



University of Tennessee, Knoxville

TRACE: Tennessee Research and Creative Exchange

Masters Theses

Graduate School

8-2005

Breastfeeding Policies and Practices in Tennessee Hospitals

Carrie J. Barker
University of Tennessee - Knoxville

Follow this and additional works at: https://trace.tennessee.edu/utk_gradthes



Part of the [Nutrition Commons](#)

Recommended Citation

Barker, Carrie J., "Breastfeeding Policies and Practices in Tennessee Hospitals. " Master's Thesis, University of Tennessee, 2005.
https://trace.tennessee.edu/utk_gradthes/1648

This Thesis is brought to you for free and open access by the Graduate School at TRACE: Tennessee Research and Creative Exchange. It has been accepted for inclusion in Masters Theses by an authorized administrator of TRACE: Tennessee Research and Creative Exchange. For more information, please contact trace@utk.edu.

To the Graduate Council:

I am submitting herewith a thesis written by Carrie J. Barker entitled "Breastfeeding Policies and Practices in Tennessee Hospitals." I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nutrition.

Sonya James, Major Professor

We have read this thesis and recommend its acceptance:

Betsy Haughton, Charles Hamilton

Accepted for the Council:

Carolyn R. Hodges

Vice Provost and Dean of the Graduate School

(Original signatures are on file with official student records.)

To the Graduate Council:

I am submitting herewith a thesis written by Carrie J. Barker entitled “Breastfeeding Policies and Practices in Tennessee Hospitals.” I have examined the final electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Nutrition.

Sonya Jones
Major Professor

We have read this thesis
and recommend its acceptance:

Betsy Haughton

Charles Hamilton

Accepted for the Council:

Anne Mayhew
Vice Chancellor and
Dean of Graduate Studies

(Original signatures are on file with official student records.)

Breastfeeding Policies and Practices in Tennessee Hospitals

A Thesis

Presented for the

Master of Science Degree

The University of Tennessee, Knoxville

Carrie J. Barker

August 2005

DEDICATION

I would like to dedicate this thesis to my husband, Christopher Barker. His encouragement, support and love allowed me to discover my potential, not just as a student, but as a person.

ACKNOWLEDGEMENTS

I would like to thank my major professor, Dr. Sonya Jones, for her guidance and support on this project. I would also like to thank Dr. Betsy Haughton for challenging me to be more than I ever imagined I could be. Her influence will resonate through everything I accomplish in my career. I would like to thank Dr. Charles Hamilton for his contributions to my education. I would like to thank Cary Springer for her statistical expertise. Finally, I want to thank Glenda King and the Tennessee Women, Infants, and Children Program for supporting and funding this research.

ABSTRACT

Objectives: The purpose of this study was to identify the level of compliance to the Baby Friendly Hospital Initiative (BFHI) in hospitals in Tennessee, to identify differences in infant feeding policies and practices based on hospital ownership type and to identify if breastfeeding disparities are related to the infant feeding policies and practices of those hospitals.

Methods: Eighty hospitals/maternity centers were surveyed in Tennessee. Thirty-seven hospitals responded to a mailed survey relating to the hospital infant feeding policies and practices as defined by the WHO/UNICEF BFHI's *Ten Steps to Successful Breastfeeding*. Compliance was modeled as a function of hospital patient characteristics.

Results: Compliance with the BFHI criteria varied greatly for each of the *Ten Steps to Successful Breastfeeding*. The lowest compliance was found for Step 10, which encourages fostering of external breastfeeding resources such as breastfeeding support groups. Step 7, which supports rooming-in for the mother and infant, was not well supported. The greatest compliance was found for Step 8, which encourages mothers to breastfeed on demand. When predicting compliance based on hospital patient population characteristics, maternal education and marital status were the strongest predictors for poor compliance to Step 5, which encourages hospital staff to train mothers on how to maintain lactation.

Conclusions: Overall, compliance for the *Ten Steps for Successful Breastfeeding* in Tennessee hospital was poor. Further investigation is needed to determine how hospitals can improve the promotion of breastfeeding in the first days of life, especially among high-risk mothers.

PREFACE

To assist the reader, the research study is divided into two parts. Part I includes an extensive literature review. Part II includes a manuscript containing introduction, methods, results, and discussion sections related to the research.

TABLE OF CONTENTS

PART I: INTRODUCTION AND LITERATURE REVIEW	1
1. INTRODUCTION	2
2. LITERATURE REVIEW	4
Health Disparities in Breastfeeding	4
Barriers to Breastfeeding	6
Benefits of Breast Milk	8
Breastfeeding Policy in the United States	10
Baby Friendly Hospital Initiative	16
Baby Friendly USA	16
Baby Friendly Hospital Initiative Research	19
Baby Friendly Hospital Initiative’s Self-Assessment Tool	22
Breastfeeding in Tennessee	23
Breastfeeding Research in Tennessee	24
Hospital Ownership	27
Research Questions	28
REFERENCES	30
 PART II: INFANT FEEDING POLICIES AND PRACTICES IN	
TENNESSEE	43
1. INTRODUCTION	44
2. METHODS	46

Survey Instrument.....	46
Expert Panel.....	46
Subject Selection.....	47
Pilot Test.....	48
Survey Implementation.....	48
Data Analysis.....	49
Dependant Variables.....	49
Independent Variables.....	50
Covariates.....	50
3. RESULTS.....	51
Expert Panel.....	51
Demographic Characteristics.....	51
BFHI Ten Steps to Successful Breastfeeding Compliance.....	52
Hospital Ownership Type and Compliance to the BFHI	
Ten Steps to Successful Breastfeeding.....	54
Hospital Population and Compliance to the Ten Steps.....	55
Hospital Ownership Type and Patient Population.....	57
Controlling for Differences in Patient Populations.....	57
4. DISCUSSION.....	60
Applications.....	60
Limitations.....	63
Significance.....	65
Summary.....	66

REFERENCES	67
APPENDICES	72
A: Infant Feeding Policies and Practices Survey	73
B: Expert Panel Invitation and Consent Form	87
C. Original Expert Panel Infant Feeding Practices Survey	
Instrument with Expert Panel Scoring Results	91
D. Pilot Study Cover Letter and Consent Form	104
E. Cover Letters, Consent Forms and Postcards	108
F. Primary Contact Instructions	114
VITA	117

LIST OF TABLES

Table

1. Hospital Compliance to Ten Steps to Successful Breastfeeding	53
2. Relationship Between Maternal Population Characteristics and Compliance to BFHI Ten Steps	56
3. Compliance to the BFHI Ten Steps Based on Hospital Ownership Type Controlling for Maternal Population Characteristics.....	58

LIST OF FIGURES

Figure

1. U.S. Breastfeeding Rates of Initiation (in-hospital) and
Breastfeeding Duration (6 month) From 1970 to 20025
2. U.S. Breastfeeding Rates of Initiation (in-hospital) For European-
American and African-American and Breastfeeding Mothers
From 1990 to 2002.....5
3. International Code of Marketing Breast Milk
Substitutes11
4. The Ten Steps to Successful Breastfeeding Implemented by the
Baby Friendly Hospital Initiative.....17
5. Geographical Sections of Tennessee25

PART I

INTRODUCTION AND LITERATURE REVIEW

1. INTRODUCTION

“Breastfeeding is a key public health measure, alongside immunization and other initiatives, to protect and promote the health of one of the most vulnerable groups of the population- infants and children” (1, p. 5). However, in the past century breastfeeding initiation rates were negatively affected by social and cultural influences, the use of formula and by the medicalization of maternity services (2). Quality of care related to in-hospital breastfeeding has become an important indicator of initiation and continuation of breastfeeding. Hospital and health care provider support has been identified as essential to the success of the breastfeeding mother (1).

In recent decades, health disparities for breastfeeding have been evident (3-4). There are many barriers to breastfeeding for all women. However, African American mothers seem to be especially at risk to not initiate breastfeeding (5-6). These health disparities are of particular concern because breastfeeding has long been associated with multiple health benefits to both the infant and the mother. Further, breastfeeding benefits the family in economic and social areas that are important to the development of a healthy infant (5).

Breastfeeding policy in the United States has been slow to address the lack of support for the breastfeeding mother, especially in the hospital setting. Formula is heavily marketed in most health care facilities caring for mothers and their newborns, even though the U.S. has accepted the International Code of Marketing Breast Milk Substitutes (2). In recent years, national programs such as the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) began to support and promote breastfeeding (7-8). However, low initiation rates and health disparities still

exist (3-4). Further, national breastfeeding initiation goals set by Healthy People 2010 have been reached by only a few states in the United States (9).

The *Ten Steps to Successful Breastfeeding* as outlined in the Friendly Hospital Initiative by the World Health Organization (WHO) and the United Nations International Children's Emergency Fund (UNICEF) has been identified as a critical component of supporting the breastfeeding mother in the hospital setting (10). However, The Baby Friendly Hospital Initiative (BFHI) and Baby Friendly USA have not been widely accepted by U.S. hospitals. Only three facilities in the State of Tennessee have implemented the *Ten Steps to Successful Breastfeeding* and have been designated "Baby Friendly" (11).

The purpose of this study was to identify the level of compliance to the Baby Friendly Hospital Initiative in hospitals in Tennessee, to identify differences in infant feeding policies and practices based on hospital ownership type and to identify if breastfeeding disparities are related to the infant feeding policies and practices of those hospitals.

2. LITERATURE REVIEW

Health Disparities in Breastfeeding

Although breastfeeding rates in the United States have increased since the 1970s, the upward trend has not occurred at the same rate in all population groups. In 2002 in-hospital breastfeeding was up to 70.1% for all racial and ethnic groups. In the same year 33.2% of all mothers reported breastfeeding at six months (Figure 1) (4). National breastfeeding data became available via the National Immunization Survey (NIS) in 2003. These data indicate that 70.9 % of infants were ever breastfed during 2002 (3).

However, Ross data indicate 73.4% of European-American women compared to 53.9% of African-American women in the United States breastfed their infant in the early post-partum period (Figure 2) (4). These data correspond to the NIS data which indicate 73.8% of European-American mothers compared to 51.1% of African-American mothers initiated breastfeeding in-hospital (3). At 6 months post-partum breast-feeding decreased to 36.0% among European-American and 19.2 % among African-American women (Figure 2) (4). Again, NIS data are similar to the Ross data, which indicate 6 month post-partum breastfeeding rates of 38.6% for European-American mothers and 21.9% for African-American women (2).

Studies indicate that the mothers who are most likely to breastfeed their babies are European-American, well educated, married, or older women, generally with a high family income. Other studies demonstrate that African-American individuals with low-income, and mothers under 30 years of age are less likely to breastfeed (5-6;12). Also, women who decide to breastfeed during preconception and prenatal periods were more likely to do so after delivery (12-14).

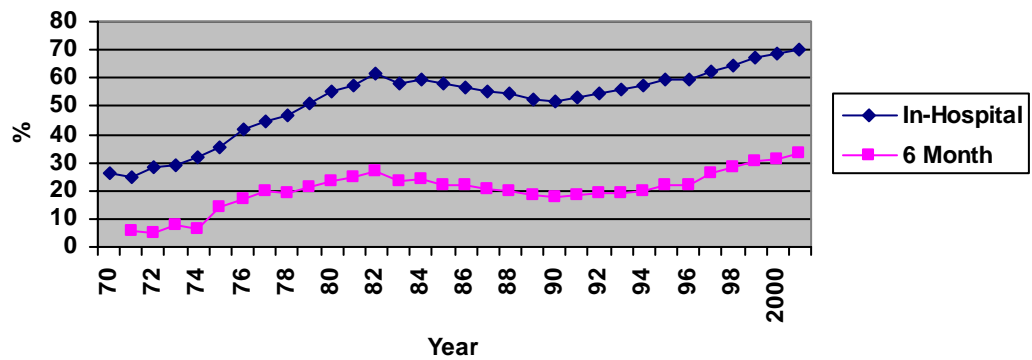


Figure 1: U.S. Breastfeeding Rates of Initiation (in-hospital) and Breastfeeding Duration (6-month) From 1970 to 2002 (4).

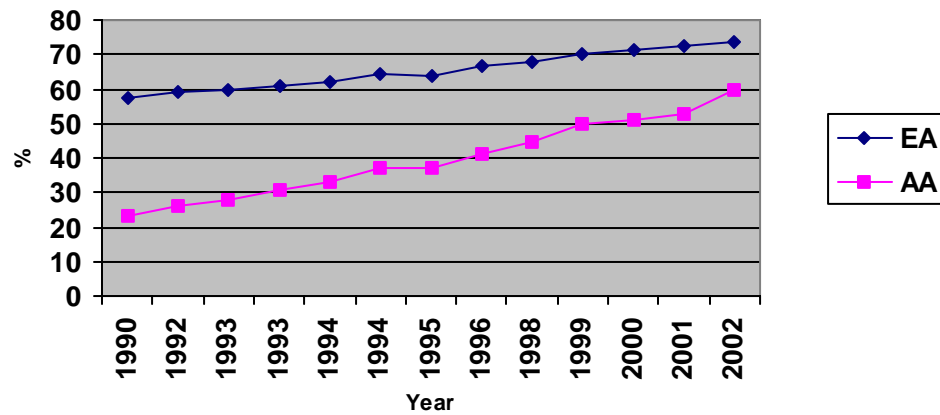


Figure 2: U.S. Breastfeeding Rates of Initiation (in-hospital) for European-American (EA) and African-American (AA) Mothers From 1990 to 2002 (4).

A study by Kogan, et al (14) reported racial disparities in prenatal advice for African-American women. The study found that after controlling for drinking status, 76.8% of European-American women reported receiving health care provider advice to discontinue drinking during pregnancy, while only 69.7% of African-American women received that advice (14). Advice promoting breastfeeding was the least reported among all groups. The study also found that women of higher socio-economic status, those who were European-American, those who were married and those with more than 12 years of education were more likely to receive breastfeeding advice. Breastfeeding advice was least frequently offered to low income women. The study also showed a significant racial disparity was evident for advice for alcohol and smoking. Breastfeeding advice was very close to reaching significance, but was skewed toward more European-American women receiving advice than African-American women (14).

Barriers to Breastfeeding

There are many factors that may influence the mother's choice of feeding method for her infant. The choice to breastfeed can be a difficult decision, especially for certain population groups. Barriers to breastfeeding, such as social, psychological and clinical factors, are often difficult for mothers to overcome (1;5;14). The mother's age and the mother's education level are strong indicators for the mother's feeding choice (1;5). The mother's attitude towards her breasts and artificial feeding are important factors, as are the attitudes of her partner, family and friends (1;5).

Cultural norms related to breastfeeding are a great influence on the mother's decision to breastfeed (13). The Surgeon General's report, *Health and Human Services Blue Print for Action on Breastfeeding* (5), describes important cultural and societal

changes that are necessary to make breastfeeding the most accepted infant feeding method. “Social support, particularly peer support, is critical for special populations with lower breastfeeding rates ” (5, p. 16). For this reason, the Surgeon General’s *Blueprint for Action* states that health education programs in schools should include information about the health benefits to related breastfeeding. The report states that educational programs and public health social marketing should be geared not only to mothers, but also to the fathers and other family members that have such a great influence on the such decisions (5).

Several factors have been identified as barriers to breastfeeding specifically for African-American women. Breastfeeding is not viewed positively among African-American women (5;8). Furthermore, it has been noted that African-American women have limited access to information and education about breastfeeding (5-6;8-9). This group is less likely to have breastfed in the hospital, to continue breastfeeding in the early days in the home setting, and to maintain breastfeeding for an extended period (8-9). This group is more likely to make the feeding decision late in the pregnancy (8-9), to supplement with formula in the hospital and to stop breastfeeding by 1 month postpartum (8-9).

The health care system can make a significant difference in the breastfeeding experience of mothers (15). For many, hospitals and maternity centers can be the source of guidance during the critical breastfeeding initiation period and the source for follow-up care after discharge. With their access to the mother in the perinatal period, hospital staff have immense influence over breastfeeding success (5;13). Hospital policies can promote and model optimal breastfeeding practices or they can undermine the

breastfeeding decision (15). Well-trained health care staff can be very beneficial to the promotion and support of breastfeeding. However, unknowledgeable, misinformed, or unsupportive health care providers can be detrimental to a mother's attempts to breastfeed (5;15). For this reason, specialized staff, such as lactation consultants, should be available to assist the mother with problems or questions in the critical few weeks postpartum. Other staff should have a basic knowledge of breastfeeding and be supportive of the mother's decision (5;15).

Benefits of Breast Milk

Research brought breastfeeding to the forefront as a public health issue by documenting the compelling advantages of breast milk. In 1997 the American Academy of Pediatrics (AAP) stated that infants, mothers, families, and society can benefit from breastfeeding and the use of human milk (16). The AAP and others also acknowledge human breast milk as the optimal method of feeding human infants. Human milk has been described as being a species-specific feeding method that contains multiple factors that are active against disease and promote overall health and development (2;16).

Breastfed infants, as compared to formula fed infants, produce immune responses to many infectious diseases secondary to the transmission of antibodies from the breast milk (4-5). Research of middle-class populations in developed countries has shown that the breastfed infant has decreased incidence and severity of acute illnesses, such as diarrhea (16-19), lower respiratory infection (18), otitis media (20-21), pneumonia (22), urinary tract infections (23), and necrotizing enterocolitis (24-25). Breastfeeding has been shown to have protective mechanisms against sudden infant death syndrome (26-

27), insulin dependant diabetes (28-29), non-insulin dependant diabetes (30), Crohn's disease (31-33), ulcerative colitis (33), childhood cancers (34-36), allergic diseases (37-38), and other chronic digestive diseases (39-41).

