sentiment, NBS = Negative Breastfeeding Sentiment, SPS = Social and Professional Support or Subjective Norm Scale, BCS = Perceived Breastfeeding Control Scale, IFIS = Infant Feeding Intention Scale, BFI = Breastfeeding Initiation.
Note. $R^2 = .73$ (N = 102, p <.001)

Prediction of Infant Feeding Behavior at Four Days Postpartum

Logistic regression was used to predict the likelihood that breastfeeding was initiated at four days postpartum using the four constructs of the theory of planned behavior and breastfeeding knowledge. A preliminary analysis before implementing a logistic regression is evaluating whether the predictor variables differ significantly between those who initiated breastfeeding and those who did not. Table 5 presents the mean values of the predictor variables and their level of statistical significance. There were statistically significant differences between the breastfeeding initiation groups on all of the predictor variables. Those who initiated breastfeeding had a significantly lower mean negative sentiment than those who did not initiate breastfeeding, and those who initiated breastfeeding had significantly higher mean scores on positive sentiment, social and professional support, breastfeeding control, and breastfeeding knowledge. The full logistic regression model containing all predictors was statistically significant, χ^2 (5, N = 102) = 7.31, p < .001, indicating that the model was able to predict

between participants who initiated breastfeeding and those who did not. The model as a whole explained between 53% (Cox and Snell R square) and 73% (Nagelkerke R squared) of the variance in the binary dependent variable, and correctly classified 92.2 percent of cases. As shown in Table 6, the strongest predictor of breastfeeding initiation was the breastfeeding control scale (BCS) with an odds ratio of 1.18 and a 95% confidence level ranging from 1.07 to 1.30.

Table 5

Mean Values for Logistic Regression Predictor Variables as a Function of Breastfeeding Initiation

Variable	Breastfeeding initiation (n = 35)	No breastfeeding initiation (n = 67)	t (100)	p
NBS	259.83	388.22	5.51	<.001
PBS	401.51	352.88	3.44	.001
SPS	289.81	193.76	6.24	<.001
BCS	44.69	23.79	11.30	<.001
BKS	75.29	60.15	5.56	<.001

Note: BKS = Breastfeeding Knowledge Scale, PBS = Positive Breastfeeding Sentiment, NBS = Negative Breastfeeding Sentiment, SPS = Social and Professional Support or Subjective Norm Scale, BCS = Perceived Breastfeeding Control Scale, IFIS = Infant Feeding Intention Scale, BFI = Breastfeeding Initiation.

Table 6

Summary of Logistic Regression for Predicting Breastfeeding Initiation

Variable	B	SE	Wald	p	OR	95% CI
NBS	<.000	.005	0.004	.950	1.00	[0.99, 1.01]
PBS	.009	.007	1.68	.195	1.00	[0.99, 1.02]
SPS	.001	.006	0.56	.814	1.00	[0.99, 1.01]
BCS	.165	.05	10.82	.001	1.18	[1.07, 1.30]
BKS	.056	.035	2.53	.112	1.06	[0.99, 1.13]

Note: BKS = Breastfeeding Knowledge Scale, PBS = Positive Breastfeeding Sentiment, NBS = Negative Breastfeeding Sentiment, SPS = Social and Professional Support or Subjective Norm Scale, BCS = Perceived Breastfeeding Control Scale, IFIS = Infant Feeding Intention Scale, BFI = Breastfeeding Initiation.

Note. CI = confidence interval for odds ratio (OR)

Research Question 2

This section presents findings related to research question number two: What are the similarities and differences between breastfeeding and formula feeding adolescent groups and Negative Breastfeeding Attitudes, Positive Breastfeeding Attitudes, Social Professional Support and Perceived Breastfeeding Control or self-efficacy? The following section focuses on similarities and differences in the two feeding groups on the individual items on the BAPT instrument. The first section of the BAPT consists of 15 negative breastfeeding and 14 positive breastfeeding sentiment items. The higher the score on the negative items, the greater the negative breastfeeding sentiment, and the higher the score on the positive items the greater the positive breastfeeding sentiment. Table 7 shows the mean item score on each negative sentiment and the mean difference between adolescent only formula feeding at 4 days postpartum and adolescents primarily breastfeeding at 4 days postpartum. The FF group expressed significantly

greater negative breastfeeding sentiment than the BF group on all the negative sentiment items except item 11 (BF is more time consuming than formula feeding) and item 12 (formula feeding lets the father become close to the baby). Formula feeders reported the strongest agreement on item 3 (no one else can help feed the baby when you breastfeed; M = 5.45), item 6 (FF is easier than breastfeeding; M = 5.51), and item 4 (difficult to breastfeed in public; M = 5.37). The breast feeders expressed highest agreement on negative sentiment item 11 (BF is more time consuming than formula feeding; M = 4.80) and item 7 (BF makes returning to work difficult; M = 4.34). The largest difference between the two groups was on items 6 where formula feeders expressed a much stronger negative sentiment in agreeing that formula feeding is easier than breastfeeding (M = 5.51) compared to breast feeders (M = 3.74).

Table 7

Level of agreement on negative breastfeeding sentiment items in formula feeding and breastfeeding adolescents

	Level of Agreement		
	FF	BF	FF - BF
Negative Sentiment	M	M	Diff
1 BF is painful	4.30	3.26	1.04**
2 FF allows the mother more freedom	5.06	3.89	1.17**
3 No one else can help feed the baby when you breastfeed	5.45	3.86	1.59**
4 Difficult to breastfeed in public	5.37	3.77	1.60**
5 BF makes your breasts sag	4.36	2.97	1.39**
6 FF easier than BF	5.51	3.74	1.77**
7 BF makes returning to work difficult	4.99	4.34	0.65*
8 Formula fed babies are easier to satisfy than breast fed babies	4.85	3.43	1.42**
9 When BF you never know if the baby is getting enough milk	5.01	3.60	1.41**
10 Mothers who formula feed get more rest than BF mothers	5.01	3.83	1.18**
11 BF is more time consuming than formula feeding	5.30	4.80	0.50
12 FF lets the father become close to the baby	3.42	3.57	-0.15
13 BF is messy	4.21	2.97	1.24**

Table 7 Continued

Negative Sentiment		Level of Agreement FF M	BF M	FF - BF Diff
14 BF ties you down	4.69	3.37	1.32**	
15 Mothers who formula feed get back into shape sooner		4.52	3.26	1.26**

Note. *p < .05; **p < .01

Table 8 shows the level of importance attached to each of the negative sentiments described in Table 7. Both groups rated the same two items as most important, item 8 (using a feeding method that satisfies my baby) and item 9 (using a feeding method where I know the baby is getting enough). There were four negative sentiment items of most importance to the FF group. These four items were compared to the BF group and included item 2 (using a feeding method that lets me have some freedom, $p < .01$): item 5 (using a feeding method that won't make my breast sag, $p < .01$); item 13 (using a feeding method that is not messy, $p < .01$); and item 14 (using a feeding method that doesn't tie me down $p < .01$).

Table 8

Level of importance on negative breastfeeding sentiment items in formula feeding and breastfeeding adolescents

	Level of Importance		
	FF	BF	FF - BF
Negative Sentiment	M	M	Diff
1 Using a feeding method that doesn't cause me pain	5.33	4.83	0.50
2 Using a feeding method that lets me have some freedom	5.28	4.26	1.02**
3 Using a feeding method that lets somebody else feed my baby	5.12	4.43	0.69**
4 Using a feeding method that is easy to do in public	5.19	4.49	0.70**
5 Using a feeding method that won't make my breasts sag	5.33	4.34	0.99**
6 Using a feeding method that is easy	5.57	4.77	0.80**
7 Using a feeding method that makes it easy to return to work	4.48	4.51	-0.03
8 Using a feeding method that satisfies my baby	5.72	5.80	-0.08
9 Using a feeding method where I know the baby is getting enough	5.82	5.83	-0.01
10 Using a feeding method that lets me get lots of rest	5.46	4.71	0.75**
11 Using a feeding method that saves time	5.16	4.46	0.70*
12 Using a feeding method that lets the father be close to the baby	4.75	4.69	0.06
13 Using a feeding method that is not messy	5.06	4.11	0.95**
14 Using a feeding method that doesn't tie me down	5.19	4.23	0.96**
15 Using a feeding method that lets me get back into shape	5.51	4.80	0.71**

Note. *p < .05; **p < .01

The level of agreement on the positive sentiment items are shown in Table 9. Both FF and BF groups showed high agreement on item 3 (breast milk is healthy for baby), item 5 (breast milk is more nutritious than infant formula), item 7 (BF makes you closer to your baby), item 10 (BF is natural), item 12 (BF best for baby), and item 14 (BF helps you bond with your baby). The items where the BF groups had the largest positive breastfeeding sentiment compared to the FF group included item 1 (BF is more convenient than FF, $p < .01$)) and item 13 (BF is personally satisfying, $p < .01$).

Table 9

Level of agreement on positive breastfeeding sentiment items in formula feeding and breastfeeding adolescents

	Level of Agreement		
	FF	BF	BF - FF
Positive Sentiment	M	M	Diff
1 BF is more convenient than FF	2.79	4.86	2.07**
2 Infant formula can cause allergies	3.63	4.14	0.51
3 Breast milk is healthy for baby	5.52	5.97	0.45*
4 Formula fed babies tend to get sick	3.64	4.49	0.85**
5 Breast milk is more nutritious than infant formula	5.31	5.51	0.20
6 Formula fed babies more fussy than breastfed babies	3.79	4.37	0.58*
7 BF makes you closer to your baby	5.16	5.66	0.50*
8 Formula fed babies tend to be overweight	3.72	3.26	-0.46
9 BF more economical than FF	4.70	5.09	0.39
10 BF is natural	5.45	5.86	0.41*
11 Infant formula can cause constipation	4.01	4.23	0.22
12 BF best for the baby	5.34	5.83	0.49*
13 BF is personally satisfying	3.90	5.17	1.27**
14 BF helps you bond with your baby	5.34	5.77	0.43*

Note. *p < .05; **p < .01

Table 10 shows the level of importance attached to each of the 14 positive sentiments listed in Table 9. Both groups consistently rated each positive sentiment with high importance as shown by all the importance means exceeding 5 on the 6-point scale. The two items with the largest discrepancy between the groups was item 10 where the BF group felt that using a feeding method that is natural was more important than the FF group ($p < .01$) and item 1 where the FF group felt that using a feeding method that is convenient was more important than the BF group ($p < .05$).

Table 10

Level of importance on positive breastfeeding sentiment items in formula feeding and breastfeeding adolescents

	Level of Importance		
	FF	BF	BF - FF
Positive Sentiment	M	M	Diff
1 Using a feeding method that is convenient	5.69	5.20	-0.49*
2 Using a feeding method that won't cause allergies	5.70	5.57	-0.13
3 Using a feeding method that is healthy for my baby	5.90	5.94	0.04
4 Using a feeding method that prevents my baby getting sick	5.85	5.91	0.06
5 Using a feeding method that is nutritious	5.85	5.89	0.04
6 Using a feeding method that keeps my baby from being fussy	5.76	5.51	-0.25
7 Using a feeding method that lets me be close to my baby	5.73	5.89	-0.22
8 Using a feeding method that keeps my baby from being overweight	5.60	5.54	-0.06
9 Using a feeding method that is economical	5.22	5.34	0.12
10 Using a feeding method that is natural	5.06	5.74	0.68**
11 Using a feeding method that doesn't cause constipation	5.54	5.66	0.12
12 Using a feeding method that is best for my baby	5.81	5.97	0.16
13 Using a feeding method that is personally satisfying	5.30	5.34	0.04
14 Using a feeding method that lets me bond with my baby	5.78	5.83	0.05

Note. *p < .05; **p < .01

There were 12 items that asked the adolescents how strongly family, friends, and health care professionals encouraged them to breastfeed. As shown in Table 11, both FF and BF groups reported receiving strong support for breastfeeding from all their health care providers. However, the FF group reported receiving little support for breastfeeding from their family and friends compared to the BF group who reported receiving much support for breastfeeding from their family and friends. The table also shows how much the study subjects cared about the opinions or advice they received about breastfeeding. Both groups reported caring about the advice they received from the health professionals with group means all over 5.0 on the 6-point caring scale. The largest differences involved the baby's father where the BF group reported that they cared more about the opinion of the father ($M = 4.89$) than the FF group ($M = 4.00$, $p < .05$).

Table 11

How strongly others want the study adolescents to breastfeed and how strongly the adolescents care about the others' opinions.

	Opinion of Others to Breastfeed or Not			How Much You Care About Their Opinion		
	FF	BF	BF - FF	FF	BF	BF - FF
Person	M	M	Diff	M	M	Diff
Baby's father	2.16	4.47	2.31**	4.00	4.89	0.89*
Your mother	2.92	4.85	1.93**	5.02	5.15	0.13
Your mother-in-law	2.05	4.52	2.47**	2.76	4.39	1.63**
Your sister	2.86	4.78	1.92**	4.49	4.54	0.05
Your closest female friend	2.91	5.14	2.23**	4.73	4.68	-0.05
Your doctor	4.76	5.62	0.86**	5.58	5.63	0.05
Your midwife	4.76	5.59	0.83**	5.59	5.62	0.03
Your hospital nurses	4.69	5.59	0.90**	5.12	5.55	0.43
Your baby's doctor	4.93	5.68	0.75**	5.73	5.75	0.02
Your childbirth educators	4.43	5.59	1.16**	5.09	5.78	0.69**
Other relatives	2.62	4.68	2.06**	3.35	4.09	0.74*
People who are important to me	3.30	5.32	2.02**	5.21	5.20	-0.01

Note. *p < .05; **p < .01

There are 10 items that assessed the sense of control that adolescents perceive they have over their ability to breastfeed. As shown in Table 12, the BF group had significantly higher mean scores on all the items compared to the FF group. Three items with the largest mean difference between groups included item 5 (I am determined to breastfeed; difference; $M = 3.37$, $p < .01$), item 9 (I am confident I can breastfeed; difference; $M = 2.93$, $p < .01$) and item 4 (I am emotionally ready to breastfeed; difference; $M = 2.92$, $p < .01$).

