Hospital Practices Related to Breastfeeding in Mississippi: A Socio-ecological Approach

Amir Alakaam
The University of Southern Mississippi

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The University of Southern Mississippi

HOSPITAL PRACTICES RELATED TO BREASTFEEDING IN MISSISSIPPI
A SOCIO-ECOLOGICAL APPROACH

by
Amir A. Hadi Alakaam

Abstract of a Dissertation
Submitted to the Graduate School
of The University of Southern Mississippi
in Partial Fulfillment of the Requirements
for the Degree of Doctor of Philosophy

December 2015
ABSTRACT

HOSPITAL PRACTICES RELATED TO BREASTFEEDING IN MISSISSIPPI

A SOCIO-ECOLOGICAL APPROACH

by Amir A. Hadi Alakaam

December 2015

Mississippi continues to have one of the lowest rates and the weakest support in respect to breastfeeding in the nation (Centers for Disease Control and Prevention, 2014a). Hospital practices supporting breastfeeding such as the Ten Steps to Successful Breastfeeding (TSSB) can dramatically increase breastfeeding rates and duration (Rosenberg, Stull, Adler, Kasehagen, & Crivelli-Kovach, 2008). The aim of this study was to explore breastfeeding practices in Mississippi hospitals based on two levels of the Socio-Ecological Model: the organizational level (phase I) examined the hospital practices based on the level of implementation of the TSSB; the individual level (phase II) examined knowledge and practices related to breastfeeding, and interest to adopt the TSSB among maternity nurses in the hospitals. Correlations among the variables were also measured. Moreover, the researcher was interested in identifying the barriers and facilitators to implementing the TSSB in maternity practices.

In phase I, the researcher surveyed nurse managers of the maternity units of all 43 hospitals in Mississippi that provide maternity care; a response rate of 72% (n = 31) was obtained. In phase II, 302 nurses working in the hospitals’ maternity setting participated. Descriptive statistics were used to analyze the data and Chi-square and Spearman correlations tests were used to determine correlations among the variables.
Phase I finding indicated that TSSB level of implementation was partial in 22 hospitals and moderate in 9 hospitals. Phase II finding found that breastfeeding knowledge and practices of the nurses were good. Most of the nurses believed that they were effective in meeting the needs of the patients, and showed a positive interest towards adopting TSSB. Positive significant associations were noted among breastfeeding knowledge and practice, interest to adopt the TSSB, age, years of experience, and other variables.

Raising awareness about the importance of the TSSB and providing a lactation consultant in the unit were the main facilitators. The common barriers for TSSB implementation were routine practices, limited financial resources, and lack of support from the government. The findings suggested a need to improve the overall breastfeeding support in Mississippi. Future research should explore various ways to implement the TSSB in hospitals’ practices.
DEDICATION

I would never have been able to finish my dissertation without the support of my parents, my two sisters, and my two brothers. It was their love overseas that kept me going. My whole life I have felt that they were proud of me, and that has always been enough drive to keep me going. A special thanks to the one who inspired me, my father, for his appreciation for knowledge, and enthusiasm for teaching. He initiated my dream to continue my education, and he is the reason why I decided to pursue a doctoral degree. He is always and forever my source of motivation and inspiration.

To my mother, the one who hurt from the first day I moved to the United States during the summer of 2010 and still hurts today. My work would not have commenced without your love, prayers, and sacrifices; and absolute thanks for breastfeeding me. I owe my success in both professional and personal life to you.

A good support partner is important for surviving a dissertation, and I was lucky enough to have a special person in my life during the dissertation journey, Shih Ting Shao. Life is much easier with your company. I thank you from the bottom of my heart for being there for me during the darkest and lightest days; and by the way, thank you for your patience and for cheering me on no matter what the venture.
ACKNOWLEDGMENTS

“One who has not thanked the creature has not thanked the creator.”

- Arabic Proverb

It is an honor to thank the many individuals who made this dissertation a reality. My first thank goes to my advisor, Dr. Jennifer Lemacks, for her teaching, kindness, and friendship. Dr. Lemacks was the one who was there for me when I moved to Mississippi; her office door was always open whenever I ran into academic, research, writing, or personal issues. I also thank her for assisting me in developing the theoretical base of my research and for helping me become a much better writer and researcher.

A very special thanks goes to the one and only Dr. Kathy Yadrick. When it comes to her, the words seem to fall short of my feelings. Dr. Yadrick not only gave me academic advice and guidance, she even gave me a mother’s love and home away from home. I am sure there is no teacher who ever showed her students more kindness, patience, and support as Dr. Yadrick, and yes, this world is a better place to live because of people like Dr. Yadrick.

I would also like to thank the members of my dissertation committee: Dr. Carol Connell, Dr. Ray Newman, and Dr. Hwanseok Choi. I appreciate your advice and suggestions. I am honored that you were able to serve as committee members for my dissertation. Dr. Choi, your guidance, assistance, and friendship helped me create a statistically sound dissertation.

I am also very grateful to Dr. James T. Johnson for his scientific advice about the research design. Special thanks and appreciation go to Dr. Alicia Landry for her caring
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I want to thank Dr. Susan Mayfield-Johnson for her inspiration and comments. I would also like to thank Beth Slaby for the hours she spent editing and expanding my vocabulary on my manuscripts and for her astonishing skill.

I would also like to express my sincere gratitude to the President of Mississippi Breastfeeding Coalition, Cheryl Lloyd, for the very wonderful person she is. She is a gift from God to humanity. Thank you for sharing your knowledge and resources. I would have been lost without your guidance.

Thank you members of Mississippi Breastfeeding Coalition for welcoming me as a member and helping me to develop the data in the dissertation. Thank you also for your effort to support breastfeeding and never allowing it to be taboo in the community. Please keep up the amazing work.

I also thank the wonderful person in the Nutrition and Food Systems Department, Belynda Brock, for always being so helpful and friendly. Belynda, you are truly the department hero behind the scenes.

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<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>AAP</td>
<td>American Academy of Pediatrics</td>
</tr>
<tr>
<td>AWONN</td>
<td>Association of Women's Health, Obstetric and Neonatal Nurses</td>
</tr>
<tr>
<td>BF</td>
<td>Baby-Friendly</td>
</tr>
<tr>
<td>BFH</td>
<td>Baby-Friendly Hospital</td>
</tr>
<tr>
<td>BFHI</td>
<td>Baby-Friendly Hospital Initiative</td>
</tr>
<tr>
<td>BFUSA</td>
<td>Baby-Friendly USA, Inc.</td>
</tr>
<tr>
<td>BKP</td>
<td>Breastfeeding Knowledge and Practices</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
</tr>
<tr>
<td>CATCH</td>
<td>Child and Adolescent Trial for Cardiovascular Health</td>
</tr>
<tr>
<td>CHAMPS</td>
<td>Communities and Hospitals Advancing Maternity Practices</td>
</tr>
<tr>
<td>CDC</td>
<td>Centers for Disease Control and Prevention</td>
</tr>
<tr>
<td>CDPH</td>
<td>California Department of Public Health</td>
</tr>
<tr>
<td>HHS</td>
<td>U.S. Department of Health and Human Services</td>
</tr>
<tr>
<td>LPN</td>
<td>Licensed Practical Nurses</td>
</tr>
<tr>
<td>mPINC</td>
<td>Maternity Practices in Infant Nutrition and Care</td>
</tr>
<tr>
<td>MS</td>
<td>Mississippi State</td>
</tr>
<tr>
<td>MSDH</td>
<td>Mississippi State Department of Health</td>
</tr>
<tr>
<td>NCSL</td>
<td>National Conference of State Legislatures</td>
</tr>
<tr>
<td>NJ</td>
<td>New Jersey State</td>
</tr>
<tr>
<td>NP</td>
<td>Nurse Practitioners</td>
</tr>
<tr>
<td>RN</td>
<td>Registered Nurses</td>
</tr>
<tr>
<td>SEM</td>
<td>Socio-Ecological Model</td>
</tr>
</tbody>
</table>
**TSSB**  Ten Steps to Successful Breastfeeding

**UNICEF**  United National Children’s Fund

**WHO**  World Health Organization

**WIC**  Women, Infants, and Children Program
CHAPTER I
INTRODUCTION

Breastfeeding offers many benefits and can be an essential strategy to reducing infant, child, and maternal morbidity and mortality rates. It can also help to reduce the cost of health care (American Academy of Pediatrics [APA], 2012; Lessen & Kavanagh, 2015; U.S. Department of Health and Human Services [HHS], 2011). Despite widespread efforts to support breastfeeding, the United States (US) has one of the lowest rates of breastfeeding in the industrialized world and one of the highest rates of infant mortality (Centers for Disease Control and Prevention [CDC], 2014a). Only 26.7% of infants are breastfed for one year, and 18.8% of infants are exclusively breastfed for the first six months of life (CDC, 2014a).

According to the CDC breastfeeding report (2014a), in 2011, the percent of infants’ breastfeeding nationwide ranged from 28.9% to 66.5% at six months, and 10% to 45.1% at one year. Mississippi has the lowest rates of breastfeeding of all states at six months (28.9%) and at one year (10%; CDC, 2014a). These rates are far below targets set in Healthy People 2020, recommendations of Healthy People 2020 specify goals of 60.6% to continue breastfeeding for six months, and 34.1% to continue breastfeeding for one year (HHS, 2014).

Breastfeeding support inside the health facility is one of the most beneficial strategies that can improve the breastfeeding rate in the community (CDC, 2014a; Declercq, Labbok, Sakala, & O'Hara, 2009; Hellings & Howe, 2000). Studies show that hospital policies and practices specifically supporting breastfeeding can dramatically increase breastfeeding rates and durations, and improve the health of mothers and infants.
after discharge (Cropley & Herwehe, 2002; Rosenberg, Stull, Adler, Kasehagen, & Crivelli-Kovach, 2008). Hospital practices, such as separating mothers from their infants, delaying the first feeding, and giving formula to infants, can discourage or prevent a mother’s decision to breastfeed (Kruse, Denk, Feldman-Winter, & Rotondo, 2005; Murray, Ricketts, & Dellaport, 2007). In the US, several health facilities have inadequate practices and policies to encourage breastfeeding (Merewood & Philipp, 2001; Weddig, Baker, & Auld, 2011). For example, although a small percentage of infants have clinical indications that result in a medical recommendation for milk formula supplementation, in some hospitals in the U.S., formula is given to more than 25% of breastfed infants before two days of age (CDC, 2014a). In these hospitals, it is likely that supplementation is a matter of routine and not medical necessity (Siska, 2011).

To address the low support level for breastfeeding inside the hospitals and to reduce many of the hospital routines that disadvantage nursing mothers, the World Health Organization (WHO) and the United National Children’s Fund (UNICEF) have implemented several global initiatives to improve breastfeeding rates and durations around the world (UNICEF, 2009; WHO, 2003). One of these initiatives is The Baby-Friendly Hospital Initiative (BFHI); this initiative describes ten practices called the “Ten Steps to Successful Breastfeeding,” which improve breastfeeding rates and durations by providing support to mothers and infants and a Baby-Friendly (BF) hospital designation for compliant facilities (UNICEF, 2009; WHO, 2003). Baby-Friendly USA Inc. (BFUSA) implements the Ten Steps to Successful Breastfeeding (TSSB) in the US (BFUSA, 2012). These steps include, for example: have a written breastfeeding policy that is routinely communicated to all health care staff, inform all pregnant women about
the benefits and management of breastfeeding, train all health care staff in skills necessary to implement this policy, help mothers initiate breastfeeding within an hour of birth, and give newborn infants no food or formula other than breast milk unless medically indicated (BFUSA, 2012).

The TSSB can intensively influence the mother’s decision to breastfeed by establishing effective breastfeeding behaviors immediately after birth and during the stay in the hospital (Smith, Moore, & Peters, 2012). Today, BFHI is the gold standard for evidenced-based breastfeeding care in hospitals (BFUSA, 2012).

There is growing evidence that the rate and duration of infant breastfeeding improve at both the hospital and community levels after hospitals implement the TSSB (Cropley & Herwehe, 2002; Semenic, Childerhose, Lauzière, & Groleau, 2012). Hospitals that administratively support breastfeeding and have a clear and comprehensive written breastfeeding policy that is communicated to staff provide better breastfeeding support services that lead to better breastfeeding outcomes (Rosenberg et al., 2008). Furthermore, studies have found that addressing multiple BFHI steps simultaneously is more effective than promoting any one step in particular (Rosenberg, et al., 2008; Smith et al., 2012). The more steps of the TSSB that a woman experiences in the hospital, the more likely she will still breastfeed postpartum (DiGirolamo, Grummer-Strawn, & Fein, 2001; Rosenberg et al., 2008).

Despite the great numbers of hospitals around the world that reached Baby-Friendly designation in the past decades (UNICEF, 2009), most hospitals in the US unfortunately do not fully support the BFHI (BFUSA, 2014; CDC, 2014a; Grizzard, Bartick, Nikolov, Griffin, & Lee, 2006; Rosenberg et al., 2008). According to the CDC’s
report on hospital support for breastfeeding (2011), 54 percent of U.S. hospitals implemented only three to five steps of the TSSB, and only four percent of the hospitals implemented nine to ten steps. As of September 14, 2014, only eight percent of U.S. hospitals and birthing centers (199 facilities) hold the Baby-Friendly designation (BFUSA, 2014). In addition to these discouraging statistics, Mississippi has no health facilities recognized as Baby-Friendly hospitals to date (BFUSA, 2014; CDC, 2015). Furthermore, only 15 percent of Mississippi hospitals have comprehensive breastfeeding policies, and only 11 percent of Mississippi facilities follow standard practice guidelines against routine supplementation with infant milk formula in US (CDC, 2015).

A successful implementation of BFHI requires changes in hospital culture and environment as well as modifications in practice routines and traditions among health care staff (Atchan, Davis, & Foureur, 2014; Semenic et al., 2012). Several theoretical models of organizational change could offer promising direction for developing effective strategies for implementing BFHI by assessing the influence of the individual and environmental factors on breastfeeding practices (Atchan et al., 2014; Thomson, Bilson, & Dykes, 2012; Vincent, 2012); one of these models is the Socio-Ecological Model (Contento, 2011, p.121). The Socio-Ecological Model (SEM) is used to explain particular individual or institutional behaviors and practices by understanding the relationship that exists between the individual (ecological) and the environmental (social) factors (Stokols, 1996). It was originally developed to explain individual behaviors and practices by understanding the influence of multilevel factors that motivate those actions (Bronfenbrenner, 1994). These factors are also seen to contribute positively or negatively to the practices and structures of an institution such as hospitals, schools, or churches
(Borkowski, 2009). Several studies used SEM by itself or in combination with other theories such as theory of planned behavior and self-determination theory to examine and promote different kinds of practices based on evidence that no individual factor can explain specific practices (Bronfenbrenner, 1994). The principles of this model have been used in previous studies to explore practices related to health care (Messer et al., 2013), life style (Dobson & Gilroy, 2009; Luepker et al., 1996), and breastfeeding care (Barona-Vilar, Escribá-Agüir, & Ferrero-Gandía, 2009). The SEM could be an effective approach to change and explain hospital environmental and hospital staff practices (Borkowski, 2009) to support adoption of the TSSB in hospitals.

In order to have an effective SEM approach, researchers recommend developing a strategy that targets at least two levels (Contento, 2011, p. 121), and Robinson (2008) specifically recommends that these be the individual level and the organizational level. Such a strategy is more likely to be sustainable and achievable especially if it focuses on specific factors that influence the individual and the environmental levels (Stokols, 1996). The Socio-Ecological Model, as recommended by these authors, framed this study, which included two levels of the SEM approach, and specifically the individual and organizational levels.

There is limited research examining the hospital policies and practices related to breastfeeding in the states that have low breastfeeding rates such as in Mississippi (Li et al., 2014; Mitra, Khoury, Hinton, & Carothers, 2004; Semenic et al., 2012); there are also few studies that have explored the barriers and facilitators that influence adoption and implementation of the BFHI in U.S. health facilities (Semenic et al., 2012; Smith et al., 2012; Turner-Maffei & Cadwell, 2004).
Research Purpose

Although improving breastfeeding support and promotion is a national priority (HHS, 2011), Mississippi continues to have one of the lowest rates and support in respect to breastfeeding in the nation (CDC, 2014a). Given the low breastfeeding rates in Mississippi, there is a need for strategies to evaluate breastfeeding support practices in relevant health care facilities.

The lack of breastfeeding practices, lack of staff training on breastfeeding, and lack of support in hospitals are main barriers that need to be examined in order to move toward a breastfeeding-friendly environment (Atchan et al., 2014; Semenic et al., 2012). The overall goal of this study was to inform policy development to improve breastfeeding support and to provide evidence to better inform implementation of the TSSB in Mississippi. This study could be the first phase of a multilevel research project designed to develop a breastfeeding intervention program that could be administered directly to healthcare staff in hospitals.

This was the first study, to our knowledge, to examine the breastfeeding policies and practices among hospitals in Mississippi and identify barriers to implementing the TSSB based on a Socio-Ecological approach. This study could improve the breastfeeding practices of health providers and overall practices of the health facilities and could help in developing a strategy to create breastfeeding-friendly environments in Mississippi.

The specific aims of the study were to:

1. Assess the implementation level of the TSSB practices of hospitals in Mississippi.
2. Examine association between TSSB level of implementation and the characteristics of hospitals.
3. Examine breastfeeding knowledge and practices, identify sources of information related to breastfeeding, and assess interest to adopt the TSSB in the practice among nursing staff in the maternity setting.

4. Assess association between nurses’ breastfeeding knowledge and practices, breastfeeding knowledge, and nurses’ interest to adopt the TSSB in their practices.

5. Examine relationship between breastfeeding knowledge and practices, breastfeeding knowledge, and interest to adopt the TSSB and demographic variables among nursing staff.

6. Identify the barriers and facilitators to adopt the TSSB in nurses’ practice and Mississippi hospitals.

Research Questions

1. What is the level of breastfeeding support (level of TSSB implementation) that exists at hospitals?

2. Is there an association between hospital level of implementation and the hospital characteristics?

3. What are the knowledge and practices regarding breastfeeding among the nurses who work in maternity or birthing settings in Mississippi?

4. What are the nurses’ sources of information related to breastfeeding in the hospital?

5. What is the nurses’ interest to adopt the TSSB in their practice?

6. Is there a relationship between nurse knowledge and practices related to breastfeeding and nurses’ interest to adopt the TSSB in their practice?
7. Are there associations between breastfeeding knowledge and practices, and interest to adopt the TSSB with demographic variables among nursing staff?
8. What are the barriers to implementing the TSSB in Mississippi hospitals?
9. What are the barriers and facilitators to implementing the TSSB in nurses’ practice?

Definitions of Terms

*Breastfeeding Rates*: Breastfeeding rates are defined as the proportion of children who were breastfed at least once, and for specific time intervals, including three, six, twelve, and twenty-four months.

*Exclusive Breastfeeding*: Refers to infants who have only received breast milk during a specified period of time.

*Hospital Policy*: Hospital policy is defined as principles or a set of practices that are made and implemented by administrators to ensure that all staff of the hospital practice in a consistent manner.

*Public Policy*: Public policy is defined as a set of rules, actions, decisions, regulations, laws, or orders taken by government to achieve specific goals with respect to particular issues.

*Maternity Unit*: Maternity unit is defined as any ward, department, or section in a health facility that provides care for women during pregnancy and childbirth.

*Birthing Unit*: Birthing unit is defined as any ward, department, or section in a health facility that provides care for women during delivery and care for newborn infants.
**Obstetric Unit**: Obstetric unit is defined as any ward, department, or section in a health facility that provides care for women during pregnancy, childbirth, and postpartum period.
Breastfeeding Benefits

Breastfeeding offers many benefits and it can be an essential strategy to improve infant, child, and maternal morbidity and mortality rates. It can also help to reduce the cost of health care in the US (HHS, 2011; Lessen & Kavanagh, 2015). Breastfeeding has been shown to provide multiple health benefits for both infants and mothers, and it is the preferred choice of feeding for all infants (AAP, 2012; Lessen & Kavanagh, 2015).

According to the World Health Organization (WHO; 2013), “if every child was breastfed within an hour of birth, given only breast milk for their first six months of life, and continued breastfeeding up to the age of two years, about 220,000 child lives would be saved every year.”

Compared to formula-fed infants, breastfed infants have lower rates of ear infections (AAP, 2012; Duffy, Faden, Wasielewski, Wolf, & Krystofik, 1997; Duncan et al., 1993), urinary tract infection (Mårild, Hansson, Jodal, Odén, & Svedberg, 2004), diarrhea, and childhood asthma; a reduced risk of severe respiratory tract infections (AAP, 2012; Hanson, 1999; Ip et al., 2007), and a lower risk of obesity (AAP, 2012; CDC, 2011; Ip et al., 2007). Other benefits reported include decreased rates of Sudden Infant Death Syndrome (Horne, Parslow, Ferens, Watts, & Adamson, 2004), reduction in the incidence of type 1 and type 2 Diabetes Mellitus (AAP, 2010; Perez-Bravo et al., 1996), hypercholesterolemia (Owen, Whincup, Odoki, Gilg, & Cook, 2002), and certain types of cancer (AAP, 2012; Bener, Denic, & Galadari, 2001), as well as improved performance on certain tests of cognitive development (Feldman & Eidelman, 2003).
Children that are breastfed also experience an overall 72% reduction in the risk of hospitalization due to lower respiratory tract diseases (AAP, 2012; Bachrach, Schwarz, & Bachrach, 2003).

Several studies indicate a relationship between breastfeeding duration and a decrease overweight and obesity risks in children in different age groups (Hester, Hustead, Mackey, Singhal, & Marriage, 2012. Ip et al., 2007; Scott, Ng, & Cobiac, 2012; Zhang et al., 2013). Breastfed infants are 36% less likely to be overweight and 49% less likely to be obese (Scott, Ng, & Cobiac, 2012). A cross-sectional study examined the relationship between breastfeeding and being overweight in children ages 6-11 years in Aruba (Grêaux et al., 2013). The researcher collected data on food patterns and breastfeeding, and measured the weight and height to obtain the Body Mass Index (BMI) for children ($n = 1,776$). The result showed that children who breastfed for four months or more had lower prevalence of overweight and obesity compared with children who either did not breastfeed or who were breastfed for fewer than four months (Grêaux et al., 2013).