Breast milk also may provide advantages in cognitive development. It contains long-chain fatty acids that are critical to brain growth and development (42-44).

Research has linked these components of breast milk to enhanced early visual acuity and cognitive function in the breastfed when compared to the non-breast fed infant (42-43; 45). The cognitive advantages of breast milk have proven to be substantial enough to induce formula companies to add these long-chain fatty acids to their formulas (46). However, the effectiveness of these fatty acids when added to formula is still questionable from recent research (47-48).

Breastfeeding provides health benefits to the mother as well. It stimulates the release of the hormone oxytocin which stimulates uterine contractions, helping to expel the placenta, to minimize post partum bleeding and to induce a more rapid uterine involution (49). Breastfeeding can help delay normal ovarian cycles and suppress normal fertility in many women. Many mothers that breastfeed for up to two years or more have decreased risk for breast and ovarian cancers (50-52). Mothers also experience psychological benefits, such as increased self-confidence and increased bonding with their child (53-54).

The *Blueprint for Action on Breastfeeding* acknowledges the economic and social benefits from breastfeeding for the family, the health care system, the employer, and the nation (5). Families who breastfeed their children can experience substantial savings of several hundred dollars when compared to the cost of feeding formula (5). Breastfed

infants typically require fewer sick care visits, prescriptions, and hospitalizations, especially if breastfed exclusively or almost exclusively. Research has indicated the total medical care expenditures for breastfed infants are about 20% lower than for formula-fed infants (5).

Breastfeeding Policy in the United States

For more than 30 years methods of infant feeding have been an issue of controversy. In the 1970's a boycott of Nestlé formula products was instituted due to the company's questionable marketing tactics in developing countries (55). With this boycott came an increased public health focus on breastfeeding policy. The WHO and UNICEF organized an international meeting on infant and child nutrition examining the importance of public awareness of breastfeeding. At this meeting it was proposed that an international code be developed to control inappropriate marketing practices of infant formula and other products that may substitute for breast milk (55). In May 1981 the World Health Assembly voted to adopt the new code, the International Code of Marketing Breast Milk Substitutes (Figure 3) (56). In a 118-1 vote the assembly approved the adoption of the code. The lone vote of "no" was from the United States, as a direct order of the Reagan Administration (55).

The fact the Reagan Administration did not support the International Code of Marketing of Breast Milk Substitutes started a political uproar (50). Objections were made by the U.S. Department of Health and Human Services (DHHS), Congress strongly voiced concerns, officials resigned from the World Health Assembly, and thousands of letters were sent to the White House in protest. However, opinions were divided during Congressional hearings investigating if formula companies had influenced the Reagan

-
1. No advertising of breast milk substitutes to families.
 2. No free samples or supplies in the health care system.
 3. No promotion of products through health care facilities, including no free or low-cost formula.
 4. No contact between marketing personnel and mothers.
 5. No gifts or personal samples to health workers.
 6. No words or pictures idealizing artificial feeding, including pictures of infants, on the labels of the product.
 7. Information to health workers should be scientific and factual only.
 8. All information on artificial feeding, including labels, should explain the benefits of breastfeeding and the costs and hazards associated with artificial feeding.
 9. Unsuitable products should not be promoted for babies.
 10. All products should be of a high quality and take account of the climate and storage conditions of the country where they are used.
-

Figure 3: International Code of Marketing Breast-Milk Substitutes (56).

Administration's vote (55). While the Ambulatory Pediatrics Association supported the Code, the American Academy of Pediatrics' Committee on Nutrition did not and cited the lack of substantial, sound, and scientific data that advertised formula company policies resulted in decreased breastfeeding rates and increased infant mortality (55).

The United States changed its position to support the International Code of Marketing Breast Milk Substitutes. In 1994 President Clinton reversed the Reagan administration's vote and signed an amendment supporting the code (57). However, this reversal of opinion has created only marginal changes for breastfeeding (55). In 1997 around 16 countries were in full compliance with the Code by adopting and enforcing laws outlined in the Code. Other countries met partial compliance by adopting some measures in support of the Code. The United States is one of many industrialized countries that have not met even partial compliance to the International Code of Marketing Breast Milk Substitutes (55).

President Clinton also signed and accepted the Innocenti Declaration, which was developed to protect, promote, and support breastfeeding through four goals identified for all governments to achieve by 1995 (55;58). These goals are: 1) appoint a national breastfeeding coordinator and establish a national breastfeeding committee; 2) ensure that hospitals and birthing centers practice the *Ten Steps to Successful Breastfeeding*; 3) take action to support the International Code of Marketing Breast Milk Substitutes; and 4) enact and enforce imaginative legislation protecting the breastfeeding rights of working women (58).

National initiatives have begun to support breastfeeding and influence political leaders and professional organizations. Healthy People 2000 led a national effort by

joining governmental agencies and voluntary professional organizations to improve the health of all Americans through the establishment and evaluation of health objectives (59). According to Healthy People 2000 national breastfeeding objectives, 75% of newborns should be breastfed in the hospital and 50% should continue to be breastfed for at least 6 months. However, these objectives for breastfeeding were not met. In 1998 only 64% of all mothers breastfed in the early post partum period and only 29% breastfed at 6 months postpartum (60).

Healthy People 2010 is a continuation of Healthy People 2000, but with a focus on two major goals: 1) Increasing quality and years of healthy life, and 2) Eliminating health disparities (9). The Surgeon General's report, *Health and Human Services Blueprint for Action on Breastfeeding* identified concerns related to the Healthy People 2000 breastfeeding goals by stating, "Racial and ethnic disparities in breastfeeding are wide despite substantial increases in breastfeeding rates in the last decade" (5, p.8). These disparities were seen in African-American and Hispanic mothers, low-income Asian and Pacific Islander, and Native American populations (5;60). In Healthy People 2010 the previous objective of 75% breastfeeding initiation and 50% breastfeeding to 6 months were continued with an additional objective added for 25% of mothers to breastfeed their babies through the end of one year (5).

Other governmental agency support of breastfeeding had a positive effect on breastfeeding rates. The Supplemental Nutrition Program for Women, Infants, and Children (WIC) became instrumental in promoting breastfeeding, especially to low income mothers (8). The WIC Reauthorization Act of 1998 mandated activities to promote breastfeeding for pregnant and lactating mothers attending WIC clinics (7-8).

Evaluations of several state WIC programs demonstrated that this intervention increased breastfeeding initiation and duration rates, while having a positive influence on women's attitudes and knowledge about the benefits of breastfeeding (7).

In 1984 the *U.S. Surgeon General's Workshop on Breastfeeding* brought together experts in the field of human milk and lactation. Breastfeeding was identified as a public health priority (61). The *Workshop* highlighted critical areas of concern for breastfeeding, one of which was the need to strengthen the support of breastfeeding in the health care system. Recommendations were made to improve professional education in human lactation and breastfeeding (61). The previously discussed Surgeon General's report, *Health and Human Services Blueprint for Action on Breastfeeding*, also has been instrumental in gaining political, medical, and social support for breastfeeding (5).

Governmental officials increased their support of families. The *Family Medical Leave Act of 1993* was implemented to assist individuals and families in need of time away from work due to family or medical reasons (62). The legislation provides the employee the right to 12 weeks of unpaid leave and job reinstatement upon return to work. The birth of a child is a qualified event under the Act and gives mothers and fathers more time with their new infants. However, many employees, such as those in small workplaces, part-time workers or those lacking a year's service are not covered under the *Act* (62). Furthermore, Healthy People 2000 made numerous recommendations for employers to better support the breastfeeding mother, including extended maternity leave, part-time employment, facilities for pumping milk or breastfeeding, and on-site child care (59). However, research has shown a lack of employer support and the federal

welfare to work reform programs have done little to improve either breastfeeding rates or duration (63-64).

During the past 3 decades, the only available data on breastfeeding rates have come from the Ross Formula Companies *Mothers Survey*. Using these data has been problematic due to a possible conflict of interest with a formula company conducting research related to breastfeeding. Further, the Ross *Mothers Survey* has a relatively low response rate of around 50%, which limits the ability to generalize estimates across populations. (4). The *National Immunization Survey* conducted by the CDC, now includes relevant breastfeeding questions and can be used to better assess the Healthy People 2010 objectives for breastfeeding (3).

Professional organizations have been gaining momentum in the support of breastfeeding. The AAP has made the most notable change, given the Academy's past position during the Reagan Administration (55). In recent years, the AAP has been one of breastfeeding's strongest advocates, by redefining its policy statement on breastfeeding in December 1997 (16). The AAP's Task Force on Breastfeeding also created the *Ten Steps to Support Parents' Choice to Breastfeed Their Baby*, which is a breastfeeding promotional initiative, geared to assist the pediatric office support breastfeeding (65). In 2000 the AAP formed a Provisional Section of Breastfeeding and later created The Academy of Breastfeeding Medicine to further support breastfeeding (16). Other groups, such as the American Dietetic Association (66) and the American Academy of Family Physicians (67) developed policy statements that encourage the support of breastfeeding.

Baby Friendly Hospital Initiative

Since the 1970's the WHO and UNICEF have been instrumental in the development of initiatives to increase the numbers of women initiating and continuing to breastfeed (1). The Baby Friendly Hospital Initiative (BFHI) was implemented in 1991 as a strategy to improve breastfeeding rates around the world. The initiative expanded the WHO/UNICEF policy statement on the special role of maternity services to protect, promote, and support breastfeeding in hospitals and birth centers (10). The cornerstone of the initiative was the *Ten Steps to Successful Breastfeeding*, which are evidence-based guidelines developed to assist maternity facilities to provide ample support to mothers (68).

The *Ten Steps to Successful Breastfeeding*, defined specific, essential practices within hospitals and birthing centers facilitating successful breastfeeding (Figure 4) (68). The *Ten Steps* acted as an evaluation mechanism for facilities attempting to comply with the WHO/UNICEF guidelines. Hospitals or birthing centers could receive the *Baby-Friendly* designation if they showed compliance with the *Ten Steps*. As of March 2005 there were more than 18,000 *Baby-Friendly* sites worldwide; only 46 of these were located in the United States (11).

Baby Friendly USA

The history of the Baby Friendly Hospital Initiative in the United States includes many controversies and changes (70). In 1991 UNICEF approached the U.S. officials to inquire about implementing the BFHI. Although other countries had implemented the BFHI through a governmental agency, the United States opted to award a contract to a nongovernmental agency to implement the program (70). The Healthy Mother, Healthy

-
1. Have a written breastfeeding policy that is routinely communicated to all health care staff.
 2. Train all health care staff in skills necessary to implement this policy.
 3. Inform all pregnant women about the benefits and management of breastfeeding.
 4. Help mothers initiate breastfeeding within 1 hour of birth.
 5. Show mothers how to breastfeed and maintain lactation, even when separated from their infants.
 6. Give newborns no food or drink other than breastmilk, unless medically indicated.
 7. Practice rooming-in – allow mothers and infants to remain together – 24 hours a day.
 8. Encourage breastfeeding on demand.
 9. Give no artificial teats or pacifiers to breastfeeding infants.
 10. Foster the establishment of breastfeeding support groups, and refer mothers to them at discharge from the hospital.
-

Figure 4. The Ten Steps to Successful Breastfeeding Implemented by the Baby Friendly Hospital Initiative (10).

Baby Coalition was awarded the contract in 1993 and established an Expert Work Group to study the feasibility of the BFHI in the United States (70). In 1994, the Expert Work Group released a controversial report, which suggested revising the Ten Steps of the BFHI and changing the name of the initiative. The report also suggested hospitals should be allowed to assess themselves and be given no limitations on the availability and promotion of infant formulas in hospitals and birth centers (70). The final report was strongly criticized by several of the Work Group's members who wrote their own minority opinion statement regarding the report. Several organizations, including the AAP, refused to endorse the Work Group's final report. Some questioned the influence of the formula industry on the group's recommendations (70).

Later, Wellstart International, which was involved in the original development of the international BFHI concept, was asked to develop the on-site evaluation tool and external assessment criteria to be utilized in the United States (70). The recommendation was made that the original BFHI *Ten Steps* guidelines should be used with one exception: *Step 4*, recommending initiation of breastfeeding within one-half hour of life, would be changed to state within one hour of life (70). In 1997 the Baby-Friendly USA program chose to use the original UNICEF guidelines. Hospital support of the BFHI is still at a minimum in the U.S. when compared to the other industrialized countries, even though research actively demonstrates the initiative's effectiveness (1;70).

“Becoming *Baby-Friendly* entails strategic planning, implementing and maintaining change throughout an entire institution, staff education at all levels, cooperation between many departments, the support of senior staff members, and expense” (70, p.679). Another barrier to the BFHI is the difficulty in persuading

hospitals to pay fair market value for the same infant formulas they have received for free in the past. Also, the short-term expenses of training staff and developing policies to bring about change are often difficult to justify to hospital administration (71). However, the long-term investment in breastfeeding can bring substantial cost savings to families, the hospital, and society (5;70).

The BFHI has been used as an effective measure of the quality of care given to breastfeeding mothers in the hospital and has been recommended to be integrated with facility Quality Improvement Processes (72). However, because few hospitals participate in the BFHI in the United States, little is known about the true quality of care regarding breastfeeding in hospitals (73). This is of special concern due to significant health disparities experienced by specific socioeconomic and racial/ethnic groups (5).

Baby Friendly Hospital Initiative Research

When compliance with the BFHI *Ten Steps* is achieved, the results are dramatic. Boston Medical Center became the 22nd Baby-Friendly hospital in the nation and the first in Massachusetts after almost 3 years of hospital-wide efforts to create breastfeeding supportive policies (70). Researchers recently published about the center's endeavors to becoming Baby-Friendly and effect on breastfeeding rates (70). The study indicated successful implementation of Baby-Friendly hospital policies is associated with a significant increase in initiation rates (70). The breastfeeding initiation rates, defined as an infant receiving *any* breast milk while in the hospital after birth, increased from 58% in 1995, to 78% in 1998, to 86% in 1999, ($p < 0.001$) (70). Exclusive breastfeeding rates increased from 6% in 1995, to 28% in 1998, to 34% in 1999 ($p < 0.001$). A positive change in US-born African-Americans initiation rates increased from 34% in 1995, to

64% in 1998, and on to 74% in 1999 ($p = 0.001$) (70). These findings support research indicating traditional hospital policies and practices may be detrimental to breastfeeding success and that the BFHI is effective (61;71-73)

Adherence to the *Ten Steps* of the BFHI, even among facilities without Baby-Friendly designation, has become an important area of research. In 1997 a study was conducted in Missouri on facility adherence to the *Ten Steps* (74). This study revealed that the 76 Missouri hospitals' survey respondents did not indicate high levels of support for the *Ten Steps* as a whole and support of individual *Steps* was inconsistent. *Step 1*, which encourages breastfeeding policy development, was the least supported *Step*. The study acknowledged the need to develop and implement breastfeeding policy to better support the *Ten Steps to Successful Breastfeeding* (74).

A similar study was conducted in 84 Minnesota hospitals regarding their adherence to the *Ten Steps* of the BFHI. Dodgson, et al (75) found poor adherence to the *Ten Steps*, with only 15% of participants reporting adherence to at least 5 of the 10 criteria. The study found differences in implementation of the *Ten Steps* according to demographic variables measured. As in the Missouri study, the existence of institutional policies (*Step 1*) was moderate (75). This study also identified *Step 1* as being an integral factor to indicate adherence to the subsequent *Steps*. Adherence to *Step 6* (no supplements unless medically indicated) was low across the state, which is consistent with other research (74;76). Rooming-in (*Step 7*) was not a regular practice in many of the more rural hospitals. Referrals to breastfeeding support groups (*Step 10*) were also not a regular practice in smaller, rural facilities (75).

A Chicago study (77) evaluated five of the *Ten Steps to Successful Breastfeeding*. In this study 47 staff members were surveyed in 5 inner-city hospitals. In some facilities conflicting information and contradictory advice about breastfeeding were given (77). Many practitioners reported not recommending breastfeeding if the mother or the infant was sick, even when the sickness was not a contraindication for breastfeeding. Outdated practices and lack of sufficient training in infant feeding and lactation management were noted as problems for these facilities (77).

An evaluation of institutional support for breastfeeding among low-income women in New Orleans was conducted (78). This study found the majority of participating facilities had explicit policies for promoting and supporting breastfeeding. Staff training was found to be an area most hospitals implemented well. It was discovered, however, that the execution of breastfeeding policies appeared to be inconsistent, especially for the issues of rooming-in and feeding supplements to breastfeeding babies (78).

A 5-year follow-up study of hospital breastfeeding policies was conducted in Philadelphia (79). This study assessed the area's breastfeeding policies and practices of the *Ten Steps to Successful Breastfeeding* and compared the current adherence levels with 1994 baseline data (80). The study found that most hospitals surveyed were currently implementing at least five of the *Ten Steps*. Thirty-seven percent of responding hospitals were classified as high implementers and 63% were classified as partial implementers of the *Ten Steps* overall (79). The areas found to need the greatest improvements were breastfeeding education of health care professionals and mother, prenatal and post discharge outreach to mothers, and restriction of infant supplementation by hospital staff

(79). The research pertaining to adherence to and implementation of the BFHI *Ten Steps* demonstrates the wide range of implications for breastfeeding public health initiatives. Adherence to the BFHI guidelines varies considerably from state to state and city to city. Karra, et al (77) recommended that all U.S. hospital breastfeeding policies and practices be evaluated.