Table 12

Level of agreement on breastfeeding self-efficacy items in formula feeding and breastfeeding adolescents.

	Level of Agreement		
	FF	BF	BF - FF
Self-efficacy	M	M	Diff
1 I have the necessary skills to breastfeed	2.39	4.69	2.30*
2 I am physically able to breastfeed	3.39	5.40	2.11*
3 I know how to breastfeed	1.79	4.20	2.41*
4 I am emotionally ready to breastfeed	1.88	4.80	2.92*
5 I am determined to breastfeed	1.69	5.06	3.37*
6 I won't need help to breastfeed	1.70	3.23	1.53*
7 I have total control over by breastfeeding	1.63	3.94	2.31*
8 Breastfeeding is easy	1.57	3.43	1.86*
9 I am confident I can breastfeed	2.04	4.97	2.93*
10 I know I will have enough milk for the baby	2.12	4.43	2.31*

Note. *p < .01

Research Question 3

This section presents findings related to research question number three: What is the relationship of socio-demographic variables with breastfeeding intention and initiation?

As shown in Table 13, those who initiated breastfeeding by four days postpartum were more likely to be married, been breastfed themselves as an infant, knew family and friends who breastfed, and attended child birth and breastfeeding classes.

Table 13

Psycho-Social Differences Between Formula Feeding Only Adolescents (n = 67) and Breastfeeding Initiators (n = 35) at Four Days Postpartum

	Formula Only		Breastfeeding Initiation			
Variable	n	%	n	%	$\chi^2(1)$	p
Married	4	6.0	9	25.7	8.06	.001
Breastfed as infant	4	6.0	8	22.9	6.32	.021
Knew family and friends who breastfed	18	27.3	24	77.4	21.61	<.001
Attended child birth classes	0	0.0	28	80.0	73.01	<.001
Attended breastfeeding classes	0	0.0	27	77.1	69.49	<.001
Native American	31	46.3	22	62.9	2.54	.111
African American	36	53.7	13	37.1	2.70	.101

A paired-samples t-test compared breastfeeding knowledge scores from the antenatal (Time 1) to the postpartum period (Time 2) in the two groups. There was a statistically significant increase in knowledge scores in the formula only feeding group from Time 1 (M = 60.53, SD = 13.48) to Time 2 (M = 78.33, SD = 13.6), t (65) = 8.89, p <.001, eta squared = .55. There was a similar increase in knowledge in the breastfeeding group from Time 1 (M = 75.29, SD = 11.63) to time 2 (M = 86.0, SD = 13.6), t (34) = 4.62, p <.001, eta squared = .39. An independent-samples t test was conducted to compare the Time 2 knowledge scores between the feeding groups. The mean Time 2 knowledge mean score for the breastfeeding group (M = 86.0,

SD = 13.6) was significantly higher than the Time 2 knowledge mean score for the formula feeding group [M = 78.33, SD = 13.6; t (99) = 2.70, p = .008, eta squared = .07].

Research Question 4: Breastfeeding Intention Related to Initiation

This section presents findings related to research question number four: Is prenatal breastfeeding intention related to breastfeeding initiation at 4 days postpartum in rural, low-income African American and Native American adolescents? A one-way between- groups analysis of variance was conducted to explore whether antenatal breastfeeding intention scores differed between the levels of infant feeding behavior. Infant feeding behavior was categorized into four groups (Group 1: breast milk only; Group 2: breast milk and less than 1 bottle of formula per day;Group3: breast milk and 1 or more bottles of formula per day;Group4:bottle fed only). There was a statistically significant difference at the $p < .001$ level in intention scores for the four feeding groups: $F (3, 98) = 55.82$, $p < .001$. The effect size, calculated using eta squared, was .63, indicating a very strong effect. Post-hoc comparisons using the Tukey HSD test indicated the mean initiation score for the bottle fed only Group 4 (M = 2.07, SD = 1.50, n = 67)was significantly lower from breast milk only Group 1 (M = 6.50, SD = 1.47, n = 23), breast milk and less than 1 bottle of formula per day; Group 2 (M = 5.80, SD = 1.82, n = 5), and Group 3 breast milk and 1 or more bottles of formula per day(M = 5.14, SD = 1.70, n = 7).

Research Question 5: Description of Research Instruments and Major Study Variables

The psychometric properties of the research instruments and descriptive statistics of their scale scores are presented in Table 14. For the current study, all of the BAPT scales had acceptable coefficient alpha's, with values ranging from .84 to .95. The knowledge test, with 20 items, had the lowest coefficient alpha of .67. The lower alpha for the knowledge test is related to the different dimensions of knowledge assessed with the test.

For the breastfeeding knowledge test (BKS), there are 5 questions which focused on the benefits of breastfeeding and 15 questions which assessed knowledge related to the practice of breastfeeding. The average percent correct on the 20 item (BKS) for the total sample was 65.3%, approximately 13 correct items. For the BAPT scales, the higher the scale score for the negative breast feeding sentiment (NBS) and positive breastfeeding sentiment(PBS), the greater the support for breastfeeding (SPS), and the greater sense of control the woman has over her ability to breastfeed (BCS).

Infant feeding intention (IFIS) was assessed with a three item scale where a score of 0 represents a very strong intention not to breastfeed at all and 8 represents a very strong intention of fully breastfeeding to 1 month of age. The infant feeding behavior variable (IFB) is a binary variable where 1 indicates breast feeding initiation at one month postpartum and a 0 indicates formula feeding only at one month postpartum. The mean IFB score of .34 shows that 34 percent of the total sample had initiated breastfeeding at one month postpartum.

Table 14

Psychometric Properties and Descriptive Statistics for the Major Study Variables

Variable	M	SD	Score Range	Theoretical Range	Alpha	Skewness
BKS	65.34	14.86	25 - 95	0 - 100	.67	-0.54
NBS	344.17	126.85	66 - 534	15 - 540	.95	-0.57
PBS	369.57	71.38	118 - 504	14 - 504	.89	-1.16
SPS	226.72	86.56	44 - 432	15 - 468	.88	-0.11
BCS	30.96	13.31	14 - 58	10 - 60	.90	0.45
IFIS	3.47	2.47	0 - 8	0 - 8	.91	0.46
BFI	0.34	0.48	0 - 1	0 - 1	NA	0.67

Note: BKS = Breastfeeding Knowledge Scale, PBS = Positive Breastfeeding Sentiment, NBS = Negative Breastfeeding Sentiment, SPS = Social and Professional Support or Subjective Norm Scale, BCS = Perceived Breastfeeding Control Scale, IFIS = Infant Feeding Intention Scale, BFI = Breastfeeding Initiation.

Summary

This chapter presented analyses and findings of the study guided by the research questions discussed in chapter one. The chapter examined the relationship of prenatal infant feeding intentions on infant feeding behavior at four days postpartum and the variables related to these intentions. The participants included 102 low-income African American and Native American adolescents 16- 19 years of age living in two rural southeastern North Carolina counties. The descriptions of the sample, instruments and the major variables were discussed.

This research utilized instruments that had acceptable coefficient alphas ranging from .84 to .95, with the exception of the Breastfeeding Knowledge Scale, at .67. This lower level was related to the different dimensions of knowledge assessed. For the BAPT scales, the intercorrelations for infant feeding intention (dependent variable) and the predictor variables, the

variable that most strongly correlated with infant feeding intention was perceived breastfeeding control (r= .82), followed by negative breastfeeding sentiment (r= -.65) and social professional support (r= .61). The positive breastfeeding sentiment (r= .23) and breastfeeding knowledge scale (r= .41) had the smallest correlations with intention. All of the intercorrelations of the BAPT constructs and the Breastfeeding Knowledge Scale were statistically significant. The total variance explained by the five predictors was 73.4%, $F(5, 9) = 52.96$, $p < .001$. Of the three statistically significant contributions explaining variance in infant feeding intention, Perceived Breastfeeding Control made the largest contribution, followed by Negative Breastfeeding Sentiment and Social Professional Support.

Statistically significant differences between breastfeeding initiation groups on all of the predictor variables were found. Those who initiated breastfeeding had statistically significant lower mean Negative Breastfeeding Sentiment than those who formula fed. Those who initiated breastfeeding had statistically significant higher mean scores on Positive Breastfeeding Sentiment, Social Professional Support, Perceived Breastfeeding Control and Breastfeeding Knowledge Scale. The logistic regression model was statistically significant for all predictors, indicating the model was able to predict between participants who initiated breastfeeding and those who did not, explaining 53% and 73% of variance in binary dependent variables and correctly classified 92.2% of the cases. The strongest predictor of breastfeeding initiation was Perceived Breastfeeding Control. Among groups, there was a statistically significant difference in the level of intention scores indicating that intention prenatally among adolescents is related to breastfeeding behavior at 4 days postpartum in low-income, rural African American and Native American adolescents. The effect size in this study was found to be very strong at .63.

Among the differences in sociodemographic variables, those who initiated breastfeeding were more likely to be married, have been breastfed themselves as an infant, have known family or friends who had breastfed infants, and had attended childbirth and/or breastfeeding classes during their prenatal care. There was a statistically significant increase in the pre and post Breastfeeding Knowledge Scale scores in both the Breastfeeding Initiation group and the Formula Feeding group. The post Breastfeeding Knowledge Scale scores of the Breastfeeding Initiation group were statistically significantly higher than the Formula Feeding post Breastfeeding Knowledge Scale scores. The specific differences and similarities of the two groups' Negative Breastfeeding Sentiment Scale, Positive Sentiment Scale and Breastfeeding Knowledge Scale were examined and are discussed as they relate to scale items. This analysis demonstrates the level of agreement and level of importance among the two groups.

Both the Breastfeeding Initiation group and the Formula Feeding Group reported receiving strong support for breastfeeding from all health care providers. However, the Formula Feeding group reported that family and friends provided little support for breastfeeding, while the Breastfeeding Group reported higher support among family and friends. Both groups reported caring about advice received from health care providers. The strongest differences between groups were caring about the opinions of the father of the baby and other relatives whereas the Breastfeeding Group cared more about these opinions than did the Formula Feeding group. Chapter five will present the summary of the study, discussion of the study findings, implications, and recommendations for further study.

CHAPTER FIVE: DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

This chapter includes the discussion, conclusions and implications of the results for nursing theory, education, and practice related to this study. Moreover, the recommendations for future research are presented in the last section.

The purpose of the study was to (1) test the Theory of Planned Behavior by examining the relationship of the components (attitudes, subjective norms, perceived control/ self-efficacy, and breastfeeding knowledge) to determine breastfeeding intention and initiation of rural, low-income African American(AA) and Native American (NA) adolescent mothers in rural communities in southeastern North Carolina; (2) determine the significant similarities and differences between breastfeeding and formula feeding adolescent groups related to the constructs; (3) explore the relationship of intention to initiation; and (4) examine the relationship between sociodemographic variables with breastfeeding intention and initiation of adolescent mothers. To the author's knowledge, there has been no research that tested the theory of planned behavior and explored breastfeeding intentions and initiations of rural, low income African American and Native American adolescent mothers in North Carolina. Ajzen's (1989) theory of planned behavior was adopted as a conceptual framework for this study. The following five questions were drawn from the conceptual model in the attempt to investigate and explore breastfeeding intentions and initiation within the rural, low-income African American and Native American adolescent population.

1. How well do the constructs of the Theory of Planned Behavior (attitudes, subjective norm, and perceived control/ self efficacy), along with knowledge of breastfeeding predict the

probability of maternal intention to breastfeed her infant until one month of age and breastfeeding

behavior at 4 days postpartum in rural, low-income African American and Native American adolescent mothers?

2. What are the similarities and differences between breastfeeding and formula feeding adolescent groups and Negative Breastfeeding Attitudes, Positive Breastfeeding Attitudes, Social Professional Support and Perceived Breastfeeding Control or Self-efficacy?

3. What is the relationship of sociodemographic variables with breastfeeding intention and initiation?

4. Is prenatal breastfeeding intention related to breastfeeding initiation at 4 days postpartum in rural, low-income African American and Native American adolescent mothers?

5. What are the psychometric properties of the instruments used as they relate to the African American and Native American adolescent population?

Research Question One: Constructs of the Theory of Planned Behavior and Breastfeeding Knowledge as Predictors of Breastfeeding Intention and Breastfeeding Initiation.