Another cohort study explored the factors that influence overweight and obesity status among children (Zhang et al., 2013). This community-based prospective study followed 1,098 children in China from the birth to two year olds. In this study, breastfeeding at three months was significantly associated with reduction of the risk of high weight gain and high BMI status. Additionally, children who were fed exclusive breast milk for the first month were at lower risk of high BMI status (47%) compared to those who were formula fed (Zhang et al., 2013). Another study in Australia ($n = 2,066,$
males and females aged 9 to 16 years) also found that breastfeeding for six months or more was protective against overweight and obesity in later childhood (Scott et al., 2012).

Breastfeeding duration also plays a significant role in determining the child’s risk of being overweight or obese (Grummer-Strawn & Mei, 2004; Kitsantas & Gaffney, 2010). A study examined the combined effect of maternal and child factors including breastfeeding duration on overweight and obesity risks in preschool children in the US (Kitsantas & Gaffney, 2010). The findings showed that breastfeeding for more than two and a half months reduced the prevalence of overweight and obesity among four year old children (Kitsantas & Gaffney, 2010).

The mechanism behind breastfeeding – weight relationship is still unidentified and under investigation. Some researchers mentioned that increased responsiveness to internal satiety cues in breastfed children is one of the potential causes behind this relationship (Hathcock, et al., 2014), or the protective effect of breastfeeding might be because an appropriate energy intake is associated with breastfeeding (Haisma et al., 2003). Hathcock et al. (2014) examined the effect of the satiety responsiveness in the association between breastfeeding and weight status in 428 toddlers aged two years in the US. Findings from this study did not show any significant association between satiety responsiveness and breastfeeding. However, breastfeeding was significantly associated with lower BMI and adiposity in the participants. Hester et al. (2012) conducted a systematic review (20 studies) to identify the underlying mechanism behind breastfeeding – weight relationship. The findings showed that the large volume of intake and high protein content of milk formula may lead to produce high percentage of body fat and faster growths which place the formula fed infants at a higher risk of obesity.
Studies suggested that increasing breastfeeding rate and duration could be an effective strategy to decrease obesity incidence across all ethnic and socioeconomic populations in the US (Britton, McCormick, Renfrew, Wade, & King, 2007; Sobush et al., 2009). Table 1 shows percentages of obese adult and obese children ages 10-17 years old in eight states (four states with highest breastfeeding rates compared with four states with lowest breastfeeding rates among the nation). As shown in Table 1, Mississippi has the lowest breastfeeding rate at six and twelve months, yet it also has the highest obesity rate in the nation.

Table 1

*Breastfeeding and Obesity Rates among U.S. Population by State*

<table>
<thead>
<tr>
<th>States by breastfeeding categories</th>
<th>Breastfeeding rate at 6 months (%)*</th>
<th>Breastfeeding rate at 12 months (%)*</th>
<th>Obesity rate among adult (%) **</th>
<th>Obesity rate among 10-17 year-olds***</th>
</tr>
</thead>
<tbody>
<tr>
<td>States with lowest breastfeeding rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mississippi</td>
<td>28.9</td>
<td>10.0</td>
<td>35.1</td>
<td>21.7</td>
</tr>
<tr>
<td>Louisiana</td>
<td>30.3</td>
<td>12.6</td>
<td>33.1</td>
<td>21.1</td>
</tr>
<tr>
<td>Alabama</td>
<td>32.1</td>
<td>11.8</td>
<td>32.4</td>
<td>18.6</td>
</tr>
<tr>
<td>Arkansas</td>
<td>32.3</td>
<td>13.5</td>
<td>34.6</td>
<td>20.0</td>
</tr>
<tr>
<td>States with highest breastfeeding rates</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vermont</td>
<td>66.5</td>
<td>45.3</td>
<td>24.7</td>
<td>11.3</td>
</tr>
<tr>
<td>Oregon</td>
<td>64.4</td>
<td>40.2</td>
<td>26.5</td>
<td>9.9</td>
</tr>
<tr>
<td>Utah</td>
<td>63.1</td>
<td>40.7</td>
<td>24.1</td>
<td>11.6</td>
</tr>
<tr>
<td>California</td>
<td>63.1</td>
<td>38.4</td>
<td>24.1</td>
<td>15.1</td>
</tr>
</tbody>
</table>


** Adapted from “Prevalence of Self-Reported Obesity among U.S. Adults by State and Territory, 2013,” by Centers for Disease Control and Prevention, 2014b.

In addition to improving infant health outcomes, breastfeeding also reduces the incidence of several maternal health outcomes. Mothers who breastfeed have a decreased risk of ovarian and breast cancers and may return to baseline weight more rapidly postpartum (Ip et al., 2007; Lessen & Kavanagh, 2015). Studies have shown that a woman is 4% to 28% less likely to develop breast cancer and 21% less likely to develop ovarian cancer for each year she breastfeeds her child (Ip et al., 2007; Lipworth, Bailey, & Trichopoulos, 2000). Additional maternal benefits of breastfeeding include reduced risk of developing type 2 Diabetes Mellitus, hypertension, postpartum depression, postpartum hemorrhage, and osteoporosis (AAP, 2012; Henderson, Evans, Straton, Priest, & Hagan, 2003; Lessen & Kavanagh, 2015).

Breastfeeding is not only medically sound, but economically beneficial as well. If 90% of U.S. families could comply with medical recommendations to breastfeed exclusively for six months, the US would save $13 billion per year in direct and indirect medical costs and prevent an excess of about 900 deaths per year, mostly infant (Bartick & Reinhold, 2010). Ball and Wright (1999) found that for every 1,000 never breastfed infants in the first year of life there were 609 excess prescriptions, 2,033 excess health care visits, and 212 excess days of hospitalization compared with infants exclusively breastfed for at least three months. All of these projections are due to increases in the incidence of otitis media, respiratory tract infections, and gastrointestinal diseases (Ball & Wright, 1999; Ip et al., 2007; Saunders, 2010). The researchers also found that costs for hospitalization in the first year of infant life from respiratory diseases among 1,000 never breastfed infants range from $26,585 to $30,750 more than costs for exclusively breastfed infants (Ball & Wright, 1999).
Breastfeeding Rates in the United States and Mississippi

The US has one of the lowest rates of breastfeeding in the industrialized world, and one of the highest rates of infant mortality (CDC, 2014a). Globally, about 76% of infants are breastfed for one year and 38% of infants are exclusively breastfed for the first six months of life (UNICEF, 2009), compared to 26.7% and 18.8% in the US, respectively (CDC, 2014a). Breastfeeding rates in the US have continued to rise over the past years. However, the rates still fall far short of Healthy People 2020 objectives. These include goals for 81% of mothers to initiate breastfeeding, 60.6% to continue breastfeeding for six months, and 34.1% to continue breastfeeding for one year in the US. Healthy People 2020 also states objectives to improve exclusive breastfeeding rates with goals for 46.2% of women to breastfeed exclusively for three months and 25.2% to do so for six months in the US (HHS, 2014).

According to the CDC’s breastfeeding report (2014a), in 2011, the percent of infants breastfeeding nationwide ranged from 45.3% (Vermont) to 10% (Mississippi) at 12 months and 66.5% (Vermont) to 28.9% (Mississippi) at six months. Mississippi, Louisiana, and Alabama have the lowest rates of breastfeeding of all states at six months (28.9%, 30.3%, and 32.1%, respectively); and Mississippi, Alabama, and Louisiana have the lowest at 12 months (10%, 11.8%, and 12.6%, respectively). Mississippi has the lowest rates of breastfeeding of all states at six months (28.9%), and at twelve months (10%; CDC, 2014a).

Table 2 presents breastfeeding rates (initiation, at six months, twelve months, and exclusive breastfeeding at six months) in US and Mississippi in comparison to Healthy People 2020 objectives.
Table 2

**Breastfeeding Rates**

<table>
<thead>
<tr>
<th>Rates</th>
<th>Healthy people 2020 (%)</th>
<th>US (%)</th>
<th>Mississippi (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfeeding initiating</td>
<td>81.9</td>
<td>79.2</td>
<td>61.5</td>
</tr>
<tr>
<td>Breastfeeding at 6 months</td>
<td>60.6</td>
<td>49.4</td>
<td>28.9</td>
</tr>
<tr>
<td>Breastfeeding at 12 months</td>
<td>34.1</td>
<td>26.7</td>
<td>10.0</td>
</tr>
<tr>
<td>Exclusive breastfeeding at 6 months</td>
<td>25.5</td>
<td>18.8</td>
<td>10.0</td>
</tr>
</tbody>
</table>


**Baby-Friendly Hospitals Initiative**

In 1991, the WHO, in collaboration with UNICEF, recognized the importance of increasing breastfeeding rates and duration worldwide and launched the Baby-Friendly Hospitals Initiative (BFHI). This initiative promotes breastfeeding within the hospital setting through the implementation of 10 steps of policies and practices called the “Ten Steps to Successful Breastfeeding” (UNICEF, 2009; WHO, 2003). The BFHI is implemented in the US by Baby-Friendly USA, Inc. (BFUSA). The work of BFUSA is predicated on the fact that human milk fed through the mother’s own breast is a natural and the best way for human infants to be nourished (BFUSA, 2012; Rosenberg et al., 2008).

Baby-Friendly hospitals (BFHs) provide the best possible care for all mothers and their infants by following the TSSB recommendations (BFUSA, 2012; CDC, 2011). The Joint Commission, which accredits most hospitals in the US, has set measures that are publicly reported and are the subject of considerable attention by hospital administrators.
In 2010, The Joint Commission added exclusive breast milk feeding as a new hospital core measure for perinatal care (HHS, 2011). In 2012, The Joint Commission announced that the Perinatal Care Core Measure set would become mandatory for all hospitals with 1,100 or more births per year (U. S. Breastfeeding Committee, 2013). Today, BFHI is the gold standard for evidenced-based breastfeeding care in hospitals (BFUSA, 2012). Table 3 shows the complete list of the TSSB.

Table 3

*The Ten Steps to Successful Breastfeeding*

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Maintain a written breastfeeding policy that is routinely communicated to all health care staff.</td>
</tr>
<tr>
<td>2.</td>
<td>Train all health care staff in skills necessary to implement this policy.</td>
</tr>
<tr>
<td>3.</td>
<td>Inform all pregnant women about the benefits and management of breastfeeding.</td>
</tr>
<tr>
<td>4.</td>
<td>Help mothers initiate breastfeeding within one hour of birth (skin-to-skin contact).</td>
</tr>
<tr>
<td>5.</td>
<td>Show mothers how to breastfeed and how to maintain lactation, even if they are separated from their infants.</td>
</tr>
<tr>
<td>6.</td>
<td>Give infants no food or drink other than breast milk, unless medically indicated.</td>
</tr>
<tr>
<td>7.</td>
<td>Allow mothers and infants to remain together 24 hours a day (rooming in).</td>
</tr>
<tr>
<td>8.</td>
<td>Encourage unrestricted breastfeeding (breastfeeding on demand).</td>
</tr>
<tr>
<td>9.</td>
<td>Give no pacifiers or artificial nipples to breastfeeding infants.</td>
</tr>
<tr>
<td>10.</td>
<td>Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic.</td>
</tr>
</tbody>
</table>


Recently, BFUSA developed a four phases’ tool called “4-D” that represents clear, step-by-step pathway to help U.S. facilities achieve the BF designation (BFUSA,
Each hospital seeking to achieve the BF designation needs to pass these phases starting from submitting an application to BFUSA to addressing the policies and reviewing the practices by the External Review Board (BFUSA, 2012). The 4-D phases include: (a) Discovery phase (D1): in this phase, the facility submits the application form and learns about the process; (b) Development phase (D2): in this phase, the BFUSA provides the facility technical assistance to develop a strategy for implementing The TSSB; (c) Dissemination phase (D3): in this phase, the facility implements the strategy and measures outcomes; and (d) Designation phase (D4): in this phase, the facility evaluates the outcome, improves the quality, and invites the BFUSA to perform an on-site assessment. Baby-Friendly designation is achieved when the External Review Board confirms that TSSB have been implemented, accurately, in the facility (BFUSA, 2012).

Studies have shown that the rate of infant breastfeeding improves after hospitals implement the BFHI practices (Cropley & Herwehe, 2002; Semenic et al., 2012). Hospitals that administratively support breastfeeding and have a clear and comprehensive written breastfeeding policy that is communicated to staff provide better breastfeeding support services that lead to better breastfeeding outcomes (Rosenberg et al., 2008). Furthermore, studies have found that adapting multiple BFHI steps simultaneously is more effective than promoting any one step in particular. The more steps that a woman experiences in the hospital, the more likely she will continue to breastfeed postpartum (Rosenberg et al., 2008; DiGirolamo et al., 2001).

According to the BFUSA (2014), every hospital that attains the BF designation moves the health facilities closer to reaching the Healthy People 2020 objective of increasing the proportion of live births that occur in centers that provide recommended
breastfeeding care for mothers and their infants. In 2007, only 2.9% of U.S. births occurred in BF designated facilities. In 2014 data, 7.79% of births occurred in BF designated facilities (CDC, 2014a); the Healthy People 2020 objective is 8.1% (HHS, 2014).

Despite the well-documented benefits of providing BFHI support services and the HHS recommendation to implement these practices, U.S. hospitals have been slow to adopt the policies and practices outlined in the BFHI (CDC, 2015; Philipp & Merewood, 2004). As of September 14, 2014, only 199 U.S. hospitals and birthing centers hold the BF designation (BFUSA, 2014). Despite the fact that BFHI was initially launched more than 23 years ago, Mississippi has no health facility recognized as a Baby-Friendly hospital to date (BFUSA, 2014).

Table 4 shows the proportion of live births that occur in BFHs and the proportion of breastfed infants who receive formula milk within the first two days of life in US and Mississippi, compared with the Healthy People 2020 objective.

Table 4

<table>
<thead>
<tr>
<th>Indicators</th>
<th>Healthy people 2020 (%)</th>
<th>US (%)</th>
<th>Mississippi (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breastfed infants receiving formula before two days of age</td>
<td>14.2</td>
<td>19.4</td>
<td>15.1</td>
</tr>
<tr>
<td>Live births occurring at Baby-Friendly facilities</td>
<td>8.1</td>
<td>7.79</td>
<td>0</td>
</tr>
</tbody>
</table>

Baby-Friendly Hospitals Initiative Effectiveness

Studies have shown that adapting the TSSB by U.S. hospitals and health centers could be an effective strategy to increase breastfeeding rates and duration across all ethnic and socioeconomic populations in the US (Philipp et al., 2001). Baby-Friendly hospitals (BFH) have increased rates of breastfeeding initiation and exclusivity even among low income status community (Merewood, Mehta, Chamberlain, Philipp, & Bauchner; 2005). The increased rates in these hospitals occur regardless of demographic characteristics of the population or the institutions (Merewood et al., 2005). Philipp et al. (2001) compared breastfeeding initiation rates at Boston Medical Center before and after launching BFHI. The TSSB were adapted at the Boston Medical Center in 1999. The researchers examined 200 complete medical records, randomly selected from each of three years: 1995, 1998, and 1999. Maternal and infant demographic variables for all three years were comparable. The results showed that the breastfeeding initiation rate increased from 58% (1995) to 77.5% (1998) to 86.5% (1999). Number of infants exclusively breastfed increased from 5.5% (1995) to 28.5% (1998) to 33.5% (1999). Initiation rates increased among African American mothers from 34% (1995) to 64% (1998) to 74% (1999) in this population. The findings from this study indicated that the successful implementation of TSSB was associated with a significant increase in breastfeeding initiation rates. Philipp et al. (2001) concluded that “one way to improve breastfeeding initiation rates is to promote the success of the BFHI in every hospital and birth center in the nation.”

Another study examined breastfeeding data in BFHs (n = 28) using a cross-sectional design to determine whether breastfeeding rates at BF-designated hospitals
differed from average U.S. national and regional rates in the same year (Merewood et al., 2005). This study showed that the breastfeeding rates in the BFHs were above the state, regional, and national rates. The mean breastfeeding initiation rate for the 28 BFHs was 83.8%, compared with a U.S. breastfeeding initiation rate of 69.5% in 2001. Breastfeeding rates and exclusivity in BFHs were not associated with the size of the institution, as well as a high proportion of black or low-income patients was not associated with decreased breastfeeding rates at BFHs (Merewood et al., 2005).

Oregon has the highest rate of infants ever breastfed (91.9%) and the second highest rate at six months (64.4%) in the US (CDC, 2014a). Rosenberg et al. (2008) explored the association between the TSSB and breastfeeding at two days and two weeks in Oregon using a cross-sectional design. The researchers surveyed 57 hospitals in Oregon about breastfeeding support practices. The practices were linked with the proportion of infants born in those hospitals during the same year, who were reported to have been breastfed for two weeks. The results showed that overall hospitals in Oregon performed six out of the ten steps which were: having a written breastfeeding policy (Step 1), providing staff with breastfeeding training (Step 2), providing breastfeeding information (Step 3), breastfeeding initiation (Step 4), avoiding supplementation (Step 6), and encouraging demand feeding (Step 8). Additionally, the researchers found a positive association between hospitals whose policies provided better breastfeeding support services and breastfeeding outcomes. Implementation of Step 1 (having a hospital policy) and Step 2 (training staff) were each associated with an increase in breastfeeding rates at two weeks (Rosenberg et al., 2008).
Globally, over the past few years, many hospitals in different countries have started to adopt the BFHI. In 2012, more than 20,000 health facilities in 156 countries around the world implemented the BFHI (Pound & Unger, 2012). Studies on these countries have shown that practicing some or all of the TSSB in the hospitals increased rates and likelihood of infants being exclusively breastfed (Braun et al., 2003; Giovannini et al., 2005; Kramer et al., 2001; Merten, Dratva, & Ackermann - Liebrich, 2005; Tarrant et al., 2011).

In 1993, the BFHI was promoted and introduced in Switzerland. Since then, breastfeeding rates and duration have increased (Merten et al., 2005). A study aimed to assess the relationship of breastfeeding rates and duration with the establishment of Baby-Friendly guidelines in Switzerland health facilities by analyzing data before and after BFHI implementation in the facilities (Merten et al., 2005). The researchers examined data for 2,861 infants born in 145 different hospitals. The results showed that in 2003, 42% of infants born in BFHs were exclusively breastfed at five months compared with 34% born in non-BFHs. In 2003, the median duration of breastfeeding was 31 weeks, compared with 22 weeks observed in 1994. In 2003, only 6% of the infants had never been breastfed. In general, breastfeeding duration was longer for infants born in BFHs, compared with infants born in non-BFHs. This study indicated that the increasing rates and duration of breastfeeding in Switzerland were due to an increasing number of BFHs and influenced by implanting the BFHI guidelines (Merten et al., 2005).

Another study in Belarus also showed the beneficial effects of implanting the TSSB into hospital practices on breastfeeding and infant health outcomes. A randomized
controlled trial explored the effects of breastfeeding promotion through BFHI on breastfeeding duration and exclusivity, as well as gastrointestinal infection, respiratory infection, and atopic eczema among infants in 31 maternity health centers (Kramer et al., 2001). The researchers used an intervention based on the scientific evidence concerning components of the BFHI and followed 16,491 mother-infant pairs for 12 months to assess the direct relationship between a breastfeeding promotion intervention and infant health, and the experimental link between infant feeding and infant morbidity in healthy mothers and their infants. In this study, the chief obstetrician and chief pediatrician from each center, assigned to the intervention condition, received an 18-hour BFHI lactation management training course on maintaining lactation, promoting exclusive and prolonged breastfeeding, and resolving common problems on breastfeeding (Kramer et al., 2001).

The results showed that, in comparison with the control group, infants who were born in the BFHI’s intervention sites were significantly more likely to be exclusively breastfed at six months, (7.9% vs 0.6%; \( p = .001 \)) and at three months (43.3% vs 6.4%; \( p < .001 \)). The intervention group had significantly higher breastfeeding rates at one year (19.7%), at six months (49.8%), and at three months (72.7%), compared to the control group (11.4%, 36.1%, and 60%, respectively). Further, the breastfeeding promotion intervention appeared to have been successful in reducing the risk of gastrointestinal tract infections by 40% and atopic eczema by 6% in the first year of life. However, this study indicated that there was no significant reduction in the risk of respiratory tract infection in the first year of life of infants (Kramer et al., 2001).

Tarrant et al. (2011) examined the impact of six steps of the TSSB (breastfeeding initiation within one hour of birth, exclusive breastfeeding while in hospital, rooming-in,
breastfeeding on demand, no pacifiers or artificial nipples, and information on breastfeeding support groups provided on discharge) on breastfeeding duration in four public hospitals in Hong Kong. Breastfeeding mother-infant pairs \( (n = 1,242) \) were followed prospectively for up to one year. In these hospitals, 4.8% of mothers experienced all six steps, 80% of the mothers were exposed to two to four steps, and only 0.3% of participants were not exposed to any steps. Mothers who experienced no or one step were four times more likely to discontinue breastfeeding in eight weeks, or fewer compared with mothers who experienced six steps. The researchers concluded that greater practice of TSSB would increase breastfeeding rates and that hospitals should practice breastfeeding support methods according to BFHI guidelines to ensure all mothers receive adequate support (Tarrant et al., 2011).