Baby Friendly Hospital Initiative's Self-Assessment Tool

Hospitals or health facilities that are interested in receiving a Certificate of Intent to Support the Principles of the Global Baby-Friendly Hospital Initiative begin the process by completing an appraisal of the respective facility's current breastfeeding practices in relation to the *Ten Steps to Successful Breastfeeding* (68). The Baby Friendly Initiative's Self-Assessment Tool acts as a survey instrument in the assessment process. The Self-Assessment Tool is to be used by key management and clinical staff in each facility to develop a plan of action based on the results on the self-appraisal (68).

The Baby Friendly Hospital Initiative's Self Assessment Tool utilized by Baby Friendly USA was designed by Wellstart International and was approved by UNICEF as adequately measuring the BFHI Global criteria (68). The Self Appraisal Tool consists of 11 facility demographic questions followed by 48 questions based on the BFHI *Ten Steps to Successful Breastfeeding*. These 48 questions are divided into sets of questions for each of the *Ten Steps*. The question set is preceded by a written definition of each *Step* and each of these questions requires a "yes" or "no" answer (68). Researchers have utilized the *Baby Friendly Self-Assessment Tool* to develop surveys to evaluate hospital breastfeeding policies and practices (71-77).

In the Minnesota research, a survey called the *Newborn Feeding Environment Survey* (NFES) was used to survey 95 Minnesota hospitals with obstetric services (75). This survey was developed and implemented in an earlier unpublished study in North Dakota (76). The instrument was designed to be consistent with the information collected when using the *BFHI Hospital Self-Assessment Tool*. The NFES survey also obtained hospital demographic information regarding Minnesota's survey respondents (75).

The study based in New Orleans did not use the BFHI Self-Assessment Tool as the foundation for its survey, but still utilized concepts from the Ten Steps to Successful Breastfeeding. This survey collected information on breastfeeding policies, staff training, health education, discharge procedures, and demographics of the delivering mother. The questionnaire also allowed respondents to qualitatively provide views on breastfeeding barriers and key elements of successful promotional efforts (78).

Breastfeeding in Tennessee

In the past the only breastfeeding data available have been from the Ross *Mother's Survey* (4). In 2002 the Ross *Mother's Survey* reported that Tennessee ranked 43rd in the nation for in-hospital breastfeeding rates at 61.4 %. Tennessee also ranked 45th in the nation for breastfeeding duration for the first 6 months of life at 23.4% (4).

In response to these low rates, the Tennessee WIC program conducted a survey of current WIC participants in 2001. It investigated current state practices and the status of breastfeeding related to WIC participants. Study participants included pregnant women, postnatal mothers who breastfed, and postnatal mothers who did not breastfeed (81). This study found that 41% of mothers classified as "non-breastfeeding" had actually

attempted to breastfeed early after their child's birth and 81% of these participants attempted to breastfeed in the hospital. However, one-half of these participants breastfed for less than two weeks (81). Attitudes about breastfeeding varied among breastfeeding and non-breastfeeding mothers. Breastfeeding was found to be personally "very important" to 94% of those breastfeeding as compared to 44% of those not breastfeeding. Of those "non-breastfeeding" mothers, 70% had attempted to breastfeed but had stopped due to a variety of reasons (81).

The study also investigated the WIC participant's hospital experiences and initial home experience with breastfeeding. Results showed that non-breastfeeding mothers who had attempted to breastfeed had a 73% greater rate of problems experienced with breastfeeding in the hospital (81). Additionally, there was a 118% greater rate of these infants being given a bottle in the hospital and these mothers experienced a 77% greater rate of breastfeeding difficulty after returning home. Only about 1.5 out of 10 postnatal mothers received WIC telephone support or had a support visit while in the hospital or when first at home (81).

The study's final report concluded with recommendations for strategies to promote breastfeeding among WIC participants (81). One was to encourage hospital policies and practices that encourage breastfeeding success. Another was to identify a resource to provide intervention and personal assistance at the hospital to help the mother prevent or overcome breastfeeding problems (81).

Breastfeeding Research in Tennessee

Tennessee is an ideal setting for research of this type due to the state's location and population variability. The state is located in the Southeastern section of the United

States, which is known to have the lowest breastfeeding rates in the country (3-4).

Previously, no state in the Southeast has been assessed for compliance to the *Ten Steps to Successful Breastfeeding*. Tennessee is naturally divided geographically into three distinct sections: East Tennessee, Middle Tennessee, and West Tennessee (Figure 5). These main areas of Tennessee also differ by climate, agriculture, industry, culture, and people (82).

Demographic variables have been identified as an indicator of hospital policies and practices related to breastfeeding (1;4;75). Tennessee has considerable demographic variation across the state. Tennessee maintains a combination of metropolitan and rural areas. In 2000 36.4% of Tennessee's population lived in rural areas (83). Dodgson, et al in their Minnesota study observed differences in the level of adherence to some of the individual steps of the BFHI *Ten Steps* in rural versus urban facilities. Though the comparison of urban and rural facilities was not the purpose of the study, the researchers described more rural areas with smaller facilities were at greater need for additional support and education interventions than were larger facilities (75).



Figure 5: Geographical Sections of Tennessee (82).

The state of Tennessee had a population of 5,740,021 as of 2001. Tennessee had a birth rate of 14 per 1000 live births in 2000 (84). In 2000 the majority of the population in Tennessee was European-American (80.2%). African-American represented 16.4% of the population. The population in Tennessee in 2000 was comprised of 2.2% Hispanic or Latinos, 1.0% Asian and 0.3% Native American (84).

East Tennessee was comprised mainly of European-Americans (85). The highest percentage of African-Americans in the eastern section of the state lived in the metropolitan areas of Hamilton and Knox, 20.1% and 8.6% , respectively.

The population of Hispanics or Latinos in East Tennessee did not exceed 2.1% (85). Middle Tennessee was more ethnically diverse than East Tennessee. The Davidson Metropolitan area was 25.9% African-American and 4.6% Hispanic or Latino. Other Middle Tennessee regions were 8.5 % African-American and 2.4% Hispanic or Latino. West Tennessee was the most ethnically diverse area of the state with 12.2-22.4% of the population being African-American (85). The African-American populations in metropolitan areas of Shelby and Madison Counties were 48.6% and 32.5% respectively. This area was comprised of 2.6% individuals of the Hispanic or Latino population (85).

Tennessee also varies in population characteristics of education and subsequent economic status. In 2000 24.1% of Tennessee residents over 25 years old did not graduate from high school. Of persons over 18 years of age, 19.6% had a Bachelors degree or higher. The median household income for the year 2000 in Tennessee was \$36,360 (86). In the state 13.5% of individuals lived in poverty and 18% of children lived in poverty (87). Around 12.5% of families in Tennessee were headed by a female and of this group 29.5% were at or below poverty guidelines (88).

Medicaid coverage in Tennessee, known as TennCare, covered around 25% of the State's population (89). In 2000 of the 1,532,599 Medicaid enrollees, 57.8% were female. For the same year 47% of all births in Tennessee were covered by TennCare (89). The birth rate for TennCare enrollees was considerably higher than for non-enrollees. Infant mortality rates during the first year of life were higher for TennCare enrollees than non-enrollees during 2000 (90).

Hospital Ownership

Hospital ownership, specifically designations of non-profit, for-profit, and government, has been shown to have a bearing on quality of care issues within hospitals. Hartz, et al (91), and Mark (92) concluded that for-profit hospitals offer lower quality of care overall. For-profit hospitals have been identified in the research as having higher costs and providing less charitable care when compared to non-profits and government facilities. Further, Kessler and McClellan (93) identify specific issues making for-profit hospitals less desirable from a patient care perspective. They speculated that for-profit hospitals may be inclined to take advantage of patients by providing fewer services than promised or by providing more costly services than would be desired by a well-informed paying patient. In contrast, government and non-profit hospitals have less incentive or ability to provide fewer services to increase profit margins (93). Non-profits may provide extra-governmental services to satisfy residual demand for indigent care, thus non-profits often supplement needs where government facilities are not available. Research has identified concerns for differences in quality of care for specific disease states, such as acute myocardial infarctions. When comparing hospital ownership to disease states, it

was found that for-profit and government hospitals had a higher incidence of adverse outcomes than non-profits (94).

In the United States, 22% of hospitals were funded by state or local governments; with non-profits representing 61% of hospitals and for-profits comprising 16% of facilities. Tennessee was close to the national percentage of government hospitals at 20%. Fifty percent of hospitals were non-profit, which was lower than the national percentage. There was a substantially greater percentage of for-profit hospitals in Tennessee as compared to the U.S. at 29% (95). Variations in quality of care related to breastfeeding by hospital ownership type may have indications for breastfeeding mothers or those that are undecided on feeding type when entering the hospital.

Research Questions

Research has demonstrated that breastfeeding support during the hospital stay postpartum is critical to successful breastfeeding initiation (1;5;53;96). No research was available to describe the differences in breastfeeding practices of hospitals based on the characteristics of the hospital and its patient population. Many potential causes have been identified for the health disparities observed in breastfeeding for African-American women. However the adequacies of hospital infant feeding policies and practices have not been evaluated based on the population served (5-7). Thus, the purpose of this study was to identify:

- the level of compliance to the *Ten Steps to Successful Breastfeeding* in hospitals in Tennessee;
- the difference by hospital ownership type in Tennessee for compliance to the *Ten Steps to Successful Breastfeeding*;

- the relationship between the hospital maternal patient population and compliance to the *Ten Steps to Successful Breastfeeding*;
- the relationship between hospital ownership type and hospital maternal patient population;
- the difference by hospital ownership type and compliance to *the Ten Steps to Successful Breastfeeding* after controlling for differences in patient population.

REFERENCES

1. Health Technology Assessment NHS R&D HTA Programme. *A systematic review to evaluate the effectiveness of interventions to promote the initiation of breastfeeding*. United Kingdom. 2000.
2. Wright AL, Schanler RJ. The resurgence of breastfeeding at the end of the second millennium. *J Nutr*. 2001;131:421S-425S.
3. Breastfeeding Practices: Results from the 2003 National Immunization Survey. Center for Disease Control and Prevention. Available at: http://www.cdc.gov/breastfeeding/NIS_data/. Accessed April 16, 2005.
4. Ross Products Division Abbott Laboratories. *Mothers Survey*. Columbus, Ohio. 2003.
5. U.S. Department of Health and Human Services, Office of Women's Health. *HHS Blueprint for Action on Breastfeeding*. Washington, DC: US Government Printing Office; 2000.
6. Timbo B, Altekruze S, Headrick M, Klontz K. Breastfeeding among black mothers: evidence supporting the need for prenatal intervention. *JSPN*. 1996; 1(1):35-38.
7. Caulfield LE, Gross SM, Bentley ME, Bronner Y, Kessler L, Jensen J, Weathers B, Paige DM. WIC-based interventions to promote breastfeeding among African-American women in Baltimore: Effects on breastfeeding initiation and continuation. *J Hum Lact*. 1998; 14(1):15-22.

8. United States Department of Agriculture. WIC Reauthorization Act. Available at: <http://www.ers.usda.gov/publications/fanrr27/fanrr27c.pdf>. Accessed April 2, 2003.
9. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: US Government Printing Office; 2000.
10. World Health Organization and United Nations Children's Fund. *Protecting, Promotion and Supporting Breastfeeding: Special Role of Maternity Services*. Geneva, WHO; 1989.
11. Baby Friendly USA. Available at: www.aboutus.com/a100/bfusa. Accessed April 20, 2005.
12. Joffe A, Radius SM. Breast versus bottle: Correlates of adolescent mothers' infant-feeding practices. *Pediatrics*. 1987;79:689-695.
13. Rousseau EH, Lescop JN, Fontaine S, Lambert J, Roy CC. Influence of cultural and environmental factors on breastfeeding. *Canadian Medical Association Journal*. 1982;127:701-704.
14. Kogan MD, Kotelchuck M, Alexander GR, Johnson WE. Racial disparities in reported prenatal care advice from health care providers. *Am J Public Health*. 1994;84(1):82-88.
15. Powers NG, Naylor AJ, Wester RA. Hospital policies: Crucial to breastfeeding success. *Seminars in Perinatology*. 1994;18(6):517-524.
16. Work Group on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics*. 1997;100:6-1035.

17. Hanson LA, Korotkova M, Haversen L, Mattsby-Baltzer I, Hahn-Zoric M, Silfverdal SA, Strandvik B, Telemo E. Breast-feeding, a complex support system for the offspring. *Pediatr Int*. 2002;44(4):347-352.
18. Arifeen S, Black RE, Antelman G, Baqui A, Caulfield L, Becker S. Exclusive breastfeeding reduces acute respiratory infection and diarrhea deaths among infants in Dhaka slums. *Pediatrics*. 2001;108(4):E67.
19. Clemens J, Elyazeed RA, Rao M, Savarino S, Morsy BZ, Kim Y, Wierzba T, Naficy A, Lee YJ. Early initiation of breastfeeding and the risk of infant diarrhea in rural Egypt. *Pediatrics*. 1999;104(1):E3.
20. Duffy LC, Faden H, Wasielewski R, Wolf J, Krystofik D. Exclusive breastfeeding protects against bacterial colonization and day care exposure to otitis media. *Pediatrics*. 1997;100:E4.
21. Duncan B, Ey J, Holberg CJ. Exclusive breast-feeding for at least 4 months protects against otitis media. *Pediatrics*. 1993;91:867-872.
22. Victora CG, Kirkwood BR, Ashworth A, Black RE, Rogers S, Sazawal S, Campbell H, Gove S. Potential interventions for the prevention of childhood pneumonia in developing countries: improving nutrition. *Am J Clin Nutr*. 1999;70(3):309-320.
23. Riccabona M. Urinary tract infections in children. *Curr Opin Urol*. 2003;13(1):59-62.
24. Covert RF. Prior enteral nutrition with human milk protects against intestinal perforation in infants who develop necrotizing enterocolitis. *Pediatr Res*. 1995;37:305.

25. Kosloske AM. Breast milk decreases the risk of neonatal necrotizing enterocolitis. *Adv Nutr Res.* 2001;10:123-137.
26. Alm B, Wennergren G, Norvenius SG, Skjaerven R, Lagercrantz H, Helweg-Larsen K, Irgens LM. Breast feeding and the sudden infant death syndrome in Scandinavia, 1992-95. *Arch Dis Child.* 2002; 86(6):400-402.
27. Ford RP, Taylor BJ, Mitchell EA, Enright SA, Stewart AW, Becroft DM, Scragg R, Hassall IB, Barry DM, Allen EM. Breastfeeding and the risk of sudden infant death syndrome. *Int J Epidemiol.* 1993; 22:885-890.
28. Monetini L, Cavallo MG, Stefanini L, Ferrazzoli F, Bizzarri C, Marietti G, Curro, V, Cervoni M, Pozzilli P. Bovine beta-casein antibodies in breast- and bottle-fed infants: their relevance in Type 1 diabetes. *Diabetes Metab Res. Rev* 2001; 17(1):51-54
29. Gerstein HC. Cow's milk exposure and type 1 diabetes mellitus. *Diabetes Care* 1994;14:13-19.
30. Young TK, Martens PJ, Taback SP, Sellers EA, Dean HJ, Cheang M, Flett B. Type 2 diabetes mellitus in children: prenatal and early infancy risk factors among native Canadians. *Arch Pediatr Adolesc Med.* 2002;156(7):651-655.
31. Rodriguez-Palmero M, Koletzko B, Kunz C, Jensen R. Nutritional and biochemical properties of human milk: Lipids, micronutrients, and bioactive factors. *Clin Perinatol.* 1999;26(2):335-359.
32. Koletzko S, Sherman P, Corey M, Griffiths A, Smith C. Role of infant feeding practices in development of Crohn's disease in childhood. *Br Med J.* 1989; 298:1617-1618.

33. Rigas A, Rigas B, Glassman M, Yen YY, Lan SJ, Petridou E, Hsieh CC, Trichopoulos D. Breast-feeding and maternal smoking in the etiology of Crohn's disease and ulcerative colitis in childhood. *Ann Epidemiol.* 1993;3:387-392.
34. Davis MK, Savitz DA, Graubard BI. Infant feeding and childhood cancer. *Lancet.* 1988;2:365-368.
35. Shu XO, Linet MS, Steinbuch M, Wen WQ, Buckley JD, Neglia JP, Potter JD, Reaman GH, Robison LL. Breast-feeding and risk of childhood acute leukemia. *J Natl Cancer Inst.* 1999;91(20):1765-1772.
36. Smulevich VB, Solionova LG, Belyakova SV. Parental occupation and other factors and cancer risk in children: I. Study methodology and non-occupational factors. *Int J Cancer.* 1999;83(6):712-717.
37. Kull I, Wickman M, Lilja G, Nordvall SL, Pershagen G. Breast feeding and allergic diseases in infants-a prospective birth cohort study. *Arch Dis Child.* 2002; 87(6):478-481.
38. Lucas A, Brooke OG, Morley R, Cole TJ, Bamford MF. Early diet of preterm infants and development of allergic or atopic disease: randomised prospective study. *Br Med J.* 1990;300:837-840.
39. Persson LA, Ivarsson A, Hernell O. Breast-feeding protects against celiac disease in childhood-epidemiological evidence. *Adv Exp Med Biol.* 2002;503:115-123.
40. Ivarsson A, Hernell O, Stenlund H, Persson LA. Breast-feeding protects against celiac disease. *Am J Clin Nutr.* 2002;75(5):914-921.