Research question one examined the constructs of the theory of planned behavior as well as breastfeeding knowledge and investigated how well these constructs (attitudes, subjective norm, and perceived control/ self efficacy, and knowledge of breastfeeding) predicted the probability of maternal intention to breastfeed until one month of age and breastfeeding initiation in rural, low income African American and Native American adolescents. The results showed that at 4 days postpartum, the constructs of the theory of planned behavior (Negative Breastfeeding Sentiments (NBS), Positive Breastfeeding Sentiments (PBS), Social Professional

Support (SPS), Breastfeeding Control (BCS) and Breastfeeding Knowledge (BKS) were significant in predicting the probability of breastfeeding intention and breastfeeding initiation in rural, low-income African American and Native American adolescent mothers. The relationships among the constructs of the BAPT and Breastfeeding Knowledge as variables proposed in the conceptual model were supported. All of the constructs supported intention of breastfeeding at a statistically significant level. The overall total variance explained by the model as a whole related to the prediction of breastfeeding initiation at 4 days postpartum was 73%, 72% adjusted R square, and correctly classified 92.2% of the cases. Three control measures were found to be statistically significant, with Perceived Breast-feeding Control (BCS) having the highest significance, followed by Negative Breastfeeding Sentiments (NBS) or negative breastfeeding attitudes and Social Professional Support (SPS) or subjective norm. Therefore, three out of four scales were significant in predicting breastfeeding initiation among rural, low income Native American and African American adolescents in southeastern North Carolina. Adolescents with a higher self-efficacy were 1.18 times more likely to breastfeed their infant. Findings of this study supported the theory of planned behavior in that three of four scales had a direct effect on both breastfeeding intentions and behaviors.

This finding is consistent with other studies of adolescent mothers as well as with mothers of all age groups (McMillan et al., 2008; Dennis, 2002; Meedya et al., 2010). McMillan and colleagues' findings revealed significance was found in positive attitudes, high perceived behavioral control, high moral norms to breastfeed and a strong self-identity as a 'breastfeeder', explaining 72% of the variance in intention to breastfeed (McMillan et al., 2008). Dennis (2002)found that most mothers wean babies due to perceived difficulties rather than maternal choice and exhibit low confidence in their ability to breastfeed (Dennis, 2002), indicating that

self-efficacy or a higher perceived breastfeeding control and confidence level would impact maternal choices in a positive manner. Meedya and colleagues (2010) identified factors that were positively associated with prolonged breastfeeding that were categorized as socio-demographic factors, biophysical factors and psychosocial factors (Meedya et al., 2010). Biophysical factors that were found to influence the duration of breastfeeding included intrapartum experiences, early breastfeeding practices and perceived milk supply. Perceived insufficient milk supply was one of the most common reasons that women ceased breastfeeding (Meedya et al., 2010).

The current study supported the previous studies of Wambach & Koehn (2004) and Ratananugool (2001). Wamback et al.(2004) reported the influencing factors in disadvantaged urban pregnant adolescents' decision making regarding infant feeding choices when they utilized focus group interviews guided by questioning based upon the Theory of Planned Behavior (TPB) with African American teens. The infant feeding decision making themes among the pregnant adolescents were summarized in benefits versus barriers of breastfeeding and bottle feeding and independent choice versus social influences. The common threads in the two themes were ambivalence and uncertainty, indicating that the construct of self-efficacy or perceived breastfeeding control would impact the infant feeding choices, as did the current study findings. Those participants in the current study who were uncertain and were not comfortable with breastfeeding did not intend to breastfeed and did not initiate breastfeeding their infant. The findings of Wamback et al. (2004) further indicated that adolescents had identified barriers of pain, public exposure and the complexity of breastfeeding. The current study found statistical significance in the Negative Sentiment Scale, addressing these issues of pain, breastfeeding in public and knowing the baby was getting enough nourishment, which had the second highest rate

for the control measures in the total variance explained by the model. Wamback et al.(2004) found that adolescents maintained that choice of feeding method was their own, although social and family influences were evident. The current study findings paralleled with Wamback et al.(2004) in that Social Professional Support was one of three statistically significant constructs explaining the total variance of predicted initiation of breastfeeding explained by the model.

Ratananugool (2001) explored a prospective, longitudinal study in an effort to enhance understanding of patterns of breastfeeding behaviors among Thai adolescent mothers and the factors influencing these behaviors using the Theory of Planned Behavior by Ajzen (1989). Findings of Ratananugool included sequential multiple regression analysis demonstrating that all variables accounted for 35.4% of the variability in breastfeeding intention with three of the constructs significantly attributable including perceived breastfeeding control, positive breastfeeding sentiments and negative breastfeeding sentiments. In the 2001 study, the adolescent mothers who had higher self-efficacy, higher positive attitudes and lower negative attitudes toward breastfeeding were more likely to intend to breastfeed. Perceived Breastfeeding Control (BCS) was the most important factor, accounting for 21.3% of the explained variance in breastfeeding intention, while Positive Breastfeeding Sentiment (PBS) accounted for 3.2% and Negative Breastfeeding Sentiment (NBS) accounted for 2.9% of explained variance. The Social Professional Support (SPS) and Breastfeeding Knowledge (BKS) added no additional explained variance (Ratananugool, 2001). The current research found some similar findings as Ratananugool's 2001 research. This study found variance of the constructs were much higher for breastfeeding initiation (72%) and included Social Professional Support (SPS) as a significant construct factoring into the total variance. All of the constructs were statistically significant for intention in the current study. The Ratananugool (2001) study was designed longitudinally at 1-

3 days, 4 weeks, and 3 month intervals, whereas the current study researched findings up to 4 days postpartum.

The current study supports several of the findings of Dyson and colleagues (2010) which indicated that moral norms were identified as most predictive of all predictive variables influencing teenage intention to formula feed or to breastfeed (Dyson et al., 2010). Similarly, according to Atchan et al., (2011), common influencing factors in the intention and initiation of breastfeeding included previous exposure to breastfeeding, the influence of the partner, mother or peer group (Atchan et al., 2011). Social norms were found to significantly impact breastfeeding initiation and these norms were explained to be influenced by culture and the woman's social context (Atchan et al., 2011). The effect of support is said to increase confidence for breastfeeding, while absence of support is said to decrease confidence in women for breastfeeding practices and sources of support for breastfeeding vary according to age, social class, ethnic groups or culture. The media has been identified as historically influencing the attitudes and public opinion as well (Atchan et al., 2011). Grassley et al., (2008) indicated that grandmothers who are close to adolescents may be influential regarding breastfeeding practices, and breastfeeding initiation may be successful through enhancing the grandmothers' knowledge as well as the support for breastfeeding (Grassley et al., 2008).

Research Question Two: Similarities and Differences between Breastfeeding and Formula Feeding Groups and TPB Constructs

The intercorrelations among the BAPT constructs were statistically significant. There were similarities and differences identified in the two feeding groups on the individual items on the BAPT instrument. As expected the formula feeding group scored significantly higher on the negative breastfeeding sentiment scale than the breastfeeding group. The formula

feeding group expressed significantly greater negative breastfeeding sentiment on all of the 15 negative sentiment items except for two items. Both groups tended to agree that breastfeeding is more time consuming than breastfeeding, and tended to disagree that formula feeding lets the father become closer to the baby.

Of the other items, the two groups differed most strongly on whether formula feeding is easier than breastfeeding, with the FF group believing quite strongly that FF is easier (M = 5.51) while the BF group believed quite strongly that FF is not easier than breastfeeding (M = 3.74). In terms of the degree of importance that the groups attached to the beliefs expressed in the negative sentiment items, the formula feeding group attached significantly more importance than the breastfeeding group to a feeding method that allows them some freedom, does not make their breasts sag, does not tie them down, and that is not messy. Both groups rated the same two items as most important in *using a feeding method that satisfies baby* and *using a feeding method where they knew baby was getting enough*.

Both the Formula Feeding and Breastfeeding groups showed high agreement among the Positive Breastfeeding Sentiment items that *breast milk is healthy for baby, breast milk is more nutritious than infant formula, breastfeeding makes you closer to your baby, breastfeeding is natural, breastfeeding is best for baby, and breastfeeding helps you bond with your baby.* However, a significant difference between the groups was that the Breastfeeding Group reported that breastfeeding was *more convenient than formula feeding* and that it was *personally satisfying*. Both groups consistently rated each positive sentiment with high importance. The Breastfeeding Group reported higher importance in *using a feeding method that is natural* with a significant higher mean, and the Formula Feeding Group reported *using a feeding method that is convenient* with a significant higher mean.

Within the Social Professional Support Scale, (SPS), both Formula Feeding and Breast Feeding groups reported receiving strong support for breastfeeding from all their health care providers. However, findings indicated a significant difference that all the other family and friends provided little support for breastfeeding in the Formula Feeding group compared to those breastfeeding postpartum. Both groups reported caring about the advice they received from the health care providers. Adolescent mothers who initiated breastfeeding reported that health care providers, in the following order of importance were the most influential among persons to influence infant feeding practices: baby's doctor, their doctor and their midwife, their hospital nurses and their childbirth educators were rated as equally influential. Adolescent mothers who formula fed their infants reported that health care providers, in the following order of importance were the most influential among persons to influence infant feeding practices: their baby's doctor, their doctor and their midwife as equally influential, their hospital nurses and their childbirth educator.

In regards to how much they cared about the opinion of these people, the response of the adolescents who initiated breastfeeding in the following order of importance were: their childbirth educators, their baby's doctor, their doctor, their midwife, and their hospital nurses. In regards to how much they cared about the opinion of these people, the response of the adolescents who formula fed infants, in the following order of importance were: their baby's doctor, their midwife, their doctor, their hospital nurses, and their childbirth educators. Cultural acceptance of breast-feeding and peer support were found to be a significant factor in the infant feeding decision process as noted in the literature review. Social Professional Support or social norm was a statistically significant construct. The largest differences in related to caring about opinions of others involved the baby's father and other relatives. The Formula Feeding group

reported caring significantly less as much as the Breastfeeding Group regarding the baby's father and other relatives.

Of the ten items assessed by both groups on the Breastfeeding Control Scale, the Breastfeeding Group scored significantly higher on all of the items compared to the Formula Feeding Group. Three items related to the Breastfeeding Control Scale (BCS) with the largest mean difference in order from higher mean difference to lower mean difference included: *I am determined to breastfeed; I am confident I can breastfeed; and I am emotionally ready to breastfeed.*

In summary, there were significant similarities and significant differences identified in the two feeding groups on the individual items on the BAPT instrument (NBS, PBS, SPS and BCS). The Formula Feeding Group scored significantly higher on the NBS, where as the Breastfeeding Group scored significantly higher on the BCS and the SPS related to the father of the baby and family and friends' support and caring significantly less regarding these opinions. Both groups consistently rated each positive sentiment with high importance with the exception of a significant difference where the Breastfeeding Group reported that breastfeeding was *more convenient than formula feeding* and that breastfeeding was *personally satisfying*.

Research Question Three: Socio-demographic Variables Related to Breastfeeding Intention and Breastfeeding Behavior at 4 Days Postpartum

Question three examined differences in socio-demographic variables related to breast-feeding intention and infant feeding behavior at 4 days postpartum. There was a statistically significant increase in knowledge scores in the Formula Feeding group from Time 1 to Time 2. There was a similar increase in knowledge in the Breastfeeding Group from Time 1 to time 2, however, the Time 2 knowledge mean score for the Breastfeeding Group (M = 86.0, SD = 13.6)

was significantly higher than the Time 2 knowledge mean score for the Formula Feeding group [M = 78.33, SD = 13.6; t (99) = 2.70, p = .008, eta squared = .07]. Adolescents who scored higher on the Breastfeeding Knowledge Scale initiated breastfeeding at 4 days postpartum significantly more often than those who scored lower. Interestingly, both breastfeeding adolescents as well as formula feeding adolescents scored higher on the Post-Breastfeeding Knowledge Scale Items. The lowest scores on the Breastfeeding Knowledge Scale Pretest for both groups were related to avoiding certain foods when breast-feeding, nipple soreness with frequent feedings and breast milk color indicating quality of breast milk.

Socio-demographic Findings

The findings demonstrated that there were significant differences related to ethnic groups with more Native American adolescents initiating breastfeeding than African American adolescents. More Native American participants reported being married and living with a significant other than African American participants and there were significant findings that more adolescents who were married and who lived with a significant other breastfed more often did those living with their own mother or another family member. Significantly more adolescents who attended childbirth classes and breastfeeding classes breastfed than those who did not attend childbirth or breastfeeding classes. There was a statistically significant increase in adolescents who were breastfed themselves as an infant and who knew other family and friends who breastfed infants initiated breastfeeding their infants.

The findings from the current study differed from the Ratananugool (2001) study in that Ratananugool found no significant differences of demographic factors among the Thai groups at both 4 weeks and 3 months postpartum. Ratananugool reported that although mothers tended to cite returning to work as a reason for stopping breastfeeding, the employment status among Thai

groups of breastfeeding and formula feeding mothers was not statistically different (Ratananugool, 2001).

The findings of the current study support the statement by the Center for Disease Control (CDC) (2006), indicating that breastfeeding rates differ substantially by race, socioeconomic level as well as other demographic factors. The CDC data from the National Immunization Survey (NIS) indicated that 71.5% non-Hispanic white children were ever breastfed compared to 50.1% of non-Hispanic black children and that among both races, children were more likely to have ever breastfed if they were ineligible for WIC, had mothers who were greater than 20 years of age, were married, had at least some college education, lived in the West or urban areas, or were above the federal poverty level (CDC, 2006).

The current study additionally supports research conducted by Lee et al.,(2005) related to the relationship between sociodemographic factors, maternal characteristics, and intention to breastfeed among low-income, inner-city pregnant women. Findings in the Lee et al. study included (n= 2,690) of the fifty-three percent of the respondents who indicated they planned to breastfeed their infant, immigrant black and foreign born Hispanics as well as island born Puerto Rican women were significantly more likely to report that they intended to breastfeed than non-Hispanic whites. Lower education, not living with the baby's father, multiparous pregnancy, and smoking were negatively and independently associated with the intention to breastfeeding (Lee et al., 2005).