Although studies on breastfeeding have shown that BFHI designation and practicing the TSSB in the birthing facilities increased the breastfeeding initiation rate and duration (BFUSA, 2012; Braun, et al., 2003; CDC, 2011; Giovannini et al., 2005; Kramer et al., 2001; Merten et al., 2005; Philipp & Merewood, 2004; Rosenberg et al., 2008), researchers found that if breastfeeding initiation rates are high in the population, implementing the TSSB has no considerable impact on breastfeeding rates (Brodribb, Kruske, & Miller, 2013). A study examined the effect of the practices of BFHI on breastfeeding rates at one and four months in Queensland, Australia (Brodribb et al., 2013). The researchers assessed the hospital characteristics and collected data about infant feeding outcome from 6,752 women. The breastfeeding initiation rate was 96.1%, and the rate at four months was 66.5% in this population. The result indicated that mothers who birthed in BFHI hospitals had significantly lower odds of breastfeeding at
one month (odds ratio 0.72, 95% Confidence Interval 0.58-0.90) than mothers who birthed in non-BFHI hospitals; however, there was no similar finding on exclusive breastfeeding and breastfeeding rate at four months. This study concluded that “breastfeeding initiation did not differ according to BFHI accreditation” and overall BFHI practices had no short term impact on breastfeeding rates when the breastfeeding initiation rates were already high in the community (Brodribb et al., 2013).

**Barriers and Facilitators to Implementing the Baby-Friendly Hospital Initiative**

Despite the well-studied benefits of BFHI on breastfeeding rate and duration. There are few studies that explored the factors and barriers that influence adoption and implementation of the BFHI in U.S. health facilities (Kovach, 1997; Semenic et al., 2012; Smith et al., 2012; Turner-Maffei & Cadwell, 2004). A study has explored the factors that influence the implementation of TSSB practices in the hospitals (Semenic et al., 2012). The researchers reviewed the databases published between 1995 and 2011 in PubMed, Cochrane Library, Research Library, Ovid Medline, and other database search engines. The study found that only a few articles focused on barriers and facilitators of TSSB implementation in the US. Findings from this integrative review showed that the main barriers were: lack of support and direction from the government to encourage the facilities to adopt the TSSB, lack of government laws related to the BFHI adaptation, limited human and financial resources to practice the TSSB, and forceful marketing by infant formula manufacturers in health facilities (Semenic et al., 2012).

Another study was conducted to examine the health staff perceptions of facilitators and barriers to implementing BFHI in neonatal intensive care units in Quebec, Canada (Benoit & Semenic, 2014). In this qualitative study, the researchers interviewed
nursing managers, nurse educators, lactation consultants, and neonatal nurse practitioners. The study identified that staff workloads, such as limited time to teach mothers to breastfeed and pump, as well as limited staff knowledge and skills especially on breastfeeding initiation, lack of continuity of breastfeeding support, and resistance to change institutions’ routines were the main barriers to implementing BFHI. The study also showed that breastfeeding education for staff, providing nurses with specific knowledge and skills to directly support breastfeeding, and raising awareness about breastfeeding practices were important facilitators to adopting BFHI and to changing health staff attitude towards breastfeeding (Benoit & Semenic, 2014).

Some references indicated that BFHI implementation is a complex process; it took the hospitals and delivery centers one to six years to successfully introduce the BFHI practices (Feldman-Winter, Procaccini, & Merewood, 2012; Morre, Gauld, & Willama, 2007; Semenic et al., 2012; Smith et al., 2012). Morre, Gauld, and Willama (2007) conducted a qualitative study to assess the barriers to implementing BFHI practices among six public hospitals and delivery centers in New Zealand. The researchers found that the main barrier was communicating the breastfeeding policy to maternity staff. The study concluded that the implementation process of BFHI is “multi-factored and complex,” and there is a need for external motivation such as public policy stimulation and/or grants from the government to encourage the facilities to adopt the BFHI practices.

Although some studies showed that the cost associated with the implementation of The TSSB was one of the barriers (Semenic et al., 2012), DelliFraine et al. (2011) found that becoming a BF facility is cost-neutral. The researchers compared the total
departmental costs in sixty BF and non-BFHs in U.S. In this study, each BFH was matched with similar size and type non-BFH in the same city. The overall labor and delivery costs in the BFH were $2,205 per delivery compared with $2,170 in the non-BFH. The cost difference was not statistically significant ($p > .05$). The study concluded that increased costs for pursuing BF designation are minimal (DelliFraine et al., 2011).

Few researchers reviewed the process of becoming a BFH in the US (Semenic et al., 2012). Merewood and Philipp (2001) outlined the steps that Boston Medical Center experienced to become the first BFH in Massachusetts in 1999. In the center, the main elements of successful implementation were strong teamwork between the task force and hospital administrators, effective education, strong leadership, and effective negotiations with the infant formula companies. The main barriers that the researchers identified were: limited breastfeeding knowledge of the health providers and professionals, strong influence of infant formula industry, lack of support from other BFH, and the resistance to change throughout the institute. However, the researchers indicated that overcoming the barriers and developing strategies for introducing the TSSB was not complicated in the case of Boston Medical Center (Merewood & Philipp, 2001).

Throughout the literature, a successful implementation of BFHI requires changes in organizational culture and attitudes (Semenic et al., 2012), and changes to overcome the practice routines and traditions (Schmied, Gribble, Sheehan, Taylor, & Dykes, 2011). Several factors such as organizational resistance, traditions, limited financial resources, commercial influence, and lack of support from the government and hospital administration could contribute to the successful introduction of BFHI into hospitals (Kovach, 1997; Semenic et al., 2012). Baby-Friendly Hospital Initiative was first
introduced in 1993 in Sweden. After only four years, all of the 65 maternity centers and hospitals in Sweden had been designated Baby-Friendly (WHO, 2003). Hofvander (2005) reviewed the four-year process of implementing BFHI in maternity centers in Sweden. The researcher found that strong government support and organized central lead teams, as well as support from health providers, were the main necessary elements to BFHI success (Hofvander, 2005). The researcher also mentioned that the main challenge to the implementation of BFHI in Sweden was Step 6 (give infants no food or drink other than breast milk) because a tradition had been developed in maternity facilities based on local health staff experience and consideration to give a newborn infant additional formula. However, continuing education of hospital staff and providing baby friendly support materials were useful to ease the implementation of the TSSB, particularly Step 6 (Semenic et al., 2012).

A similar study in the US also showed that the most difficult barriers were in Steps 6 and 9 (Merewood & Philipp, 2001; Smith et al., 2012). The BFHI guidelines on those steps indicated that the health care provider can order formula supplementation only when it is necessary, which is when latch-on is not achieved within ten to twelve hours after birth (Weddig et al., 2011). In some non-BF maternity setting, the mothers are allowed to use formula on request, and the hospitals provide the diaper bags at discharge that included infant formula samples (Smith et al., 2012). Weddig et al. (2011) examined the breastfeeding knowledge and practices of Registered Nurses (n = 40) in Colorado hospitals. In this qualitative study, nurses mentioned that breastfeeding was the gold standard for feeding infants, but their hospitals had varied non-BF practices. For example, each hospital had a different way of practicing the breast milk only rule (Step
6). In most non-BFHs, the amount, types, and criteria for formula milk supplementation were up to the individual nurse and there was no hospital policy on providing supplementation. This study also mentioned that lack of hospital policy, inappropriate or outdated policy, and nurses’ limited education in BFHI were some of the significant barriers to supporting breastfeeding and BFHI practices (Weddig et al., 2011).

Becoming a Baby-Friendly institute requires changes in the organization structures and health providers’ practices. Smith et al. (2012) explored the five years’ process of successful strategy to implement TSSB in a hospital in the U.S. (throughout the article, the authors did not mention the hospital name or location). The article indicated that posting the breastfeeding policy and other posters related to the TSSB throughout units in the hospitals and providing the breastfeeding information in the Electronic Health Record system were the main strategies to educate the nurses about the BFHI implementation process. According to the authors, these steps were very effective to move the hospitals toward Baby-Friendly setting (Smith et al., 2012). The authors concluded “a well thought-out plan of creating policies, education tools, and outcome measures encourages the successful transition to Baby-Friendly practices; through time and effort, barriers to Baby-Friendly practices can be overcome, and hospital can achieve its goal of increasing breastfeeding rate” (Smith et al., 2012).

According to Smith et al. (2012), in order to implement Step 6, some U.S. hospitals examined the importance of diaper bags and infant formula samples by conducting a focus group with the mothers. The administrators found that mothers did not value the diaper bags and formula samples. As a result, the administrators found that
there was no need to provide the bag and the hospital could implement Step 6 easily (Smith et al., 2012).

Studies suggested that theoretical models of organizational change, such as Socio-Ecological Model, could offer promising direction for developing effective strategies for implementing BFHI (Atchan et al., 2014; Thomson et al., 2012; Vincent, 2012). These models can be used to change organizational culture, environmental complexity, and practices to support adoption of the BFHI in health care settings (Semenic et al., 2012). Thomson et al. (2012) suggested a “heart and minds” approach to help implement BFHI in the health facilities. This approach states that an engagement needs to occur on emotional and rational levels in order to achieve sustainable change within a variety of social and educational settings to encourage people to engage by recognizing and understanding the barriers (Thomson et al., 2012; Vincent, 2012). In the BFHI implementation process, the introduction of non-negotiable standards of practices that related to protocols and policies represent the basis of the “minds” approach or organizational level, while engagement and collaboration of the health staff at all levels represent the emotional “heart” approach or the individual level (Thomson et al., 2012; Vincent, 2012).

Socio-Ecological Model

During the past years, there has been a dramatic increase in the research interest in altering health care practices in health facilities by changing individual and environmental behaviors (Borkowski, 2009). The Socio-Ecological Model (SEM) for health practices focuses on both individual and environmental factors as targets for an intervention. This model was first introduced in the 1970s by Bronfenbrenner to examine
the relationship that exists between individual or biological and environmental or social factors (Bronfenbrenner, 1994). It was originally developed to explain individual behaviors and to determine the underlying reasons behind particular practices by understanding the influence of multi-level factors that motivate those actions (Stokols, 1996). The model assumes that an intervention should assess both community and personal determinants in order “to change institutions, community, policy, and legislation to foster individual and community health” (Contento, 2011, p.121), an effective modification in the organization’s environment will produce actual changes in individuals’ behavior (Bronfenbrenner, 1994).

The SEM shows that individual behaviors are an outcome of interactions between several factors at different multiple levels (Bronfenbrenner, 1994). The first factor is the individual level which includes personal knowledge, values, attitude, and experience. Any intervention based on this level should focus on direct motivation of specific individual behavior. The second factor, the interpersonal level, includes the social network that surrounds the individual, such as family, friends, partners, and peers at work. Strategies to influence this level include creating worksite-based programs, developing a support group, and working with peers. The third factor is the organizational and community level, which involves the settings in which interaction occurs, such as hospitals, schools, and the workplace. The role of the researcher at this level is to educate decision makers in these settings about the important issues and develop a partnership with them. The fourth factor is the policy and system level, which includes government structure, policies, legislations, initiatives, and other governmental actions. At this level, researchers can educate policy makers and legislators about the
importance of actions, concerns and work in collaborations with them (Bronfenbrenner, 1994; Contento, 2011, p.121; Schwartz, Tuchman, Hobbie, & Ginsberg, 2011; Stokols, 1996).

In order to have an effective approach, the researcher needs to develop a strategy that targets all these levels: individual, interpersonal, organizational, and policy levels. Such a strategy is more likely to be sustainable and achievable especially if it focuses on specific factors that determine actions to motivate people’s behaviors (Stokols, 1996). Research indicates that using SEM to develop an intervention involves two stages. The first stage identifies the specific mediators of practices that are relevant to the target population based on the individual and environmental levels. The second stage creates a program based on these relevant mediators focusing on personal, community, and organization norms (Contento, 2011; Robinson, 2008).

A good example of an intervention using the SEM approach is the “Healthy Active Oregon 2003,” a program developed by the Oregon Department of Human and Health Services in 2003 to promote healthy behaviors and to reduce the risk of chronic diseases by targeting all the levels described by SEM (Nutrition Council of Oregon, 2003). The main components of this program are: (a) Individual: promote reasonable portion size at home and restaurants; (b) Interpersonal: parents should serve as good role models by practicing healthy behaviors and being physically active daily; (c) Workplace: employers should arrange an exercise facility at work and provide a walk and bike path; and (d) Public: community leaders and policy makers could develop school policies that promote healthy and active behaviors such as policies that affect contracts with soft drink companies and school meal programs (Nutrition Council of Oregon, 2003). Research
indicates that this program has been largely successful to develop healthy communities and practices through social, organizational, and policy changes, and serves as an effective model for future health promotion programs (Dobson & Gilroy, 2009).

Studies have shown that any intervention focused on individual and organizational SEM levels could be effective, achievable, and sustainable because barriers to healthful practices are both personal and environmental (Robinson, 2008). The Child and Adolescent Trial for Cardiovascular Health (CATCH) is another successful intervention based on SEM principles. The CATCH developed as a three-year school-based intervention of a multilevel health promotion model, to promote and improve eating and physical activity behavior for elementary schools in the US. This program is one of the most evaluated strategies of a multilevel organizational based program that targets the individual behavior and the organizational environment (Hatcher & Scarpa, 2002). The CATCH involved 96 elementary schools at four different sites and aimed at changing students’ dietary habits and physical activities behavior through changing practices at the student (individual) and school (organization) levels (Luepker et al., 1996). The program was effective in modifying the negative practices of school lunches and was able to improve the eating and physical activity behaviors in children in three years (Luepker et al., 1996). Due to its effectiveness in providing achievable changes, CATCH is today a model for several health promotion programs across the nation (Hatcher & Scarpa, 2002). The success of this program was due to its approaches that were used to promote healthy behaviors at multiple levels (Luepker et al., 1996).

The SEM provides a framework through the consideration of multiple levels of individual and social influences on practices. By using this model, the researcher can
better identify the barriers and the facilitators in specific health care issues and recognize areas in need of health promotion interventions (Stokols, 1996). Messer et al. (2013) examined the barriers and the facilitators to the HIV care in medical facilities in North Carolina based on the SEM framework. The researcher developed instruments to assess the patients’ experiences in the health care facilities and to examine potential barriers to engage in the HIV care system. Results from this study showed that there are several barriers and facilitators at multiple levels, including patients, healthcare providers, clinics, and community levels. The study concluded that identifying factors that influence health care services in facilities at different levels of the SEM might create an effective intervention for future programs (Messer et al., 2013).

Many organizations around the world use SEM by itself or in combination with other theories to examine and promote different kinds of practices based on evidence that no individual factor can explain why specific people are involved in specific behavior and practices (CDC, 2014c; Stokols, 1996). The concepts of this model have been used to increase breastfeeding rates and to promote breastfeeding, particularly, in the TSSB practices by the WHO and UNICEF as well as by healthcare researchers.

There are many factors influencing the normal initiation and establishment of breastfeeding such as a mother, family, community, health care practices, legislations, and policies (Meedya, Fahy, & Kable, 2010; UNICEF, 2009). The WHO joint statement “the Special Role of Maternity Services in Protecting, Promoting and Supporting Breastfeeding” (1989, p. 36) addresses the importance of the individual, community, institutional, and health system factors in breastfeeding care. This statement notes that “for breastfeeding to be successfully initiated and established, mothers need the active
support during pregnancy and following birth, not only of their families and communities, but also of the entire health system” (WHO, 1989). It is necessary to adopt specific structural institutional practices associated with breastfeeding support during the pre- and postnatal period, including higher involvement of health care providers in breastfeeding education and care to increase breastfeeding support in the community (WHO, 1989).

In order to have an effective strategy in the health care setting, studies recommend using multiple level approaches with at least one target an individual factor and other target a component of the organizational factor (Contento, 2011; Robinson, 2008). The concepts of this approach and the hypothesized relationships between the individual and the organizational levels have been used in previous studies to explore practices related to breastfeeding (Barona-Vilar et al., 2009; Galtry, 2003).

Barona-Vilar et al. (2009) examined women’s perceptions and experiences related to breastfeeding in primary health care centers in Valencia, Spain, based on SEM social and institutional levels of support. Findings from this study showed that the women’s decision to breastfeed was highly mediated by social network and institutional support.

Similar findings have been reported by other researchers who have examined the implications of early childhood policies and breastfeeding practices on breastfeeding rates and duration in European countries and the US, as revealed in Kramer et al. (2001), Merten et al. (2005), Rosenberg et al. (2008), and Tarrant et al. (2011) studies (discussed earlier in Baby-Friendly Hospitals Initiative Effectiveness section). Galtry (2003) reviewed the impact of childhood policies and labor market on breastfeeding in the US. The researcher indicated that policies that support parents in the employment situation,
such as paid parental leave, have a practical impact on family decisions to initiate and continue breastfeeding. The studies indicated that to examine a specific issue on breastfeeding practices, researchers should examine the barriers that are shared among the institute, as a whole, then it will become easier and sustainable to change the individual behaviors if the barriers in the community and organization are removed (Galtry, 2003).

A possible model for breastfeeding practice inside the health facility based on Socio-Ecological Model is presented in Figure 1.

![Socio-Ecological Model](image)

**Figure 1.** Model for breastfeeding practice inside the health facility based on Socio-Ecological Model. This multi-level model can be used to examine and identify different levels of support and promotion of breastfeeding inside the health facility.
As shown in Figure 1, the model includes:

1. Individual level: Includes knowledge, beliefs, attitude, values, skills, and practices related to breastfeeding among healthcare staff in the facility such as nurses, providers, and professionals. Several other theories such as theory of planned behaviors and self determination theory also focus on this level and how to direct and examine individual behaviors and performance (Contento, 2011, p.122; Robinson, 2008).

2. Interpersonal level: Includes social networks of peers, friends, and staff inside the units and facility, as well as community groups supporting breastfeeding and programs that provide education and information to all health care providers and staff in the facility.

3. Institutional or organizational level: Approaches on this level include breastfeeding policies and practices in the facility such as the TSSB. This level also includes evidence based practices for breastfeeding among the maternity and birthing units, hospital structure, and health staff trainings related to practices that support mothers’ decisions to breastfeed.

4. Policy and system level: Approaches on this level focus on governmental structure, policies, and legislation, as well as state policies and regulations related to breastfeeding such as Health and Safety Code, International Code of Marketing of Breast-milk Substitutes Act; governmental programs such as Women, Infants, and Children (WIC) program; and state programs such as Texas Ten Step program.
An approach that targets those levels could be effective in changing hospital environmental and hospital staff practices (Borkowski, 2009). As shown in several studies, social, institutional, and organizational support through policies and practices is one of the key factors to achieve a breastfeeding friendly environment in developed countries (Barona-Vilar et al., 2009; Galtry, 2003; Semenic et al., 2012; Turner-Maffei & Cadwell, 2004).

State Breastfeeding Regulations and Baby-Friendly Hospitals Initiative

Few states in the US have breastfeeding laws that encourage the hospitals and the delivery care centers to adopt some or all of the TSSB in order to promote exclusive breastfeeding and to ensure that the health facilities provide breastfeeding-friendly maternity care (Hawke, Dennison, & Hisgen, 2013). New York, California, and Texas have breastfeeding laws related to the distribution, handling, or using of human milk in health facilities; California, Florida and Alaska have additional laws that encourage hospitals to specifically adopt the TSSB (National Conference of State Legislatures [NCSL], 2015). For example, California Health and Safety Code § 123367 requires “all acute care and special hospitals that have a perinatal unit to adopt [the TSSB], or an evidence-based alternative with targeted outcomes adopted by a health care service plan, or the Model Hospital Policy Recommendations as defined by Cal. Health and Safety Code § 123366.” (2013 Cal. Stats, Chap. 666; SB 402; NCSL, 2015). The state legislation in California also requires all birthing hospitals to adopt the TSSB and be BF designated or have similar practices and policies based on BFHI guidelines to breastfeeding by 2025 (California Department of Public Health [CDPH], 2014).
Some states developed a program to encourage and help hospitals throughout the pathway to achieve the BFH designation (CDC, 2011). Some of these programs, such as “Texas Ten Step Program,” developed a scorecard evaluation tool that can be used as a first step to identify a facility’s readiness to implement the BFHI (Texas Department of State Health Services, 2014). Other states have started funding hospitals to help them implement the TSSB and improve overall breastfeeding rates in the state (Feldman-Winter et al., 2012). In 2010, New Jersey (NJ) Department of Health received a grant from CDC to decrease obesity incidence and increase exclusive breastfeeding rates by implementation the BFHI in NJ hospitals (Feldman-Winter et al., 2012). This grant provided technical assistance for 10 hospitals over an 18-month period to help the hospitals achieve the BF designation. In 2010, there were no BFHs in NJ; in March 2012, Capital Health (the first of 10 hospitals) fully implemented the TSSB and became the first BFH in NJ (Feldman-Winter et al., 2012).

Several studies showed that policies and state legislation related to breastfeeding can influence the breastfeeding rate and duration (Hawkins, Stern, & Gillman, 2012; Kogan, Singh, Dee, Belanoff, & Grummer-Strawn, 2008). Hawkins et al. (2012) examined the association between breastfeeding laws and breastfeeding initiation and duration using data from the Pregnancy Risk Assessment Monitoring system. This longitudinal quasi-experimental study explored the impact of state laws related to breastfeeding on feeding practices among mothers (n = 326,263) in 32 states between 2000 - 2008. The study indicated that state laws that support breastfeeding increased breastfeeding initiation and duration in the community. Additionally, the study mentioned
that introducing new breastfeeding laws most likely benefits minority ethnic mothers and those mothers not starting or continuing breastfeeding (Hawkins et al., 2012).

As of January 25, 2015, Mississippi did not have any breastfeeding-related legislation that encourages or requires birthing facilities to implement the TSSB or any other similar practices (La Leche League, 2015; NCSL, 2015).

Evaluation of Breastfeeding Practices among Health Facilities in Mississippi

The CDC recommends examining the maternity services and evaluating the evidence based practices for breastfeeding among the facilities in the US and encourages health staff training to provide practices that support mothers’ decisions to breastfeed (CDC, 2013). The CDC established an ongoing national system called the Maternity Practices in Infant Nutrition and Care (mPINC) to evaluate practices related to breastfeeding among all health facilities that provide maternity setting in the US. This project is a national survey conducted by CDC’s researchers every two years, beginning in 2007 (CDC, 2013). The survey examines the breastfeeding practices of the hospital, based on several steps of TSSB such as skin-to-skin contact (placing the naked baby on the mother’s bare chest), rooming in, and active follow-up after discharge; additionally, the system reports the initiation, frequency, and exclusivity of breastfeeding in hospitals. The mPINC system also calculates scores for each facility and state to display the overall facility and state performance and support on breastfeeding practices.