41. Udall JN, Dixon M, Newman AP, Wright JA, James B, Bloch KJ. Liver disease in a 1-antitrypsin deficiency: retrospective analysis of the influence of early breast- vs bottle-feeding. *JAMA*. 1985;253:2679-2682.
42. Richards M, Hardy R, Wadsworth ME. Long-term effects of breast-feeding in a national birth cohort: educational attainment and midlife cognitive function. *Public Health Nutr*. 2002;5(5):631-635.
43. Helland IB, Smith L, Saarem K, Saugstad OD, Drevon CA. Maternal supplementation with very-long-chain n-3 fatty acids during pregnancy and lactation augments children's IQ at 4 years of age. *Pediatrics*. 2003;111(1):E39-44.
44. Rao MR, Hediger ML, Levine RJ, Naficy AB, Vik T. Effect of breastfeeding on cognitive development of infants born small for gestational age. *Acta Paediatr*. 2002;91(3):267-273.
45. Hamosh M, Salem N. Long-chain polyunsaturated fatty acids. *Biol Neonate*. 1998;74:106-120.
46. Richards M, Hardy R, Wadsworth ME. Infant nutrition and cognitive development in the first offspring of a national UK birth cohort. *Dev Med Child Neurol*. 1998;40:163-167.
47. National Alliance for Breastfeeding Advocacy. New Infant Formulas with DHA and ARA. Available at: <http://www.naba-breastfeeding.org>. Accessed January 2, 2003.

48. New Nutrition. *Infant formula supplemented with fatty acids to get U.S. launch.*
Available at: www.newnutrition.com/newspage/180102f.htm. Accessed January 2, 2003.
49. Matthiesen AS, Ransjo-Arvidson AB, Nissen E, Uvnas-Moberg K. Postpartum maternal oxytocin release by newborns: effects of infant hand massage and sucking. *Birth*. 2001;28(1):20-21.
50. Collaborative Group on Hormonal Factors in Breast Cancer. Breast cancer and breastfeeding: collaborative reanalysis of individual data from 47 epidemiological studies in 30 countries, including 50302 women with breast cancer and 96973 women without the disease. *Lancet*. 2002;360(9328):187-195.
51. Helewa M, Levesque P, Provencher D, Lea RH, Rosolowich V, Shapiro HM. Breast Disease Committee and Executive Committee and Council, Society of Obstetricians and Gynecologists of Canada. Breast cancer, pregnancy, and breastfeeding. *J Obstet Gynaecol Can*. 2001;24(2):164-180.
52. Rosenblatt KA, Thomas DB. Lactation and the risk of epithelial ovarian cancer. *Int J Epidemiol*. 1993;22(2):192-197.
53. Heinig MJ, Dewey KG. Health effects of breastfeeding for mothers: a critical review. *Nutrition Research Reviews*. 1997;10:35-56.
54. Foster SF, Slade P, Wilson K. Body image, maternal fetal attachment, and breast feeding. *J Psychosom Res*. 1996;41(2):181-184.
55. Philipp BL, Merewood A, O'Brien S. Physicians and breastfeeding promotion in the United States: A call for action. *Pediatrics*. 2001;107(3):584-587.

56. International Code of Marketing Breast Milk Substitutes. World Health Organization. 1981. Available at:
http://www.who.int/nut/documents/code_english.PDF. Accessed April 3, 2003.
57. World Health Organization. Clinton signs legislation to protect breastfeeding. *AWHONN Lifelines*. 1999;3(6):41.
58. World Health Organization and United Nations International Children's Emergency Fund. Innocenti Declaration. 1989. Available at:
http://www.infactcanada.ca/innocenti_declaration.htm. Accessed April 2, 2003.
59. National Center for Health Statistics. *Healthy People 2000 Final Review*. Hyattsville, Maryland: Public Health Service; 2001.
60. U.S. Department of Health and Human Services. CDC Pediatric Nutrition Surveillance. Atlanta, GA: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention; 2000.
61. U.S. Department of Labor. Compliance Assistance- Family and Medical Leave Act (FMLA). Available at: www.dol.gov/esa/whd/fmla/. Accessed April 20, 2005.
62. Department of Health and Human Services. *Report of the Surgeon General's workshop on breastfeeding and human lactation*. Rockville, MD: Public Health Service, Health Resources and Services Administration; 1984.
63. Hamilton J. *Breastfeeding in the workplace. Report on the National Breastfeeding Policy Conference*. Los Angeles, CA: UCLA Center for Healthier Children, Families and Communities Breastfeeding Resource Program; 1998.

64. Haider SJ, Jacknowitz A, Schoeni RF. Welfare work requirements and child well-being: evidence from the effects on breast-feeding. *Demography*. 2003 Aug;40(3):479-97.
65. American Academy of Pediatrics Work Group on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics*. 1997;100:1035-1039.
66. American Dietetic Association. Position of the American Dietetic Association: Breaking the barriers to breastfeeding. 2001. Available at: www.eatright.com/images/journal/1001/adar1.pdf. Accessed April 2, 2003.
67. American Academy of Family Physicians. AAFP Policy Statement on Breastfeeding. 2001. Available at: <http://www.aafp.org/x6633.xml>. Accessed April 20, 2005.
68. World Health Organization. *Evidence for the Ten Steps to Successful Breastfeeding*. Geneva, World Health Organization; 1998.
69. Young D. Baby-Friendly Expert Work Group in the United States: Blowing the whistle. *Birth*. 1995;22:59-62.
70. Philipp BL, Merewood A, Miller LW, Chawla N, Murphy-Smith MM, Gomes JS. Baby-Friendly Hospital Initiative improves breastfeeding initiation rates in a US hospital setting. *Pediatrics*. 2001;108(3):677-681.
71. Cattaneo A, Buzzetti R. Effect on rates of breast feeding of training for Baby Friendly Hospital Initiative. *BMJ*. 2001;323:1358-1362.
72. Cadwell K. Using the Quality Improvement Process to affect breastfeeding protocols in United States Hospitals. *J Hum Lact*. 13;5:1-9.

73. Kramer MS, Chalmers B, Hodnett ED, Sevkovskaya Z, Dzиковich I, Shapiro S, Collet JP, Vanilovich I, Mezen I, Ducruet T, Shishko G, Zubovich V, Mknuik D, Gluchanina E, Dombrovskiy V, Ustinovitch A, Kot T, Bogdanovich N, Ovchinikova L, Helsing E. Promotion of Breastfeeding Intervention Trial (PROBIT). *JAMA*. 2001;285(4):413-420.
74. Syler G, Sarvela P, Welshimer K, Anderson S. A descriptive study of breastfeeding practices and policies in Missouri hospitals. *J Hum Lact*. 1997; 13(2):103-107.
75. Dodgson JE, Allard-Hale CJ, Bramscher A, Brown F, Duckett L. Adherence to the Ten Steps of the Baby-Friendly Hospital Initiative in Minnesota Hospitals. *Birth*. 1999; 26(4):239-247.
76. Vietas JG, Henley S. Infant feeding environments in North Dakota hospitals. Unpublished Manuscript. 1995. Available from: Susan Henley, University of Minnesota, College of Nursing 6-101 Weaver-Densford Hall, 308 Harvard Street S.E., Minneapolis, MN 55455
77. Karra MV, Auerbach KG, Olson L, Bingham EP. Hospital infant feeding practices in Metropolitan Chicago: an evaluation of five of the 'Ten Steps to Successful Breast-feeding'. *J Am Diet Assoc*. 1993;93(12):1437-1439.
78. Cropley L, Herwehe JC. Evaluation of institutional support for breastfeeding among low-income women in the metropolitan New Orleans area. *J Am Diet Assoc*. 2002; 102(1):94-96.

79. Kovach AC. A 5-year follow-up study of hospital breastfeeding policies in the Philadelphia area: a comparison with the Ten Steps. *J Hum Lact.* 2002;18(2):144-153.
80. Kovach AC. An assessment tool for evaluating hospital breastfeeding policies and practices. *J Hum Lact.* 2003; 12(1):41-45.
81. Edge Healthcare Research. *Breastfeeding Telephone Survey*. RFS 343.53-042. Nashville, TN: Women, Infants and Children's Program Department of Health; 2001.
82. Tennessee Regulatory Authority. *Tennessee Bluebook, 2002*. Available On-line: www.state.tn.us/sos/bluebook/online/bbonline.htm. Accessed March 3, 2003.
83. HITSPOT. Rural Populations. Available at: <http://hitspot.utk.edu/~chrg/ods/abr8376.htm>. Accessed March 3, 2003.
84. HITSPOT. Birth Rates. Available at: <http://hitspot.utk.edu/~chrg/ods/ybr8360.htm>. Access March 3, 2003.
85. Tennessee Quick Facts: U.S. Census. Available at: <http://quickfacts.census.gov/qfd/states/47000.html>. Accessed March 3, 2003.
86. HITSPOT. Household Income. Available at: <http://hitspot.utk.edu/~chrg/ods/abr8683.htm>. Accessed March 3, 2003.
87. HITSPOT. Poverty. Available at: <http://hitspot.utk.edu/~chrg/ods/abr8699.htm>. Accessed March 3, 2003.
88. HITSPOT. Households Headed By A Female. Available at: <http://hitspot.utk.edu/~chrg/ods/abr8723.htm>. Accessed March 3, 2003.

89. State of Tennessee Comptroller of the Treasury. *Development of Per Capita Costs for the TENNCARE Program for State Fiscal Year 2002*. Available at:
<http://www.comptroller.state.tn.us/oreo/reports/TennCarefinal.pdf>. Accessed March 3, 2003.
90. Bureau of TENNCARE. *The Impact of TENNCARE on Women's Health in Tennessee*. Available at:
<http://www.state.tn.us/tenncare/women2001/women2001.pdf>. Accessed March 3, 2003.
91. Hartz AJ, Krakauer H, Kuhn L. Hospital characteristics and quality of care. *JAMA*. 1989;321:1720-1725.
92. Mark TL. Psychiatric hospital ownership and performance: do non-profit organizations offer advantages in markets characterized by asymmetric information? *J Human Resources*. 1996;31:631-649.
93. Kessler DP, McClellan MB. The effects of hospital ownership on medical productivity. *J Econ*. 2002;33;(3):488-506.
94. Shen Y. The effect of hospital ownership choice on patient outcomes after treatment for acute myocardial infarction. *J Health Econ*. 2001; 21:901-922.
95. Tennessee Hospitals by Ownership, 2003. Available at:
www.statehealthfacts.org. Accessed April 1, 2005.
96. The Breastfeeding Coalition of the Inland Empire and Inland Counties Regional Perinatal Program. *Providing Breastfeeding Support: Model Hospital Policy Recommendations*. San Diego, CA. 1999.

PART II

INFANT FEEDING POLICIES AND PRACTICES IN TENNESSEE

1. INTRODUCTION

Successful breastfeeding is contingent on the in-hospital experience of the mother and infant. In recent decades health disparities for breastfeeding have been evident. However, the causes for these disparities have been difficult to isolate (1-2). Although there are many barriers to breastfeeding for all women, African American mothers seem to be especially at risk to not initiate breastfeeding (3-6). The latest estimates suggest that breastfeeding rates are increasing in all populations, but the prevalence for some populations is rising at a considerably lower rate than others (1;7). In particular, the region of the country in which a woman lives seems to now be one of the strongest predictors of breastfeeding (1;7). Mothers under the age of 30 are less likely to breastfeed than their older counterparts (7). Mothers with an educational level of high school or less are less likely to breastfeed than mothers with some college education or advanced degrees (7). Further, mothers at or below the federal poverty threshold are less likely to breastfeed than mothers above the poverty threshold (7). Research has not yet identified if the in-hospital experience could be related to health disparities.

Hospital policies and practices have been shown to affect the breastfeeding initiation rates in hospitals (8-10). Hospitals in the U.S. have not yet made the commitment to strongly support the breastfeeding mother and her infant, possibly due to financial pressures and staffing issues (11). U.S hospital breastfeeding initiation rates are still below the Healthy People 2010 recommendations for breastfeeding despite evidence suggesting that hospital practices can improve initiation rates (1;7;12). However, few hospitals in the U.S. have joined initiatives designed to improve hospital practices (9).

The extent to which hospitals in the U.S. follow recommendations to support breastfeeding is of considerable policy interest.

The *Ten Steps to Successful Breastfeeding* as outlined in the Baby Friendly Hospital Initiative by the World Health Organization (WHO) and United Nations International Children's Emergency Fund (UNICEF) (13) has been identified as a critical component of supporting the breastfeeding mother in the hospital setting (8). The purpose of this research was to examine the extent to which hospitals in a southern state met the criteria for good hospital breastfeeding practice as described in the *Ten Steps To Successful Breastfeeding* (13).

2. METHODS

Survey Instrument

The survey instrument, Hospital Infant Feeding Practices Survey (Appendix A), was developed to be consistent with the information gathered in the *Hospital Self-Assessment Tool* available from Baby-Friendly USA (13). The Hospital Self-Assessment Tool and the *Newborn Feeding Environment Scale* were both used to develop this survey instrument (13-14). *The Hospital Self-Assessment Tool* has been used to design similar surveys that were used in past research of this type (15-20). However, the *Hospital Self-Assessment Tool* utilizes “yes” and “no” responses that can mask variability in hospital practices. For this reason, responses in the Hospital Infant Feeding Practices Survey were modified to a Likert-like scale of “none of the time”, “part of the time”, “most of the time”, “all of the time” and “don’t know”. The *Newborn Feeding Environment Scale* was used in two research studies to elicit descriptive responses for areas in which a Likert-like scale was not appropriate (14-15). An on-line version of the Hospital Infant Feeding Practices Survey was also developed for this study. The on-line version of the survey was housed through a secured University based website. The on-line version was developed using the SPSS Survey Builder Program (SPSS Data Entry Builder for Windows Version 4.0, 2004, Chicago, IL).

Expert Panel

A panel of experts was used to establish content and face validity. The panel consisted of 10 health care professionals, each having more than 5 years experience related to breastfeeding (i.e., public health advocate, researcher, lactation consultant, or breastfeeding policy expert). These panelists were selected and contacted by the primary

researcher to participate in the expert panel. After consenting to participate, the panelists were mailed or e-mailed the survey instrument for review (Appendix B). The expert panel participants were asked to critique the instrument questions and responses (Appendix C).

Subject Selection

The Tennessee State Department of Health provided a list and secondary data for 93 birthing facilities in Tennessee with greater than five total births for the year 2002 (21). From this population, 10 hospitals were randomly selected to participate in the pilot study for this research, leaving 83 hospitals for the sample population. Nine hospitals were identified as in-eligible to participate due to the discontinuation of obstetric services at the facility, for a final sample size of 74 hospitals.

The primary contact person at each facility was identified by contact lists provided by Tennessee WIC Regional Breastfeeding Coordinators. This list was comprised of Obstetric Unit Nurse Managers and Lactation Consultants. When a primary contact person was not identified for a hospital, the obstetric unit was contacted by phone to identify the person most appropriate to receive a survey pertaining to infant feeding. The primary contact person assisted in the identification of other survey participants. The study participation guidelines requested that at least three staff members participate in the survey. Participant guidelines indicated three individuals should complete the survey form individually. These three hospital staff should each have a minimal of two years of experience in the obstetric unit of the hospital, they should each be from different disciplines, and participation should be completely voluntary.

Pilot Test

The survey instrument designed for this study was pilot-tested with 10 hospitals that were randomly selected from the population. Eight hospitals participated in the pilot study. A primary contact person was identified at each hospital. The primary contact received the survey packet (Appendix D), using a modified version of the Dillman's survey method (22-23). The primary contact obtained hospital consent to participate and assisted in identifying three hospital staff willing to complete the survey instrument. Participant guidelines indicated three individuals should complete the survey form individually. Consistent with the research protocol, three hospital staff should each have a minimal of two years of experience in the obstetric unit of the hospital, they should each be from different disciplines, and participation should be completely voluntary. Participants indicated changes to the instrument and to the survey process itself.

Survey Implementation

The survey methodology was modified from Dillman's method for mail and internet-based surveys (22-23). The survey packet included an informational letter to the primary contact, a hospital consent form (Appendix E), and primary contact instruction (Appendix F). Also included in the survey packet were the three survey participant cover letters (Appendix E), consent forms and three survey instruments (Appendix A) with three postage-paid envelopes. Each participant received a cover letter, a participant consent form and a survey instrument. The on-line option to participation was indicated on the cover of each survey and in each cover letter.

The primary contact acquired the appropriate consent from hospital administrators. The primary contact assisted in identifying the three hospital staff

members to participate in the survey as outlined previously, but was not excluded from participation. The survey participants then completed the survey instruments either by mail or on-line.

A post-card reminder was issued within 1 week of the initial survey. Three weeks after the initial mailing, an additional survey packet was mailed to the primary contact at non-respondent hospitals. Due to the 32% response rate, a second postcard reminder was mailed to the primary contact at non-respondent hospitals two weeks later. The second postcard was followed with reminder phone calls to primary contacts at non-respondent hospitals.

Data Analysis

Survey responses were via computer and verified with double entry. Data were analyzed using SPSS (SPSS for Windows Version 11.0, 2002, Chicago, IL) and appropriate statistical techniques, using consultation provided by University statisticians.