The current study supports the findings of Wamback et al. (2005) and Wamback et al., (2004) that emphasized the importance of cultural influences on breastfeeding practices, citing the least likely women to breastfeed were young, low-income members of ethnic minority races and who lack support for breastfeeding, and moreover were at risk for premature cessation if

they decided to breastfeed later in their pregnancy, demonstrate a negative attitude toward breastfeeding and positive attitudes about bottle feeding, and have a low confidence in their ability to breastfeed. While adolescent participants reported the health benefits of breastfeeding, they identified barriers of pain, public exposure and the complexity of breastfeeding and social and family influences were evident (Wambach, et al., 2005; Wambach et al., 2004).

Moreover, according to Atchan et al., (2011), common influencing factors in the intention and initiation of breastfeeding included previous exposure to breastfeeding, the influence of the partner, mother or peer group (Atchan et al., 2011). Social norms were found to significantly impact breastfeeding initiation and these norms were explained to be influenced by culture and the woman's social context (Atchan et al., 2011).

Findings of the current study support several findings of Robinson et al., (2011). Robinson et al. cited African American women who intended to breast feed demonstrated confidence in their ability to breast feed with themes that emerged related to self efficacy including performance accomplishments, vicarious experiences, verbal persuasions, and physiological reactions. Themes of social embarrassment and feelings of regret were also indentified in the findings, and summarized that although African American women in the study rated themselves overall as confident with breastfeeding, several narratives about the actual feeding choices indicated ambivalence, underscoring the needed continual support of African American women planning to breast feed (Robinson et al., 2011).

The current study also supports research findings of Furman et al., (2012) in a study designed to understanding barriers of breastfeeding among high risk inner city African American women. Findings included themes of low self-efficacy with fear of social isolation and limited expression of positive self-esteem among participants. Relationship issues and social support

themes included formula as a cultural norm, worries about breastfeeding in public, and challenging family relationships. Structural and environmental factor themes included negative postpartum hospital experiences and lack of support after going home (Furman et al., 2012).The current study also partially supports findings by Hundalani et al., (2012) who investigated predictors of breastfeeding in a minority inner-city population of a majority of African American women. Findings included only three in four women who intended to breastfeed prior to delivery were breastfeeding at hospital discharge. However, one in ten women previously not intending to breastfeed did so. Older mothers and those with a lower parity were more likely to breastfeed at discharge and also to breastfeed exclusively (Hundalani, et al., 2012).

Research Question Four: Antenatal Breastfeeding Intention Related to Breastfeeding Behavior at 4 Days Postpartum Among Adolescents

Research question four investigated antenatal breastfeeding intention as it related to actual breastfeeding behavior at 4 days postpartum among the participants. Participants were found to have four categories of infant feeding behavior at 4 days postpartum: breast milk only, breast milk and less than 1 bottle of formula per day, breast milk and 1 or more bottles of formula per day and bottle (formula) fed only. The model revealed a statistical significance in the relationship of breast-feeding intention and breast-feeding behavior at 4 days postpartum in low-income, rural African American and Native American adolescents with 23 participants exclusively breastfeeding, 5 participants breast-feeding and supplementing with less than 1 bottle of formula per day, 7 breast-feeding and supplementing with 1 or more bottles of formula per day and 67 participants bottle (formula) feeding only with post-hoc comparisons tests using Tukey HSD statistically significant for difference ($p < .01$) between groups. This finding supported findings by Ratananugool (2001)in determining variables of the theory of planned

behavior that best form the predictor set for breastfeeding behavior. Four of the variables in Ratananugool's research, breastfeeding intentions, perceived breastfeeding problems, subjective norms and breastfeeding knowledge were found to be the best predictors of breastfeeding, partial breastfeeding and formula feeding (Ratananugool, 2001). Research conducted by Ratananugool was longitudinal, whereas the current research differed in comparing intentions to a 4 day postpartum time increment.

Research Question Five: Psychometric Properties of Instruments

The psychometric properties of the research instruments and descriptive statistics of their scale scores were analyzed and reported in the current study. For the current study, all of the BAPT scales had acceptable coefficient alpha's, with values ranging from .84 to .95. The knowledge test (BKS), with 20 items, had the lowest coefficient alpha of .67. The lower alpha for the knowledge test is related to the different dimensions of knowledge assessed with the test.

For the breastfeeding knowledge test (BKS), there were 5 questions which focused on the benefits of breastfeeding and 15 questions which assessed knowledge related to the practice of breastfeeding. The average percent correct on the 20 item (BKS) for the total sample was 65.3%, approximately 13 correct items. For the BAPT scales, the higher the scale score for the negative breast feeding sentiment (NBS) and positive breastfeeding sentiment(PBS), the greater the support for breastfeeding (SPS), and the greater sense of control the woman has over her ability to breastfeed (BCS).

Infant feeding intention (IFIS) was assessed with a three item scale where a score of 0 represents a very strong intention not to breastfeed at all and 8 represents a very strong intention of fully breastfeeding to 1 month of age. The infant feeding behavior variable (IFB) is a binary variable where 1 indicates breast feeding initiation at one month postpartum and a 0 indicates

formula feeding only at one month postpartum. The mean IFB score of .34 shows that 34 percent of the total sample had initiated breastfeeding at one month postpartum.

Conclusion of Study Findings

The initiation rate of breastfeeding in the rural low-income African American and Native American adolescents in southeastern North Carolina for this study was 34.3% overall, with 22.5% exclusively breastfeeding at 4 days postpartum, which is similar to the overall breastfeeding initiation rate of 33.4% (Robeson County) and 34.0% (Columbus County) in the rural counties for all ages of women delivering babies (North Carolina Department of Health and Human Services[NCDHHS], 2014) compared to 74.9% in North Carolina and 76.5% nationally as a whole (CDC, 2014). At the present time, there are no recent studies reporting the breastfeeding rate of only African American and Native American adolescents in southeastern North Carolina rural counties. A recent study of North Carolina teens (ages 13- 17) across the state reported an overall 52% of breastfeeding initiation rate among White, Hispanic, and Black teen mothers , with white teen mothers initiating at 87%, black teen mothers initiating at 41% and Hispanic teen mothers initiating at 89% (Tucker, Wilson & Samandari, 2011). The current study's African American and Native American adolescent initiation rate is much lower than recent reports and studies of adolescent breastfeeding in the United States, which had rates ranging from52% in North Carolina overall (North Carolina State Center for Health Statistics (NCSCHS), 2012; Tucker, et al., 2011) to 71% nationally (Sipsma, Magriples, Divney, Gordon, Gabzdyl & Kewshaw, 2013).

The low incidence of breastfeeding in this study may be a result of a lack of Baby Friendly Hospital policies to promote breastfeeding in the local hospitals in the area. Although the health departments stress importance of breastfeeding and offer classes to encourage the

practices, it appears that adolescents may need encouragement from several sources in order to impact cultural norms and the acceptance of breast-feeding practices. Moreover, adolescents may choose to attend or not to attend childbirth and breastfeeding classes. Those who choose not to attend these classes are at a far greater risk of choosing not to initiate breastfeeding their infant based on the current study findings. This should be of major concern for policy makers of hospitals and other health care providers in the rural communities in rural southeastern North Carolina as well as other rural areas where breastfeeding initiation rates are poorer among young adolescent women in order to promote breastfeeding among young mothers. Strategies to increase enrollment of classes targeting adolescents may be necessary to increase breastfeeding rates and impact cultural beliefs and attitudes among younger women.

The most common reasons given for not breastfeeding, supplementing formula with breastfeeding, or introducing formula to exclusively breastfed infants after initiating breastfeeding were revealed in the current study through the postpartum questionnaires and included the following responses: "*not comfortable with breastfeeding", "don't know how to breastfeed", "don't know if baby getting enough to eat when breastfeeding",* and *"not knowing if breastfeeding satisfying baby"*. A number of previous research studies supported that insufficient milk was the major factor impeding continuation of breastfeeding (Wambach et al., 2005;Meedya et al., 2010;Wamback et al., 2009). It is not clear from the current study if the adolescent mothers had insufficient breast milk supply or if they perceived that they had insufficient breastmilk supply.

Significant Constructs of Theory of Planned Behavior

The model of the theory of planned behavior provided the conceptual framework for this study and was supported by the current findings. Breastfeeding intentions had significant zero-

order correlations with all of the predictors proposed in the theoretical model. The results demonstrate that three variables showed statistically significant contributions to the variability in breastfeeding initiation at 4 days postpartum and were perceived breastfeeding control (BFC) or self-efficacy, social professional support (SPS) or subjective norm and negative breastfeeding sentiments (NBS) or negative breastfeeding attitudes.

Findings of the present study support the construct of perceived Breastfeeding Control or self efficacy as part of the theory of planned behavior as a predictor of breast-feeding intention and initiation. Perceived Breast-feeding Control had a statistically significant finding in both breast-feeding intentions and behaviors of low-income adolescent African Americans and Native Americans in rural counties in North Carolina.

Findings of the present study support the construct of Negative Breastfeeding Sentiment as part of the theory of planned behavior as a predictor of breast-feeding intention and initiation. Negative Breastfeeding Sentiment had a statistically significant finding in both breast-feeding intentions and behaviors of low-income adolescent African Americans and Native Americans in rural counties in North Carolina.

Social Professional Support or social norm was also statistically significant. Findings of the present study support the construct of Social Professional Support or social norms as part of the theory of planned behavior as a predictor of breast-feeding intention and initiation. Social Professional Support had a statistically significant finding in both breast-feeding intentions and behaviors of low-income adolescent African Americans and Native Americans in rural counties in North Carolina. In the current study, adolescent mothers who initiated breastfeeding reported that health care providers were a very important influence in their attitudes and perception of breastfeeding, indicating that the potential for increased support and influence among the

healthcare professions in the decisions of young, low-income, rural adolescents is great and also important.

Findings of the present study support the construct of Positive Breastfeeding Sentiment as part of the theory of planned behavior as a predictor of breast-feeding intention. Positive Breastfeeding Sentiment had a statistically significant finding in breast-feeding intentions of low-income adolescent African Americans and Native Americans in rural counties in North Carolina. The level of agreement among the Positive Sentiment Score items were slightly higher for the adolescents who initiated breastfeeding than for the adolescents who chose to formula feed their infants, indicating that both groups had some understanding of breastfeeding benefits for baby.

Findings of the present study support the construct of Breastfeeding Knowledge as a predictor of breast-feeding intention. Breastfeeding Knowledge had a statistically significant finding in breast-feeding intentions of low-income adolescent African Americans and Native Americans in rural counties in North Carolina. The breastfeeding knowledge construct was not a statistically significant construct through the multiple regression analyses, however, the breastfeeding intentions had significant zero-order correlations with all of the predictors proposed in the theoretical model. The qualitative responses recorded in the current study on the *Postpartum Formula Feeding* and *Breastfeeding Forms* indicated that a lack of familiarity and comfort regarding breastfeeding was a deterring factor to initiate breastfeeding among rural, low-income African American and Native American adolescents at 4 days postpartum. Juliff and colleagues' (2007) findings also indicated that Western Australian adolescent secondary school students have less than ideal knowledge of breastfeeding, where female students were found to be more positive than male students regarding attitudes of breastfeeding. The comparison of

rural to metropolitan students found that the metropolitan students had higher breastfeeding knowledge and were more positive toward breastfeeding than the rural students (Juliff et al., 2007).

Breastfeeding Intention Related to Breastfeeding Behavior

The current study supported the relationship between breastfeeding intention and breastfeeding behavior among low-income, rural African American and Native American adolescent mothers in southeastern North Carolina utilizing the Theory of Planned Behavior. A statistically significant difference at the $p < .01$ level was found between groups. The effect size, calculated using eta squared, was .63. Post-hoc comparisons using the Tukey HSD test indicated that the mean score for the *bottle fed only* group (n= 67) (M = 2.07, SD = 1.50) was significantly different from the *breast milk total* group(n= 35) (M = 6.13, SD = 1.62). This finding was consistent with a previous study designed to assess the degree to which women's intentions to breastfeed prior to delivery translates to actual breastfeeding at hospital discharge and to investigate predictors of breastfeeding in a minority inner-city population of a majority of African American women. This study found that three in four women who intended to breastfeed prior to delivery were breastfeeding at hospital discharge. Moreover, one in ten women previously not intending to breastfeed did so (Hundalani et al., 2012). Findings of Alexander et al., (2010) found the breastfeeding intentions of pregnant low-income inner city teens and non-teens included that the support of the father of the baby significantly influenced breastfeeding intent among participants, suggesting that paternal involvement would be integral to the success of breastfeeding (Alexander et al., 2010).

Socio-demographic Variables Related to Breast-feeding Intention and Initiation

The current study supported the relationship between breastfeeding intention and

initiation as it relates to socio-demographic variables. At 4 days postpartum, more Native American adolescents (62.9 of those breast-feeding) breastfed than did African American adolescents (37.1% of those breast-feeding), while African Americans accounted for 53.7% of all adolescents in the study that formula fed and Native Americans accounted for 43.6% of adolescents in the study who formula fed. Study participants attending childbirth classes were significantly more likely to breast-feed. Of the formula feeding group, none of the mothers attended childbirth classes, while 80% of those who breast-fed attended childbirth classes. Moreover, of the participants who attended breastfeeding classes, 77.1% breastfed their infants, while none of the participants who formula fed their infants had attended breast-feeding classes. Having been breastfed themselves increased the likelihood of breastfeeding their infant. Of all the participants who had breast-fed their infant, 22.9% had been breastfed themselves as an infant, while 77.1 % had not been breastfed as an infant. Only 6% of participants who formula fed their infants had been breastfed as an infant themselves, while 94% of the participants who formula fed their infants had not been breastfed as an infant themselves. Knowing others who have breastfed infants among family and friends increased the likelihood of breastfeeding their infants. Seventy-one point six percent of all the participants who formula fed their infant knew no other mothers who had breast-fed, 2.9% knew 1- 3 mothers who had breast-fed and 1.5% knew 4 or more mothers who had breast-fed. More adolescents who breastfed their infants were married, (25.7% of breast-feeding mothers), compared to 6% of adolescents who were married that chose to formula feed their infants. The living status of adolescents was reported at 25.7% of breast-feeding mothers living with husband, 22.9% living with a significant other, 37.1% living with their own mother and 14.3% living with another family member. Of the formula feeding mothers, only 6% lived with a husband, 10.4% lived with a significant other, 67.2%

lived with their own mother and 16.4% lived with another family member. Adolescents who chose to formula feed tended to live with their own family more often than did breastfeeding adolescents (83%), while breastfeeding adolescents tended to live with husband or significant other more often (48.6%).