The 2013 mPINC report (the latest report available as of January 25, 2015) showed that 86% of the maternity setting facilities in Mississippi include breastfeeding education as a routine element of their prenatal classes; however, only 15% of maternity centers and hospitals in Mississippi have comprehensive breastfeeding policies and only
27% of facilities in Mississippi initiate skin-to-skin contact (CDC, 2015). The report also indicates that only 54% of the 42 maternity facilities in Mississippi responded to mPINC survey in 2011, and only 11% of facilities in Mississippi adhere to standard practice guidelines against routine supplementation with infant milk formula (CDC, 2015). Mississippi was tied for having the lowest overall state score with 59 out of 100 among the nation. The mean score nationwide is 75 (CDC, 2015).

Studies indicated a significant relationship between the state’s mPINC scores and breastfeeding rates, where higher scores were associated with an increase in breastfeeding rates up to 6 months (Dozier & McKee, 2011, Li et al., 2014). Li et al. (2014) examined breastfeeding policies and practices (staff training and structural organization aspects of care) in 48 hospitals in Alabama, and their association with infants’ breastfeeding rates at 24 and 48 hours after birth, using mPINC data. The result showed that the odds of breastfeeding were significantly higher among mothers who delivered their infant in hospitals with high overall mPINC score. This study also concluded that providing breastfeeding-related training as well as skill and attitude training to nurses, and implementing a written hospital policy about breastfeeding can improve breastfeeding rate in the community (Li et al., 2014).

Although the mPINC system is a practical indicator to examine the hospital practices on breastfeeding (Dozier & McKee, 2011), researchers mentioned that the data from mPINC are limited because the system does not integrate all aspects of each of the TSSB (Lind, Perrine, Li, Scanlon, & Grummer-Strawn, 2014), and the survey does not address the existence of written hospital policies on breastfeeding (Hawke et al., 2013). Additionally, specific employees at each hospital reported the answers for the mPINC
survey’s questionnaire individually, and the data are not cross-validated (Li et al., 2014, Lind et al., 2014).

Boston Medical Center was awarded a two million dollar grant in June, 2014, from Kellogg foundation to increase breastfeeding rates and to improve breastfeeding support practices among hospitals in the Southern U.S. through Communities and Hospitals Advancing Maternity Practices program (CHAMPS; Boston Medical Center, 2014; CHAMPS, 2014). The program aims to improve maternal and child health outcome through the promotion of the TSSB practices in 25 hospitals in Mississippi, New Orleans, Texas, and Southern Tennessee; and help at least 10 hospitals obtain BF designation within three years (CHAMPS, 2014).

As of January 16, 2015, only six hospitals enrolled in CHAMPS: four hospitals from New Orleans and two hospitals from Mississippi (University of Mississippi Medical Center enrolled on November 2014 and North Mississippi Medical Center enrolled on December 2014; CHAMPS, 2014).

Conclusion

Given the low breastfeeding rates in many areas of the US, there is a need for strategies to evaluate and improve hospital breastfeeding support practices. Adopting the TSSB by U.S. hospitals and health centers is an effective strategy to increase breastfeeding rates and duration across the nation. For promotion and support of TSSB practices in the US to be effective, practices of health staff and policies of the health organizations must be improved. Health facilities’ policies need to be accurate, up-to-date, and scientifically based. In order to assure the availability of such practices, policies concerning lactation and breastfeeding must become a core unit of hospital
structure, and all health providers caring for mothers and infants should have frequent opportunities to update their knowledge about breastfeeding in the health organization to match their practices.

Hospitals that adopt specific policies like separating infants from the mothers or routinely giving formula to breastfeeding infants make it much harder for mothers and infants to be able to breastfeed. When hospitals have policies that encourage mothers to feed their infants only breast milk, it encourages mothers to continue breastfeeding at home (CDC, 2014a; Declercq et al., 2009). It is well-documented that implementing the TSSB in health facilities can dramatically improve breastfeeding rates and duration. However, future studies need to assess the long-term effectiveness of the TSSB in the US and examine the factors that influence a hospital's decision to adopt the BFHI practices. Additionally, more research is also needed to understand reasons behind low breastfeeding rates in the US and the level of breastfeeding support that currently exists at individual and institutional levels based on theoretical approaches.
CHAPTER III
METHODOLOGY

Research Design

The Institutional Review Board (IRB) of The University of Southern Mississippi reviewed and approved the research protocol and related documents for execution of this project (see Appendix A). A descriptive correlational design was employed in this study to examine hospital practices related to breastfeeding in Mississippi and to identify barriers to implementing the TSSB in hospitals and in nurses’ practices, based on the concepts of the Socio-Ecological Model. Using descriptive design in this study was necessary because, according to Grove, Burns, and Gray (2012), descriptive study’s purpose is to provide a picture of situations as they naturally happen and may be used to identify problems with current practices (p. 215). Breastfeeding practices in Mississippi must be clearly studied before prediction or causality can be examined. The study was conducted in two phases over two months. The goals of each phase were as follows:

1. Phase I: (a) examine the current status of overall TSSB practices (TSSB level of implementation) in Mississippi hospitals, representing the organizational level of SEM; (b) assess associations between the characteristics of hospitals with levels of implementation; and (c) identify barriers to implementation of the TSSB in the hospitals.

2. Phase II: (a) explore the breastfeeding knowledge, breastfeeding practices, familiarity with the TSSB, and interest to adopt the TSSB among maternity nursing staff in Mississippi, representing the individual level of SEM; (b) identify associations between breastfeeding knowledge and practices, and interest to adopt
the TSSB with nurses’ demographic variables; and (c) identify facilitators and barriers to implementing the TSSB in the practice based on nurses’ own experiences.

Figure 2 shows a simplified framework for examining hospital practices related to breastfeeding based on the SEM levels and highlights the two levels that were used in the study’s design. This simple framework is presented in this way (compared with Figure 1, p.36) so the main design in this study can be clarified.

![Figure 2. Simplified framework shows the four levels that influence hospital practice related to breastfeeding based on Socio-Ecological Model. The present study explored breastfeeding practices in hospitals based on two levels (the shaded areas), the organizational level (phase I) and the individual level (phase II).](image)

Although the SEM’s approach informed the study design, this study did not test the SEM’s effectiveness in predicting breastfeeding practices against other theories. Testing the model in this descriptive study was not the researcher’s area of concern.
*Study Participants*

The first phase included all health facilities in Mississippi that provided maternity or birthing services at the time of the study (43 hospitals). In order to determine the sample population, the researcher categorized the hospitals according to the district in which the hospitals were located and by the number of deliveries per hospital using data from the 2013 Report on Hospitals (Mississippi State Department of Health, [MSDH], 2014) as follows: category I (more than 1,000 deliveries/year), category II (500-1,000 deliveries/year), and category III (fewer than 500 deliveries/year). Appendix B shows the complete list of Mississippi hospitals by categories and by the district in which they are located. Appendix C shows Mississippi public health districts map.

The second phase included nursing staff working in the maternity setting in Mississippi hospitals. The study assessed a convenience sample of nurses in the maternity/birthing setting in Mississippi hospitals. According to MSDH data (2014), there are 31,645 Registered Nurses (RN); 10,274 Licensed Practical Nurses (LPN); and 2,150 Nurse Practitioner (NP) in Mississippi. Among those nurses, 17,230 RN; 1,999 LPN; and 555 NP are working in the hospitals in Mississippi. The majority of the nursing population in Mississippi are female (84%) and white (73%), with ages ranging from 25 to 65 years (Kaiser Family Foundation, 2015). In each hospital, there are about 5-10 nurses in the maternity or birthing unit based on the hospital’s and unit’s size (MSDH, 2014). Two-hundred to four-hundred nurses (5-10 nurses in each hospital) were estimated to participate in this phase.
Recruitment

Participants in phase I were recruited through the Breastfeeding Resource Guide developed by Mississippi Breastfeeding Coalition (2015). This guide included contact information for specific health care individuals (maternity nurses or lactation consultants) for all 43 hospitals in Mississippi. The researcher initiated several meetings with the president of Mississippi Breastfeeding Coalition to obtain support prior to conducting the study.

Participants in Phase II were recruited from the Association of Women’s Health, Obstetric and Neonatal Nurses (AWHONN) at the Mississippi AWHONN Section’s meeting. Participants were also asked to identify other individuals who were willing to participate in the study. The researcher initiated contact via phone with the representative of AWHONN in Mississippi to obtain support prior to the initiation of the study. The AWHONN has around 25,000 members distributed among different sections and chapters. The AWHONN has one section in Mississippi, this section includes three chapters that service different areas in Mississippi. The association’s members are mainly nurses who are working in obstetric, neonatal, pediatric, child care, and women's health setting such as Neonatal Nurse Practitioner, Pediatric Nurse Practitioners, Women’s Health Nurse Practitioner, Registered Nurse Certified in obstetric/gynecologic care, and other specialties.

Participants in the second phase met the following criteria: (a) Having the ability to speak and read English; (b) adults 18 and older of any ethnicity; (c) RN, NP, or LPN; and (d) currently working in either an obstetric, birthing, or maternity unit in a hospital in Mississippi.
Procedure

In phase I, the researcher used a cross-sectional survey to collect data on breastfeeding practices and to determine which of the TSSB were implemented in the facility. The survey was conducted using a questionnaire named “Breastfeeding Practices in the Hospital” (Appendix D). After securing IRB approval, the researcher contacted the persons in the breastfeeding resource guide via telephone to ask them to contact the nurse managers or the directors of maternity or birthing services in their facilities to solicit their participation in the study on behalf of each hospital. The researcher surveyed the nurse managers or directors of the maternity/birthing unit within one to two weeks after the first contact. The instrument was sent by postal mail to the nurse manager or director of the maternity/birthing unit or center in each hospital and was self-administrated by the participants. The survey packet included a cover letter presenting the purpose of the study, a letter of support from the president of Mississippi Breastfeeding Coalition (Appendix E), a consent form, a stamped self-addressed envelope, and an instruction to return the completed questionnaire to the researcher. Each participant received a $10 gift card for participating.

Phase II included a cross-sectional survey to explore the current breastfeeding knowledge and practices of nurses who work in the maternity/birthing setting in the hospitals using a breastfeeding knowledge and practices (BKP) questionnaire (Appendix F). This questionnaire was self-administrated by participants. Hard copies were provided to the participants. The survey packet included a cover letter presenting the purpose of the study, a consent form, an instruction to return the completed questionnaire to the researcher, and a stamped self-addressed envelope. Responses were collected via postal
mail or in person in order to maximize the flexibility of the survey’s administration. Each participant entered into a prize drawing with the chance to win one of the three $10 gift cards.

In both phases, the questionnaire administration and distribution was based on Dillman’s methods for survey distribution (2000); this method was developed to achieve a minimum survey response rate of greater than fifty percent from professional individuals. Participants completed the survey after consent was given and were asked to respond to survey questions as accurately as possible based on the practices of their facility. To increase the response rate, a letter by mail, appealing for the return of the questionnaire was sent to non-respondents after three weeks from the initial contact.

Validity was enhanced in several ways: first, a framework of questionnaires derived from previous literature was used; second, the questionnaires were reviewed by experienced researchers and breastfeeding professionals. Reliability of the questionnaires was determined by conducting a pilot study.

The study’s questionnaires were reviewed to evaluate relevance and completeness of the instruments by a committee of experts in the field of public health, nursing, and nutrition from The University of Southern Mississippi; lactation consultants; and Mississippi -based practicing nurses; The researcher also conducted a pilot study with 15 participants to obtain feedback regarding design and content clarity of the survey as well as to assure the reliability of the instruments.

Using a quantitative study design in both phases allowed the researcher to gather responses from a larger number of participants than if using other methods, such as
qualitative, and reduced the influence of the researcher on participants’ responses (Grove, Burns, & Gray, 2012, p. 256).

Participation in the study was voluntary. All aspects of the research were managed by academic researchers who have experience in maternal and child nutrition, public health, and breastfeeding research. All data was kept confidential, and no identifying information was collected on the instruments. To minimize risks to the participants, no hospital or individual names were disclosed. The surveys were coded to protect the identity of the study participants. The participants’ names, facility names, and any other personal identifiers were also coded. All notes were held in a locked filing cabinet where only the researcher had access. All electronic data was stored on the computer of the researcher, which was accessible only by password. This password was only known by the researcher. Confidentiality about hospital practices and identities of individuals participating in the study were assured as a condition of informed consent.

Instrument

Instrument I: Breastfeeding Practices in the Hospital

The breastfeeding practices in the hospital questionnaire (Appendix D) was developed by the researcher to include ten sections; each section had two to six questions about practices related to specific steps of the TSSB. The Texas Ten Step Program – Scorecard tool (2014) was used as a starting point to develop 31 questions to collect data on breastfeeding practices, and assess the level of the TSSB implementation in each hospital. Additional multiple-choice questions were added to the end of each section to identify barriers to the implementation of the TSSB in the hospital related to each step.
These 10 questions about barriers were developed by the researcher based on the Turner-Maffei and Cadwell report (2004). The questionnaire thus has a total of 41 questions.

The researcher applied the scoring algorithm developed by the Texas Ten Step Program (2014) to assess the current status of overall TSSB practices of each hospital. For each closed ended question, a score was calculated using a 0-2 scale; zero indicates a practice that is not supportive of breastfeeding, one indicates a partial credit to practice that is supportive of breastfeeding, and two indicates an ideal practice that is supportive of breastfeeding. For each multiple-choice item related to the hospital practices (question’s number 7, 32, and 40), a score was calculated using a 0-2 scale; each selected item was given a score of two, a non-selected item was given a score of zero. In total, there were 28 closed ended questions which were answered by yes = 2, partially = 1, and no = 0. These questions were given a possible score range of 0-56. There were three multiple choice questions related to the hospital practices with a possible score range of 0 - 44 (question number 7 included 11 choices, question number 32 included 4 choices, and question number 40 included 7 choices; in total these three questions had 22 items).

There were 10 unscored multiple-choice questions to identify barriers to the implementation of the TSSB in the hospital. The scores for 28 closed ended questions (0-56) and the scores for three multiple choice questions (0-44) made up the overall score for each hospital, which gave a possible score range from 0-100 for each facility. The total score represented the current practices of overall TSSB implementation of each hospital.

For example, for Step 8 (encourage breastfeeding on demand), the questions were: (1) policy encourages mothers to breastfeed without restriction of time or
frequency; answers included yes, partially, or no. A “yes” answer was given a score of 2, a “partially” answer was given a score of 1, and a “no” answer was given a score of 0. 

(2) Staff educate mothers on the following (select all that apply); answers included (a) newborns usually feed a minimum of eight times in 24 hours, (b) infants use recognizable cues to signal readiness to begin and end feedings, (c) physical contact and nourishment are both important, and (d) adequate feeding should be based on satiety and output. Each selected items was given a score of 2.

Hospitals were categorized into the following ranking system after calculating the overall implementation scores: low implementation (scores 0-24.9), partial implementation (scores 25-74.9), moderate implementation (scores 75-89.9), and high implementation (scores 90-100).

Questions to identify barriers to implementing the TSSB in the hospital included 10 multiple choices questions (one in each section of the ten sections of the questionnaire). Responses to each choice in these questions were coded yes or no and were included in the results section. A selection of each choice in these questions was given a yes answer. For example, for Step 8 (encourage breastfeeding on demand), the question was “what are the common barriers to encourage breastfeeding on demand practices in your facility?” Answers included (a) expectations on the part of mothers and staff that feeding should occur on a regular schedule, (b) lack of knowledge of common feeding cues, (c) lack of adequate mother/baby contact, and (d) other (specify).

The researcher created a data set (Appendix B) based on Mississippi Department of Health (MSDH) annual report on hospitals (2014) “2013 Report on Hospital” containing information on characteristics of each hospital: Location as determined by
Mississippi public health district number (I-IX); region (within or outside Mississippi metro area, as determined by the U.S. Census Bureau, 2013); hospital size (number of beds: fewer than 150, 150-250, or more than 250); number of deliveries per year (fewer than 500, 500-1000, or more than 1000); and number of Cesarean sections per year (fewer than 200, 200-400, or more than 400).

**Instrument II: Breastfeeding Knowledge and Practices Questionnaire**

In the second phase, the researcher used a BKP questionnaire (Appendix F) that was developed by the researcher based on literature reviews and using concepts and questions from previous studies. The questionnaire contained four sections. The first two sections included questions about nurses’ knowledge, nurses’ own practices related to breastfeeding, and nurses’ familiarity with the TSSB. The third section included questions about nurses’ interest in adopting the TSSB in their practices as well as questions about barriers and facilitators to implementing the TSSB in their practices. The sections were based on instruments from study of Freed et al. (1995). Freed granted the researcher permission to use the instruments for this study that can be referenced in Appendix G. The fourth section identified the hospital category in which the nurses were working based on Mississippi public health districts number and the number of deliveries per years, and asked about the demographic information of the nurses based on the HHS guidelines (2012).

The first section included thirteen questions: seven items relate to nurses’ knowledge of the health benefits of breastfeeding including the nutritional benefits of exclusive breastfeeding, protection of breastfeeding against allergic reactions and infections, and effects of milk formula on infants. The other six items asked about
possible reasons to stop breastfeeding, including breast abscess, mastitis, insufficient milk supply, infant teething or having frequent loose stools, and infant is not satisfied. Response categories were yes, no, or unsure. Based on Freed et al. (1995) each correct answer received three points, while an unsure answer received two points and an incorrect answer received one point; with a possible range of 13-39, a higher score reflecting better knowledge. For example, for the item “breastfeeding increases immune function,” a “yes” answer was given a score of 3, while an “unsure” answer was given a score of 2 and a “no” answer was given a score of 1. Another item was “the mother should stop breastfeeding when the baby has frequent loose stools,” a “no” answer was given a score of 3, while an “unsure” answer was given a scores of 2 and a “yes” answer was given a score of 1.

The second section included four items about nurses’ own practices and experience related to breastfeeding. The first item was a multiple-response question about current practices of breastfeeding support. Responses included counsel patients prenatally, counsel patients regarding infant feeding method, assist with breastfeeding techniques, assist with lactation problems, and other. Each selected items was given one point; with possible range of 1-5 score. The second item was also a multiple-response question that asked about the sources of information related to breastfeeding that the nurses had received in their facility; responses included undergraduate nursing program, training program in the facility, continuing education, lactation consultant, personal experience, and other colleagues. The third item asked a question about the effectiveness of nurses’ breastfeeding practices (how effective the nurses felt they were in meeting the needs of their breastfeeding patients). This item was measured on a five-point Likert
scale, from 1=“not effective” to 5=“very effective”. The fourth item asked to identify if the participant was familiar with the TSSB or not; response categories were yes or no. A “yes” answer moved the respondent to the next section (third section) of the survey, while a “no” answer moved the responder to the last section (fourth section) of the survey.

The scores for all knowledge and practice items made up the overall scores for each individual, which gave a possible score range from 15-49 (the breastfeeding knowledge items gave a possible range of 13-39 points, practice effectiveness items gave possible range of 1-5 points, and breastfeeding practices items gave a possible range of 1-5 points). The breastfeeding knowledge and practices overall scores were categorized into the following ranking system based on Freed et al. (1995) work: Poor (scores ≤ 31) and good (scores ≥ 32).

The third section asked eight questions specifically related to the TSSB. The first five items measured interest of nurses to adopt the TSSB in their practice. These items were answered on a five-point Likert scale that included response categories of “strongly disagree” to “strongly agree” with one being the most negative and five the most positive. For example, for the item “I am determined to adopt the Ten Steps of BFHI in my practice,” a “strongly agree” answer was given a score of 5, while a “strongly disagree” answer was given a score of 1. These items gave a possible score range of 5-25. This section also included two multiple-response questions to identify any possible facilitators and barriers to the implementation of the TSSB in the hospital based on nurses’ own practices and experiences. The facilitators included raising awareness about the importance of the TSSB, providing nurses with specific knowledge and skills to directly
support breastfeeding, implementing policies and protocols related to the TSSB, and other (specify). The barriers included lack of knowledge and training, busy workload, shortage of staff, resistance to change, and other (specify).

The fourth section included questions to identify the hospital category in which the nurses were working. The first question identified the hospital category based on the Mississippi Public Health Districts Map; the choices were I to IX districts. The second question identified the hospital category based on the number of deliveries per year. The choices were category I (more than 1,000 deliveries/year), category II (500-1,000 deliveries/year), and category III (fewer than 500 deliveries/year). For example choice “a” stated “Category I (more than 1,000 deliveries/year): Anderson Regional Medical Center, Baptist Memorial Hospital DeSoto, Baptist Memorial Hospital Union, Forrest General Hospital, Memorial Hospital Gulfport, Mississippi Baptist Medical Center, North Mississippi Medical Center, River Oaks Hospital, Rush Foundation Hospital, St. Dominic Jackson Memorial Hospital, University Hospital & Health System, Wesley Medical Center, Woman's Hospital.”

Additionally, the fourth section included questions with unordered response categories to collect demographic information among nurses. These questions asked about type of employment (full time, part time); professional credentials (Registered Nurse, Nurse Practitioner, Licensed Practical Nurse, or others); years of clinical experience (in years); sex (male, female); age (in years); race (White, Black/African American, American Indian/Alaska Native, Native Hawaiian/other Pacific Islander, Hispanic, Asian, or Mixed Races).
Study Measures

Study variables were summarized in Appendix H.

Pilot Study

A pilot study was conducted to help ensure the reliability of the instruments. The pilot study was conducted on May 2015 after receiving approval from The University of Southern Mississippi’s Institutional Review Board (Appendix I). A sample of 15 nurses who had similar demographic characteristics to the targeted population participated in this pilot study. The sample included a diverse group of nurses with respect to age and place of work, and included both members and non-members of the AWHONN. Nurses were female, mostly White ($n = 8$), followed by African American ($n = 6$), and Asian ($n = 1$). Participants’ ages ranged from 28 to 45 years. Most of the participants were RN ($n = 12$), followed by LPN ($n = 2$), and NP ($n = 1$). Participants’ years of experience ranged from one to ten years. Eleven nurses were working in category I hospitals and four nurses in category II hospital.