Dependent Variable

The scores for each *Step* of the Baby Friendly Hospital Initiative's *Ten Steps to Successful Breastfeeding* were the dependent variables. Sub-scores from the three completed surveys for each hospital were summed and averaged for one final score for each *Step* for each participating hospital. The designated descriptive questions were then analyzed separately. Analysis on all available data was conducted using case wise elimination of missing information.

Independent Variables

Hospital ownership type; i.e. for-profit or non-profit and government, was the independent variable for this study. Hospital ownership type was coded: (1) for-profit, (2) non-profit and (3) government.

Covariates

Covariates included hospital demographic data such as health region, total bed capacity, and capacity of obstetric unit. These items were collected on the survey instrument. Maternal hospital population characteristics, which have been shown to increase the risk to not breastfeed, were utilized as covariates (7). The covariates, African-American mothers, mothers under the age of 30, mothers with high school or less education, unmarried mothers and mothers utilizing Medicaid, were presented in the form of percentages of the total hospital patient population for each facility (21). The covariate data were provided by the Tennessee Department of Health (21).

3. RESULTS

Expert Panel

Ten breastfeeding experts agreed to participate in the expert panel. Expert panelist ranked survey responses for questions using the Likert-like scale based on their expert knowledge. Higher scores indicated better compliance to the component of the *Step*. The ranked sub-scores for each of the survey responses were compiled and averaged to give a final score for each *Step*. The scoring results from the expert panel are presented on the survey instrument in Appendix C.

Demographic Characteristics

The response rate from the initial survey mailing was 34.1%, n=23. In the first contact with non-respondents which was made by using a postcard reminder, the response rate was 8.9%, n=6. The second survey packet was then sent to the non-respondents and the response rate was 6.7%, n=6. A phone call was made to follow-up with non-respondents which yielded a 4.1%, n=3 response rate. A final response rate of 50.0%, n=37 was observed. The final non-response rate of 50%, n=37, was comprised of 48.6%, n=36, passive non-response and 1.4%, n=1, active non-response.

The majority of the hospital representatives responding to the survey indicated their hospital was a non-profit facility (59.4%). The remaining respondents identified their hospital as for-profit (21.9%) and government (18.8%). Rural hospitals represented 57% of participants, leaving the remaining 43% of participating hospitals self-reporting an urban locality. All state health regions in Tennessee were represented with at least one hospital participating in each region.

BFHI Ten Steps to Successful Breastfeeding Compliance

BFHI *Ten Steps to Successful Breastfeeding* scores are depicted in Table 1. Scores represent the mean values for each of the *Ten Steps*. Percents represent the proportion of total available points that the mean value represents. *Step 8*, which concerns encouraging breastfeeding on demand, had the greatest mean percent score of 88.2%, corresponding to the greatest compliance with recommendations for the Ten Steps. *Step 10*, which involves the foster and referral of support groups, was the least supported *Step* with a score of 34.7%.

Step 7, which encourages rooming-in for mother and infant, had low compliance with a score of 35.62 %. Of the participating hospitals, only 38% of them reported 24 hour per day rooming-in. Of the remaining hospitals, 25% reported rooming-in only during the day with the baby returning to the nursery at night; 34% of the hospitals reported that the baby was brought to the mother on demand. A final 2% reported infants were brought to the mothers on a schedule. Collectively, 61% of hospitals in Tennessee did not maintain their rooming-in procedures to assure mothers have 24 hour per day access to their infant.

Step 1, breastfeeding policy, had a low compliance average percent score of 41.1%. Though 77% of hospitals reported having a breastfeeding policy, the level of actual support of the policy contributed to the low compliance overall for this *Step*. Few hospitals (26%) reported having the policy posted in areas specific to mothers, children and infants. Further, 48% of participant reported having no evaluation of their breastfeeding policy.

Table 1 – Hospital Compliance to Ten Steps to Successful Breastfeeding

N=37	Total Possible Points	<u>Tennessee Hospital Compliance</u>			
		Mean	SD	Compliance Score*	SD
Step 1: Have a written breastfeeding policy that is routinely communicated to all health care staff.	33	13.57	3.78	41.13	11.45
Step 2: Train all health care staff in skills necessary to implement this policy.	17	9.68	4.13	56.94	24.30
Step 3: Inform all pregnant women about the benefits and management of breastfeeding.	24	15.96	3.11	66.49	12.97
Step 4: Help mothers initiate breastfeeding within 1 hour of birth.	31	23.85	3.02	76.93	9.73
Step 5: Show mothers how to breastfeed and maintain lactation, even when separated from their infants.	12	8.18	2.15	68.21	17.92
Step 6: Give newborns no food or drink other than breastmilk, unless medically indicated.	16	8.93	2.16	55.79	13.53
Step 7: Practice rooming-in – Allow mothers and infants to remain together – 24 hours a day.	23	8.19	3.35	35.62	14.58
Step 8: Encourage breastfeeding on demand.	8	7.06	1.04	88.23	12.95
Step 9: Give no artificial teats or pacifiers to breastfeeding infants.	14	7.05	1.22	50.35	8.739
Step 10: Foster the establishment of breastfeeding support groups and refer others to them at discharge from the hospital.	18	6.25	1.92	34.74	10.69

* Average mean.

Compliance for *Step 2*, which concerns training staff, had an average percent compliance of 56.9%. Though 67% of participants reported training for all staff involved with breastfeeding mothers and infants, 59% percent of the staff reported only 1 to 5 hours of total breastfeeding policy training. *Step 6* had low scores of 55.8%. *Step 6* encourages no supplementation for breastfeeding infants. Participants reported that supplemental feedings were given to breastfed infants “part of the time” (46%), “most of the time” (6%), and “all of the time” (2%). Further, 50% of participating hospitals reported that all of the formula used at their facility was donated by formula companies. Twenty-two percent paid for only specialty formulas with the regular formulas being donated. Only 9% met the BFHI standards to purchase all formulas at fair market price.

Step 9 described compliance to pacifier usage to be poor at 50.35%. Participants (22%) reported routinely providing all mothers with pacifiers. Further, 51% reported providing pacifiers at the mother’s request. Survey participants reported that 51% of breastfeeding mothers were informed of the dangers of using pacifiers during the initiation of breastfeeding “most of the time”. The overall score for the Tennessee hospitals was 57.4%.

Hospital Ownership Type and Compliance to the BFHI Ten Steps to Successful Breastfeeding

It was hypothesized that hospital ownership type (for-profit, non-profit, and government) would predict compliance to each of the BFHI *Ten Steps to Success to Successful Breastfeeding*. The variable of hospital ownership type was compared using MANOVA for each of the *Ten Steps*. Results of the analysis indicated there were no

differences in compliance to the Ten Steps among the three hospital types

$F(20,50)=1.722, p=.061$.

Hospital Population and Compliance to the Ten Steps

It was hypothesized there would be a correlation between hospital maternal population characteristics and compliance to each of the BFHI *Ten Steps*. A Spearman's Rho correlation analyzed the relationships between each of the hospital maternal population characteristics and each of the *Ten Steps*. There was no statistically significant correlation in the level of compliance to the individual *Ten Steps to Successful Breastfeeding* when compared to percent of African-American mothers and percent of mothers under 30 year old. In Table 2, statistically significant correlations are identified in four of the *Ten Steps to Successful Breastfeeding* for mothers with a high school or less education. These are illustrated by *Step 1* ($r = -0.38, p=0.024$), indicating that as the percentage of mothers with a high school or less education increased, the compliance to the *Step* decreases. *Step 5* ($r=-0.41, p=0.016$), *Step 9* ($r=-0.39, p= 0.022$) and *Step 10* ($r=-0.44, p=0.008$) had a statistically significant correlation with educational status, indicating a negative correlation between percentage of mothers with a high school or less education level and *Step* compliance. A statistically significant correlation was found for the percentage of unmarried mothers. *Step 5* ($r=-0.38, p=0.024$), *Step 7* ($r=-0.44, p=0.008$), and *Step 8* ($r=-0.35, p=0.038$) are identified in Table 2, as statistically significant. These correlations indicate that marital status, specifically not being married, may relate to *Step* compliance in a negative manner. A correlation was found for *Step 4*

Table 2: Relationship between Maternal Population Characteristics and Compliance to BFHI Ten Steps.

Ten Steps	Percentage Maternal Population Characteristics									
	<u>African-American</u>		<u>Under 30 Years Old</u>		<u>High School or Less Education</u>		<u>Unmarried</u>		<u>Medicaid</u>	
	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>	<i>r</i>	<i>p</i>
Step 1: Have a written breastfeeding policy that is routinely communicated to all health care staff.	0.27	0.123	-0.16	0.346	-0.38*	0.024	-0.20	0.252	-0.26	0.139
Step 2: Train all health care staff in skills necessary to implement this policy.	0.28	0.104	-0.12	0.476	-0.30	0.079	-0.13	0.461	-0.29	0.091
Step 3: Inform all pregnant women about the benefits and management of breastfeeding.	-0.28	0.114	0.12	0.483	0.27	0.118	0.05	0.768	-0.18	0.308
Step 4: Help mothers initiate breastfeeding within 1 hour of birth.	-0.18	0.301	0.05	0.771	-0.12	0.502	-0.11	0.536	-0.34*	0.044
Step 5: Show mothers how to breastfeed and maintain lactation, even when separated from their infants.	0.09	0.599	-0.31	0.061	-0.41*	0.016	-0.38*	0.024	-0.30	0.085
Step 6: Give newborns no food or drink other than breastmilk, unless medically indicated.	-0.20	0.250	-0.17	0.328	0.06	0.722	0.08	0.638	-0.18	0.315
Step 7: Practice rooming-in – Allow mothers and infants to remain together – 24 hours a day.	-0.17	0.325	0.03	0.861	-0.32	0.061	-0.44**	0.008	0.05	0.787
Step 8: Encourage breastfeeding on demand.	-0.04	0.845	-0.14	0.426	-0.32	0.064	-0.35*	0.038	0.04	0.813
Step 9: Give no artificial teats or pacifiers to breastfeeding infants.	-0.20	0.258	0.19	0.257	-0.39*	0.022	-0.32	0.058	-0.22	0.205
Step 10: Foster the establishment of breastfeeding support groups and refer others to them at discharge from the hospital.	0.33	0.058	-0.04	0.837	-0.44**	0.008	-0.12	0.481	-0.15	0.391

*, Correlation is significant at the 0.05 level (2-tailed).

of the BFHI *Ten Steps* and mother's utilizing Medicaid insurance, indicating that as Medicaid participation increased, *Step* compliance decreased.

Hospital Ownership Type and Patient Population

The relationship between hospital ownership type and hospital maternal patient population was analyzed using MANOVA. Results indicated, $F(10,50)=.515$, $p=.871$, there was not a significant difference between the three different types of hospitals and the maternal patient populations served.

Controlling for Differences in Patient Populations

It was hypothesized that hospital ownership type would have a bearing on compliance to the *Ten Steps to Successful Breastfeeding* after controlling for differences in hospital maternal patient populations. The three independent variables indicating hospital ownership type were dummy coded. Non-profit hospitals were used as the comparison group. The covariates were presented as percents of total maternal patient populations. The percent of mothers that were African-American, under 30 years old, high school or less education, unmarried, and utilizing Medicaid were coded into five categories. The results (Table 3) indicated a significant difference between government hospitals (Beta= -0.43, $p=0.011$) when compared to non-profit hospitals, for compliance to the *Step 7*. On average there was a 0.43 decrease in compliance to *Step 7*, rooming in, as a result of a one standard deviation increase in compliance score, when comparing government hospitals to non-profit hospitals and controlling hospital maternal patient population characteristics.

Table 3: Compliance to BFHI Ten Steps Based on Hospital Ownership Type Controlling for Maternal Population Characteristics

Ten Steps ¹	<u>Hospital Type²</u>				<u>Percent Maternal Population Characteristics</u>									
	<u>Government</u>		<u>For-Profit</u>		<u>African-American</u>		<u>Under 30 Years of Age</u>		<u>High School or Less Education</u>		<u>Unmarried</u>		<u>Medicaid</u>	
	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>
Step 1: Have a written breastfeeding policy	0.208	1.246	-0.19	0.247	0.129	0.124	-0.07	0.281	0.03	0.787	-0.18	0.308	-0.01	0.665
Step 2: Train all staff	0.07	0.674	-0.18	0.300	0.17	0.075	-0.02	0.786	0.07	0.561	-0.23	0.248	-0.03	0.287
Step 3: Inform all pregnant women about the benefits and management of breastfeeding.	-0.01	0.944	0.09	0.603	0.05	0.483	0.05	0.314	0.19	0.039*	-0.23	0.138	-0.48	0.044*
Step 4: Help mothers initiate breastfeeding within 1 hour of birth.	-0.04	0.802	-0.10	0.566	0.04	0.569	0.06	0.289	0.10	0.278	-0.16	0.300	-0.04	0.088
Step 5: Show mothers how to breastfeed and maintain lactation	-0.02	0.907	-0.12	0.488	0.15	0.001*	-0.03	0.295	0.12	.022*	-0.29	0.002*	-0.02	0.153

¹ Standard regression coefficient from ordinary least squares regression.

² Non-Profit hospital type is comparison group.

* Correlation is significant at the 0.05 level(2-tailed)

Table 3: Continued.

Ten Steps ¹	<u>Hospital Type²</u>				<u>Percent Maternal Population Characteristics</u>									
	<u>Government</u>		<u>For-Profit</u>		<u>African-American</u>		<u>Under 30 Years of Age</u>		<u>High School or Less Education</u>		<u>Unmarried</u>		<u>Medicaid</u>	
	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>P</i>	<i>Beta</i>	<i>p</i>	<i>Beta</i>	<i>p</i>
Step 6: Give newborns no food or drink other than breastmilk.	0.17	0.343	0.11	0.523	-0.62	0.222	-0.00	0.977	-0.03	0.645	0.08	0.481	-0.02	0.337
Step 7: Practice rooming-in.	-0.43*	0.011	-0.20	0.217	0.13	0.060	0.04	0.400	0.13	0.132	-0.30	0.044*	.001	0.974
Step 8: Encourage breastfeeding on demand.	-0.32	0.061	0.13	0.425	0.04	0.070	0.01	0.775	0.03	0.273	-0.09	0.075	0.01	0.229
Step 9: Give no pacifiers to breastfeeding infants.	-0.05	0.762	-0.15	0.390	-0.01	0.702	0.05	0.012*	-0.02	0.474	-0.00	0.945	-0.01	0.206
Step 10: Foster breastfeeding support groups	-0.09	0.627	0.11	0.542	0.05	0.184	0.05	0.106	-0.27	0.569	-0.07	0.383	0.00	0.980

¹ Standard regression coefficient from ordinary least squares regression.

² Non-profit hospital type is comparison group.

* Correlation is significant at the 0.05 level (2-tailed)

4. DISCUSSION

Applications

This study was designed to assess the in-hospital quality of care for breastfeeding support based on hospital ownership type. Hospital compliance to the *Ten Steps to Successful Breastfeeding* was compared to hospital maternal patient population characteristics to investigate if differences in patient population could be used to predict compliance to the *Ten Steps*. Further, the study investigated the possible link between hospital policies and breastfeeding health disparities.

Overall compliance to *the Ten Steps to Successful Breastfeeding* in Tennessee was poor at 57.4%. *Step 10*, fostering breastfeeding support groups, had the lowest level of compliance to recommended practice. The high rate of rural hospital participation could have influenced compliance to this *Step*. Rural hospitals may have less community resources from local health departments and groups such as Le Leche League, as compared to the hospitals in metropolitan areas (20;25). It is also possible the community supports for breastfeeding are difficult to implement in the southern U.S. where there is less cultural acceptance of breastfeeding (2-3;26-27).

The poor compliance level for *Step 7*, rooming-in, is of particular concern. It seems current rooming-in practices in Tennessee do not meet the guidelines as described by the BFHI *Ten Steps*, which would allow the practice of rooming-in to benefit the breastfeeding mother and her infant (13). In this study, hospitals reported having a rooming-in policy, but the data indicated many hospitals still regularly utilized nurseries. This practice alone may inadvertently affect the establishment of breast milk by limiting

mother/infant contact. In the instance a mother is trying to establish her milk supply, this type of separation could make breastfeeding initiation more challenging (13;27).

Another *Step* of low compliance is *Step 1*, which encourages breastfeeding policies. Though most hospitals reported having a breastfeeding policy, the level of actual support of the policy contributed to the low compliance overall for this *Step*. Few hospitals reported having the policy posted in areas specific to mothers, children and infants. Further, few hospitals utilized any evaluation of their breastfeeding policies. Thus with no evaluation, hospitals have no way of knowing if their policies are effective in supporting the breastfeeding mother.

Step 2, which addresses staff training, was also in poor compliance. For this *Step*, it seems the quantity of training hours is the main issue of concern. Most participants reported being trained only 1 to 5 hours on breastfeeding and breastfeeding policies. The BFHI *Ten Steps* encourages 18 hours or more of training specific to breastfeeding and lactation (13;27). *The BFHI Evidence for the Ten Step to Successful Breastfeeding* acknowledges that the 18-hour requirement was based on the experience of the authors, rather than on evidence based practice (13). More research is needed to address the specific length of training time required to adequately train hospital staff caring for breastfeeding mothers.

Supplementation for breastfed infants, *Step 6*, is a concern because almost half of participants reported supplementing breastfed infants at least “part of the time”. Further, the widespread use of formula donations in Tennessee may prove to make implementing the BFHI difficult, as almost half of all hospitals received all their infant formulas free of

charge from the formula companies. As past research has demonstrated, addressing the acceptance of donated formula is a critical, but difficult barrier to overcome in hospitals (11).