Previous research findings in the literature review explore factors that affect the infant feeding decision and suggest that reasons to initiate breastfeeding or formula feed are varied and complex, but tend to be 'mother-centered' as opposed to 'infant centered'. Common influencing factors identified in the literature related to decisions to breastfeed or not include previous exposure to breastfeeding/ attitude to breastfeeding, personality and self-concept, being married versus single, low-income status, influence of partner/ mother/ peer group, perception of the partner's preference rather than actual knowledge of the partner's preference and accessibility to artificial baby milk (Atchan et al., 2011; Ratananugool, 2001).

Methodological Issues

The study design of this prospective correlational research was a strength of the study because it provided advantages of breast-feeding initiation studied at a second point in time with two interviews with the subjects over a nine month period of time. This allowed the variables to be studied as an outcome variable measured at a later time. The design is compatible with the Theory of Planned Behavior. The design was more costly and time consuming than cross sectional studies, however. Attrition was somewhat of a problem related to transient subjects and telephone numbers being disconnected related to low-income status.

Due to the sampling of the current study, results cannot be generalized and should be interpreted with caution. A convenience sample with the limitation to only African American and Native American first time mothers and their normal babies delivered naturally in a low-

income rural southeastern North Carolina setting limits the generalization to all adolescent mothers. The external validity should be considered within this context.

Instruments and Data Collection

The interview questionnaires (Personal Information Questionnaire, Infant Feeding Intention Scale, Breastfeeding Attrition Prediction Tool, Breastfeeding Knowledge Scale) were utilized to collect data during the prenatal period (interview time one). Additional interview questionnaires were utilized to collect data (Breastfeeding Knowledge Scale Postpartum Screening Question and the Breastfeeding or Formula Feeding Postpartum Form) four days postpartum (interview time two) either via telephone contact or home visit. Personal contact with study participants and the availability of the investigator during the administration of the questionnaires yielded advantages in terms of recruiting participants and clarifying questions and answers of the participants.

The internal consistency of subscales of the BAPT ranged from .94 to .85, with the Positive Breastfeeding Sentiment (PBS) having the lowest alpha coefficient (.85 see Table 3). Additionally, the variance of the PBS score related to prediction of breastfeeding initiation was lower than were the Perceived Breastfeeding Control, the Social Professional Support and the Negative Breastfeeding Sentiment. The internal consistency of the Breastfeeding Knowledge Scale was found to have an alpha coefficient of .67. The lower alpha for the knowledge test was related to the different dimensions of knowledge assessed with the test.

Implications and Recommendations

Study results provide evidence for the applicability of the Theory of Planned Behavior with infant feeding practices (breastfeeding as well as formula feeding) among low-income African American and Native American adolescents in rural southeastern North Carolina. At the

present time, to the author's knowledge, there is no other published research revealing the utility of the Theory of Planned Behavior among African American and Native American adolescents in rural, low-income southeastern regions of North Carolina. Besides the variables proposed by the Theory of Planned Behavior, a literature review added additional concepts to enhance the model. The conceptual model utilized added breastfeeding knowledge to assist nurses to gain a better understanding of factors predicting breastfeeding behaviors among rural, low-income African American and Native American adolescents in southeastern North Carolina. The model offers modifiable factors that can be targeted for change. The model provides a practical value for the development of research based assessments and interventions in promoting breastfeeding behaviors among rural, low-income adolescents among minority groups of African Americans and Native Americans. All of the concepts utilized in the current study have been supported to be useful in nursing research such as perceived Breastfeeding Control, Social Professional Support and Negative and Positive Breastfeeding Sentiments. However, as they relate to the low-income rural African American and Native American adolescent, these concepts in nursing continue to need refinement. The complex nature and relationships among the concepts and outcome behavior surrounding breastfeeding need further investigation with additional samples in similar and in different settings. The results from future studies will refine the present theoretical model.

Implications for Education

Breastfeeding has been targeted as one public health strategy of healthy behavior that can potentially reduce and eliminate health disparities among disadvantaged socioeconomic groups. It is of great importance to recognize the success in breastfeeding as well as the national benchmark that has been raised by Healthy People 2020 (81%) for the potential impact on the well-being of mothers and children and the potential to eliminate disparities among more

disadvantaged ethnic and racial groups (Healthy People 2020, 2011). The position confirms that the promotion of breastfeeding is an important public health strategy for improving infant and child morbidity and mortality, providing protection against common childhood infections, improving maternal morbidity as well as controlling health care costs (ADA, 2009). Nurse educators need and search for evidence- based information to guide best practices in order to promote breastfeeding success among adolescents who are at risk for decreased breastfeeding rates and disparities of health for themselves and their children. Findings of this study add to the body of knowledge of nursing with respect to breast-feeding behaviors among low-income, rural African American and Native American adolescents. Nurse educators should convey to students the importance of modifiable factors in the success of promoting breastfeeding behaviors. Effective interventions can be developed and implemented to impact the adolescent's beliefs that can improve the prospects of breastfeeding and to increase self-efficacy of the young mothers' ability to carry out healthier behavior for a healthier start for their young.

Because breastfeeding and infant feeding behaviors are embedded in society and our culture, success of breastfeeding reflects the interaction among the biological, psychological and social factors. A holistic approach should be utilized for working in maternal child environments with new mothers, but also in the community where social networks influence communities and the social norms of our society in regards to acceptance and promotion of breastfeeding.

Implications for Nursing Practice

Recommendations based upon the current research include raising awareness through education focused toward adolescents with an emphasis on low-income minorities and their significant others in the promotion and the support of breastfeeding. The perceptions of problems with breastfeeding or the level of confidence of the ability of the adolescent to

breastfeed and to overcome potential barriers was the most important factor influencing the decision to initiate or not to initiate breastfeeding. Support from social networks were cited as factors associated with the decision to breastfeed as well.

Based upon the research information, nurses can develop assessment plans to identify adolescents at risk for not breastfeeding during prenatal care. It is of high importance to recognize that health care professionals' support for breastfeeding was cited as significant to the adolescents' decision to breastfeed. Family of the adolescent should also be included in the intervention. Cultural beliefs should be explored. Programs to assist with providing help for resolving breastfeeding problems and strategies to improve maternal confidence should be included to provide adolescent mothers the support needed during this critical time.

Breastfeeding problems can be the result of a lack of skill and knowledge related to how to nurse a baby during the short time period after delivery. Nurses should encourage adolescent mothers to nurse their babies as early as possible after delivery and avoid giving formula feedings prior to lactation. Nurses should learn how to demonstrate breastfeeding to young mothers if they do not know how as to encourage the healthier means of providing nutrition to the infants. It is important that the young adolescent mothers have an opportunity to acquire skills they need during the first few times they attempt to feed their newborn infant. Guidance may be provided in the positioning of the baby at the breast. Nurses should not assume that mothers know or understand after the first explanation due to fatigue and being emotionally overwhelmed.

A barrier to breastfeeding is insufficient milk supply or perceived insufficient milk supply. Nurses should advise young mothers how to breastfeed her infant regarding the step by step individual feedings as well as the frequency of feeding for the newborn. Specific guidance

for the individual adolescent may be provided, overcoming barriers to breastfeeding during hospital stay as well as after discharge via telephone encounter, office visit or home visit.

Adolescent mothers who wish to return to school or work should be introduced to and taught how to use a breast pump effectively in order to maintain milk supply while they are at school or work. Mother-child friendly workplaces are on the rise and should be established in order for healthier lifestyles to be carried through. School nurses can provide basic information regarding breastfeeding as an advocate for adolescent mothers in the school setting.

Education in clinics and OB-GYN practices is recommended in the form of child birth classes, breast-feeding classes, or parenting classes during the prenatal visit increments. To promote breastfeeding at the individual, family and community level, collaboration among adolescent mothers, their families, clinics, hospitals, schools as well as support groups is essential in order to impact the overall cultural acceptance and support of breastfeeding.

Recommendations for Future Research

Based upon the results and the limitations of the current study, the following recommendations are made for future research:

1. A larger sample size of participants should be used to include a range of racial backgrounds and age intervals across the adolescent period as well as utilizing a longitudinal design for further findings to answer questions related to breastfeeding behavior based upon the recommended length of breastfeeding (at the 3-month, 6- month and one year interval).

2. Qualitative studies should be conducted related to how individual mothers make the decision to breastfeed their infants and overcome biological and physical barriers, as well as social and cultural barriers.

3. Qualitative studies should be conducted related to adaptations of Baby-friendly practices among OB clinics (health departments as well as private OB practices.)

Summary

This research study demonstrated the utility of the theory of planned behavior in an assessment of factors influencing the infant feeding intention at one month and the breastfeeding behaviors at four days postpartum of low-income, rural African American and Native American adolescents in southeastern North Carolina. This study provided background for further experimental research and support for the development of research models and interventions for breastfeeding promotion in practice among Native American and African American adolescents in rural populations. The study findings provided useful information that can be used in interventions as well as in future nursing research to support and promote breastfeeding.

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East Carolina University

APPENDIX A

Assent Form

Things You Should Know Before You Agree To Take Part in this Research

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IRB Study #UMC IRB- 12-002219

Title of Study: Breastfeeding Intention and Initiation Among Rural, Low-IncomeNative American and African American Adolescent Mothers in North Carolina: Testing the Theory of Planned Behavior

Person in charge of study: Cynthia Hales Herndon, PI

Where they work: Robeson County Department of Public Health

Study contact phone number: 910-671-3419

Study contact E-mail Address: cindy.herndon@hth.co.robeson.nc.us

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People at ECU and The Robeson County Department of Public Health study ways to make people's lives better and to bring about better health outcomes. These studies are called research. This research is trying to find out the pattern of African American and Native American adolescent mothers' breastfeeding practices in rural communities in southeastern North Carolina, and to find out the reasons adolescent mothers may breastfeed.

You do not have to be in this research if you don't want to.

You may stop being in the study at any time. If you decide to stop, no one will be angry or upset with you.

Why are you doing this research study?
The reason for doing this research is to find out if you are going to breastfeed your baby or formula feed your baby and why.

Why am I being asked to be in this research study?

We are asking you to take part in this research because you will soon be having a baby and you are African American or Native American and you are a teenager.

How many people will take part in this study?

If you decide to be in this research, you will be one of about 120 people taking part in it.

What will happen during this study?

You will be asked to answer questions from questionnaires about your life and plans about how you will feed your baby. These questions will take about 20 minutes to finish. You will receive free gifts and a Wal-mart gift card for answering the questions. After you have your baby, the researcher will either call you or visit you in your home and ask a few more questions. This will take about 20 minutes. You will receive a $20 gift certificate from Wal-mart on the second interview.

This study will take place at Robeson County Department of Public Health and will last 20 minutes and the second interview will either be by telephone or in your home and will last 20 minutes.

Who will be told the things we learn about you in this study?

The information collected in this study will be used as a dissertation paper with East Carolina University and may be published in a professional nursing journal. The names of individuals will not be shared or identified. No personal information will be shared that is identified back to the individual. Information about infant feeding decision making will be tracked and recorded. The information will ultimately be used to help teen mothers with infant feeding. No illegal activity will be reported. Parents and teachers will not be told of individual responses or given individual information.

What are the good things that might happen?

Sometimes good things happen to people who take part in research. These are called "benefits." The benefits to you of being in this study may be that you will be made aware of different choices you have as a mother to be and of good things that could happen to your baby because of those choices.

What are the bad things that might happen?

Sometimes things we may not like happen to people in research studies. These things may even make them feel bad. These are called "risks." These are no known risks of this study.

What if you or your parents don't want you to be in this study?

If you or your parents don't want you to be in this study, here are some other things that you may be able to do call the Principal Investigator and tell them to take you out of the study.

Will you get any money or gifts for being in this research study?

You will receive a gift bag and a Wal-mart gift certificate for being in this study after the first interview. After the second interview, you will receive a Wal-mart gift certificate of higher value for completing the study.

Who should you ask if you have any questions?

If you have questions about the research, you should ask the people listed on the first page of this form. If you have other questions about your rights while you are in this research study you may call the Institutional Review Board at 252-744-2914.

If you decide to take part in this research, you should sign your name below. It means that you agree to take part in this research study.