The responses provided by this pilot study were used to investigate each item in the study’s instruments. Items were examined for clarity and format (language and vocabulary appropriateness to the target population). Additionally, content and construct reliability of the instruments were also examined in this pilot study.

There were a few questions which needed to be slightly modified in the instruments as a result of this pilot study. A Cronbach’s alpha was utilized to ensure internal consistency for the surveys based on the result of the pilot study. Using a Cronbach’s alpha statistical test yielded the following results: .94 for instrument I (scale range .85 - .95) and .83 for whole instrument II (.84 for nurses’ knowledge score; .71 for
nurses’ practices score; and .69 for nurses’ interest to adopt the TSSB score). The results indicated the instruments had the necessary reliability.

Data Analysis

The researcher used the Statistical Package for Social Sciences software (IBM SPSS for Windows, version 22.0, 201, IBM SPSS, Chicago, IL) to analyze participants’ responses, and to examine relationships among the variables. Descriptive statistics were used to analyze the following variables (data were presented as proportion or mean ± Standard Deviation):

1. Characteristics of each facility: Region (within or outside Mississippi metro area), location (Mississippi public health district number), hospital size: number of beds (category), number of deliveries per year (category), and number of Cesarean sections per year (category).

2. The current level of implementation of the TSSB for the hospitals.

3. Score of level of implementation of the TSSB for the hospitals.

4. Barriers to implement the TSSB in the hospital from administrators’ perspectives.

5. Scores of nurses’ knowledge about breastfeeding.


7. Effectiveness of practices related to breastfeeding among nurses.

8. Sources of information regarding breastfeeding among nurses.

9. Familiarity with the TSSB.

10. Scores of nurses’ interest to adopt the TSSB in their practices.

11. Facilitators to implement the TSSB in the nurses’ practices from nurses’ perspectives.
12. Barriers to implement the TSSB in the nurses’ practices from nurses’ perspectives.

13. Socio-demographic information of nurses: age, sex, ethnicity, professional credentials, type of employment, years of experience, and hospital category in which the nurses are working.

A Chi-square test was used to determine the association of the outcome (TSSB level of implementation score of the hospital) with hospital characteristics: district’s number (I-IX); region (within or outside Mississippi metro area); hospital size (fewer than 150, 150-250, or more than 250); number of deliveries per year (less than 500, 500-1000, or more than 1000); and number of Cesarean sections per year (fewer than 200, 200-400, or more than 400). Chi-square analysis and Spearman correlations were used to determine the association among the variables: breastfeeding knowledge and practices, breastfeeding knowledge, effectiveness of practices, familiarity with the TSSB, nurses’ interest in adopting the TSSB, and the socio-demographic information of nurses: age, sex, ethnicity, professional credentials, current practice, years of clinical experience, and hospital categories in which the nurses are working.

Independent t-test and ANOVA were used to determine the differences between the various groups of breastfeeding knowledge and practices, and interest to adopt the TSSB. Variables were included and removed from the results at $\alpha = 0.10$. Statistical significance were set at $p < .05$ using one and two-tailed comparisons.

Limitations

This study had numerous limitations. First, the questionnaires were answered individually by participants in each facility. This could introduce a possible bias due to
respondents having differing perspectives based on their own experiences, practices, and satisfaction (Collinson & Collinson, 2009). This might have certain implications for the reliability and validity of the data. However, previous studies among nurse managers and hospital administrators conducting related studies have shown accurate and valid responses (Hellings & Howe, 2000; Tarrant et al., 2011). Second, due to the voluntary nature of this study, and time and resource restrictions, this study investigated breastfeeding practices in one state only and assessed a convenience sample of nurses in Mississippi, but the study did not include the entire population of nurses; the data might not be generalizable to other states. Third, the study examined the level of TSSB implementation among the hospitals based on the individual and organizational levels; however, the BFHI implementation is a complicated process that goes beyond the nursing staff and hospital practices. More phases and more approaches would be needed to assess a multilevel modeling strategy that covers more or all levels of the SEM.

This study provides valued information about a topic that previously has not been adequately investigated in this area, the level of support for breastfeeding in Mississippi, which has a very low breastfeeding rates, as well as identify the barriers to implement BFHI in Mississippi hospitals.
CHAPTER IV

MANUSCRIPT I: BREASTFEEDING PRACTICES AND BARRIERS TO IMPLEMENTING THE TEN STEPS TO SUCCESSFUL BREASTFEEDING IN MISSISSIPPI HOSPITALS

Well Established

The rate of breastfeeding improves after hospitals implement the Ten Steps to Successful Breastfeeding. Mississippi has one of the lowest rates of breastfeeding in the US and has no health care facilities recognized as Baby-Friendly hospitals to date.

Newly Expressed

This study indicates that the current status of the Ten Steps to Successful Breastfeeding implementation in Mississippi hospitals is partial. Adoption of the Baby-Friendly Hospital Initiative is needed to implement ideal breastfeeding practices in Mississippi.

Abstract

*Background:* Despite widespread efforts to support breastfeeding, Mississippi has the lowest rates of breastfeeding of all states at six months and at one year (Centers for Disease Control and Prevention [CDC], 2014a). Hospital practices supporting breastfeeding, such as The Ten Steps to Successful Breastfeeding (TSSB,) can dramatically increase breastfeeding rates. The TSSB also provide an evidence based standard which may be used to examine the level of breastfeeding support in health care facilities.

*Objectives:* The purpose was to assess the implementation level of the TSSB in Mississippi hospitals and to identify barriers to implementing the TSSB in the hospitals.
**Methods:** The researcher surveyed nurses’ managers/directors of the maternity/birthing units of all 43 hospitals in Mississippi that provide maternity care by mail using a cross-sectional survey. A response rate of 72% ($n = 31$) was obtained. Hospital implementation of the TSSB was classified as high, moderate, partial, or low. A Chi square analysis was used to find associations between TSSB level of implementation and hospital characteristics.

**Results:** The researcher classified implementation in 0% of Mississippi hospitals as high, 29% as moderate, and 71% as partial. Hospital level of implementation was significantly positively associated with hospital delivery rate along with the hospital Cesarean section rate per year. The common barriers for implementation of the TSSB reported by respondents were: resistance to new policies, limited financial and human resources, and lack of support from national and state governments.

**Conclusions:** There is a need to improve the overall breastfeeding support in Mississippi hospitals. Future research should explore various ways to implement the TSSB in hospitals’ practices.

**Background**

Breastfeeding offers many benefits and can be an essential strategy to reducing infant and maternal morbidity and mortality rates. It can also help to reduce the cost of health care (APA, 2012; HHS, 2011; Lessen & Kavanagh, 2015). According to the CDC breastfeeding report (2014), in 2011, the percent of infants breastfeeding nationwide ranged from 28.9% to 66.5% at six months, and 10% to 45.1% at one year. Mississippi has the lowest rates of breastfeeding of all states at six months (28.9%) and at one year (10%; CDC, 2014a). These rates are far below targets set in Healthy People 2020;
recommendations specify goals of 60.6% to continue breastfeeding for six months, and 34.1% to continue breastfeeding for one year (HHS, 2014).

To address the low support level for breastfeeding in hospitals and to reduce many of the hospital routines that disadvantage nursing mothers, the World Health Organization (WHO) and the United National Children’s Fund (UNICEF) have implemented The Baby-Friendly Hospital Initiative (BFHI). This initiative describes ten hospital practices called the Ten Steps to Successful Breastfeeding (TSSB), which improve breastfeeding rates and durations by providing support to mothers and infants, and a Baby-Friendly (BF) hospital designation for compliant facilities (UNICEF, 2009; WHO, 2003). Today, the BFHI is the gold standard for evidenced-based breastfeeding care in hospitals; moreover, the TSSB is considered the standard model for evaluation of the breastfeeding practices in the health setting (BFUSA, 2012). There is growing evidence that the rates and duration of infant breastfeeding improves after hospitals implement the TSSB (Merewood, Mehta, Chamberlain, Philipp, & Bauchner, 2005; Rosenberg, Stull, Adler, Kasehagen, & Crivelli-Kovach, 2008).

Hospitals that administratively support breastfeeding provide better breastfeeding practices that lead to better breastfeeding outcomes (Rosenberg et al., 2008). Furthermore, studies have found that addressing multiple BFHI steps simultaneously is more effective than promoting any one step in particular (Rosenberg, et al., 2008; Smith et al., 2012). The more steps of the TSSB that a woman experiences in the hospital, the more likely she will breastfeed postpartum (DiGirolamo, et al., 2001; Rosenberg et al., 2008). Despite the great numbers of hospitals around the world that reached BF designation in the past decades (UNICEF, 2009), most hospitals in the US unfortunately...
do not fully support the BFHI (BFUSA, 2014; CDC, 2014; Rosenberg et al., 2008). According to the CDC (2015), about half of U.S. hospitals implemented only three to five steps of the TSSB. Mississippi has no health facilities recognized as BF hospitals to date (BFUSA, 2015).

Given the low breastfeeding rates in Mississippi, there is a need for strategies to evaluate breastfeeding support practices in relevant health facilities. This is the first study, to our knowledge, to examine breastfeeding practices in hospitals in Mississippi and identify barriers to implementing the TSSB in hospitals. The goals of this study were to (a) examine the status of overall TSSB practices (TSSB level of implementation) in Mississippi hospitals; (b) assess associations between the characteristics of hospitals with TSSB levels of implementation; and (c) identify barriers to implementation of the TSSB in the hospitals.

Methods

This study was conducted from June through August 2015. It used a descriptive design to explore the current breastfeeding practices in Mississippi hospitals based on two levels of the Socio-Ecological Model (SEM). The first phase focused on the organizational level, and examined hospital practices based on TSSB concepts by surveying the nurse manager of maternity/birthing units in each Mississippi hospital that provide maternity care. The second phase focused on the SEM individual level and examined breastfeeding knowledge and practice among nursing staff, including their interest to adopt the TSSB in their practices, by surveying nurses working in the maternity/birthing setting in Mississippi hospitals. Figure 2 (page 45) shows a framework for examining hospital practices related to breastfeeding based on the SEM levels and
highlights the two levels that were used in the study’s design. The description and findings of the second phase are presented in another manuscript (Alakaam, et al., manuscripts in preparation). The study was approved by the University of Southern Mississippi Institutional Review Board.

Participants

The researcher included all Mississippi hospitals that provided maternity/birthing services at the time of the study (43 hospitals). Participants were recruited through the Breastfeeding Resource Guide developed by Mississippi Breastfeeding Coalition (2015). This guide includes contact information for specific health care individuals (maternity nurses or lactation consultants) for all Mississippi hospitals with maternity units. The researcher first contacted the persons listed as contacts in the Breastfeeding Resource Guide via telephone and asked them to contact the nurse managers or the directors of maternity/birthing services in their facilities to solicit their participation in the study on behalf of each hospital. The researcher then sent the survey packet to the nurse manager/director of each hospital unit by postal mail. The survey packet included a cover letter presenting the purpose of the study, a letter of support from the president of the Mississippi Breastfeeding Coalition, a consent form, the questionnaire, and a return stamped self-addressed envelope. The researcher sent another package three weeks after the initial contact to those who had not yet responded. Respondents were given a $10 gift card for participation.

Instruments and Analysis

The researcher developed a cross sectional survey on hospital breastfeeding practices based on the implementation of the TSSB in the facility. The questionnaire was
developed by the researcher based on the Texas Ten Step Program – Scorecard tool (2014), and had 10 sections, each with three to seven questions.

The researcher applied the scoring algorithm developed by the Texas Ten Step Program (2014) to translate the participant’s responses into meaningful scores and to measure the current status of overall TSSB practices in each hospital. For each closed ended question, a score was calculated using a 0-2 scale; zero indicates a practice that is not supportive of breastfeeding, one indicates partial credit for a practice that is supportive of breastfeeding, and two indicates an ideal practice that is supportive of breastfeeding. For each multiple-response item related to the hospital practices, a score was calculated using a 0-2 scale; each selected item was given a score of 2, non-selected item was given a score of zero. For example, for Step 8 (encourage breastfeeding on demand), the questions were: (1) policy encourages mothers to breastfeed without restriction of time or frequency. Answers included yes, partially, or no. A “yes” answer was given a score of 2; a “partially” answer was given a score of 1; and a “no” answer was given a score of zero. (2) staff educate mothers on the following (select all that apply). Answers included (a) newborns usually feed a minimum of eight times in 24 hours, (b) infants use recognizable cues to signal readiness to begin and end feedings, (c) physical contact and nourishment are both important, and (d) adequate feeding should be based on satiety and output; each selected item was given a score of 2. The questionnaire gives a possible total score range from 0-100 which represents the current practices of overall TSSB implementation of each hospital. The total score was categorized into four levels: low implementation (scores 0-24.9), partial implementation (scores 25-74.9), moderate implementation (scores 75-89.9), and high implementation (scores 90-100).
An additional 10 multiple-choice questions (one question at the end of each section) were added to the questionnaire to assess barriers to implementing the TSSB. For example, for step 8 (encourage breastfeeding on demand), the question was “what are the common barriers to encourage breastfeeding on demand practices in your facility?” Answers included (a) expectations on the part of mothers and staff that feeding should occur on a regular schedule, (b) lack of knowledge of common feeding cues, (c) lack of adequate mother/baby contact, and (d) other (specify).

The researcher also created a data set containing information on characteristics of each hospital based on the Mississippi State Department of Health’s annual report “2013 Report on Hospitals” (Mississippi State Department of Health, 2014), which included the following data: Mississippi public health district number (I-IX); region (within or outside Mississippi metro area, as determined by the U.S. Census Bureau, 2013); hospital size: number of beds (fewer than 150, 150-250, or more than 250); number of deliveries per year (fewer than 500, 500-1000, or more than 1000); and number of Cesarean sections per year (fewer than 200, 200-400, or more than 400). Cut-points were established by the researcher.

The researcher conducted a pilot study with 15 participants to assess the reliability and clarity of the measures, and modified questions based on feedback to elicit more relevant responses. A Cronbach’s alpha was utilized to ensure internal consistency for the survey, the test yielded .94 for the whole instrument (scale range .85 – .95), indicating the questionnaire had the necessary reliability.

The researcher used the Statistical Package for Social Sciences software (IBM SPSS for Windows, version 22.0, 201, IBM SPSS, Chicago, IL) for data analysis.
Descriptive statistics were used to analyze the following variables: the current level of implementation of the TSSB in the hospitals, barriers to implementing the TSSB in the hospital from respondents’ perspectives, and demographic characteristics of each facility as described above. Chi-square tests were used to determine the association of the level of implementation with hospitals’ characteristics.

Results

All nurse managers of maternity units or directors of birthing/women’s service center of Mississippi hospitals with maternity setting were contacted (43 hospitals). Thirty-one completed questionnaires ($n = 31$) were returned to the researcher; response rate was 72.1%. There were no significant differences between respondents’ and non-respondents’ hospitals with respect to hospital size, location, delivery rate, and Cesarean section rate per year.

Characteristics of the hospitals

None of the 31 hospitals had a BF certificate at the time of the study. About 63% of the hospitals were located within a Mississippi metropolitan area, and the hospitals’ size (based on number of beds) ranged from fewer than 150 (32.3%) to more than 250 (38.7%) beds. The number of hospitals who participated was distributed proportionally to the total number within each category of hospitals’ delivery rate and Cesarean sections rate per year. The characteristics of the hospitals and the number of hospitals by Mississippi public health district number are shown in Table 5.

Current Level of Implementation of the TSSB

Findings indicated that the current status of overall TSSB level of implementation at Mississippi hospitals was partial (mean 65.45, $SD$ 13.84, range 43, min 44, max 87).
Table 5

*Mississippi Hospitals Characteristics (n = 31)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n*</th>
<th>%**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region of state</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Within Mississippi metro area</td>
<td>19</td>
<td>63.3</td>
</tr>
<tr>
<td>Outside Mississippi metro area</td>
<td>12</td>
<td>36.7</td>
</tr>
<tr>
<td>Deliveries/year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer than 500</td>
<td>7</td>
<td>22.6</td>
</tr>
<tr>
<td>500-1000</td>
<td>11</td>
<td>35.5</td>
</tr>
<tr>
<td>1000 or more</td>
<td>13</td>
<td>41.9</td>
</tr>
<tr>
<td>Cesarean sections/year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer than 200</td>
<td>10</td>
<td>32.3</td>
</tr>
<tr>
<td>200-400</td>
<td>10</td>
<td>32.3</td>
</tr>
<tr>
<td>400 or more</td>
<td>11</td>
<td>35.5</td>
</tr>
<tr>
<td>Hospital size (number of beds)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer than 150</td>
<td>10</td>
<td>32.3</td>
</tr>
<tr>
<td>150-250</td>
<td>9</td>
<td>29.0</td>
</tr>
<tr>
<td>250 or more</td>
<td>12</td>
<td>38.7</td>
</tr>
<tr>
<td>Public health district</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>II</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td>III</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>IV</td>
<td>2</td>
<td>6.5</td>
</tr>
<tr>
<td>V</td>
<td>9</td>
<td>29.0</td>
</tr>
<tr>
<td>VI</td>
<td>2</td>
<td>6.5</td>
</tr>
<tr>
<td>VII</td>
<td>1</td>
<td>3.2</td>
</tr>
<tr>
<td>VIII</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td>IX</td>
<td>8</td>
<td>25.8</td>
</tr>
<tr>
<td>VI</td>
<td>2</td>
<td>6.5</td>
</tr>
<tr>
<td>VII</td>
<td>1</td>
<td>3.2</td>
</tr>
</tbody>
</table>

Note. *The number of the sample within each hospital characteristic category.

**The percentage of the sample within each hospital characteristic category.

Specifically, it was partial in 22 hospitals (71%) and moderate in nine hospitals (29%); none of the hospitals had low or high levels of implementation. See Table 6.
Table 6

Score and Level of Implementation of the Ten Steps in Mississippi Hospitals (n = 31)

<table>
<thead>
<tr>
<th>Level</th>
<th>Score (mean ± SD)</th>
<th>n*</th>
<th>%**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>Partial</td>
<td>59.5 ± 11.8</td>
<td>22</td>
<td>71.0</td>
</tr>
<tr>
<td>Moderate</td>
<td>80.0 ± 3.8</td>
<td>9</td>
<td>29.0</td>
</tr>
<tr>
<td>High</td>
<td>0</td>
<td>0</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Note. Level of implementation of the Ten Steps to Successful Breastfeeding: low (score 0-24.9), partial (score 25-74.9), moderate (score 75-89.9), and high (score 90-100). The total possible score ranges from 0-100 points.

* The number of hospitals in each level.

** The percentage of hospitals in each level.

Associations between Hospital Level of Implementation and Hospital Characteristics

A chi-square analysis showed significant positive associations of the level of implementation with the hospital’s delivery rate per year ($\chi^2 = 0.47, p < .001$) and the hospital’s Cesarean section rate per year ($\chi^2 = 0.43, p = .001$). There were no significant associations with the hospital’s location (within or outside metro) and the hospital’s district number (Mississippi public health district). See Table 7.

Table 7

Mississippi Hospital Characteristics Associated with Score of Overall Implementation of the Ten Steps to Successful Breastfeeding (n = 31)

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>mean (SD)*</th>
<th>p**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Region of state</td>
<td></td>
<td>.84</td>
</tr>
<tr>
<td>Within metro area</td>
<td>69 (13.96)</td>
<td></td>
</tr>
<tr>
<td>Outside metro area</td>
<td>66.3 (14.23)</td>
<td></td>
</tr>
<tr>
<td>Deliveries/year</td>
<td></td>
<td>.00</td>
</tr>
<tr>
<td>Fewer than 500</td>
<td>52.4 (13.12)</td>
<td></td>
</tr>
<tr>
<td>500-1000</td>
<td>66.3 (13.25)</td>
<td></td>
</tr>
<tr>
<td>1000 or more</td>
<td>71.7 (10.19)</td>
<td></td>
</tr>
</tbody>
</table>
Barriers to Implementing the Ten Steps to Successful Breastfeeding in the Hospital

The majority of participants indicated the main barriers to Step 1 (have written breastfeeding policies in the hospital) were resistance to new policies and practices (90.3%) and lack of support from national and state governments (74.2%). Regarding Step 2 (train all health care staff) about half of the participants specified that the main barriers were finding time for training, financial cost of providing training, and cost of staff coverage for training hours. Regarding barriers to Step 3 (inform all pregnant women about breastfeeding benefits) the majority of participants affirmed the following

Table 7 (continued).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>mean (SD)*</th>
<th>p**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cesarean sections/year</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer than 200</td>
<td>58.6 (15.04)</td>
<td>.01</td>
</tr>
<tr>
<td>200-400</td>
<td>62.9 (14.55)</td>
<td></td>
</tr>
<tr>
<td>400 or more</td>
<td>74 (6.86)</td>
<td></td>
</tr>
<tr>
<td>Hospital size (number of beds)</td>
<td></td>
<td>.24</td>
</tr>
<tr>
<td>Fewer than 150</td>
<td>62.3 (15.88)</td>
<td></td>
</tr>
<tr>
<td>150-250</td>
<td>64.3 (12.05)</td>
<td></td>
</tr>
<tr>
<td>250 or more</td>
<td>70.2 (12.73)</td>
<td></td>
</tr>
<tr>
<td>Public health district</td>
<td></td>
<td>.17</td>
</tr>
<tr>
<td>I</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>II</td>
<td>72 (2.64)</td>
<td></td>
</tr>
<tr>
<td>III</td>
<td>45</td>
<td></td>
</tr>
<tr>
<td>IV</td>
<td>81 (4.24)</td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>64.6 (14.14)</td>
<td></td>
</tr>
<tr>
<td>VI</td>
<td>62 (24.04)</td>
<td></td>
</tr>
<tr>
<td>VII</td>
<td>76</td>
<td></td>
</tr>
<tr>
<td>VIII</td>
<td>64.5 (16.01)</td>
<td></td>
</tr>
<tr>
<td>IX</td>
<td>61.25 (13.85)</td>
<td></td>
</tr>
</tbody>
</table>

Note. Level of implementation of the Ten Steps to Successful Breastfeeding: low (score 0-24.9), partial (score 25-74.9), moderate (score 75-89.9), and high (score 90-100). The total possible score ranges from 0-100 points.