Pacifier use during breastfeeding initiation (*Step 9*) may decrease the success of the breastfeeding mother (13;27). Among survey participants, the use of pacifiers is an issue. Pacifiers were routinely provided to the infant by hospital staff and more often at the request of the mother. This finding was surprising, since the majority of survey participants reported that breastfeeding mothers were informed of the dangers of using pacifiers during the initiation of breastfeeding “most of the time”.

The correlations between maternal population characteristics and compliance to the *Ten Steps to Successful Breastfeeding* are of particular interest. It was hypothesized that race would be a factor in hospital compliance. However, the data did not support this hypothesis. *Step 7*, rooming-in, was negatively correlated with the percent of unmarried mothers. *Step 5*, show mothers how to maintain lactation, and *Step 8*, encouraging breastfeeding on demand, were also negatively correlated with the percent of unmarried mothers. These correlations indicate that hospitals serving greater populations of unmarried mothers may need to improve their policies and practices to better support the breastfeeding education of the unmarried mothers they serve.

Compliance to *Step 5*, assisting mothers with maintaining lactation, *Step 8*, encourage breastfeeding on demand, and *Step 9*, give no pacifiers, are specific to maternal education and were found to be negatively correlated with mothers with a high school or less education. These negative correlations are of concern because mothers with this education level are more likely to return to the work force soon after giving

birth and are more likely to stop breastfeeding during the first weeks after childbirth (5,7). *Step 7*, rooming-in, was also negatively correlated with mothers with a high school or less education. These correlations indicate that hospitals serving greater populations of mothers with lower education levels may need to enhance their policies and practices to better support the breastfeeding education and rooming-in needs of the mothers they serve.

Only one of the *Ten Steps to Successful Breastfeeding* was significantly different when comparing hospital ownership type after controlling for hospital maternal population characteristics. Government hospitals were less compliant when compared to non-profit hospitals for *Step 7*, rooming in, when controlling for the covariates. This indicates that government hospitals may be less likely to comply with the rooming in standards as outlined by the BFHI Ten Steps to Successful Breastfeeding. Government hospitals may need to improve hospitals policies related to rooming in to better support the breastfeeding mother.

Limitations

This study intended to assess the in-hospital quality of care for breastfeeding support based on hospital type and other patient population characteristics in Tennessee using the WHO/UNICEF Baby Friendly Hospital Initiative's guidelines. However, some limitations can be noted.

One limitation is the lack of data on breastfeeding rates per hospital in Tennessee. Recently the CDC has released breastfeeding rates for states using the National Immunization Survey; however these data were not available by individual hospital or even by county (7). Other researchers assessing hospital adherence to the *Ten Steps to*

Successful Breastfeeding were able to make conclusions comparing breastfeeding rates to quality of in-hospital care given (14;16-18). For this study, no correlations can be made between qualities of care to breastfeeding initiation rates.

A second limitation is that recorded responses are not only self-report, but also only from the perspective of the practitioners at each facility, not the patient. If documentation of policies and practices supporting breastfeeding are not available, survey participants were forced to give their best estimation of the type of care provided. Furthermore, survey participants may have had prior knowledge of the Baby Friendly Hospital Initiative's *Ten Steps to Successful Breastfeeding*, which could have influenced their survey responses to more positively reflect their adherence to the *Ten Steps*.

Another limitation was the low response rate. One issue that may have contributed to the low response rate for this study was the difficulty in identifying the primary contact person at each hospital. When a primary contact was not identified by the list provided by the Tennessee WIC Regional Breastfeeding Coordinator, the primary researcher contacted the hospital obstetric units by phone to acquire the name of the nurse manager or other appropriate individual to receive the survey by mail. Nurse managers were often supervisors of more than one unit, which made locating them for their mailing information difficult. Further, many primary contacts stated the hospital mail system was not a reliable way to send or receive mail. To address these issues, several phone calls were made to identify the name of the primary contact person. Hospital staff were asked how to best address the survey packet envelope to insure the hospital mail room was able to distinguish to whom and where the mail was to go. Still, for several hospitals, a specific name of a primary contact person could not be acquired. For these hospitals, the

packets were mailed to the “Nurse Manager-Obstetric Unit” which may have decreased the probability that the most appropriate person received the survey packet.

Significance

Breastfeeding is a key public health measure” (26, p. 5). However, the state of breastfeeding policies and practices in hospitals remains unclear to public health and breastfeeding proponents. Few research studies primarily investigated hospital adherence to the Baby-Friendly Hospital Initiative’s *Ten Steps to Successful Breastfeeding* (14-20). Even fewer have investigated if hospital characteristics influence the facility’s quality of care related to breastfeeding.

With the development of Healthy People 2010 and the goal to eliminate health disparities (12), it has become increasingly important to identify strengths and weaknesses in hospital breastfeeding quality of care. Furthermore, because in-hospital care is critical to the successful initiation of breastfeeding (8), additional investigation is needed to test if hospital type and other demographic factors affect the quality of care received by the minority mother. Although this research was not able to show statistical significance as related specifically to race, other socio-economic components were found to possibly contribute to decreased breastfeeding support. Unmarried mothers and those with a high school or less education were found to be predictors of hospital support for providing education to the mother to maintain lactation when separated from her infant and for not providing pacifiers in hospital.

Hospitals must recognize the critical role they play in supporting the single mother, especially those with limited education. Single mothers must receive the same, if not more support to encourage breastfeeding than married mothers, given that

breastfeeding has been shown to benefit the family unit in terms of increased bonding, as well as health and economic benefits (2). Further, mothers with high school or less education must be given information, education and support in the hospital setting to encourage breastfeeding. This research demonstrates that hospitals with high percentages of mothers with high school or less education are significantly more likely to receive less support for certain hospital policies and practices for breastfeeding, which may contribute to historically decreased numbers of breastfeeding initiation among mothers in this group.

Summary

This research study found that participating hospitals in Tennessee did not comply to the Baby Friendly Hospital Initiative's *Ten Steps to Successful Breastfeeding*.

Hospitals may need to increase their encouragement of local breastfeeding support groups as outlined by *Step 10*. Hospitals may also need to improve their policies regarding rooming-in procedures, as outlined by *Step 7*. There is a possible relationship between maternal patient populations and hospital compliance to specific *Steps*.

Hospitals should be mindful of the characteristics of the maternal population they serve, in particular those serving high numbers of unmarried and less educated mothers. These groups of mothers may require enhanced education and support to be successful if they choose to breastfeed.

REFERENCES

1. Ross Products Division Abbott Laboratories. *Mothers Survey*. Columbus, Ohio. 2003.
2. U.S. Department of Health and Human Services, Office of Women's Health. *HHS Blueprint for Action on Breastfeeding*. Washington, DC: US Government Printing Office; 2000.
3. Timbo B, Altekruze S, Headrick M, Klontz K. Breastfeeding among African-American mothers: evidence supporting the need for prenatal intervention. *JSPN*. 1996; 1(1):35-38.
4. Joffe A, Radius SM. Breast versus bottle: Correlates of adolescent mothers' infant-feeding practices. *Pediatrics*. 1987;79:689-695.
5. Rousseau EH, Lescop JN, Fontaine S, Lambert J, Roy CC. Influence of cultural and environmental factors on breastfeeding. *Canadian Medical Association Journal*. 1982;127:701-704.
6. Kogan MD, Kotelchuck M, Alexander GR, Johnson WE. Racial disparities in reported prenatal care advice from health care providers. *Am J Public Health*. 1994;84(1):82-88.
7. Breastfeeding Practices: Results from the 2003 National Immunization Survey. Center for Disease Control and Prevention. Available at: http://www.cdc.gov/breastfeeding/NIS_data/. Accessed April 16, 2005.
8. Powers NG, Naylor AJ, Wester RA. Hospital policies: Crucial to breastfeeding success. *Seminars in Perinatology*. 1994;18(6):517-524.
9. Baby Friendly USA. Available at: www.aboutus.com/a100/bfusa. Accessed April 20, 2005.

10. Young D. Baby-Friendly Expert Work Group in the United States: Blowing the whistle. *Birth*. 1995;22:59-62.
11. Philipp BL, Merewood A, O'Brien S. Physicians and breastfeeding promotion in the United States: A call for action. *Pediatrics*. 2001;107(3):584-587.
12. U.S. Department of Health and Human Services. *Healthy People 2010: Understanding and Improving Health*. 2nd ed. Washington, DC: US Government Printing Office; 2000.
13. World Health Organization. Evidence for the Ten Steps to Successful Breastfeeding. 1998. Geneva, World Health Organization.
14. Dodgson JE, Allard-Hale CJ, Bramscher A, Brown F, Duckett L. Adherence to the Ten Steps of the Baby-Friendly Hospital Initiative in Minnesota Hospitals. *Birth*. 1999; 26(4):239-247.
15. Vietas JG, Henley S. Infant feeding environments in North Dakota Hospitals. Unpublished Manuscript. 1995. Available from: Susan Henley, University of Minnesota, College of Nursing 6-101 Weaver-Densford Hall, 308 Harvard Street S.E., Minneapolis, MN 55455.
16. Philipp BL, Merewood A, Miller LW, Chawla N, Murphy-Smith MM, Gomes JS. Baby-Friendly Hospital Initiative improves breastfeeding initiation rates in a U.S. hospital setting. *Pediatrics* 2001;108(3):677-681.
17. Cattaneo A, Buzzetti R. Effect on rates of breast feeding of training for Baby Friendly Hospital Initiative. *BMJ*. 2001;323:1358-1362.
18. Cadwell K. Using the Quality Improvement Process to affect breastfeeding protocols in United States hospitals. *J Hum Lact*. 13;5:1-9.

19. Kramer MS, Chalmers B, Hodnett ED, Sevkovskaya Z, Dzikovitch I, Shapiro S, Collet JP, Vanilovich I, Mezen I, Ducruet T, Shishko G, Zubovich V, Mknuik D, Gluchanina E, Dombrovskiy V, Ustinovitch A, Kot T, Bogdanovich N, Ovchinikova L, Helsing E. Promotion of Breastfeeding Intervention Trial (PROBIT). *JAMA*. 2001;285(4):413-420.
20. Syler G, Sarvela P, Welshimer K, Anderson S. A descriptive study of breastfeeding practices and policies in Missouri hospitals. *J Hum Lact*. 1997; 13(2):103-107.
21. Tennessee Department of Health. Vital Statistics Data. Nashville, TN; 2000.
22. Dillman DA. *Mail and telephone surveys. The total design method*. New York, New York; Wiley; 1978.
23. Dillman DA. *Mail and Internet Surveys : The Tailored Design Method*. New York, New York; Wiley; 2000.
24. National Rural/Frontier Women's Health Coordinating Centers. Available at: <http://www.4woman.gov/owh/RFCC/index.htm>. Accessed April 1, 2005.
25. Bentley ME, Dee DL, Jenson LJ. Breastfeeding among low income, African-American women: Power, beliefs and decision making. *Am Society for Nutri Science*. 2003; S:305-309.
26. NHS R&D HTA Programme. *Health Technology Assessment. A Systematic Review to Evaluate the Effectiveness of Interventions to Promote the Initiation of Breastfeeding*. United Kingdom; 2002.

27. World Health Organization and United Nations International Emergency

Children's Fund. *Protecting, promotion and supporting breastfeeding: special role of maternity services*. Geneva: WHO; 1989.

APPENDICES

APPENDIX A

Infant Feeding Policies and Practices Survey

Hospital Infant Feeding Survey



Complete the Survey On-line at
<http://surveys.utk.edu/carrie/index.htm>

The University of Tennessee, Knoxville
As Part of Thesis Research Conducted
By Carrie J. Barker, RD, LDN
Department of Nutrition

Hospital Infant Feeding Practices Survey

HOSPITAL DATA

Date ____ / ____ / 04

1. Hospital Name: _____

2. Address: _____

3. Name of Chief Hospital Administrator: _____

4. Phone: () ____ - _____

5. Names of senior Nursing Officers (or other personnel in charge): _____

6. For the Facility: _____ 7. Phone: _____

8. For the Labor/Delivery: _____ 9. Phone: _____

10. For the Antenatal Service: _____ 11. Phone: _____

12. Name of person to be contacted for additional information (the person that received the survey packet in the mail): _____

Type of Hospital: (please circle all that apply)

14a. Government

14b. Private (not for profit)

14c. Private (for profit)

14d. Mission

14e. Teaching

14f. Other: _____

HOSPITAL CENSUS DATA (Please fill in appropriate numbers for each blank)

15a. Total hospital bed capacity: _____

15b. _____ In labor and delivery area 15c. _____ In the normal nursery

15d. _____ In the special care nursery 15e. _____ In other areas for
mothers and children

SURVEY PARTICIPANT DATA

16a. Please identify your credentials: _____

16b. Please identify your function or role in maternal/infant care: _____

16c. How long have you been working in this capacity or in the area of maternal/infant care at your current facility?

Months _____ Years _____

17. Does your health facility have an explicit written policy that addresses the promotion, and support of breastfeeding? **Check one answer.**

- ☐ Yes
- ☐ No
- ☐ Revising the policy
- ☐ Use standing orders of each physician
- ☐ Don't know

18. Which of the following statements BEST describes the philosophy of your hospital's infant feeding policy. **Check one answer.**

- ☐ Formula feeding is to be the primary feeding option encouraged.
- ☐ Both formula feeding and breastfeeding are to be encouraged as equal feeding options.
- ☐ Breastfeeding is to be the primary feeding option encouraged.
- ☐ Both formula feeding and breastfeeding are to be encouraged, but breastfeeding is to be emphasized as the best choice.
- ☐ Don't know

19. What specific issues does the policy address? **Check all that apply.**

- ☐ promotion of formula
- ☐ group instruction for using formula, feeding bottles, and pacifiers
- ☐ promotion of breastfeeding
- ☐ group instruction for breastfeeding, using breast pumps, hand expression
- ☐ Don't know

20. Who contributed to the development and evaluation of your infant feeding policy? Check all that apply. **Check all that apply.**

- ☐ OB nurse(s)/nursery nurse
- ☐ Unit Managers
- ☐ Administrators
- ☐ Nurse midwife(s)
- ☐ Certified lactation consultant(s)
- ☐ Physician(s)
- ☐ Nurse aide(s)
- ☐ Community representative(s)
- ☐ La Leche League representative(s)
- ☐ Certified childbirth educator(s)
- ☐ Registered Dietitian(s)
- ☐ Other: _____

21. How is this policy communicated to the staff that are responsible for providing maternity service? **Check all that apply.**

- ☐ Oral briefings
- ☐ Written manuals
- ☐ Policy is posted
- ☐ Policy is not communicated
- ☐ Other: _____

22. How is this policy communicated to the maternity patients of your facility? **Check all that apply.**

- ☐ Oral discussion with patient and staff
- ☐ Written materials discussing policy are provided to patient
- ☐ Policy is posted in areas serving mothers, infants, and children
- ☐ Policy is not communicated to patients
- ☐ Other: _____

23. How do you evaluate the effectiveness of your infant feeding policy? **Check all that apply.**

- ☐ Formal evaluation plan
- ☐ Informal policy review
- ☐ Policy evaluated by breastfeeding committee
- ☐ No evaluation is currently implemented
- ☐ Other: _____

24. Is the infant feeding policy a component of staff training? **Check one answer.**

- ☐ No, it is not a component of staff training
- ☐ Yes, but it is *rarely* a component of staff training
- ☐ Yes, it is *sometimes* a component of staff training but not consistently
- ☐ Yes, select staff caring for women and infants only (e.g. nurse managers)
- ☐ Yes, for all staff caring for women and infants
- ☐ Don't know

25. Is training on breastfeeding and lactation management given to all staff caring for women and infants within 6 months of their arrival? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

26. Please indicate the number of hours that all staff in contact with mothers and infants are trained in regard to breastfeeding and lactation management. **Check one answer.**

- ☐ 0 hours
- ☐ 1 – 5 hours
- ☐ 6 – 10 hours
- ☐ 11 – 15 hours
- ☐ 16 or more hours

27. Please indicate the number of hours that mother/baby nurses are trained in regard to breastfeeding and lactation management. **Check one answer.**

- ☐ 0 hours
- ☐ 1 – 5 hours
- ☐ 6 – 10 hours
- ☐ 11 – 15 hours
- ☐ 16 or more hours

28. Please indicate the number of hours nurse managers are trained in regard to breastfeeding and lactation management. **Check one answer.**

- ☐ 0 hours
- ☐ 1 – 5 hours
- ☐ 6 – 10 hours
- ☐ 11 – 15 hours
- ☐ 16 or more hours

29. Are all pregnant women informed about the benefits and management of breastfeeding? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

30. Do prenatal records indicate whether breastfeeding has been discussed with the pregnant woman? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

31. Are a mother's prenatal records available at the time of delivery? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

32. Are pregnant women given oral advice or written materials regarding formula feeding? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

33. Does the health care facility take into account a woman's intention to breastfeed when deciding on the use of a sedative, an analgesic, or an anesthetic (if any) during labor and delivery? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

34. Does the health care facility take into account a woman's intent to breastfeed when deciding on the use of a postnatal contraceptive such as Depo-Provera? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

35. Are staff familiar with the effects of such medications (from questions 33 & 34) on breastfeeding? **Check one answer.**

- ☐ Very few of the staff are familiar
- ☐ Part of the staff are familiar
- ☐ Most of the staff are familiar
- ☐ All of the staff are familiar
- ☐ Don't know

36. Does a woman who has never breastfed or who has previously encountered problems with breastfeeding receive special attention and support from the staff of the health care facility? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

37. Are healthy, vaginally delivered babies given to their mother's to hold, with skin contact, within a half hour of completion of the second stage of labor and allowed to remain with them for at least the first hour? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

38. When are healthy, vaginally delivered breastfeeding babies given to their mothers for their first feeding? **Check one answer.**

- ☐ 0-30 minutes after birth
- ☐ 31-60 minutes after birth
- ☐ 1-2 hours after birth
- ☐ 3 or more hours after birth
- ☐ When mother requests

39. When are healthy, caesarean delivered breastfeeding babies given to their mothers for their first feeding? **Check one answer.**

- ☐ 0-30 minutes after birth
- ☐ 31-60 minutes after birth
- ☐ 1-2 hours after birth
- ☐ 3 or more hours after birth
- ☐ When mother requests

40. When are staff members available to mothers to offer help to initiate breastfeeding? **Check one answer.**

- ☐ 0-30 minutes after birth
- ☐ 31-60 minutes after birth
- ☐ 1-2 hours after birth
- ☐ 3 or more hours after birth
- ☐ When mother requests

41. Do staff offer all mothers further assistance with breastfeeding within 6 hours of delivery? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

42. After receiving assistance from staff, are breastfeeding mothers able to demonstrate how to correctly position and attach their babies for breastfeeding? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

43. How are breastfeeding mothers informed on expression of their breast milk?

Check all that apply.