_____ _____

Sign your name here if you want to be in the study Date

_____

Print your name here if you want to be in the study

_____ _____

Signature of Person Obtaining Assent Date

_____

Printed Name of Person Obtaining Assent

APPENDIX B

Participant Consent

Dear Participant,

I am a doctoral nursing student at East Carolina University in the ECU College of Nursing department. I am asking you to take part in my research study entitled *Breastfeeding Intention and Initiation Among Rural, Low-Income Native American and African American Adolescent Mothers in North Carolina: Testing the Theory of Planned Behavior.*

The purpose of this research is to test the Theory of Planned Behavior by examining the relationship of the components (attitudes, subjective norms, perceived control/ self-efficacy, and breastfeeding knowledge) to determine breastfeeding intention and breastfeeding initiation behaviors of rural, low-income Native American and African American adolescent mothers in rural communities in southeastern North Carolina, and to explore the similarities and differences and relationships of sociodemographic variables with breastfeeding intention and initiation and possible reasons adolescent mothers may make a decision to breastfeed before the birth of the baby and at four days postpartum. The possible influencing factors of this population will be explored in addition through the gathering of extra information. This information will be important in the development of future programs that will encourage adolescent mothers to breastfeeding and promote breastfeeding.

By doing this research, I hope to learn how to best teach adolescent mothers why it is important to breastfeed their babies. The questions that will be answered are:

1. How well do the constructs of the Theory of Planned Behavior (attitudes, subjective norms, and self-efficacy) and knowledge of breastfeeding predict the probability of maternal intention to breastfeed her infant until one month of age and breastfeeding behavior at 4 days postpartum in rural low-income African American and Native American adolescent mothers?

2. What are the similarities and differences between breastfeeding and formula feeding adolescent groups and Negative Breastfeeding Attitudes, Positive Breastfeeding Attitudes, Social Professional Support, and Perceived Breastfeeding Control or self-efficacy?

3. What is the relationship of sociodemographic variables with breastfeeding intention and initiation?

4. Is prenatal breastfeeding intention related to breastfeeding initiation at 4 days postpartum in rural, low-income African American and Native American adolescent mothers?

5. What are the Psychometric properties of the instruments used as they relate to the Native American and African American adolescent population?

Your participation is voluntary.

You are being invited to take part in this research because you are an adolescent age from 18- 19 years old and are African American or Native American background. The amount of time it will take you to complete this study is 20 minutes in two different times, once now and once 4 days after you have delivered your baby.

You are being asked to answer two sets of surveys at two different time intervals: one during your pregnancy and one at four days after you deliver your baby. The surveys will ask questions about how you plan to feed your infant and what factors influence your decisions. You will be given incentive material at both times to include Wal-mart gift certificates and a gift bag.

Because this research is overseen by the ECU Institutional Review Board, some of its members or staff may need to review my research data. However, the information you provide will not be linked to you in any way. Therefore, your responses cannot be traced back to you by anyone, including me.

If you have questions about your rights as someone taking part in research, you may call the UMCIRB Office at phone number 252-744-2914 (days, 8:00 am-5:00 pm). If you would like to report a complaint or concern about this research study, you may call the Director of UMCIRB Office, at 252-744-1971.

You do not have to take part in this research, and you can stop at any time. If you decide you are willing to take part in this study, sign the signature line below signifying that you agree to participate in the study and you have been informed of the above study information.

Thank you for taking the time to participate in my research.

Sincerely,

Cynthia H. Herndon, Principal Investigator

I have been informed about the adolescent breastfeeding study and I agree to participate.

_____ Date:_____

APPENDIX C

Personal Information Questionnaire

Prenatal Questionnaire

1. How old are you? ____years ____months

2. What is the number of years you have completed at school? _____ years

3. What is the number of years your partner has competed at school? ____ years

4. Are you married? ____If not, do you intend to marry?_____Living status _____

5. Have you been working before and /or during your pregnancy? _____

6. Do you intend to keep the baby?_____

7. If you are working, what is your occupation? _____

8. If you are working, will you have maternity leave and how long? _____

9. Were you in school before and during your pregnancy? _____

10. If yes, do you intend to continue with school after delivery? _____

11. If yes, when will you return to school? _____

12. How much money does your family earn each month? _____

13. How long have you lived in Robeson County? _____

14. How many people live in your home? _____

15. What is your ethnic background? _____

16. If Native American, do you have a Native American card?_____

17. If so, what percentage Native American are you? _____

18. Are you receiving prenatal care and if so, where? _____

19. When did you first visit your provider's prenatal clinic? _____weeks

20. Did you receive breastfeeding materials and/ or advice at your prenatal clinic? ____

21. Were you ever breastfed when you were an infant? _____

22. How many of your friends and family have breastfed their infants? _____

APPENDIX D

DIRECTIONS

On the following page is a list of statements about how you plan to feed your baby. Look at each statement as I read it to you and tell me **how strongly you feel** about each statement by circling:

0 if you **strongly disagree** with the statement
1 if you **disagree** with the statement
2 if you **neither disagree or agree** with the statement
3 if you **agree** with the statement
4 if you **strongly agree** with the statement

APPENDIX E
Infant Feeding Intentions Questionnaire

PLEASE CIRCLE THE NUMBER THAT MOST CLOSELY DESCRIBES HOW YOU FEEL ABOUT EACH STATEMENT

		Strongly Disagree				Strongly Agree
1.	I am planning to only formula feed my baby (I will not breastfeed at all)	0	1	2	3	4
2.	I am planning to at least give breastfeeding a try	0	1	2	3	4
3.	When my baby is 1 month old, I will be breastfeeding without using any formula or other milk	0	1	2	3	4
4.	When my baby is 3 months old, I will be breastfeeding without using any formula or other milk	0	1	2	3	4
5.	When my baby is 6 months old, I will be breastfeeding without using any formula or other milk	0	1	2	3	4

This is the outcome or dependent variable and is scored as follows:

- Item 1 is reverse scored so that a response of strongly agree (adolescent plans to only formula feed the baby) receives a score of 0.
- After recoding item 1, the scores for item 1 and 2 are averaged.
- This average is then added to the sum of items 3, 4, and 5.
- Possible scores thus range from 0 to 16, with 0 representing a very strong intention to not breastfeed at all and 16 represents a very strong intention of fully breastfeeding to 6 months of age.

APPENDIX F

BREASTFEEDINGATTRITION

PREDICTIONTOOL

(BAPT)

©JillJankeRNC,DNSc
UniversityofAlaskaAnchorage
SchoolofNursingandHealthSciences
3211ProvidenceDrive
Anchorage,Alaska99508
June2008

DIRECTIONS FOR BAPT TOOL (PI WILL READ TO SUBJECTS)

DIRECTIONS

On the following page is a list of statements about breast and formula/bottle feeding. Look at each statement as I read it to you and tell me **how strongly you feel** about each statement by circling:

1 if you **strongly disagree** with the statement
2 if you **disagree** with the statement
3 if you **slightly disagree** with the statement
4 if you **slightly agree** with the statement
5 if you **agree** with the statement
6 if you **strongly agree** with the statement

PLEASE CIRCLE THE NUMBER THAT MOST CLOSELY DESCRIBES HOW YOU FEEL ABOUT EACH STATEMENT

There are no wrong answers.

PLEASECIRCLE THENUMBERTHAT MOSTCLOSELYDESCRIBES HOWYOUFEELABOUT EACHSTATEMENT.

	Strongly disagree					Strongly agree
1. Breastfeeding is more convenient than formula feeding.	1	2	3	4	5	6
2. Breastfeeding is painful.	1	2	3	4	5	6
3. Formula feeding allows the mother more freedom.	1	2	3	4	5	6
4. Infant formula can cause allergies.	1	2	3	4	5	6
5. Breastmilk is healthy for the baby.	1	2	3	4	5	6
6. No one else can help feed the baby when you breastfeed.	1	2	3	4	5	6
7. It is difficult to breastfeed in public.	1	2	3	4	5	6
8. Formula fed babies tend to get sick.	1	2	3	4	5	6
9. Breastmilk is more nutritious than infant formula.	1	2	3	4	5	6
10. Breastfeeding makes your breasts sag.	1	2	3	4	5	6
11. Formula feeding is easier than breastfeeding.	1	2	3	4	5	6
12. Formula fed babies are more fussy than breastfed babies.	1	2	3	4	5	6
13. Breastfeeding makes you closer to your baby.	1	2	3	4	5	6
14. Breastfeeding makes returning to work difficult.	1	2	3	4	5	6
15. Formula fed babies are easier to satisfy than breastfed babies.	1	2	3	4	5	6
16. Formula fed babies tend to be overweight.	1	2	3	4	5	6
17. Breastfeeding is more economical than formula feeding.	1	2	3	4	5	6
18. When you breastfeed you never know if the baby is getting enough milk.	1	2	3	4	5	6
19. Mothers who formula feed get more rest than breastfeeding mothers.	1	2	3	4	5	6
20. Breastfeeding is natural.	1	2	3	4	5	6
21. Breastfeeding is more time consuming than formula feeding.	1	2	3	4	5	6
22. Formula feeding lets the father become close to the baby.	1	2	3	4	5	6
23. Infant formula can cause constipation.	1	2	3	4	5	6
24. Breastfeeding is best for the baby.	1	2	3	4	5	6
25. Breastfeeding is personally satisfying.	1	2	3	4	5	6
26. Breastfeeding is messy.	1	2	3	4	5	6
27. Breastfeeding ties you down.	1	2	3	4	5	6
28. Breastfeeding helps you bond with your baby.	1	2	3	4	5	6
29. Mothers who formula feed get back into shape sooner.	1	2	3	4	5	6

BAPT Instructions

DIRECTIONS

On the following page is a list of individuals. Look at each individual as I read it to you and tell me **how much they want you to breastfeed** by circling:

1 if they **definitely do not want** you to breastfeed
2 if they **strongly do not want** you to breastfeed
3 if they **slightly do not want** you to breastfeed
4 if they **slightly want** you to breastfeed
5 if they **strongly want** you to breastfeed
6 if they **definitely want** you to breastfeed

0 if the person never talked to you about their wanting you to breastfeed or formula/bottle feed

There are no wrong answers.

FOREACHOFTHEFOLLOWINGINDIVIDUALSINDICATEHOWMUCH THEYWANTYOUTOBREASTFEED.

	Definitely NOT breastfeed					**Definitely breastfeed**	**Not Applicable**
30. The baby's father thinks I should:	1	2	3	4	5	6	0
31. My mother thinks I should:	1	2	3	4	5	6	0
32. My mother-in-law thinks I should:	1	2	3	4	5	6	0
33. My sister thinks I should:	1	2	3	4	5	6	0
34. My closest female friend thinks I should:	1	2	3	4	5	6	0
35. My doctor thinks I should:	1	2	3	4	5	6	0
36. My midwife thinks I should:	1	2	3	4	5	6	0
37. La Leche League thinks I should:	1	2	3	4	5	6	0
38. Your hospital nurses think I should:	1	2	3	4	5	6	0
39. Your baby's doctor think I should:	1	2	3	4	5	6	0
40. Your childbirth educator thinks I should:	1	2	3	4	5	6	0
41. Other relatives think I should:	1	2	3	4	5	6	0
42. People who are important to me think I should:	1	2	3	4	5	6	0

BAPT Instructions

DIRECTIONS

On the following page is a list of statements about breast and formula/bottle feeding. Look at each statement as I read it to you and tell me **how important** each statement is to you by circling:

1 if the statement is **definitely not important** to you
2 if the statement is **moderately not important** to you
3 if the statement is **slightly not important** to you
4 if the statement is **slightly important** to you
5 if the statement is **moderately important** to you
6 if the statement is **definitely important** to you

There are no wrong answers.

PLEASEINDICATEBELOWHOWIMPORTANTEACHOFTHEFOLLOWINGSTATEMENTSARE TOYOU.

	NOT Important tome					**Important to me**
43. Using a feeding method that is convenient is:	1	2	3	4	5	6
44. Using a feeding method that doesn't cause me pain is:	1	2	3	4	5	6
45. Using a feeding method that lets me have some freedom is:	1	2	3	4	5	6
46. Using a feeding method that won't cause allergies is:	1	2	3	4	5	6
47. Using a feeding method that is healthy for my baby is:	1	2	3	4	5	6
48. Using a feeding method that lets someone else feed my baby is:	1	2	3	4	5	6
49. Using a feeding method that is easy to do in public is:	1	2	3	4	5	6
50. Using a feeding method that protects my baby from getting sick is:	1	2	3	4	5	6
51. Using a feeding method that is nutritious is:	1	2	3	4	5	6
52. Using a feeding method that won't make my breasts sag is:	1	2	3	4	5	6
53. Using a feeding method that is easy is:	1	2	3	4	5	6
54. Using a feeding method that keeps by baby from being fussy is:	1	2	3	4	5	6
55. Using a feeding method that lets me be close to my baby is:	1	2	3	4	5	6
56. Using a feeding method that makes it easy to return to work is:	1	2	3	4	5	6
57. Using a feeding method that satisfies my baby is:	1	2	3	4	5	6
58. Using a feeding method that keeps my baby from being overweight is:	1	2	3	4	5	6
59. Using a feeding method that is economical is:	1	2	3	4	5	6
60. Using a feeding method where I know the baby is getting enough is:	1	2	3	4	5	6
61. Using a feeding method that lets me get lots of rest:	1	2	3	4	5	6
62. Using a feeding method that is natural is:	1	2	3	4	5	6
63. Using a feeding method that saves time is:	1	2	3	4	5	6
64. Using a feeding method that lets the father be close to the baby is:	1	2	3	4	5	6
65. Using a feeding method that doesn't cause constipation is:	1	2	3	4	5	6
66. Using a feeding method that is best for my baby is:	1	2	3	4	5	6
67. Using a feeding method that is personally satisfying is:	1	2	3	4	5	6
68. Using a feeding method that is not messy is:	1	2	3	4	5	6
69. Using a feeding method that doesn't tie me down is:	1	2	3	4	5	6
70. Using a feeding method that helps me bond with my baby is:	1	2	3	4	5	6
71. Using a feeding method that lets me get back into shape is:	1	2	3	4	5	6

DIRECTIONS

On the following page is a list of individuals. Look at each individual as I read it to you and tell me **how much you care about their opinion** on how you should feed your baby by circling:

1 if you **definitely do not care** about their opinion
2 if you **moderately do not care** about their opinion
3 if you **slightly do not care** about their opinion
4 if you **slightly care** about their opinion
5 if you **moderately care** about their opinion
6 if you **definitely care** about their opinion

There are no wrong answers.