*The mean and SD of hospitals’ implementation scores of the Ten Steps in the same category.

**Chi-square analysis; statistical significance p < .05.
responses as the main barriers: fragmentation of prenatal care creating diffusion of messages about breastfeeding (77.4%) and limited attendance at education programs (83.9%). Regarding Step 4 (skin-to-skin contact), the routine practice of mother-baby separation in the first hour for clinical examination and cleaning was the common barrier (74.2%).

The majority of participants (80.6%) indicated that routine non-indicated supplementation of infant formula and budgetary constraints (67.7%) were the main barriers to Step 6 (no food or drink other than breastmilk practice). Regarding Step 7 (rooming in), the common barriers were perception that routine separation is necessary for medical procedures (77.4%), and perception of staff and mothers that sleep quality is improved when mothers and babies are separated (67.7%).

Other common barriers to the implementation of the individual steps of the TSSB selected by participants included: for Step 5 (show mothers how to breastfeed), inconsistent advice among staff (87.1%) and limited staff time (71%); for Step 8 (encourage breastfeeding on demand), expectation on the part of mothers and staff that feeding should occur on a regular schedule (77.4%) and lack of adequate mother-baby contact (58.1%); for Step 9 (give no artificial nipples or pacifiers), cultural expectation that pacifiers are needed to calm babies (80.6%) and concern about the safety of cup feeding (71%); and for Step 10 (foster establishment of breastfeeding support groups), lack of proactive resources (77.4%) and lack of awareness of existing resources (64.5%).

The complete list of the barriers including others mentioned by participants is shown in Table 8.
Table 8

_Barriers to Implementation of the Ten Steps to Successful Breastfeeding in Mississippi_  
_Hospitals as Identified by Maternity Administrators (n = 31)_

<table>
<thead>
<tr>
<th>Step</th>
<th>Item</th>
<th>n</th>
<th>%*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Step 1</td>
<td>Have a written hospital policy about breastfeeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Resistance to new policies and practices</td>
<td>28</td>
<td>90.3</td>
</tr>
<tr>
<td></td>
<td>Lack of support from key sectors</td>
<td>23</td>
<td>74.2</td>
</tr>
<tr>
<td></td>
<td>Lack of monitoring to indicate if practice is in keeping with policy</td>
<td>15</td>
<td>48.4</td>
</tr>
<tr>
<td></td>
<td>Concern about the potential costs of policy change</td>
<td>12</td>
<td>38.7</td>
</tr>
<tr>
<td></td>
<td>Other such as: disagreement about the validity or importance of the policies</td>
<td>7</td>
<td>22.6</td>
</tr>
<tr>
<td>Step 2</td>
<td>Train all health care staff in skills necessary to implement this policy</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Finding time for training</td>
<td>18</td>
<td>58.1</td>
</tr>
<tr>
<td></td>
<td>Cost of staff coverage for training hours</td>
<td>17</td>
<td>54.8</td>
</tr>
<tr>
<td></td>
<td>Financial cost of providing training</td>
<td>17</td>
<td>54.8</td>
</tr>
<tr>
<td></td>
<td>Lack of in-house expertise for training</td>
<td>10</td>
<td>32.3</td>
</tr>
<tr>
<td></td>
<td>High staff turnover</td>
<td>5</td>
<td>16.1</td>
</tr>
<tr>
<td></td>
<td>Other such as: discontinuation due to budget constraints</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td>Step 3</td>
<td>Inform all pregnant women about breastfeeding benefits</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Limited attendance at education programs</td>
<td>26</td>
<td>83.9</td>
</tr>
<tr>
<td></td>
<td>Fragmentation of prenatal care</td>
<td>24</td>
<td>77.4</td>
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<tr>
<td>Step 4</td>
<td>Initiate skin-to-skin contact within an hour of birth</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Routine practice of mother-baby separation in the first hour</td>
<td>23</td>
<td>74.2</td>
</tr>
<tr>
<td></td>
<td>Perception that routine procedures have priority over breastfeeding</td>
<td>10</td>
<td>32.3</td>
</tr>
<tr>
<td></td>
<td>Other such as: changing culture of older nurses</td>
<td>4</td>
<td>12.9</td>
</tr>
<tr>
<td>Step 5</td>
<td>Show mother how to breastfeed</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inconsistent advice and teaching among staff</td>
<td>27</td>
<td>87.1</td>
</tr>
<tr>
<td></td>
<td>Limited staff time</td>
<td>22</td>
<td>71.0</td>
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<tr>
<td></td>
<td>Limited staff competence in assessing and educating mothers</td>
<td>20</td>
<td>64.5</td>
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<tr>
<td>Step 6</td>
<td>Give infant no food or drink other than breastmilk</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Routine non-indicated supplementation of infant formula</td>
<td>25</td>
<td>80.6</td>
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</table>
Table 8 (continued).

<table>
<thead>
<tr>
<th>Step</th>
<th>Item</th>
<th>n</th>
<th>%*</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Budgetary constraints regarding purchase of formula</td>
<td>21</td>
<td>67.7</td>
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<tr>
<td></td>
<td>Misconceptions regarding contraindications to breastfeeding</td>
<td>14</td>
<td>45.2</td>
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<tr>
<td></td>
<td>Concern parents will choose another facility if they do not receive a discharge bag</td>
<td>10</td>
<td>32.3</td>
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<tr>
<td></td>
<td>Others such as: large formula feed population, many lower socioeconomic patients requested formula pack, Nurses recognize a formula feeding to maintain weight</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>Step 7 Practice rooming-in 24 hours a day</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Perception that routine separation is necessary for medical procedures</td>
<td>24</td>
<td>77.4</td>
</tr>
<tr>
<td></td>
<td>Perception of staff and mothers that sleep quality is improved when mothers and babies are separated</td>
<td>21</td>
<td>67.7</td>
</tr>
<tr>
<td></td>
<td>Other such as: Infant severity of illness and prematurity</td>
<td>3</td>
<td>9.7</td>
</tr>
<tr>
<td></td>
<td>Step 8 Encourage breastfeeding on demand</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Expectations of mothers/staff that feeding should occur on a regular schedule</td>
<td>24</td>
<td>77.4</td>
</tr>
<tr>
<td></td>
<td>Lack of knowledge of common feeding cues</td>
<td>18</td>
<td>58.1</td>
</tr>
<tr>
<td></td>
<td>Lack of adequate mother-baby contact</td>
<td>11</td>
<td>35.5</td>
</tr>
<tr>
<td></td>
<td>Step 9 Give no artificial teats or pacifier</td>
<td></td>
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<td></td>
<td>Cultural expectation that pacifiers are needed to calm babies</td>
<td>25</td>
<td>80.6</td>
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<tr>
<td></td>
<td>Staff familiarity with supplemental feeding devices and discomfort with alternative feeding methods</td>
<td>22</td>
<td>71.0</td>
</tr>
<tr>
<td></td>
<td>Concern about the safety of cup feeding</td>
<td>12</td>
<td>38.7</td>
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<td></td>
<td>Step 10 Foster establishment of breastfeeding support group</td>
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<td></td>
<td>Lack of proactive resources</td>
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<td>77.4</td>
</tr>
<tr>
<td></td>
<td>Lack of awareness of existing resources</td>
<td>20</td>
<td>64.5</td>
</tr>
</tbody>
</table>

Note. * Percentages with a category do not total 100% because multiple responses were possible.

Discussion

This study assessed the level of implementation of the TSSB in the hospitals. Findings indicated that the current level of implementation was partial in Mississippi hospitals, and none of the hospitals had completely implemented the TSSB. As
previously mentioned, there are no other existing studies which specifically examined the breastfeeding practices or the implementation of the TSSB in Mississippi. These findings, however, were consistent with data from the 2013 National Survey of Maternity Practices in Infant Nutrition and Care (mPINC), conducted by the CDC to evaluate practices related to breastfeeding among all health facilities that provide maternity setting in the US. In this survey, Mississippi was tied for having the lowest overall mPINC score with 59 out of 100 among the nation (the mean score nationwide is 75; CDC, 2015). These results indicate there are weaknesses in breastfeeding practices and low breastfeeding support in Mississippi hospitals.

Previous research in other states and cities in the US indicates alternative findings regarding level of implementation of the TSSB (Grizzard et al., 2005; Kovach, Crivelli-Kovach, & Chung, 2011; Li et al., 2014). From the literature, it can be speculated that other U.S. hospitals have a higher level of implementation of ideal breastfeeding practices such as the TSSB than Mississippi hospitals. For example, Kovach et al. (2011) classified the implementation level of the TSSB in 18 hospitals in Philadelphia as high to moderate in 2009. The variations between the present study findings related to the level of implementation of the TSSB in the hospital and the other research findings may be due to true differences in breastfeeding practices or due to using a different instrument than the one used in the present study. Furthermore, time of data collection could impact the end results; several studies showed that hospitals, in general, change their policies and practices over short periods of time (Crivelli-Kovach & Chung, 2011; Ip et al., 2007).

The associations found in the study also provided interesting findings. When the researcher assessed the association between TSSB level of implementation and the
hospitals’ variables, the level of implementation was positively correlated with hospital delivery and Cesarean section rates. This correlation may be due to the assumption that hospitals with higher delivery rates have better resources (Semenic et al., 2012; Su et al., 2007), including those to address high-risk pregnancies requiring Cesarean sections, and a higher number of providers that specialize in breastfeeding care, such as lactation consultants, who can help to improve the overall breastfeeding support inside the maternity and birthing units (Su et al., 2007). However, in the future one might want to investigate the possible differences in the breastfeeding practices between hospitals with low delivery and Cesarean section rates and hospitals with high delivery and Cesarean section rates.

There were no significant associations between TSSB level of implementation and hospital location (within, outside metro area) or hospital size. Gizzard et al. (2006) also found no association with location of hospitals in Massachusetts. Regarding size, two studies, one in Massachusetts (Gizzard et al., 2006) and one in Sweden (Hofvander, 2005) did find a positive association between level of implementation and hospital size; however, Merewood et al. (2005) did not find such association among U.S. hospitals. These variations in findings may be due to differences in the characteristics of study population between the present study and that of Gizzard et al. (2006) and Hofvander (2005) especially, the majority of hospitals participated in these studies were located within metropolitan areas.

The present study also identified common organizational level barriers for implementation of each step of TSSB; across all steps, resistance to new policies and protocols, routine breastfeeding practices, limited financial and human resources, and
lack of support from national and local governments accounted for the largest number of barriers. Studies that examined the BFHI implementation process in health facilities described similar barriers as those identified in the present study particularly regarding lack of administrative support (Daniels & Jackson, 2011), lack of government funding (Heads, 2005), resistance to change (Semenic et al., 2012), and hospital routine (Kovach, 2002; Walsh, Pincombe, & Henderson, 2011).

The findings regarding the barriers can provide useful information for policy makers and hospital administrators to further assist hospitals in the implementation of the TSSB. For example, several studies showed the effectiveness of Step 10 (foster establishment of breastfeeding support groups) in sustaining breastfeeding up to three months (Murray et al., 2007); according to the present study, the main barriers to implementing Step 10 were lack of awareness of available resources and lack of proactive resources. Recommendations for future efforts could include improving access to breastfeeding support information and providing statewide services that enhance and expand the breastfeeding resources available to both mothers and providers. Hospital administrators should also utilize available resources to overcome the barriers such as insufficient funding. For example, Mississippi hospitals can enroll in CHAMPS (Communities and Hospitals Advancing Maternity Practices) program that is managed by Boston Medical Center and Kellogg foundation. This program currently provides grant and technical assistance to hospitals in the Southern U.S. to help them obtain BF designation (CHAMPS, 2014).

The study has some limitations. First, the questionnaire was answered individually by participants in each facility; this could have introduced a possible bias
due to respondents having differing perspectives based on their own experiences, practices, and satisfaction (Collinson & Collinson, 2009). However, previous research conducted with nurse managers and hospital administrators has shown accurate and valid responses (Hellings & Howe, 2000; Tarrant et al., 2011). Second, the study examined level of TSSB implementation among hospitals representing the organizational level of the Social Ecological Model, additional research is needed to examine the influence of other levels of SEM on breastfeeding such as the impact of the government and community structure on breastfeeding practices. Additionally, findings may be of interest to other southern states with low breastfeeding rates, but caution should be used in generalizing because data collection was limited to Mississippi.

This study was not intended to show causation in breastfeeding practices implementation among hospitals but just association. A positive correlation did exist with some variables, while no correlation existed with others. More research should be conducted specifically with regard to causation related to breastfeeding practices. This study provides valuable information about a topic that previously has not been adequately investigated, the level of support of breastfeeding in Mississippi, which has a very low breastfeeding rate, as well as identifies barriers to implementing the TSSB in Mississippi hospitals.

Conclusion

The present study findings, along with those from Alakaam et al. (manuscript in preparation) study provided an overall view of the current status of breastfeeding practices in Mississippi hospitals. However, there is still a need for further research to explore in depth the practices of each step and their association with breastfeeding rates.
and duration in Mississippi hospitals. Furthermore, the ultimate goal of the research is not just to improve the breastfeeding practices in Mississippi hospitals but also to increase the breastfeeding rate and duration in Mississippi. This study explored one of the factors that has a great impact on breastfeeding rates and duration; however, future research is needed in Mississippi to explore other factors that could influence the low breastfeeding rates such as factors related to culture, poverty level, and education level among mothers in this state as identified by other studies (DiGirolamo et al., 2003; Meedya, Fahy, & Kable, 2010)

Funding

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Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this research.
CHAPTER V

MANUSCRIPT II: NURSES’ KNOWLEDGE AND PRACTICES RELATED TO
BREASTFEEDING AND INTEREST TO ADOPT THE TEN STEPS TO
SUCCESSFUL BREASTFEEDING IN MISSISSIPPI HOSPITALS

Abstract

Background: Mississippi has the lowest rates of breastfeeding of all states at six months and at one year (Centers for Disease Control and Prevention [CDC], 2014a). Nurses working in the maternity setting are considered to have a powerful influence on mother’s decision to breastfeed.

Objectives: to examine nursing staff knowledge, practice, effectiveness of practice, and sources of information related to breastfeeding; to assess interest to adopt the Ten Steps to Successful Breastfeeding (TSSB); and to identify facilitators and barriers to implementing the TSSB.

Methods: A total of 302 nurses working in hospital maternity/birthing settings participated in this cross sectional study. Data were collected using a self-administered questionnaire. Chi-square analysis and Spearman correlations were used to determine correlations among the variables.

Results: Overall breastfeeding knowledge and practices of respondents was good. About 10% earned a perfect knowledge score. Most believed they were very effective to effective (77%) in meeting the needs of the patients, and were familiar with the TSSB (69.9%). The majority of respondents had positive interest towards adopting TSSB. Significant positive associations were noted among knowledge, interest, and effectiveness; as well as between knowledge and practice and age, years of experience,
and other variables. Resistance to change was the main barrier to implementing the TSSB; raising awareness about the importance of the TSSB and providing a lactation consultant in the unit were the main facilitators.

Conclusions: More research is needed to understand reasons behind low breastfeeding rates and duration in Mississippi.

Background

Breastfeeding has been shown to provide multiple health benefits for both infants and mothers, and it is the preferred choice of feeding for all infants (AAP, 2012). Mississippi has the lowest rates of breastfeeding of all states at 6 months (28.9%), and at 12 months (10%; CDC, 2014a). In 1991, the World Health Organization (WHO), in collaboration with United Nations Children's Fund (UNICEF), recognized the importance of increasing breastfeeding rates and duration worldwide and launched the Baby Friendly Hospital Initiative (BFHI). This initiative promotes breastfeeding within the hospital setting through the implementation of 10 steps of practices called the Ten Steps to Successful Breastfeeding (TSSB; UNICEF, 2009; WHO, 2003). Studies have shown that the rate of infant breastfeeding improves after hospitals implement the TSSB (Merewood et al., 2005; Rosenberg et al., 2008). Despite the fact that the BFHI was initially launched more than 23 years ago, none of the hospitals in Mississippi has completely implemented the TSSB to date (Alakaam et al., manuscript in preparation; BFUSA, 2014).

Nurses are the key element of breastfeeding care and they play an essential role in promoting the TSSB practices inside the hospital (Weddig et al., 2011). Nurses working in the maternity/birthing units are also an important part of delivering care and they are considered to have a powerful influence on mothers’ decisions about method of feeding
(DiGirolamo, Grummer-Strawn, & Fein, 2003). Knowledge and information about nursing practice related to breastfeeding and nurses’ awareness about TSSB can assist in developing programs to facilitate successful adoption of the TSSB in Mississippi hospitals. Therefore, the purpose of this study was to: (a) examine nurses’ knowledge and practices, and identify sources of information related to breastfeeding; (b) assess nurses’ familiarity with the TSSB and interest to adopt the TSSB in their practices; (c) examine relationships between breastfeeding knowledge, effectiveness of practices related to breastfeeding, familiarity with the TSSB, interest to adopt the TSSB, and demographic variables among nursing staff; and (d) identify the barriers and facilitators to adopting the TSSB in the hospital from nurses’ perspectives.

Methods

This study was conducted from June through August 2015. It used a descriptive design to explore the current breastfeeding practices in Mississippi hospitals based on two levels of the Socio-Ecological Model (SEM). The first phase focused on the organizational level, and examined hospital practices based on TSSB concepts by surveying the nurse manager of maternity/birthing units in each Mississippi hospital that provide maternity care. The second phase focused on the SEM individual level and examined breastfeeding knowledge and practice (BKP) among nursing staff, including their interest to adopt the TSSB in their practices, by surveying nurses working in the maternity/birthing setting in Mississippi hospitals. The description and findings of the first phase are presented in another manuscript (Alakaam et al., manuscripts in preparation). The study was approved by The University of Southern Mississippi Institutional Review Board.
Participants

The participants were nursing staff working in maternity/birthing units in Mississippi hospitals. A target number of 200-400 nurses was estimated to participate in the study based on the number of nurses working in Mississippi hospitals (5-10 in each hospital maternity/birthing unit of the 43 hospitals with such units; Mississippi State Department of Health, 2014). The inclusion criteria included: ability to speak and read English; adults 18 and older of any ethnicity; and currently working in either an obstetric, birthing, or maternity unit in a hospital in Mississippi.

The sample was accessed through a nursing association meeting; the respondents from the meeting were asked to identify other individuals who might be willing to participate in the study. In order to maximize the flexibility of administration survey packets were distributed and collected via postal mail or in person. The package included a cover letter presenting the purpose of the study, a consent form, instructions to return the completed questionnaire to the researcher, and a stamped self-addressed envelope for those who wished to return the survey by mail. Each participant who completed the questionnaire was entered into a prize drawing with the chance to win one of three $10 gift cards.

Instrument and Data Analysis

The researcher developed a questionnaire using concepts from previous studies. The questionnaire contained four sections. The first two sections included questions about nurses’ knowledge, practices, sources of information regarding breastfeeding, and familiarity with the TSSB. These questions were adapted, with permission and slight revisions, from an instrument developed by Freed et al. (1995). The third section included
questions about interest to adopt the TSSB in the nurses’ practices along with questions about barriers and facilitators to implementing the TSSB in the practice. For clarity, the questions and responses of each section are described in the results section.

The fourth section identified the hospital category in which the nurses were working based on Mississippi public health districts number (I - IX) and the number of deliveries per years: category I (more than 1000 deliveries/year), category II (500-1000 deliveries/year), and category III (fewer than 500 deliveries/year). Nurses’ demographic information was also included: age, sex, race, credentials, type of employment, and years of practice.

Data were coded and analyzed using the Statistical Package for Social Sciences software (IBM SPSS for Windows, version 22.0, 201, IBM SPSS, Chicago, IL). Total scores were calculated for the following variables: breastfeeding knowledge, BKP, effectiveness of practices related to breastfeeding, and interest to adopt the TSSB. Descriptive statistics, including frequencies and percentages, or means and standard deviations were determined, as appropriate, for the above variables as well as for the nurses’ sources of information regarding breastfeeding, facilitators and barriers to implement the TSSB in the nurses’ practices, and demographics variables. Chi-square analysis and Spearman correlations were used to determine relationships between the variables; independent sample t-test and ANOVA were used to determine the differences between the various groups.

Pilot Study

A pilot study was conducted to help ensure the reliability of the questionnaire. A sample of 15 nurses who had similar demographic characteristic to the targeted
population participated in the pilot study. The sample included a diverse group of nurses with respect to age and place of work. Nurses were female, mostly White \((n = 8)\), followed by African American \((n = 6)\), and Asian \((n = 1)\). Participants’ ages ranged from 28 to 45. Most of the participants were Registered Nurses (RN; \(n = 12\)), followed by Licensed Practical Nurses (LPN; \(n = 2\)), and Nurse Practitioners (NP; \(n = 1\)). Participants’ years of experience ranged from one to ten years. Twelve nurses were working in category I hospitals and four nurses in category II hospitals.

The responses provided were used to evaluate each item in the study’s instrument. A Cronbach’s alpha was utilized to ensure internal consistency, yielding .83 for the whole instrument (.84 for nurses’ knowledge; .71 for nurses’ practices; and .69 for nurses’ interest scores).

Results

**Demographic Characteristics**

The researcher distributed 400 survey packets to nurses via postal mail or in person; 302 were completed and returned (response rate of 76%). There is no available data that reports the numbers of nurses working in a maternity/birthing setting in each public health districts in Mississippi. However, to avoid under or over representation of the sample in each specific district, the percentage of the respondents from each district was compared and tested for differences by Chi-square test with the percentage of hospitals with maternity/birthing units in that district. The respondent sample was distributed similarly to hospitals over the nine districts, and there were no significant differences between percentage of respondents and percentage of hospitals by public health district \((\chi^2 = 25.88, p = .36)\).
Participants were all female and mostly White. Participants’ ages ranged from 23 to 56 with a mean age of 36.2 years (SD 6.89, range 33). Most of the participants were RN (75.8%), followed by LPN (13.9%), and NP (10.3%). Participants’ years of experience ranged from one to twenty-eight years with a mean of 8.43 years (SD 4.86, range 27). Sixty-three percent of the participants were full time employees. The complete list of participants’ characteristics is shown in Table 9.