- ☐ Shown how to express their milk
- ☐ Given information on expression
- ☐ Advised of where they can get help with expression, should they need it
- ☐ Expression instruction/information is not offered
- ☐ Don't know

44. Do mothers have access to staff members or counselors who have specialized training in breastfeeding and lactation management before discharge? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

45. Are mothers of babies in special care helped to establish and maintain lactation by frequent expression of milk? **Check one answer.**

- ☐ None of the Time
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

46. Are healthy babies who have initiated breastfeeding given supplemental feedings by staff or the mother? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

47. Do staff have a clear understanding of the acceptable reasons for prescribing supplements other than breast milk for breastfeeding babies? **Check one answer.**

- ☐ Few of the staff clearly understands
- ☐ Part of the staff clearly understands
- ☐ Most of the staff clearly understands
- ☐ All of the staff clearly understands
- ☐ Don't know

48. How does your hospital obtain infant formula? **Check one answer.**

- ☐ Purchase all formulas at fair market price
- ☐ Purchase some regular infant formula at a discounted rate
- ☐ Regular infant formula donated, purchase only specialty formulas
- ☐ All formula is donated
- ☐ Don't know

49. How much contact do mothers have with their healthy babies? **Check all that apply.**

- ☐ All babies room-in, day and night
- ☐ Mothers must request room-in
- ☐ Babies room-in during the day; are in nursery at night
- ☐ Babies are brought to mother on demand
- ☐ Babies are brought to mother on a schedule
- ☐ Other: _____

50. When does rooming-in usually start for a healthy infant after a vaginal delivery?
Check one answer.

- ☐ We do not have rooming-in
- ☐ When staff are finished with post-birth procedures
- ☐ When mother requests
- ☐ Within the first hour
- ☐ Immediately after birth

51. When does rooming-in usually start for a healthy infant after a cesarean delivery?
Check one answer.

- ☐ We do not have rooming-in
- ☐ When staff are finished with post-birth procedures
- ☐ When mother requests
- ☐ Within the first hour
- ☐ Immediately after birth

52. How often are healthy full-term infants fed? **Check one answer.**

- ☐ On a schedule, based on hospital policy or physician order
- ☐ At mother's discretion
- ☐ At nurse's discretion
- ☐ According to infant cues
- ☐ Other: _____

53. Are mothers advised to breastfeed their healthy babies on demand and as often as their babies want to breastfeed? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

54. How are pacifiers used on your unit? **Check all that apply.**

- ☐ At the discretion of nurse
- ☐ At the request of the mother
- ☐ Routinely provided to all mothers
- ☐ Pacifiers are not provided by the hospital
- ☐ Other: _____

55. In general, how often are breastfed babies given pacifiers? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

56. Are breastfeeding mothers educated about the potential effect of early introduction of bottles and pacifiers on breastfeeding initiation? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

57. Does the hospital give education to key family members so that they can support the breastfeeding mother at home? **Check one answer.**

- ☐ Hardly ever
- ☐ Part of the time
- ☐ Most of the Time
- ☐ All of the Time
- ☐ Don't know

58. To whom do you refer breastfeeding mothers for follow-up support? **Check all that apply.**

- ☐ We do not refer
- ☐ No groups available in our area
- ☐ WIC
- ☐ Certified lactation consultant
- ☐ Lactation educators
- ☐ Lactation medical specialist
- ☐ Volunteer support group (other than La Leche League)
- ☐ La Leche League
- ☐ Medical clinic/physician
- ☐ Women are encouraged to call the maternity unit with questions
- ☐ Maternity unit personnel call all breastfeeding women for follow-up support
- ☐ Women are encouraged to talk to their friends and relatives who have breastfed
- ☐ Home visit is provided by hospital nurse or lactation consultant
- ☐ Support groups on hospital grounds
- ☐ Other: _____

59. Please indicate the number of hours the services of a certified lactation consultant are available on a weekly basis. **Check one answer.**

- ☐ 0 hours
- ☐ 1 – 15 hours
- ☐ 16 – 30 hours
- ☐ 40 hours or more

60. Do you provide formula discharge packs to new mothers? **Check one answer.**

- ☐ All babies receive discharge packs that include formula
- ☐ Formula fed babies receive discharge packs that include formula; breastfeeding babies receive no discharge packs
- ☐ Formula fed babies receive discharge packs that include formula; breastfeeding babies receive discharge packs specific for breastfeeding
- ☐ All babies receive discharge packs that do not contain formula
- ☐ No babies receive discharge packs
- ☐ Other: _____

61. Please indicate if would like feedback regarding your survey results. **Check one answer.**

- ☐ Yes, I would like a copy of survey results.
- ☐ No, please do not send me survey results.

62. Please give your comments about this assessment _____

Thank You for Your Time and Assistance with this Important Research!

APPENDIX B

Expert Panel Invitation and Consent Form

Dear Breastfeeding Expert,

Researchers with The University of Tennessee, Knoxville are conducting a study about hospital policies and practices in the state of Tennessee. The research is being conducted as a graduate research project through the Department of Nutrition under the supervision of Dr. Sonya Jones and Dr. Betsy Haughton.

Your knowledge and opinions are important to this study. Thus, I would like to invite you to participate in an expert panel to review the interview instrument that has been developed for this research.

The Hospital Infant Feeding Practices Survey consists of 64 questions. Of these, 25 questions require categorical responses, 16 questions pertain to hospital information and demographics, and 23 questions concern hospital policies and practices and are on the Likert-like scale. You will be asked to critique the instrument and make suggestions based on your expert knowledge. In order to improve the validity of the scoring system devised for the survey, you will also be asked to suggest scores for responses based on the Likert score (0-5). The response scores suggested by each expert panelist will then be averaged to set the score used on the revised instrument.

Participation in this study is voluntary and would involve approximately one-hour to review the instrument and make suggestions. There are no known anticipated risks to your participation in this study, although questions are quite general, you may decline answering any questions you feel you do not wish to participate in the expert panel. All information you provide will be considered confidential and grouped with responses from other participants. Further, you will not be identified by name in any report or publication resulting from this study. The data collected through this study will be kept until completion of the thesis in room 213 Jessie Harris Building in a locked filing cabinet.

If after receiving this letter, you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact Assistant Professor Sonya Jones at 865-974-6250.

As with all projects involving human participants at The University of Tennessee, this project has been reviewed by, and received ethics clearance through the Office of Research at the University of Tennessee, Knoxville. Should you have comments or concerns resulting from your participation in this study, please contact the Office of Research at 865-974-3466.

Thank you for your assistance with this project.

Sincerely,

Carrie Barker, RD
Nutrition Graduate Student
University of TN, Knoxville

CONSENT FORM

I agree to participate in the expert panel in part with a research study conducted by Carrie Barker of the Department of Nutrition, under the supervision of Drs. Sonya Jones and Betsy Haughton. I have made this decision based on the information I have received in the Information Letter and have had the opportunity to receive any additional details I wanted about this study. I am aware of the benefits of participating in this research, such as contributing to knowledge about breastfeeding in TN and sharing my professional knowledge about breastfeeding. All information which I provide will be held in confidence. I understand that I will not be identified in the any report or publication that may develop from this research. I understand that I may withdraw from participation in the expert panel at any time.

I understand that all data from the expert panel will be kept confidential and on file in the Department of Nutrition for a maximum of 1 year at which point they will be destroyed. Only the three above mentioned researchers will have access to the information and data collected via the expert panel.

I am aware that all information I provide will be considered confidential and grouped with responses from other participants. Further, I will not be identified by name in any report or publication resulting from this study. The data collected through this study will be kept until completion of Ms. Barker's thesis in room 213 Jessie Harris Building in a locked filing cabinet.

I acknowledge that this project has been reviewed by and received ethics clearance through the Office of Research at the University of TN, Knoxville and that I may contact this office if I have any questions about my participation in this study.

If e-mailing this document please type in your name and your e-mail reply will be used as your signature. If you will be faxing or mailing this document, please sign as indicated.

Participant's Name: _____

Participant's Signature: _____

Date: _____

APPENDIX C

Original Expert Panel Infant Feeding Practices Survey Instrument with Expert Panel
Scoring Results

Hospital Infant Feeding Practices Survey

HOSPITAL DATA

Date____/____/ 04

1.Hospital Name:_____

2. Address: _____

3. Name of Chief Hospital Administrator:_____

4. Phone: () _____ - _____

5. Names of senior Nursing Officers (or other personnel in charge): _____

6. For the Facility:_____ 7. Phone:_____

8. For the Labor/Delivery:_____ 9. Phone: _____

10. For the Antenatal Service: _____ 11. Phone: _____

12.Name of person to be contacted for additional information (the person that received the survey packet in the mail): _____

Type of Hospital: (please circle all that apply)

14a. Government

14b.Private (not for profit)

14c.Private (for profit)

14d. Mission

14e.Teaching

14f. Other: _____

HOSPITAL CENSUS DATA (Please fill in appropriate numbers for each blank)

15a. Total hospital bed capacity:_____

15b.____ In labor and delivery area 15c. _____ In the normal nursery

15d.____ In the special care nursery 15e. _____ In other areas for
mothers and children

SURVEY PARTICIPANT DATA

16a. Please identify your credentials:_____

16b. Please identify your function or role in maternal/infant care: _____

16c. How long have you been working in this capacity or in the area of maternal/infant care at your current facility?

Months _____ Years _____

17. Does your health facility have an explicit written policy that addresses the promotion, and support of breastfeeding? **Check one answer.**

- ☐ [4] Yes
- ☐ [1] No
- ☐ [3] Revising the policy
- ☐ [2] Use standing orders of each physician
- ☐ Don't know

18. Which of the following statements BEST describes the philosophy of your hospital's infant feeding policy. **Check one answer.**

- ☐ [1] Formula feeding is to be the primary feeding option encouraged.
- ☐ [2] Both formula feeding and breastfeeding are to be encouraged as equal feeding options.
- ☐ [3] Breastfeeding is to be the primary feeding option encouraged.
- ☐ [4] Both formula feeding and breastfeeding are to be encouraged, but breastfeeding is to be emphasized as the best choice.
- ☐ Don't know

19. What specific issues does the policy address? **Check all that apply.**

- ☐ [1] promotion of formula
- ☐ [1] group instruction for using formula, feeding bottles, and pacifiers
- ☐ [1] promotion of breastfeeding
- ☐ [1] group instruction for breastfeeding, using breast pumps, hand expression
- ☐ Don't know

20. Who contributed to the development and evaluation of your infant feeding policy? Check all that apply. **Check all that apply.**

- ☐ [1] OB nurse(s)/nursery nurse
- ☐ [1] Unit Managers
- ☐ [1] Administrators
- ☐ [1] Nurse midwife(s)
- ☐ [1] Certified lactation consultant(s)
- ☐ [1] Physician(s)
- ☐ [1] Nurse aide(s)
- ☐ [1] Community representative(s)
- ☐ [1] La Leche League representative(s)
- ☐ [1] Certified childbirth educator(s)
- ☐ [1] Registered Dietitian(s)
- ☐ Other: _____

21. How is this policy communicated to the staff that are responsible for providing maternity service? **Check all that apply.**

- ☐ [1] Oral briefings
- ☐ [1] Written manuals
- ☐ [1] Policy is posted
- ☐ [0] Policy is not communicated
- ☐ Other: _____

22. How is this policy communicated to the maternity patients of your facility? **Check all that apply.**

- ☐ [1] Oral discussion with patient and staff
- ☐ [1] Written materials discussing policy are provided to patient
- ☐ [1] Policy is posted in areas serving mothers, infants, and children
- ☐ [0] Policy is not communicated to patients
- ☐ Other: _____

23. How do you evaluate the effectiveness of your infant feeding policy? **Check all that apply.**

- ☐ [1] Formal evaluation plan
- ☐ [1] Informal policy review
- ☐ [1] Policy evaluated by breastfeeding committee
- ☐ [0] No evaluation is currently implemented
- ☐ Other: _____

24. Is the infant feeding policy a component of staff training? **Check one answer.**

- ☐ [0] No, it is not a component of staff training
- ☐ [1] Yes, but it is *rarely* a component of staff training
- ☐ [2] Yes, it is *sometimes* a component of staff training but not consistently
- ☐ [3] Yes, select staff caring for women and infants only (e.g. nurse managers)
- ☐ [4] Yes, for all staff caring for women and infants
- ☐ Don't know

25. Is training on breastfeeding and lactation management given to all staff caring for women and infants within 6 months of their arrival? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

26. Please indicate the number of hours that all staff in contact with mothers and infants are trained in regard to breastfeeding and lactation management. **Check one answer.**

- ☐ [1] 0 hours
- ☐ [2] 1 – 5 hours
- ☐ [3] 6 – 10 hours
- ☐ [4] 11 – 15 hours
- ☐ [5] 16 or more hours

27. Please indicate the number of hours that mother/baby nurses are trained in regard to breastfeeding and lactation management. **Check one answer.**

- ☐ [1] 0 hours
- ☐ [2] 1 – 5 hours
- ☐ [3] 6 – 10 hours
- ☐ [4] 11 – 15 hours
- ☐ [5] 16 or more hours

28. Please indicate the number of hours nurse managers are trained in regard to breastfeeding and lactation management. **Check one answer.**

- ☐ [1] 0 hours
- ☐ [2] 1 – 5 hours
- ☐ [3] 6 – 10 hours
- ☐ [4] 11 – 15 hours
- ☐ [5] 16 or more hours

29. Are all pregnant women informed about the benefits and management of breastfeeding? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

30. Do prenatal records indicate whether breastfeeding has been discussed with the pregnant woman? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

31. Are a mother's prenatal records available at the time of delivery? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

32. Are pregnant women given oral advice or written materials regarding formula feeding? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

33. Does the health care facility take into account a woman's intention to breastfeed when deciding on the use of a sedative, an analgesic, or an anesthetic (if any) during labor and delivery? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

34. Does the health care facility take into account a woman's intent to breastfeed when deciding on the use of a postnatal contraceptive such as Depo-Provera? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

35. Are staff familiar with the effects of such medications (from questions 33 & 34) on breastfeeding? **Check one answer.**

- ☐ [1] Very few of the staff are familiar
- ☐ [2] Part of the staff are familiar
- ☐ [3] Most of the staff are familiar
- ☐ [4] All of the staff are familiar
- ☐ Don't know

36. Does a woman who has never breastfed or who has previously encountered problems with breastfeeding receive special attention and support from the staff of the health care facility? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

37. Are healthy, vaginally delivered babies given to their mother's to hold, with skin contact, within a half hour of completion of the second stage of labor and allowed to remain with them for at least the first hour? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

38. When are healthy, vaginally delivered breastfeeding babies given to their mothers for their first feeding? **Check one answer.**

- ☐ [5] 0-30 minutes after birth
- ☐ [4] 31-60 minutes after birth
- ☐ [3] 1-2 hours after birth
- ☐ [2] 3 or more hours after birth
- ☐ [1] When mother requests

39. When are healthy, caesarean delivered breastfeeding babies given to their mothers for their first feeding? **Check one answer.**

- ☐ [5] 0-30 minutes after birth
- ☐ [4] 31-60 minutes after birth
- ☐ [3] 1-2 hours after birth
- ☐ [2] 3 or more hours after birth
- ☐ [1] When mother requests

40. When are staff members available to mothers to offer help to initiate breastfeeding? **Check one answer.**

- ☐ [5] 0-30 minutes after birth
- ☐ [4] 31-60 minutes after birth
- ☐ [3] 1-2 hours after birth
- ☐ [2] 3 or more hours after birth
- ☐ [1] When mother requests

41. Do staff offer all mothers further assistance with breastfeeding within 6 hours of delivery? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

42. After receiving assistance from staff, are breastfeeding mothers able to demonstrate how to correctly position and attach their babies for breastfeeding? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

43. How are breastfeeding mothers informed on expression of their breast milk?
Check all that apply.

- ☐ [1] Shown how to express their milk
- ☐ [1] Given information on expression
- ☐ [1] Advised of where they can get help with expression, should they need it
- ☐ [1] Expression instruction/information is not offered
- ☐ Don't know