HOWMUCH DOYOUCARE ABOUT THEFOLLOWINGPEOPLESOPINIONONHOWYOUSHOULDFEEDYOUR BABY?

	Do not care at all					Care very much	Not Applicable
72. The baby's father	1	2	3	4	5	6	0
73. Your mother	1	2	3	4	5	6	0
74. Your mother-in-law	1	2	3	4	5	6	0
75. Your sister	1	2	3	4	5	6	0
76. Your closest female friend	1	2	3	4	5	6	0
77. Your doctor	1	2	3	4	5	6	0
78. Your midwife	1	2	3	4	5	6	0
79. La Leche League	1	2	3	4	5	6	0
80. Your hospital nurse	1	2	3	4	5	6	0
81. Your baby's doctor	1	2	3	4	5	6	0
82. Your childbirth educator	1	2	3	4	5	6	0
83. Other relatives	1	2	3	4	5	6	0
84. People who are important to you	1	2	3	4	5	6	0

BAPT Instructions

PLEASE INDICATE THE DEGREE TO WHICH YOU AGREE OR DISAGREE WITH THE FOLLOWING STATEMENTS

PLEASEINDICATETHE DEGREETOWHICHYOU AGREE ORDISAGREEWITHTHE FOLLOWINGSTATEMENTS.

	Strongly Disgree					**Strongly Agree**
85. I have the necessary skills to breastfeed	1	2	3	4	5	6
86. I am physically able to breastfeed	1	2	3	4	5	6
87. I know how to breastfeed	1	2	3	4	5	6
88. I am emotionally ready to breastfeed	1	2	3	4	5	6
89. I am determined to breastfeed	1	2	3	4	5	6
90. I won't need help to breastfeed	1	2	3	4	5	6
91. I have total control over my breastfeeding	1	2	3	4	5	6
92. Breastfeeding is easy	1	2	3	4	5	6
93. I am confident I can breastfeed	1	2	3	4	5	6
94. I know I will have enough milk for the baby	1	2	3	4	5	6

PLEASECIRCLE THECORRECT ANSWER ORFILLIN THE BLANKSFORTHE FOLLOWINGQUESTIONS:

95. What is the PRIMARY method of infant feeding are you using with your new baby?

a. Breastfeeding**(ifcircled,proceedtoquestion#96)**
b. Formula feeding**(ifcircled,skiptoquestion#100)**

96. How long do you intend to breastfeed?_____

97. When did you decide you were going to breastfeed?

a. Before you became pregnant
b. During the first three months of your pregnancy(1st trimester)
c. During the middle three months of your pregnancy(2nd trimester)
d. During the last three months of your pregnancy(3rd trimester)
e. After the baby was born

98. How soon after the birth did you first breastfeed your infant?_____(hours)

99. What was the main reason(s) you chose to breastfeed? (list as many reasons that apply)

_____

_____

_____

_____

100. What is the birth date of your newborn:_____
101. What type of birth did you have?

a. Vaginal birth
b. Cesarean birth

102. How much did your baby weigh at birth?____pounds____ounces

103. What was your infant's sex? ___male ___female

104. Have you ever breastfed before?

a. Yes **(if yes, proceed to question # 105)**
b. No **(if no, skip to question # 107)**

105. How long did you breastfeed your last child?_____

106. Was the experience:

a. Extremely successful
b. Very successful
c. Moderately successful
d. Slightly successful
e. Not at all successful

107. How many children have you given birth to?_____

108. What is your age?_____

109. What is your ethnic origin?

a. Black
b. Asian
c. White
d. Hispanic
e. Native American
f. Other (please specify):_

110. Circle the highest grade completed:

Grade school:	1 2 3 4 5 6 7 8
High school:	9 10 11 12
College:	13 14 15 16
Graduate School:	17 18 19 20

111. Annual family income:
a. $10,000 or less
b. $10,001 to $25,000
c. $25,001 to $40,000
d. $40,001 to $55,000
e. $55,001 to $70,000
f. $70,001 to $85,000
g. $85,001 to $100,000
h. over $100,000

112. What is your marital status?_____

113. Who is YOUR primary health care provider?

a. Nurse midwife
b. Obstetrician
c. Family practice physician
d. Other (please specify)_____

114. Who is the BABY'S primary health care provider?

a. Nurse practitioner
b. Pediatrician
c. Family practice physician
d. Other (please specify)_____

Thisistheendofthequestionnaire.Ifyouhavefurthercomments,pleasewritethemontheback ofthispage.Thankyouforyourtime.

APPENDIX G
BAPT QUESTIONNAIRE

SCORING GUIDELINES

For
the

BREASTFEEDING ATTRITION PREDICTION TOOL

(BAPT)

©JillJankeRNC,DNSc
UniversityofAlaskaAnchorage
SchoolofNursingandHealthSciences
3211ProvidenceDrive
Anchorage,Alaska99508
June2008

1. ATTITUDINAL FACTORS

a. Negative Breastfeeding Sentiment (NBS) Attitudinal Scale.

i. Multiply each belief score by its corresponding outcome evaluation. The items to be multiplied are as follows:2, 44; 3, 45; 6,48; 7,49;10,52; 11,53;14,56;15,57;18,60;19,61;21,63;22,64;26,68;27,69;29,71.

(1) Example: a person scores a 6 for item 2 "breastfeeding is painful" and a 4 for item 44 "using a feeding method that doesn't cause me pain is...". These scores are multiplied for an item attitudinal score of 24.

ii. Sum all multiplied scores for the "Negative Breastfeeding Sentiment" attitudinal score.

iii. The higher the score, the greater the negative breastfeeding sentiment.

b. Positive Breastfeeding Sentiment (PBS) Attitudinal Scale.

i. Multiply each belief score by its corresponding outcome evaluation. The items to be multiplied are as follows:1,43;4,46;5,47;8,50;9,51; 12,54;13,55;16,58;17,59;20,62;23,65;24,66;25,67;28,70.

(1) Example: a person scores a 2 for item 5 "Breastmilk is healthy for the baby" and a 6 for item 47 "Using a feeding method that is healthy for my baby is...". These scores are multiplied for an item attitudinal score of 12.

ii. Sumall multiplied scores for the "Positive Breastfeeding Sentiment" attitudinal score.

iii. The higher the score, the greater the positive breastfeeding sentiment.

2. SOCIAL AND PROFESSIONAL SUPPORT SCALE (SPS)

a. Multiply each belief statement by its corresponding motivation to comply statement. The items to be multiplied are as follows: 30,72;31,73;32,74; 33,75;34,76;35,77;36,78;37,79;38,80;39,81;40,82;41,83;42,84.

b. Sum all multiplied scores for the "Social Support" scale.

c. The higher the score, the greater the support for breastfeeding.

3. BREASTFEEDING CONTROL SCALE (BFC)

a. Reverse score item 90 ('I won't need help…')
b. Sum scores for items 85-94.
c. The higher the score, the greater sense of control the woman has over her ability to breastfeed.

APPENDIX H

BREAST-FEEDING KNOWLEDGE SCALE INSTRUCTIONS

On the following page is a list of statements about infant feeding. Look at each statement as I read it to you and tell me whether you agree or disagree with the statement by circling:

1 if you **agree** with the statement

2 if you **disagree** with the statement

APPENDIX I

Breast-Feeding Knowledge Scale Pre-Test

PLEASE INDICATE WHETHER YOU AGREE OR DISAGREE WITH EACH STATEMENT

	Agree	Disagree
1. Breast milk and bottled milk are the same	1	2
2. Babies who are bottle-fed have more illnesses than babies who are breastfed.	1	2
3. Breastfeeding helps bonding between mother and baby	1	2
4. Breastfeeding prevents a woman from returning to her pre-pregnancy weight.	1	2
5. If breastfeeding a woman cannot return to work	1	2
6. Breastfeeding is unhygienic and can spread germs	1	2
7. Small breasts will not produce milk	1	2
8. Breastfeeding mothers have less risk of breast and ovarian cancer	1	2
9. Breast milk protects a baby from infection	1	2
10. Most women make enough milk to breastfeed	1	2
11. Women who breastfeed should avoid certain foods	1	2
12. Exclusive breastfeeding is recommended for the first 6 months of a baby's life.	1	2
13. Breast milk provides all the nutrients a baby needs	1	2
14. The more often you breastfeed, the more milk you will have for your baby.	1	2
15. When breastfeeding no extra food, water, or vitamins are needed for thefirst 6 months.	1	2
16. Breastfeeding mothers' nipples get sore easily if babies suck frequently	1	2
17. Babies should begin breastfeeding immediately after delivery	1	2
18. Breast fed infants need to be nursed more frequently than formula fed babies.	1	2
19. Mothers who breast feed cannot get pregnant while they continue to breastfeed.	1	2
20. The color of breast milk can tell you whether your breast milkis good or not.	1	2

APPENDIX J

POSTPARTUM SCREENING QUESTION

Below is a question on how you are feeding your baby. Please look at each question as I read it to you and answer by circling the correct answer.

Which of the following best describes how you are feeding your baby now?

a. Baby gets breast milk only
b. Baby gets breast milk and other fluids but not formula
c. Baby gets breast milk and less than one bottle of formula a day
d. Baby gets breast milk and one or more bottles of formula a day
e. Baby given breast for comfort and baby is completely bottle fed (no breast milk at all)
f. Baby is completely bottle fed (no breast milk at all)

If the adolescent responds with a, b, c, or d she is then given postpartum questions dealing with breastfeeding and other issues related to infant feeding and care of her baby (Breastfeeding Postpartum Form).

If the adolescent responds with e or f she is then given postpartum questions dealing with formula feeding and other issues related to infant feeding and care of her baby (Formula Feeding Postpartum Form).

APPENDIX K

BREASTFEEDING POSTPARTUM FORM

Below is a list of questions on how you are feeding your baby. Please look at each question as I read it to you and answer by circling the correct answer or by telling me your answers.

1. How long do you intend to breastfeed? _____

2. How soon after the birth did you first breastfeed your infant? _____ (hours)

3. Who is helping you to feed and care for your baby?
   _____

4. Where do you breastfeed your baby during the day?
   _____

5. Where do you breastfeed your baby during the night?
   _____

6. Do you use a breast pump? _____yes _____no

7. Is anyone encouraging you to continue breastfeeding? _____no _____yes (Who?)
   _____

8. How do you handle breastfeeding at night?
   _____

9. What problems are you having with your breastfeeding?

_____
_____
_____
_____
_____
_____

10. What was the main reason(s) you chose to breastfeed? (list as many reasons that apply)

_____
_____
_____

_____

_____

_____

11. How much did your baby weigh at birth? _____pounds _____ounces

12. What was your infant's sex? _____male _____female

13. Did you receive infant formula at your hospital? _____yes _____no

14. Have you used the formula yet? _____yes _____no

15. When did you first give your baby infant formula? _____

16. Why did you decide to give your baby infant formula?
    _____

17. Did you attempt to breastfeed while you were in the hospital? _____yes _____no

18. Were you successful in breastfeeding while in the hospital? _____yes _____no

19. Do you have a dishwasher at home? _____yes _____no

20. How many visits to the Health Department did you have during your pregnancy? _____

21. How many visits did you miss to the Health Department during your pregnancy? _____

22. Did you attend child birth classes? _____yes _____no If yes, how many?
    _____

23. Did you attend breastfeeding classes? _____yes _____no If yes, how many?
    _____

24. Do you intend to continue your education? _____yes _____no

25. Has your family income changed since the birth of your baby? _____no _____yes
    (Please Explain)

26. Has your living arrangements changed since the birth of your baby? _____no _____yes
    (Please Explain)

27. What body image concerns do you have?_____

28. Please rate your level of satisfaction with your current method of infant feeding on the following scale.

Very Dissatisfied 1 2 3 4 5 6 7 8 9 10 **Very Satisfied**

APPENDIX L

FORMULA FEEDING POSTPARTUM FORM

Below is a list of questions on how you are feeding your baby. Please look at each question as I read it to you and answer by circling the correct answer or by telling me your answers.