Table 9

*Characteristics of the sample (n = 302)*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>n*</th>
<th>%**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Younger than 40 years</td>
<td>199</td>
<td>65.9</td>
</tr>
<tr>
<td>40 years or older</td>
<td>103</td>
<td>34.1</td>
</tr>
<tr>
<td>Race</td>
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<td></td>
</tr>
<tr>
<td>White</td>
<td>198</td>
<td>65.6</td>
</tr>
<tr>
<td>African American</td>
<td>73</td>
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<tr>
<td>Hispanic</td>
<td>9</td>
<td>3.0</td>
</tr>
<tr>
<td>Asian</td>
<td>21</td>
<td>7.0</td>
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<tr>
<td>Title</td>
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<td></td>
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<tr>
<td>Registered Nurse</td>
<td>229</td>
<td>75.8</td>
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<tr>
<td>Licensed Practical Nurse</td>
<td>42</td>
<td>13.9</td>
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<td>Nurse Practitioner</td>
<td>31</td>
<td>10.3</td>
</tr>
<tr>
<td>Years of practice</td>
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<td></td>
</tr>
<tr>
<td>Fewer than 5 years</td>
<td>74</td>
<td>24.6</td>
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<tr>
<td>5–10 years</td>
<td>102</td>
<td>33.9</td>
</tr>
<tr>
<td>10 years or more</td>
<td>125</td>
<td>41.5</td>
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<tr>
<td>Employment</td>
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<tr>
<td>Full-time</td>
<td>191</td>
<td>63.2</td>
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<tr>
<td>Part-time</td>
<td>111</td>
<td>36.8</td>
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<tr>
<td>Nurse's hospital location, by Mississippi Public Health District</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>22</td>
<td>7.3</td>
</tr>
<tr>
<td>II</td>
<td>23</td>
<td>7.6</td>
</tr>
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</table>
Table 9 (continued).

<table>
<thead>
<tr>
<th>Characteristic</th>
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<th>%**</th>
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<td>17</td>
<td>5.6</td>
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<tr>
<td>IV</td>
<td>23</td>
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<tr>
<td>V</td>
<td>69</td>
<td>22.8</td>
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<tr>
<td>VI</td>
<td>17</td>
<td>5.6</td>
</tr>
<tr>
<td>VII</td>
<td>28</td>
<td>9.3</td>
</tr>
<tr>
<td>VIII</td>
<td>51</td>
<td>16.9</td>
</tr>
<tr>
<td>IX</td>
<td>52</td>
<td>17.2</td>
</tr>
</tbody>
</table>

Nurse’s hospital-deliveries/year

<table>
<thead>
<tr>
<th>Category</th>
<th>n*</th>
<th>%**</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 or more</td>
<td>165</td>
<td>54.6</td>
</tr>
<tr>
<td>500-1000</td>
<td>91</td>
<td>30.1</td>
</tr>
<tr>
<td>Fewer than 500</td>
<td>46</td>
<td>15.2</td>
</tr>
</tbody>
</table>

Note. *The number of the sample in each category.

**The percentage of the sample in each category.

Breastfeeding Knowledge

Respondents were asked to indicate a “yes, unsure, or no” response to 13 questions assessing their knowledge about breastfeeding (seven questions about breastfeeding benefits and six questions related to breastfeeding recommendation). Each correct answer received three points, while an unsure answer received two points, and incorrect answer received one point; the scores for all items made up the total knowledge score for each participant with a possible score range from 13-39; a higher score reflects greater knowledge. Overall, in this sample, the mean score of respondents’ breastfeeding knowledge was 32.75 (SD 4.95, range 20). Only 33 nurses (10.9%) earned a perfect score.

Regarding the health benefits of breastfeeding, the majority of respondents indicated that breastfeeding increases immune function (81.5%), is beneficial to continue
for six months (85.1%), and decreases infectious diseases (79.8%); however, 18.5% of nurses had the wrong answer for the item “breastfeeding increases allergic response protection” and were unsure if babies can get all the nutrition they need from breast milk. Additionally, 22.5% of the respondents were unsure if infant formulas are nutritionally equivalent to breast milk. Table 10 presents results for the health benefits of breastfeeding questions.

Table 10

*Nurses’ Responses to Health Benefits of Breastfeeding Questions (n = 302)*

<table>
<thead>
<tr>
<th>Items and Correct Responses (Yes/No)</th>
<th>Yes (%)</th>
<th>Unsure (%)</th>
<th>No (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases immune function (Yes)</td>
<td>81.5</td>
<td>7.3</td>
<td>18.3</td>
</tr>
<tr>
<td>Beneficial for 6 months (Yes)</td>
<td>85.1</td>
<td>8.6</td>
<td>6.3</td>
</tr>
<tr>
<td>Decreases infectious diseases (Yes)</td>
<td>79.8</td>
<td>11.9</td>
<td>8.3</td>
</tr>
<tr>
<td>Breastfeeding provides benefits that cannot be produced by formula feeding (Yes)</td>
<td>77.2</td>
<td>13.2</td>
<td>9.6</td>
</tr>
<tr>
<td>Babies can get all the nutrition they need from breast milk until at least 6 month of age (Yes)</td>
<td>69.2</td>
<td>18.5</td>
<td>12.3</td>
</tr>
<tr>
<td>Increases allergic response protection (Yes)</td>
<td>65.6</td>
<td>15.8</td>
<td>18.5</td>
</tr>
<tr>
<td>Most infant formula are nutritionally equivalent to breast milk (No)</td>
<td>10.6</td>
<td>22.5</td>
<td>66.9</td>
</tr>
</tbody>
</table>

Participants were also asked if they would recommend that mothers stop breastfeeding in specific situations. Among the respondents, 78.1% would not recommend stopping if the mother has an insufficient milk supply and 75.5% if the baby is not satisfied. About 14% of the respondents were unsure about the recommendation in the situations “when the mother has an insufficient milk supply” and “when the baby is not satisfied”. Regarding breast abscess and mastitis, 46.7% and 34.1% of the
respondents, respectively, had the wrong responses and would recommend stopping breastfeeding in these conditions. Table 11 presents results for the recommendation question.

Table 11

*Nurses’ Responses to the Question “When Should the Mother Stop Breastfeeding?”*(n = 302)

<table>
<thead>
<tr>
<th>Items*</th>
<th>No (%)</th>
<th>Unsure (%)</th>
<th>Yes (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast abscess</td>
<td>43.4</td>
<td>9.9</td>
<td>46.7</td>
</tr>
<tr>
<td>Mastitis</td>
<td>54.6</td>
<td>11.3</td>
<td>34.1</td>
</tr>
<tr>
<td>Insufficient milk supply</td>
<td>78.1</td>
<td>14.9</td>
<td>7.0</td>
</tr>
<tr>
<td>Baby is not satisfied</td>
<td>75.5</td>
<td>13.6</td>
<td>10.9</td>
</tr>
<tr>
<td>Baby have teething</td>
<td>67.2</td>
<td>12.6</td>
<td>20.2</td>
</tr>
<tr>
<td>Baby have frequent loose stools</td>
<td>58.3</td>
<td>10.9</td>
<td>30.8</td>
</tr>
</tbody>
</table>

Note. *The correct response for all the items is “No.”

*Nurses’ Practices Related to Breastfeeding*

Participants were asked to select their current practices of breastfeeding support with respect to their own duties and experiences in the facility, in a multiple-response question. Each selection was given one point, for a possible score range of 1-5. The mean score of respondents’ practices related to breastfeeding was 2.64 (SD 0.87, range 4). Most of the respondents (75.5%) selected two to three practices and only 15.3% selected all the practices. Among the respondents, 72.5% of the nurses assisted with breastfeeding techniques, 68.2% counseled patients regarding infant feeding methods, 61.3% counseled patients prenatally, 60.3% assisted with lactation problems, and 2% selected other practices.


**Effectiveness of Practices Related to Breastfeeding**

Nurses were asked how effective they believed they were in meeting the needs of the patients. Responses used a 5-point Likert scale, from one = “not effective” to five = “very effective.” In general, most of the respondents believed they were very effective (32.1%) to effective (45.4%). About 1% believed they were not effective, 2% believed they were slightly effective, and 20.9% believed they were neither effective nor ineffective. The mean was 4.07 (effective; SD 0.79, range 4).

**The Level of Breastfeeding Knowledge and Practices**

The scores for breastfeeding knowledge, practices, and effectiveness items made up the total score for BKP for each respondent, yielding a possible score range from 15-49, which was then categorized into two levels: poor (scores ≤ 31) and good (scores ≥32). In general, the level of BKP of the respondents was good with a mean score of 39.53 (SD 5.83, range 24). Although the overall BKP level of the respondents was good, only 12 nurses (4%) earned a perfect score.

**Sources of Information Regarding Breastfeeding**

Participants were asked to select from one to five sources of breastfeeding information in a multiple-response question. The mean was 3.13 (SD 1.31, range 5); about half of the respondents selected two or three sources of information (25.5% and 28.1% respectively), and only 14.9% of the nurses selected five sources of information regarding breastfeeding. About 10% of the respondents selected only one source of information. The main sources of information were undergraduate nursing programs (70.9%), followed by training programs in the facility (58.9%), personal experience
(57.3%), other colleagues (54.6%), lactation consultants (37.4%), and continuing education offering by the facility (34.4%).

*Familiarity with the Ten Steps to Successful Breastfeeding*

Participants were asked to select a “yes or no” response to the question “are you familiar with the Baby Friendly Hospital Initiative of breastfeeding support (the Ten Steps to Successful Breastfeeding)?” Among the sample, 69.9% of the respondents were familiar with the TSSB, and 30.1% of the respondents were not. Those who were not familiar with the TSSB did not answer the questions related to the interest to adopt the TSSB, and barriers and facilitators to implement the TSSB; thus, the number of respondents for these items was 210.

*Interest to Adopt the Ten Steps to Successful Breastfeeding*

Participants were asked to respond to five items measuring the interest of nurses to adopt the TSSB in their practice. These items were answered on a 5-point Likert scale that included response categories of “strongly disagree” to “strongly agree” with one being the most negative and five the most positive. Response frequencies for each item and a total score were calculated to give a possible score range of 5-25.

The mean score of the interest to adopt the TSSB was 20.53 (SD 3.6, range 13). The majority of respondents had positive interest in adopting TSSB in their practice. Most of the respondents strongly agreed/agreed that: they were determined to adopt the TSSB (78%), they should adopt the TSSB in their practices (72%), and they would adopt the TSSB despite the difficulties (72%). Only 24% neither agreed nor disagreed to these statements. Additionally, 70% strongly agreed/agreed that they would adopt the TSSB if
Table 12

*Interest to Adopt the Ten Steps to Successful Breastfeeding in Nurses’ Practices*

\(n = 210\)

<table>
<thead>
<tr>
<th>Items</th>
<th>Strongly Agree</th>
<th>Agree</th>
<th>Neither</th>
<th>Disagree</th>
<th>Strongly Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>I am determined to adopt the Ten Steps in my practice</td>
<td>88 (41.9)</td>
<td>76 (36.2)</td>
<td>42 (20.0)</td>
<td>3 (1.9)</td>
<td>1 (0.5)</td>
</tr>
<tr>
<td>I should adopt the Ten Steps in my practice</td>
<td>81 (38.6)</td>
<td>72 (34.3)</td>
<td>54 (25.7)</td>
<td>3 (1.4)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>I would feel guilty if I was not adopting the Ten Steps in my practice.</td>
<td>79 (37.6)</td>
<td>74 (35.2)</td>
<td>52 (24.8)</td>
<td>5 (2.4)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>I would adopt the Ten Steps in my practice if there were facilitating factors</td>
<td>90 (42.9)</td>
<td>58 (27.6)</td>
<td>58 (24.3)</td>
<td>11 (5.2)</td>
<td>0 (0.0)</td>
</tr>
<tr>
<td>I would adopt the Ten Steps in my practice, despite the difficulties</td>
<td>86 (41.0)</td>
<td>65 (31.0)</td>
<td>51 (24.3)</td>
<td>8 (3.8)</td>
<td>0 (0.0)</td>
</tr>
</tbody>
</table>

Note. The number of participants was 210 because only those who indicated they were familiar with the Ten Steps to Successful Breastfeeding responded to these items.

There were facilitating factors such as having a lactation consultant in the unit. See Table 12.

*Associations and Group Differences for Breastfeeding Knowledge, Practices, and Other Variables*

Significant positive correlations were revealed among BKP, breastfeeding knowledge, effectiveness of practices, and interest to adopt the TSSB, as well as between familiarity with TSSB and BKP, breastfeeding knowledge, and effectiveness of practices (See Table 13).
There were also positive correlations of BKP with age \((r = .15, p = .001)\) and years of experience \((r = .35, p < .001)\). Familiarity with TSSB and effectiveness of practices were also positively correlated with year of experience \((r = .15, p < .001; r = .29, p < .001\) respectively) and age \((r = .29, p < .001; r = .19, p < .001\) respectively). No other statistically significant correlations were found.

Table 13

**Correlation Analysis of Variables**

<table>
<thead>
<tr>
<th>Variables</th>
<th>Effectiveness of Practices</th>
<th>Interest to adopt TSSB</th>
<th>Familiarity with TSSB</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(r)-value ((p)-value))**</td>
<td>(r)-value ((p)-value))**</td>
<td>(r)-value ((p)-value))**</td>
</tr>
<tr>
<td>Breastfeeding Knowledge and Practices</td>
<td>(.64 (.00)*) (302)</td>
<td>(.56 (.00)*) (210)</td>
<td>(.15 (.00)*) (302)</td>
</tr>
<tr>
<td>Breastfeeding Knowledge</td>
<td>(.54 (.00)*) (302)</td>
<td>(.57 (.00)*) (210)</td>
<td>(.09 (.14)) (302)</td>
</tr>
<tr>
<td>Effectiveness of Practices</td>
<td><strong>--</strong></td>
<td>(.52 (.00)*) (210)</td>
<td>(.31 (.00)*) (302)</td>
</tr>
</tbody>
</table>

Note. TSSB: The Ten Steps to Successful Breastfeeding.

Total possible score ranges for breastfeeding knowledge and practices (15-49) points including: breastfeeding knowledge (13-39) points, breastfeeding practices (1-5) points, and effectiveness of practices related to breastfeeding (1-5). Total possible score range for interest to adopt the Ten Steps in nurses’ practices is (5-25) points. The number of participants for interest to adopt TSSB variable was 210 because only 69.9% of the nurse was familiar with the Ten Steps.

*Statistical significance \(p < .01\).

**Spearman correlation test.

Scores for BKP and interest to adopt the TSSB were compared by characteristics of the respondents using independent sample \(t\)-test and ANOVA. The mean BKP score of the part time employee group \((n = 111)\) was significantly lower than the full time employee group \((n = 191)\), \(t (200) = -4.22, p < .001\). Also, respondents in Mississippi
public health districts V, VIII, and IX achieved a higher mean BKP score than those in other districts $F(8, 293) = 3.29, p < .001$. Respondents working in category I hospitals ($n = 165$) also achieved a higher BKP score than those in category II ($n = 91$) and category III ($n = 46$), $F(2, 299) = 20.77, p < .001$. No significant differences were found in BKP scores based on race or nurses’ credential. See Table 14.

Table 14

*Differences in Breastfeeding Knowledge and Practices, and Interest to Adopt The Ten Steps to Successful Breastfeeding, By Respondents’ Characteristics*

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>BKP score* ($n = 302$)</th>
<th>Interest Score** ($n = 210$)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean ± SD</td>
<td>n (%)</td>
</tr>
<tr>
<td>Age</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Younger than 40 years</td>
<td>39.83 ± 6.18</td>
<td>199 (65.9)</td>
</tr>
<tr>
<td>40 years or older</td>
<td>40.49 ± 4.97</td>
<td>103 (34.1)</td>
</tr>
<tr>
<td>Race</td>
<td></td>
<td></td>
</tr>
<tr>
<td>White</td>
<td>39.87 ± 6.22</td>
<td>198 (65.6)</td>
</tr>
<tr>
<td>African American</td>
<td>38.89 ± 4.98</td>
<td>73 (24.2)</td>
</tr>
<tr>
<td>Hispanic</td>
<td>38.78 ± 3.70</td>
<td>9 (3.0)</td>
</tr>
<tr>
<td>Asian</td>
<td>38.24 ± 5.40</td>
<td>21 (7.0)</td>
</tr>
<tr>
<td>Title</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Registered Nurse</td>
<td>39.23 ± 5.95</td>
<td>229 (75.8)</td>
</tr>
<tr>
<td>Licensed Practical Nurse</td>
<td>41.33 ± 4.28</td>
<td>42 (13.9)</td>
</tr>
<tr>
<td>Nurse Practitioner</td>
<td>38.74 ± 6.34</td>
<td>31 (10.3)</td>
</tr>
<tr>
<td>Years of experience</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fewer than 5 years</td>
<td>36.25 ± 6.05</td>
<td>74 (24.6)</td>
</tr>
<tr>
<td>5–10 years</td>
<td>39.35 ± 6.06</td>
<td>102 (33.9)</td>
</tr>
<tr>
<td>10 years or more</td>
<td>41.48 ± 4.54</td>
<td>125 (41.5)</td>
</tr>
</tbody>
</table>
Table 14 (continued).

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>BKP score* ((n = 302))</th>
<th>Interest Score** ((n = 210))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean ± SD</td>
<td>(n) (%)</td>
</tr>
<tr>
<td></td>
<td>(p)</td>
<td></td>
</tr>
<tr>
<td>Employment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full-time</td>
<td>40.52 ± 5.62</td>
<td>191 (63.2)</td>
</tr>
<tr>
<td>Part-time</td>
<td>37.66 ± 5.75</td>
<td>111 (36.8)</td>
</tr>
<tr>
<td>Nurse’s hospital location, by public</td>
<td></td>
<td></td>
</tr>
<tr>
<td>health district</td>
<td></td>
<td></td>
</tr>
<tr>
<td>I</td>
<td>36.68 ± 7.94</td>
<td>22 (7.3)</td>
</tr>
<tr>
<td>II</td>
<td>38.13 ± 6.58</td>
<td>23 (7.6)</td>
</tr>
<tr>
<td>III</td>
<td>35.89 ± 4.87</td>
<td>17 (5.6)</td>
</tr>
<tr>
<td>IV</td>
<td>39.48 ± 4.85</td>
<td>23 (7.6)</td>
</tr>
<tr>
<td>V</td>
<td>40.89 ± 4.63</td>
<td>69 (22.8)</td>
</tr>
<tr>
<td>VI</td>
<td>38.41 ± 4.77</td>
<td>17 (5.6)</td>
</tr>
<tr>
<td>VII</td>
<td>37.89 ± 5.53</td>
<td>28 (9.3)</td>
</tr>
<tr>
<td>VIII</td>
<td>40.61 ± 6.09</td>
<td>51 (16.9)</td>
</tr>
<tr>
<td>IX</td>
<td>40.71 ± 5.77</td>
<td>52 (17.2)</td>
</tr>
<tr>
<td>Nurse’s hospital delivery rate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1000 or more</td>
<td>41.18 ± 5.02</td>
<td>165 (54.6)</td>
</tr>
<tr>
<td>500-1000</td>
<td>38.78 ± 5.72</td>
<td>91 (30.1)</td>
</tr>
<tr>
<td>Fewer than 500</td>
<td>35.78 ± 6.49</td>
<td>46 (15.2)</td>
</tr>
</tbody>
</table>

Note. *Breastfeeding Knowledge and Practices score. Total possible score ranges (15-49) points.

**Interest to adopt the Ten Steps to Successful Breastfeeding in nurses’ practices scores. Total possible score ranges (5-25) points.

The number of participants was 210 because only 69.9% of the nurse was familiar with the Ten Steps to Successful Breastfeeding.

Statistical significance if \(p < .05\), as determined by \(t\)-tests and ANOVA.
Additionally, the mean interest score of the part time employee group \((n = 137)\) was significantly lower than the full time employee group \((n = 73)\), \(t(208) = -2.57, p = .001\). The mean interest score of the nurses with fewer than five years of experiences group \((n = 74)\) was also significantly lower than the nurses with 5-10 years and more than 10 years of experience groups. \(F(2, 207) = 5.23, p < .001\). No significant differences were found between interest scores based on other demographic variables. See Table 14.

**Barriers and Facilitators to Implement the Ten Steps to Successful Breastfeeding in Nurses’ Practices**

The main barriers to the implementation of the TSSB in the nurses’ practices selected by the respondents were a resistance to change (90.5%), followed by a shortage of staff (73.3%) and busy workload (50.5%). Only 18.1% of the respondents considered lack of knowledge and training related to TSSB as a barrier.

The main facilitators to implementing the TSSB were raising awareness about breastfeeding practices and the importance of the TSSB (82.9%), followed by providing a lactation consultant in the unit (79.5%), providing nurses with specific knowledge and skills related to breastfeeding (75.2%), and implementing policies and protocols related to the TSSB (72.4%). There were no additional comments when asked to specify other barriers or facilitators to TSSB implementation in their practices.