44. Do mothers have access to staff members or counselors who have specialized training in breastfeeding and lactation management before discharge? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

45. Are mothers of babies in special care helped to establish and maintain lactation by frequent expression of milk? **Check one answer.**

- ☐ [1] None of the Time
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

46. Are healthy babies who have initiated breastfeeding given supplemental feedings by staff or the mother? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

47. Do staff have a clear understanding of the acceptable reasons for prescribing supplements other than breast milk for breastfeeding babies? **Check one answer.**

- ☐ [1] Few of the staff clearly understands
- ☐ [2] Part of the staff clearly understands
- ☐ [3] Most of the staff clearly understands
- ☐ [4] All of the staff clearly understands
- ☐ Don't know

48. How does your hospital obtain infant formula? **Check one answer.**

- ☐ [4] Purchase all formulas at fair market price
- ☐ [3] Purchase some regular infant formula at a discounted rate
- ☐ [2] Regular infant formula donated, purchase only specialty formulas
- ☐ [1] All formula is donated
- ☐ Don't know

49. How much contact do mothers have with their healthy babies? **Check all that apply.**

- ☐ [1] All babies room-in, day and night
- ☐ [1] Mothers must request room-in
- ☐ [1] Babies room-in during the day; are in nursery at night
- ☐ [1] Babies are brought to mother on demand
- ☐ [1] Babies are brought to mother on a schedule
- ☐ Other: _____

50. When does rooming-in usually start for a healthy infant after a vaginal delivery?
Check one answer.

- ☐ [1] We do not have rooming-in
- ☐ [2] When staff are finished with post-birth procedures
- ☐ [3] When mother requests
- ☐ [4] Within the first hour
- ☐ [5] Immediately after birth

51. When does rooming-in usually start for a healthy infant after a cesarean delivery?
Check one answer.

- ☐ [1] We do not have rooming-in
- ☐ [2] When staff are finished with post-birth procedures
- ☐ [3] When mother requests
- ☐ [4] Within the first hour
- ☐ [5] Immediately after birth

52. How often are healthy full-term infants fed? **Check one answer.**

- ☐ [1] On a schedule, based on hospital policy or physician order
- ☐ [3] At mother's discretion
- ☐ [2] At nurse's discretion
- ☐ [4] According to infant cues
- ☐ Other: _____

53. Are mothers advised to breastfeed their healthy babies on demand and as often as their babies want to breastfeed? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

54. How are pacifiers used on your unit? **Check all that apply.**

- ☐ [1] At the discretion of nurse
- ☐ [1] At the request of the mother
- ☐ [1] Routinely provided to all mothers
- ☐ [1] Pacifiers are not provided by the hospital
- ☐ Other: _____

55. In general, how often are breastfed babies given pacifiers? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

56. Are breastfeeding mothers educated about the potential effect of early introduction of bottles and pacifiers on breastfeeding initiation? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

57. Does the hospital give education to key family members so that they can support the breastfeeding mother at home? **Check one answer.**

- ☐ [1] Hardly ever
- ☐ [2] Part of the time
- ☐ [3] Most of the Time
- ☐ [4] All of the Time
- ☐ Don't know

58. To whom do you refer breastfeeding mothers for follow-up support? **Check all that apply.**

- ☐ [0] We do not refer
- ☐ [0] No groups available in our area
- ☐ [1] WIC
- ☐ [1] Certified lactation consultant
- ☐ [1] Lactation educators
- ☐ [1] Lactation medical specialist
- ☐ [1] Volunteer support group (other than La Leche League)
- ☐ [1] La Leche League
- ☐ [1] Medical clinic/physician
- ☐ [1] Women are encouraged to call the maternity unit with questions
- ☐ [1] Maternity unit personnel call all breastfeeding women for follow-up support
- ☐ [1] Women are encouraged to talk to their friends and relatives who have breastfed
- ☐ [1] Home visit is provide by hospital nurse or lactation consultant
- ☐ [1] Support groups on hospital grounds
- ☐ Other: _____

59. Please indicate the number of hours the services of a certified lactation consultants are available on a weekly basis. **Check one answer.**

- ☐ [1] 0 hours
- ☐ [2] 1 – 15 hours
- ☐ [3] 16 – 30 hours
- ☐ [4] 40 hours or more

60. Do you provide formula discharge packs to new mothers? **Check one answer.**

- ☐ [0] All babies receive discharge packs that include formula
- ☐ [2] Formula fed babies receive discharge packs that include formula; breastfeeding babies receive no discharge packs
- ☐ [3] Formula fed babies receive discharge packs that include formula; breastfeeding babies receive discharge packs specific for breastfeeding
- ☐ [4] All babies receive discharge packs that do not contain formula
- ☐ [1] No babies receive discharge packs
- ☐ Other: _____

61. Please indicate if would like feedback regarding your survey results. **Check one answer.**

- ☐ Yes, I would like a copy of survey results.
- ☐ No, please do not send me survey results.

62. Please give your comments about this assessment _____

Thank You for Your Time and Assistance with this Important Research!

APPENDIX D

Pilot Study Cover Letter and Consent Form

Dear Maternity/Infant Care Provider,

Researchers at The University of Tennessee, Knoxville would like to invite your hospital to participate in a research pilot study that is being conducted in hospitals throughout Tennessee. This study is the second phase of a graduate thesis research project conducted through the Department of Nutrition under the supervision of Dr. Sonya Jones and Dr. Betsy Haughton. The pilot study consists of a survey that focuses on the infant feeding policies and practices that hospital maternity services are currently implementing in Tennessee. The knowledge and opinions of you and your staff are important to this study. Thus, I would appreciate the opportunity to conduct the research study with your facility.

Participation in this pilot study is voluntary and would involve completion of the survey by *three* maternal/infant care staff. The estimated time to complete the survey instrument is no longer than 45 minutes. Our research protocol requires that the three staff members identified by the primary hospital contact (the person that received the initial survey packet) should choose to participate in the survey on a voluntary basis. These staff members should each have different roles in maternal/infant care and should have at least 2 years of experience in this area of your facility. Each of the three staff members should complete either the hard copy survey form or the on-line form. A self-addressed stamped envelope has been provided for each survey for staff that choose to complete the hard copy survey form. Staff also have the option of completing the same survey on-line to a secure University-based website, which should take no more than 30 minutes to complete.

There are no known anticipated risks to your participation in this pilot study, although questions are quite general, you may decline answering any questions you feel you do not wish to answer. All information you provide will be considered confidential and grouped with responses from other participants in the study. Further, you or your hospital will not be identified by name in my thesis or in any report or publication resulting from this study. The data collected through this study will be kept for a period of 1 year in my supervisor's lab at the University of Tennessee, Knoxville.

If after receiving this letter, you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact myself, Carrie Barker, at 865-405-0625 or Assistant Professor Sonya Jones at 865-974-6250.

As with all pilot projects involving human participants at The University of Tennessee, this project has been reviewed by, and received ethics clearance through the Office of Research at the University of TN, Knoxville. Should you have comments or concerns resulting from your participation in this study, please contact the Office of Research at 865-974-3466.

Thank you for your assistance with this project.

Sincerely,

Carrie Barker, RD,LDN
Nutrition Graduate Student
University of TN, Knoxville

HOSPITAL CONSENT FORM

As a hospital administrator or manager, I give consent to hospital staff to participate in the pilot research study being conducted by Carrie Barker of the Department of Nutrition at The University of Tennessee, Knoxville, under the supervision of Drs. Sonya Jones and Betsy Haughton. I have made this decision based on the information I have received in the Information Letter and have had the opportunity to receive any additional details I wanted about this study. I am aware of the benefits of our hospital participating in this research, such as contributing to knowledge about infant feeding in Tennessee and sharing professional knowledge about infant feeding. As a participant in this pilot study, I realize that staff from this hospital will be asked to take part in a survey that may require up to forty minutes to complete either by mail or on-line. I understand that they may decline answering any of the questions, if they so choose. All information provided in this pilot study will be held in confidence. I understand that this hospital and its staff will not be identified by name in the thesis, report or any publication resulting from this study. I understand that I may withdraw this consent at any time and I may decline continued participation in the pilot study by requesting that any data collected from our staff or facility be destroyed.

I understand that all pilot research surveys will be kept confidential and on file in the Department of Nutrition in a locked filing cabinet in Room 213 until the completion of Ms. Barker's thesis, and then the surveys will be destroyed. Only the three above-mentioned researchers will have access to the survey forms and data.

I acknowledge that this project has been reviewed by and received ethics clearance through the Office of Research at the University of Tennessee, Knoxville and that I may contact this office if I have any questions about my participation in this study.

Hospital Name: _____

Administrator's Name: _____

Administrator's Signature: _____

Name of Witness: _____

Signature of Witness: _____

Date: _____

APPENDIX E

Cover Letters, Consent Forms and Postcards

Dear Maternity Services Administrator,

Researchers at The University of Tennessee, Knoxville would like to invite your hospital to participate in a research study that is being conducted in over eighty hospitals throughout Tennessee. This study is the final phase of a graduate thesis research project conducted through the Department of Nutrition under the supervision of Dr. Sonya Jones and Dr. Betsy Haughton. The study consists of a survey that focuses on the infant feeding policies and practices that hospital maternity services are currently implementing in Tennessee. The knowledge and opinions of you and your staff are important to this study. Thus, I would appreciate the opportunity to conduct the research study with your facility.

Participation in this study is voluntary and would involve completion of the survey instrument that would require no longer than forty-five minutes to complete. A self-addressed stamped envelope has been provided for each survey to mail in the hard copy survey instrument. Staff also have the option of completing the same survey on-line to a secure University-based website, which should take no more than thirty minutes to complete.

There are no known anticipated risks to your participation in this study, although questions are quite general, you may decline answering any questions you feel you do not wish to answer. All information you provide will be considered confidential and grouped with responses from other participants in the study. Further, you or your facility will not be identified by name in my thesis or in any report or publication resulting from this study. The data collected through this study will be kept for a period of one year in a locked filing cabinet in my supervisor's lab at the University of Tennessee, Knoxville, after which the data will be destroyed.

If after receiving this letter, you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact Assistant Professor Sonya Jones at 865-974-6250.

As with all projects involving human participants at The University of Tennessee, this project has been reviewed by, and received ethics clearance through the Office of Research at the University of Tennessee, Knoxville. Should you have comments or concerns resulting from your participation in this study, please contact the Office of Research at 865-974-3466.

Thank you for your assistance with this project.

Sincerely,

Carrie Barker, RD,LDN
Nutrition Graduate Student
University of TN, Knoxville

Dear Maternity Services Administrator,

Recently your facility was invited by researchers at The University of Tennessee, Knoxville to participate in a research study that is being conducted in over eighty hospitals throughout Tennessee. This study is the final phase of a graduate thesis research project conducted through the Department of Nutrition under the supervision of Dr. Sonya Jones and Dr. Betsy Haughton. The study consists of a survey that focuses on the infant feeding policies and practices that hospital maternity services are currently implementing in Tennessee. The knowledge and opinions of you and your staff are important to this study. Thus, I would appreciate the opportunity to conduct the research study with your facility.

A benefit to participating in this study is that your facility will receive a report outlining your survey results. This data could be valuable in addressing staff availability, training time provided, and policies and practices around infant feeding. Many of the issues addressed in the survey are becoming of more and more interest to JACHO, so participation in this study could serve as an initial evaluation process for your facility.

Participation in this study is voluntary and would involve completion of the survey instrument that would require no longer than forty-five minutes to complete. A self-addressed stamped envelope has been provided for each survey to mail in the hard copy survey instrument. Staff also have the option of completing the same survey on-line to a secure University-based website, which should take no more than thirty minutes to complete.

There are no known anticipated risks to your participation in this study, although questions are quite general, you may decline answering any questions you feel you do not wish to answer. All information you provide will be considered confidential and grouped with responses from other participants in the study. Further, you or your facility will not be identified by name in my thesis or in any report or publication resulting from this study. The data collected through this study will be kept for a period of one year in a locked filing cabinet in my supervisor's lab at the University of Tennessee, Knoxville, after which the data will be destroyed.

If after receiving this letter, you have any questions about this study, or would like additional information to assist you in reaching a decision about participation, please feel free to contact Carrie Barker at 865-405-0625 or Assistant Professor Sonya Jones at 865-974-6250.

As with all projects involving human participants at The University of Tennessee, this project has been reviewed by, and received ethics clearance through the Office of Research at the University of Tennessee, Knoxville. Should you have comments or concerns resulting from your participation in this study, please contact the Office of Research at 865-974-3466.

Thank you for your assistance with this project.

Sincerely,

Carrie Barker, RD,LDN
Nutrition Graduate Student
University of TN, Knoxville

HOSPITAL CONSENT FORM

As a hospital administrator or manager, I give consent to hospital staff to participate in the research study being conducted by Carrie Barker of the Department of Nutrition at The University of Tennessee, Knoxville, under the supervision of Drs. Sonya Jones and Betsy Haughton. I have made this decision based on the information I have received in the Information Letter and have had the opportunity to receive any additional details I wanted about this study. I am aware of the benefits of our hospital participating in this research, such as contributing to knowledge about infant feeding in Tennessee and sharing professional knowledge about infant feeding. As a participant in this study, I realize that staff from this hospital will be asked to take part in a survey that may require up to forty minutes to complete either by mail or on-line. I understand that they may decline answering any of the questions, if they so choose. All information provided in this study will be held in confidence. I understand that this hospital and its staff will not be identified by name in the thesis, report or any publication resulting from this study. I understand that I may withdraw this consent at any time and I may decline continued participation in the study by requesting that any data collected from our staff or facility be destroyed.

I understand that all research surveys will be kept confidential and on file in the Department of Nutrition in a locked filing cabinet in Room 213 until the completion of Ms. Barker's thesis, and then the surveys will be destroyed. Only the three above-mentioned researchers will have access to the survey forms and data.

I acknowledge that this project has been reviewed by and received ethics clearance through the Office of Research at the University of Tennessee, Knoxville and that I may contact this office if I have any questions about my participation in this study.

Hospital Name: _____

Administrator's Name: _____

Administrator's Signature: _____

Name of Witness: _____

Signature of Witness: _____

Date: _____

Infant Feeding Survey

Recently you were mailed a packet containing surveys for a research study being conducted by The University of Tennessee, Knoxville Department of Nutrition. This study is investigating hospital infant feeding policies and practices across Tennessee. The opinions of you and your staff are important to this study so your participation is very much appreciated.

If you and your staff have already completed this survey on-line or mailed in the completed survey, thank you. If you and your staff have not completed the survey please do so as soon as possible.

Please note that by participating in this study you will receive a report outlining your results. This information could be valuable to your facility when making decisions about policies and staffing needs.

If you have questions about the research study or need another survey packet please call Carrie Barker at 865-405-0625 or e-mail me at cbarker3@utk.edu.

APPENDIX F

Primary Contact Instructions

Hospital Primary Contact Instructions

As the Hospital Primary Contact your assistance in this research is critical to its success. As with any research study it is important to follow the research protocol as outlined in the study. Below the prerequisites to participation are identified. These guidelines should be easy to follow, but they are important in that these guidelines have been set to insure quality of the data received across care disciplines. If you have any questions or concerns about this protocol please feel free to call or e-mail me at (865) 405-0625 or cbarker3@utk.edu.

Enclosed in this packet is a ***Hospital Consent Form*** that should be signed by a Maternity/Infant Administrator. This form insures your facility that there are no known anticipated risks to participating in this research and that your facility consents to participating in this study based on this. This form may be mailed in one of the self-addressed stamped envelopes either with a completed survey or by itself (if all three surveys are completed on-line).

Please offer a copy of the Hospital Infant Feeding Survey (make sure to include the cover letter, consent form and the self-addressed stamped envelope) to **3** staff members (you may include yourself) that will volunteer to participate in the survey.

As you approach staff members to participate in this study, please follow the research guidelines for participation listed below:

- **Remember participation is voluntary; no staff member should be forced to participate.**
- **Each of the 3 staff members should have different functions in maternal/infant care;** e.g. the nurse manager, mother-care nurse, and infant-care nurse may all participate, even though all 3 are nurses, they all play different roles in care. *Any* staff member that contributes to mother/infant care may participate in the survey as long as they each have different roles in care.
- **Each participating staff member must have at least 2 years of experience in the Maternity/Infant Care area of your facility.**

The 3 participating staff members may complete either the hard copy form to mailed in or the on-line form available at <http://surveys.utk.edu/carrie/index.htm>. If you have any questions about this study or the research protocol, please contact me at (865) 405-0625 or cbarker3@utk.edu.

Also, if you choose your facility will receive a report that will outline your facilities infant feeding practices and how those practices compare across the State of Tennessee.

This report could prove to be helpful in justifying staffing and policy recommendations in your facility. You should receive a copy of this report by late fall of this year.

Again thank you for your time and effort in this research project.

Carrie Barker, RD LDN

Graduate Student

Department of Nutrition-The University of Tennessee, Knoxville

VITA

Carrie Jenette Barker was born in Elizabethton, Tennessee on March 3, 1976. She attended Unaka Elementary and graduated from Unaka High School in Elizabethton, Tennessee in 1994. She received a Bachelor of Science In Nutrition in May 2000 from East Tennessee State University, Johnson City. In August of 2005, she received a Master of Science in Nutrition (Public Health Nutrition option) and a Master of Public Health (Community Health Education option) from The University of Tennessee, Knoxville.