1. Who is helping you to feed and care for your baby?

   _____

2. Where do you feed your baby during the day?

   _____

3. Where do you feed your baby during the night?

   _____

4. What problems are you having with feeding your baby?

_____
_____
_____
_____
_____
_____

5. What was the main reason(s) you chose **NOT** to breastfeed? (list as many reasons that apply)

_____
_____
_____

6. How much did your baby weigh at birth? _____pounds _____ounces

7. What was your infant's sex? _____male _____female

8. Did you receive infant formula at your hospital? _____yes _____no

9. Have you used the formula yet? _____yes _____no

10. When did you first give your baby infant formula? _____

11. Do you give your baby anything else to eat in addition to the formula? _____yes _____no If yes, what?

12. Why did you decide to give your baby infant formula or other supplements?
    _____

13. Did you attempt to breastfeed while you were in the hospital? _____yes _____no

14. Were you successful in breastfeeding while in the hospital? _____yes _____no

15. Did you attempt to breastfeed after you got home? _____yes _____no

16. Were you successful in breastfeeding while at home? _____yes _____no

17. Do you have a dishwasher at home? _____yes _____no

18. How many visits to the Health Department did you have during your pregnancy? _____

19. How many visits did you miss to the Health Department during your pregnancy? _____

20. Did you attend child birth classes? _____yes _____no If yes, how many?
    _____

21. Did you attend breastfeeding classes? _____yes _____no If yes, how many?
    _____

22. Do you intend to continue your education? _____yes _____no

23. Has your family income changed since the birth of your baby? _____no _____yes
    (Please Explain)

24. Has your living arrangements changed since the birth of your baby? _____no _____yes
    (Please Explain)

25. What body image concerns do you
    have?_____

26. Please rate your level of satisfaction with your current method of infant feeding on the following scale.

    Very Dissatisfied 1 2 3 4 5 6 7 8 9 10 **Very Satisfied**

APPENDIX M

Breast-Feeding Knowledge Scale Post Test

PLEASE INDICATE WHETHER YOU AGREE OR DISAGREE WITH EACH STATEMENT

		Agree	Disagree
1.	Breast milk and bottled milk are the same	1	2
2.	Babies who are bottle-fed have more illnesses than babies who are breastfed .	1	2
3.	Breastfeeding helps bonding between mother and baby	1	2
4.	Breastfeeding prevents a woman from returning to her pre-pregnancy weight.	1	2
5.	If breastfeeding a woman cannot return to work	1	2
6.	Breastfeeding is unhygienic and can spread germs	1	2
7.	Small breasts will not produce mild	1	2
8.	Breastfeeding mothers have less risk of breast and ovarian cancer	1	2
9.	Breast milk protects a baby from infection	1	2
10.	Most women make enough milk to breastfeed	1	2
11.	Women who breastfeed should avoid certain foods	1	2
12.	Exclusive breastfeeding is recommended for the first 6 months of a baby's life.	1	2
13.	Breast milk provides all the nutrients a baby needs	1	2
14.	The more often you breastfeed, the more milk you will have for your baby	1	2
15.	When breastfeeding no extra food, water, or vitamins are needed for the first 6 months.	1	2
16.	Breastfeeding mothers' nipples get sore easily if babies suck frequently	1	2
17.	Babies should begin breastfeeding immediately after delivery	1	2
18.	Breast fed infants need to be nursed more frequently than formula fed babies.	1	2
19.	Mothers who breast feed cannot get pregnant while they continue to breastfeed.	1	2
20.	The color of breast milk can tell you whether your breast milk is good or not.	1	2

APPENDIX N

To:
afjrj@uaa.uaa.alaska.edu;
...
Cc:
Pressler, Jana Lee;
Herndon, Cynthia Hales;
...
The message sender has requested a read receipt. To send a receipt, click here.
Good morning, Dr. Janke,

My name is Cindy Herndon and I am a doctoral student at East Carolina University. I am interested in breastfeeding initiation in adolescent teen mothers (Native American and African American adolescents ages 15- 19). I would like to talk to you about your tool and ultimately obtain your permission to utilize it in a study. I would like to find out if the tool has been decreased in the length due to potential for "instrumentation burden". I would also be so grateful if I could chat with you about my plans for the study to get your thoughts.

My phone numbers are: office- 910-671-3419 and cell- 910-674-6169. I work at the Robeson County Department of Public Health in North Carolina (Lumberton) It is a very impoverished, rural area. I am a nurse supervisor for the Nurse Family Partnership here. We serve Robeson and Columbus County.

I look so forward to hearing from you via e-mail or phone.
Thank you for your consideration.

Cindy Herndon

Cynthia H. Herndon, MSN, RN-C, WHCNP, CNE
Nurse Family Partnership Supervisor
Robeson County Department of Health
460 Country Club Road
Lumberton, NC 28358
(910) 671-3419
(910)-674-6169
Herndon, Cynthia Hales;
...
From: Jill R Janke [mailto:jrjanke@uaa.alaska.edu]
Sent: Wednesday, March 28, 2012 3:47 PM
To: cindy.herndon@hth.co.robeson.nc.us
Subject: BAPT

It was nice talking with you Cindy. Here is a copy of the BAPT as well as the scoring instructions. You have my permission to use and modify, if necessary, the instrument. My only condition is that you send me a copy of the final document and any publications that resulted from the study.

Let me know if you have further questions. Jill Janke

JRJANKE@uaa.alaska.edu (new email)

Dear Dr. Ratananugool,

Thank you so much! I am so excited that you agree to have your tools utilized here. I will take in consideration that the tools may need to be altered per the cultural issues that you mentioned. I will keep you informed to the status of the study at completion and if there are any publications after the study.

Thank you again.

Cindy Herndon

Cynthia H. Herndon, MSN, RN-C, WHCNP, CNE

Nurse Family Partnership Supervisor

Robeson County Department of Health

460 Country Club Road

Lumberton, NC 28358

(910) 671-3419

(910)-674-6169

From: ngamnit ratananugool [mailto:ngamrat@hotmail.com]
Sent: Monday, April 23, 2012 2:43 AM
To: cindy.herndon@hth.co.robeson.nc.us
Subject: Permission to use the tools

Dear Ms. Herndon
I'm very glad that you're interested to use the measurement tools that I used in my dissertation research. You can have my permission to use "The Breastfeeding Initiation Scale, Breast-feeding Knowledge Scale and the Breast-feeding Bahavior Scale in your dissertation. Anyway, I have a concern about cultural sensitivity, because I conducted my research in Thailand. So, you can adapt these tools for the cutural issue.
I look forward to hearing from you about the copy of your work after completion. Have a nice day
Sincerely yours,
Ngamnit Ratananugool

Dear Cynthia,

You are most welcome to use the scale. It may help you to know that based on our second analysis, we slightly revised the wording of item 2. Attached are supplementary materials and a full-sheet format of the scale. Best wishes with your research.

--Laurie

Laurie A. Nommsen-Rivers, PhD, RD, IBCLC
Assistant Professor of Pediatrics
Division of Neonatology/Center for Interdisciplinary Research in Human Milk and Lactation

Cincinnati Children's Hospital Medical Center
3333 Burnet Avenue, MLC 7009
Cincinnati, OH 45229-3039
Office Phone: 513-636-7208 Cell Phone: 513-335-3256
FAX: 513-803-0969

Herndon, Cynthia Hales
Fri 10/11/2013 5:59 PM
Dear Dr Nommsen-Rivers and Dr. Dewey:

I am a doctoral student in the College of Nursing at East Carolina University and I am conducting a study on breastfeeding intention and initiation among rural, low-income adolescents. I would like to ask your permission to utilize the Infant Feeding Intentions Scale in my study. Would you please consider this? I am also using the Theory of Planned Behavior.
Thank you so much for considering this!

Cynthia H. Herndon MSN RN
Doctoral Student
College of Nursing
East Carolina University
Greenville NC

APPENDIX O

ECU Office for Human Research Integrity

600 Moye Boulevard

Brody School of Medicine

4N-70 Mail Stop 682

Greenville, NC 27834

Dear East Carolina University IRB Staff:

This letter serves to affirm that the study of Cynthia H. Herndon, who is a doctoral student in ECU College of Nursing, entitled *Breastfeeding Intention and Initiation Among Rural, Low-Income Native American and African American Adolescent Mothers in North Carolina: Testing the Theory of Planned Behavior*has been approved to be conducted with a convenience sample within the Robeson County Department of Public Health beginning Fall 2012 and extending to Spring 2013. This study will focus on adolescent breastfeeding and the constructs of the Theory of Planned Behavior. Breastfeeding is a targeted public health strategy to improve the health of infants and children and decrease the gap of health disparities among the maternal-child aggregate population in our nation. Robeson County has a unique population, as over two-thirds of the population are minority and impoverished. Robeson is classified as a rural county, which renders our population vulnerable as well.

The target population of this study is adolescents between the ages of 16 and 19 of Native American (n= 60) and African American (n= 60)racial backgrounds and of low income up to 185% Federal Poverty Level. The proposed sample will be a convenience sample, recruited through resources of care that are offered to prenatal clients in the public health department. Following approval of East Carolina University Institution Review Board, the PI (Cynthia Herndon) will make initial contact with potential participants during the initial visit to the public

health department during prenatal care and obtain informed consent/ parental consent. Several questionnaires will be completed by the participants over two encounters.

Please do not hesitate to contact this department with any questions you may have.

William J. Smith, MPH

Health Director

APPENDIX P

ECU Office for Human Research Integrity

600 Moye Boulevard

Brody School of Medicine

4N-70 Mail Stop 682

Greenville, NC 27834

Dear East Carolina University IRB Staff:

This letter serves to affirm that the study of Cynthia H. Herndon, who is a doctoral student in ECU College of Nursing, entitled *Breastfeeding Intention and Initiation Among Rural, Low-Income Native American and African American Adolescent Mothers in North Carolina: Testing the Theory of Planned Behavior* has been approved to be conducted with a convenience sample within the Columbus County Department of Public Health beginning Fall 2012 and extending to Spring 2013. This study will focus on adolescent breastfeeding and the constructs of the Theory of Planned Behavior. Breastfeeding is a targeted public health strategy to improve the health of infants and children and decrease the gap of health disparities among the maternal-child aggregate population in our nation. Columbus County has a unique population, as approximately one-half of the population are minority and highly impoverished. Columbus is classified as a rural county, which renders our population vulnerable as well.

The target population of this study is adolescents between the ages of 16 and 19 of Native American (n= 60) and African American (n= 60)racial backgrounds and of low income up to 185% Federal Poverty Level. The proposed sample will be a convenience sample, recruited through resources of care that are offered to prenatal clients in the public health department. Following approval of East Carolina University Institution Review Board, the PI (Cynthia Herndon) will make initial contact with potential participants during the initial visit to the public health department during prenatal care and obtain informed consent/ parental consent. Several questionnaires will be

completed by the participants over two encounters.

Please do not hesitate to contact this department with any questions you may have.

Kim Smith, MPH

Health Director

APPENDIX Q

EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office 252-744-2914 · Fax 252-744-2284 · www.ecu.edu/irb

Notification of Initial Approval: Expedited

From:	**Biomedical IRB**
To:	**Cynthia Herndon**
CC:	**Jana Pressler**
Date:	**3/19/2013**
Re:	**UMCIRB 12-002219** **Infant Feeding Attitudes, Intentions and Behaviors**

I am pleased to inform you that your Expedited Application was approved. Approval of the study and any consent form(s) is for the period of 3/18/2013 to 3/17/2014. The research study is eligible for review under expedited category #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB. The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

The approval includes the following items:

Name	Description
Adult Consent | History	Consent Forms
BAPT | History	Surveys and Questionnaires
Breastfeeding and Formula Feeding Information pamphlet | History	Information Sheet
Breastfeeding Intention Scale | History	Surveys and Questionnaires
Breastfeeding Knowledge Scale | History	Surveys and Questionnaires
Breastfeeding Postpartum Form | History	Surveys and Questionnaires
Disclosure Herndon | History	COI Disclosure Form
DissertationProposalDec7final.doc | History	Study Protocol or Grant Application
Flyer for pregnant mothers.pdf | History	Clinical Investigators Brochure
Formula Postpartum Form | History	Surveys and Questionnaires
Minor Assent Form | History	Consent Forms
Personal Informaion Questionnaire | History	Surveys and Questionnaires
Postpartum Screening Question | History	Surveys and Questionnaires

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418 IRB00004973

Study.PI Name:
Study.Co-Investigators: EAST CAROLINA UNIVERSITY
University & Medical Center Institutional Review Board Office
4N-70 Brody Medical Sciences Building· Mail Stop 682
600 Moye Boulevard · Greenville, NC 27834
Office**252-744-2914**· Fax **252-744-2284**· **www.ecu.edu/irb**

Notification of Continuing Review Approval: Expedited

From: Biomedical IRB

To: Cynthia Herndon

CC: Jana Pressler

Date: 1/24/2014

Re: CR00001645
UMCIRB 12-002219
Infant Feeding Attitudes, Intentions and Behaviors

The continuing review of your expedited study was approved. Approval of the study and any consent form(s) is for the period of 1/23/2014 to 1/22/2015. This research study is eligible for review under expedited category #7. The Chairperson (or designee) deemed this study no more than minimal risk.

Changes to this approved research may not be initiated without UMCIRB review except when necessary to eliminate an apparent immediate hazard to the participant. All unanticipated problems involving risks to participants and others must be promptly reported to the UMCIRB.

The investigator must submit a continuing review/closure application to the UMCIRB prior to the date of study expiration. The Investigator must adhere to all reporting requirements for this study.

Approved consent documents with the IRB approval date stamped on the document should be used to consent participants (consent documents with the IRB approval date stamp are found under the Documents tab in the study workspace).

The approval includes the following items:

Document	Description
Adult Consent(0.01)	Consent Forms
BAPT(0.01)	Surveys and Questionnaires
Breastfeeding and Formula Feeding Information pamphlet(0.01)	Information Sheet
Breastfeeding Intention Scale(0.01)	Surveys and Questionnaires
Breastfeeding Knowledge Scale(0.01)	Surveys and Questionnaires
Breastfeeding Postpartum Form(0.01)	Surveys and Questionnaires
Disclosure Herndon(0.01)	COI Disclosure Form
DissertationProposalDec7final.doc(0.01)	Study Protocol or Grant Application
Flyer for pregnant mothers.pdf(0.01)	Clinical Investigators Brochure
Formula Postpartum Form(0.01)	Surveys and Questionnaires
Minor Assent Form(0.01)	Consent Forms
Personal Informaion Questionnaire(0.01)	Surveys and Questionnaires
Postpartum Screening Question(0.01)	Surveys and Questionnaires

The Chairperson (or designee) does not have a potential for conflict of interest on this study.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418