**Discussion**

This study provides an overview of nursing knowledge and practice related to breastfeeding in Mississippi. Like other similar studies (Freed et al., 1996; Hellings & Howe 2004; Hellings & Howe, 2000; McLaughlin, Fraser, Young, & Keogh, 2011), the results of this study indicated an overall limited knowledge and practices related to
breastfeeding among nursing staff; very few respondents had a perfect score. However, in this sample, nurses were generally more knowledgeable about breastfeeding, compared with other samples of nurses in other studies which used a similar instrument (Hellings & Howe 2004; Hellings & Howe, 2000; Spear, 2004). For example, one study that examined breastfeeding knowledge among nurses in North Carolina indicated that about half of the participants did not recognize the health benefits of breastfeeding related to infectious diseases, and nurses in general had a limited knowledge about breastfeeding benefits and practices (Register, Eren, Lowdermilk, Hammond, & Tully, 2000). Another study by Hellings and Howe (2004) examined breastfeeding knowledge among NP in a northwestern state found about 35% of the participants were unsure that they would recommend that the mother to stop breastfeeding in the presence of breast abscess.

One of the interesting things in the present results is that although more than half of the nurses indicated that personal experience was the most common source of information about breastfeeding, the majority of respondents possessed limited knowledge and practices about breastfeeding especially when it came to the breastfeeding recommendations. Furthermore, half of respondents indicated that training programs offered by their particular facility was one of most common sources of their breastfeeding information, when in fact, previous studies showed that most of the U.S. hospitals did not provide ideal staff training related to breastfeeding (CDC, 2011; Li et al., 2014). Based on the present study findings, breastfeeding training needs to be provided in the hospital setting on the unique nutritional benefits of breast milk over infant formula and on breastfeeding recommendations related to health conditions of the mothers and infants, such as breast abscess in mothers and frequent loose stools in infants.
Another interesting finding related to the respondents’ practice was that only a few of respondents assisted their patients with all the methods that support breastfeeding and the majority practiced two to three methods. The work of Hellings and Howe (2000) indicated more practices were experienced by the participants; however, the sample in that study was only NP. These findings are important as they showed the limitations of breastfeeding practices that are provided by maternity nursing staff. It is essential that nurses in the maternity/birthing units be able to assist the mothers with all breastfeeding techniques and issues, as they are the main healthcare providers for postpartum mothers (DiGirolamo et al., 2003).

It was interesting to find that older nurses and full time nurses have a better knowledge in breastfeeding and a higher interest in adopting the TSSB than young and part time nurses. These findings agreed with those of previous studies (Daniels & Jackson, 2011; Spear, 2004). The reasons for these correlations could be due to the fact that full time and older nurses have more years of experience in the breastfeeding field and have attended more training over the years of their practice, thereby gaining more information related to breastfeeding (Hellings & Howe 2004; Register et al., 2000). A possible application of these findings is that hospitals could develop new training programs or improve existing programs to specifically target the new nursing staff and part time nurses to provide updated breastfeeding information and increase nurses’ awareness regarding the TSSB.

The findings also showed positive correlations between breastfeeding knowledge, interest to adopt the TSSB in nurses’ practices, and effectiveness of practices related to breastfeeding among nursing staff. These findings are in agreement with other studies.
(Daniels & Jackson, 2011; Spear, 2004). It may be suggested that improving the knowledge about breastfeeding and TSSB among nursing staff may have a great benefit on practices effectiveness related to breastfeeding.

The aim of this study was also to identify barriers and facilitators to implementing the TSSB from the individual level perspective of the hospital which in this case was the maternity/birthing unit nursing staff. Results indicated that raising awareness among nursing staff and providing a lactation consultant were the main factors which could facilitate the TSSB implementation process in the hospital based on respondents’ experiences. It is important to focus on these factors to facilitate the TSSB adoption process as the present data also showed more than half of the respondents agreed that they would adopt the TSSB in their practices if there were facilitating factors. Barriers identified by nursing staff were somewhat similar to those identified by nurse managers/directors in Mississippi hospitals as indicated by Alakaam et al. (manuscript in preparation; the first phase of the present research as mentioned earlier) in which the main barriers were the resistance to change and shortage of staff.

These findings suggest hospital administrators should develop programs to overcome resistance to change such as informing nursing staff of the benefits that the TSSB brings to the community. For example, nursing staff should be informed that adapting multiple TSSB steps in the nurses’ practices is very effective to maintain breastfeed postpartum up to three months among mothers (Rosenberg et al., 2008). The Mississippi State Department of Health should also provide more resources and support to the hospitals in Mississippi in order to eliminate the barriers and facilitate the implementation of the TSSB in hospitals.
The study has some limitations. Although the researcher did not control any of the sample characteristics and applied the convenience sampling method to recruit the nurses, all the participants in the study were female; and most of them were white and held the RN credential. Previous data about characteristics of nursing staff in Mississippi indicates that the majority of the nursing population in Mississippi is female (84%), white (73%), and RN (80%; Kaiser Family Foundation, 2015). In order to determine if differences exist in the knowledge and practices related to breastfeeding on the underrepresented groups in the present study, future researchers may implement a different sampling method in the research design, such as purposive sampling approach of male nursing staff.

Another possible limitation is the socially desirable response bias by nurses that may potentially affect the accuracy of the data especially the accuracy of practices’ effectiveness and interest to adopt the TSSB measures. There is the possibility that responses reflect what the respondents believe, but not actually how they practice. Nevertheless, the findings highlight several areas of concern around nurses’ knowledge and practices in the maternity setting and the need for well-planned education programs related to breastfeeding and TSSB practices in the hospital.

Conclusion

The current status of breastfeeding knowledge and practices among Mississippi nurses in hospital maternity/birthing units and their perceptions of the barriers and facilitators to TSSB implementation have been explored in this study. The findings showed that the majority of maternity nurses in Mississippi hospitals are interested in adopting the TSSB in their practices; thus suggest that maternity nursing staffs could help
to improve the overall breastfeeding practices in the Mississippi hospitals and therefore, breastfeeding support in Mississippi if they provided with sufficient resources and information.

Funding

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Conflict of Interest

The authors declared no potential conflicts of interest with respect to the research, authorship, and publication of this research.
CHAPTER VI
CONCLUSIONS

The aim of this study was to explore the current breastfeeding practices in Mississippi hospitals that provide maternity or birthing care based on two levels of the Socio-Ecological Model: the organizational level, assessed through phase I; and the individual level, assessed through phase II. Moreover, the researcher was interested in identifying the barriers to implementing the TSSB in hospitals and in maternity nursing practices.

As previously mentioned, there are no other existing studies that have explored implementation of the TSSB among hospitals in Mississippi. The findings of this study provide an overview of hospitals practices on breastfeeding and nursing knowledge and practice related to breastfeeding in Mississippi. Understanding the many factors that influence the process of TSSB implementation in health care facilities is an important step in providing effective approaches to help the facilities achieve Baby-Friendly designation.

Summary of Findings

A descriptive research design was used to conduct the study by utilizing two different survey instruments for data collection, each instrument in different phase. The first phase examined hospital practices based on TSSB concepts, by surveying nurse managers/directors of maternity or birthing units in each Mississippi hospital; the second phase examined knowledge, practice, and sources of information related to breastfeeding, as well as the interest to adopt the TSSB in nursing practice, by surveying nurses working in hospital maternity/birthing setting. In the first phase, all nurse managers or directors of
maternity/birthing units of the hospitals in Mississippi with maternity setting were contacted (43 hospitals). Thirty-one hospitals participated in the study (response rate of 72% was obtained). In the second phase, a target population of 200-400 nurses was estimated based on the number of nurses working in Mississippi hospital maternity/birthing units (5-10 in each hospital; MSDH, 2014). The final sample was 302 nurses (response rate of 76% was obtained).

Findings from the first phase indicated that the current level of implementation of the TSSB (which represents the level of breastfeeding support) was partial in Mississippi hospitals, and none of the hospitals completely implemented the TSSB. The study also showed positive significant relationships between the level of implementation of TSSB and some hospitals’ demographic variables such as hospitals delivery rate and Cesarean section rate per year, while no relationships were found between the level of implementation and hospital location (within/outside Metro area) or geographic region of the state (represented by the public health district in which the hospital was located). The first phase also identified common organizational level barriers for implementation of each step of the TSSB based on the maternity/birthing unit administrators’ perspective. In general, resistance to new policies and protocols, routine breastfeeding practices, limited financial and human resources, and lack of support from national and state governments accounted for the largest number of barriers.

The second phase provided information about nursing knowledge and practice related to breastfeeding in Mississippi. Although data indicated an overall limited knowledge and practices related to breastfeeding among nursing staff, the majority of the respondents were familiar with the TSSB and interested in adopting the TSSB in their
practices. The findings suggested that the nursing staff (individual level) could help to improve the overall breastfeeding practices in the hospital (organizational level) and therefore, breastfeeding support in Mississippi, if provided with sufficient resources and information. Furthermore, promotion and support of breastfeeding and the TSSB among nursing staff may help to facilitate TSSB implementation in Mississippi hospitals.

According to the findings from the second phase, the positive interest to adopt the TSSB by nurses was clear; however, most of the nurses did not engage in all the necessary and essential practices related to breastfeeding such as counseling patients prenatally and assisting with lactation problems. It is important to improve overall breastfeeding support practices among maternity nurses because nurses working in the maternity/birthing units are an essential part of delivering care (Weddig et al., 2011). They are also considered to have a powerful influence on a mother’s decision about the method of infant feeding (DiGirolamo et al., 2003).

In addition to exploring breastfeeding knowledge and practices among nursing staff, phase II in this study also examined correlations among the variables. The findings showed positive relationships among several variables such as between BKP, the effectiveness of nurses’ practices related to breastfeeding, and nurses’ interest to adopt TSSB in their practices. Improving the breastfeeding knowledge and the familiarity with TSSB among nursing staff may have a positive impact on the effectiveness of their breastfeeding practices in the hospital setting.

The aim of the second phase was also to identify barriers and facilitators to implementing the TSSB at the individual level. Results indicated that resistance to change was selected by the majority of nurses as the main barrier to implementing the
TSSB in nursing practice. In addition, raising awareness about breastfeeding practices and the TSSB, providing lactation consultants, and improving nurses’ knowledge on breastfeeding were the main factors which could help to facilitate the implementation process based on nurses’ experiences.

In general, the main barriers and facilitators to TSSB adoption in Mississippi hospitals reported in the present study were consistent with the findings from studies conducted in developing nations such as China and the Middle East as reported in an integrative review by Semenic et al. (2012). This consistency could be due to the fact that the southern states, and particularly Mississippi, have the lowest performing health care system across the nation due to several reasons related to the system itself and state government support such as insufficient funding and weak state regulations related to the health care system (Kaiser Family Foundation, 2015; NCSL, 2015). As previously mentioned in the literature review, Mississippi did not have any breastfeeding-related legislation that encourages or requires birthing facilities to implement the TSSB or any other similar practices (La Leche League, 2015; NCSL, 2015).

To address these issues, the Mississippi State Department of Health and other state government officials should provide more resources and support to the hospitals in Mississippi in order to eliminate the barriers and facilitate the implementation of the TSSB in hospitals. Legislative initiatives at both state and federal levels could also include new policies ensure that the hospitals have started adopting breastfeeding support practices such as the TSSB and implementing comprehensive breastfeeding policy that is visible and communicated to the community. Hospital administrators should also utilize available resources to overcome the barriers such as insufficient funding. For example,
Mississippi hospitals can enroll in the CHAMPS program that is managed by Boston Medical Center and Kellogg foundation. This program currently provides grants and assistance to hospitals in the Southern U.S. to help them obtain BF designation (CHAMPS, 2014).

Based on a rigorous review of literature, the TSSB implementation process is complex but achievable. Carrying out the above recommendation has the potential to eliminate challenges and issues associated with the adoption of the TSSB in the hospitals.

Strengths and Limitations

Although no Mississippi hospitals have a BF certificate, the researcher examined the breastfeeding practices in these hospitals based on TSSB implementation criteria because the TSSB practices remains the gold standard in the US and around the world for evaluation and assessment of breastfeeding practices in any healthcare setting.

As with any research, this research has limitations. The modifications made to existing instruments could introduce a possible limitation. However, instrument I (breastfeeding practices in the hospital; Appendix D) was validated in the pilot phase of this study, and instrument II (breastfeeding knowledge and practices; Appendix F) was validated and used in several previous studies as well as validated in a pilot phase with individuals who represented the selected population of Mississippi nurses working in maternity setting ($n = 15$).

Additionally, a committee of experts reviewed the instruments to evaluate relevance and completeness of the tools. The committee included six researchers who had extensive research experiences in the field of public health, nursing, and nutrition (three from the Department of Nutrition and Food Systems, two from the Department of Public
Health, and one from the College of Nursing at The University of Southern Mississippi); one lactation consultant; and three Mississippi-based practicing RNs.

As previously mentioned, although the SEM informed the study design, this study did not test the model or the levels’ effectiveness in predicting breastfeeding practices against other theories. Testing the model in this descriptive study was not the researcher’s area of concern. Future research may consider examining SEM model effectiveness and assess how it could be used in developing interventions related to breastfeeding. Additionally, this study was not intended to show causation in breastfeeding practices among hospitals, or in breastfeeding knowledge and practices among nursing staff, just association. A positive correlation did exist with some variables, while no correlation existed with others. More research should be conducted specifically with regard to causation related to breastfeeding practices.

The descriptive design of this study was appropriate, given that the purpose of a descriptive study is to provide a picture of situations as they naturally happen and to identify problems with current practice (Grove et al., 2012, p. 215). This study offers an overall view of breastfeeding practices among the nursing staff of the Mississippi hospitals that provide maternity care. The findings of this study may help advance research related to breastfeeding practices from the understanding and investigation phases to the causation and intervention phases (Contento, 2011; Robinson, 2008).

Recommendations for Future Research and Applications

Advocacy and support of the Baby-Friendly Hospital Initiative and breastfeeding are needed to continue to find ways to implement ideal breastfeeding practices in the
hospitals. Based on the results of this study, recommendations for future research and practical applications for the findings are as follows:

1. This study should be replicated targeting other hospital staff working in the maternity setting. One suggestion would be to replicate phase II with other maternity care providers who have influence on mothers’ decisions to breastfeed such as obstetricians, gynecologists, and midwives.

2. This study could also be replicated in other states that have low breastfeeding rates such as Alabama, Kentucky, and Arkansas, to assess the level of breastfeeding support in these states.

3. Additional research is needed to examine the influence of entities representing other levels of SEM on breastfeeding and explore various ways to implement the breastfeeding standards through the different levels such as the impact of public policies and state regulations on breastfeeding practices in the hospital (public policy level).

4. Future research should also evaluate the level of implementation of each practice of the TSSB and explore various ways to implement the TSSB in hospitals’ practices.

Conclusions and Policy Implications

Although the breastfeeding practices, policies, and regulations in several states have been improved in recent years (CDC, 2015), there is still a need to further develop and implement effective policies and practices related to breastfeeding and improve overall breastfeeding regulations in the US to provide more extensive breastfeeding promotion and support. Researchers should work closely with legislators and the community to create and implement effective policies across the nation, particularly,
regarding those which focus on breastfeeding initiation such as “Give infants no food or drink other than breast milk, unless medically indicated”, and breastfeeding duration such as “encourage breastfeeding on demand.” Few states in the US have breastfeeding laws that encourage the hospital and the birthing centers to adopt some or all of the TSSB (Hawke et al., 2013). Mississippi did not have any breastfeeding-related regulations that requires hospitals to implement the TSSB or any other similar practices (La Leche League, 2015; NCSL, 2015).

States with low breastfeeding rate such as Mississippi need to implement new policy or modify the existing one to address distribution and handling of human milk in health facilities, as well as encourage hospitals to specifically adopt the TSSB. Legislative initiatives at both state and federal levels should include new policies that ensure hospitals have started adopting breastfeeding support practices and implementing comprehensive breastfeeding policy that is visible and communicated to the healthcare staff. The California Health and Safety Code § 123367 is a good example of a state legislation that recognizes the importance of breastfeeding support in the health facilities. This state legislation requires all birthing facilities to adopt the TSSB and be Baby-Friendly designated or have similar practices and policies based on BFHI guidelines by 2025 (CDPH, 2014). Legislation and act of this kind are useful for addressing breastfeeding support among the health facilities and has an important role in breastfeeding promotion and improvement across the nation.
APPENDIX A

INSTITUTIONAL REVIEW BOARD APPROVAL

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional_review_board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 26, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the "Adverse Effect Report Form".
- If approved, the maximum period of approval is limited to twelve months.
  Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15061501
PROJECT TITLE: Hospital Practices Related to Breastfeeding in Mississippi a Socio-Ecological
PROJECT TYPE: New Project
RESEARCHER(S): Amir Alakaam
COLLEGE/DIVISION: College of Health
DEPARTMENT: Nutrition and Food Systems
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Exempt Review Approval
PERIOD OF APPROVAL: 06/16/2015 to 06/15/2016

Lawrence A. Hosman, Ph.D.
Institutional Review Board
# APPENDIX B

## HOSPITALS IN MISSISSIPPI WITH NUMBER OF DELIVERIES

<table>
<thead>
<tr>
<th>Facilities by Category</th>
<th>County</th>
<th>Counties Name - Number</th>
<th>Number of Deliveries/year</th>
</tr>
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* Hospital \((n = 19)\) are located in metropolitan areas as classified by the U.S. Census Bureau, 2013.
## HOSPITALS IN MISSISSIPPI WITH NUMBER OF CESAREAN SECTIONS

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<tr>
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<th>County</th>
<th>Districts Name - Number</th>
<th>Number of C-Sections/year</th>
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<tr>
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<tr>
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<td>Pike</td>
<td>Southwest-VII</td>
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* Hospital (n = 19) are located in metropolitan areas as classified by the U.S. Census Bureau, 2013.
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<tr>
<th>Facilities by Category</th>
<th>County</th>
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* Hospital (n = 19) are located in metropolitan areas as classified by the U.S. Census Bureau, 2013.
APPENDIX D

INSTRUMENT I: BREASTFEEDING PRACTICES IN THE HOSPITAL

**Breastfeeding Practices in the Hospital**

- **What is this study about:**
The purpose of this study is to examine breastfeeding practices at Mississippi hospitals that provide maternity care. Your response is important to improve breastfeeding support and to provide evidence to better inform implementation of breastfeeding practices such as the “Ten Steps to Successful Breastfeeding” in Mississippi. Information obtained from this survey will also improve breastfeeding support in Mississippi.

- **How long will the survey take to complete:**
On average, the survey will take about 10-20 minutes to complete.

- **Confidentiality:**
All research procedures were approved by the University of Southern Mississippi Institutional Review Board. Your responses will be treated in a confidential manner and will be kept private. Your name, facility name, and any other personal identifiers will not be included in either oral or written presentation of study results. Your participation in the study is completely voluntary.

- **Who do I contact if I have questions about the survey:**
Amir Alakaam, MBChB. MS.
Doctoral Candidate
(570) 290-6899, amir.alakaam@eagles.usm.edu
Jennifer Lemacks, PhD. RD
Assistant Professor
(601) 266-6825, jennifer.lemacks@usm.edu

- **Who do I contact if I have questions regarding my rights as a study participant:**
The chair of the Institutional Review Board, The University of Southern Mississippi, 118, College Drive #5115=6, Hattiesburg, MS 39406, (601) 266-5997.

To Thank You for Participating in This Survey, We Will Send You a $10 Gift Card
Breastfeeding Practices in the Hospital

With regard to breastfeeding policies in your facility, select the response that best describes the policies and practices in your hospital

1. Does your hospital have a written breastfeeding policy or protocol?
   a. yes
   b. partially
   c. no

2. All the facility staff who potentially interact with childbearing women and babies review all policies and clinical protocols related to breastfeeding and infant feeding used by maternity services.
   a. yes
   b. partially
   c. no

3. The policy indicates that breastfeeding is the preferred method of infant feeding.
   a. yes
   b. partially
   c. no

4. The facility has an established breastfeeding task force or equivalent perinatal review committee.
   a. yes
   b. partially
   c. no

5. What are the common barriers to implementation of breastfeeding policies in your facility? (select all that apply)
   a. Resistance to new policies and practices
   b. Lack of support from key sectors (e.g., administrative, medical, nursing)
   c. Concern about the potential costs of policy change
   d. Disagreement about the validity or importance of the policies
   e. Lack of monitoring to indicate if practice is in keeping with policy
   f. Other (specify) __________________________

With regard to the practice: train all health care staff in the skills necessary to implement breastfeeding policy, select the best response to the following questions

6. Employees who care for mothers, newborns and infants receive breastfeeding training
a. yes
b. partially
c. no

7. Training includes the following (select all that apply)
   a. Advantages of exclusive breastfeeding.
   b. Anatomy and physiology, breastmilk production
   c. How to solve common breastfeeding problems (sore nipples, engorgement, blocked ducts, etc.)
   d. Impact of introducing formula and artificial nipples before breastfeeding is established, as recommended in The International Code of Marketing of Breastmilk Substitutes
   e. Supervised clinical experience (e.g. shadowing) with International Board Certified Lactation Consultant (IBCLC) or with staff with additional breastfeeding education beyond basics
   f. Knowledge of discharge referral process to include list of available community breastfeeding resources
   g. The importance of early skin-to-skin contact, rooming-in and feeding on-demand (baby-led)
   h. Communicating with and counseling pregnant and postpartum women about exclusive breastmilk feeding
   i. Observing, assessing, and assisting with breastfeeding positions and latch
   j. Teaching hand expression and set-up of breast pump and safe storage of milk
   k. Knowledge of safe formula preparation, paced bottle feeding, and newborn stomach capacity

8. What are the common barriers to staff training related to breastfeeding in your facility? (select all that apply)
   a. Finding time for training
   b. Lack of in-house expertise for training
   c. Financial cost of providing training
   d. Cost of staff coverage for training hours
   e. High staff turnover creating continuous need for training
   f. Other (specify) ____________________
With regards to the practice: inform all pregnant women about the benefits and management of breastfeeding select the best response to the following questions.

9. Education provided to pregnant mothers covers the importance of exclusive and early initiation of breastfeeding
   a. yes
   b. partially
   c. no

10. Educational materials are free of messages that promote or advertise infant food other than breastmilk.
   a. yes
   b. partially
   c. no

11. What are the common barriers in your facility to informing all pregnant women about the benefits and management of breastfeeding? (select all that apply)
   a. Fragmentation of prenatal care creating diffusion of messages about breastfeeding
   b. Limited attendance at education programs
   c. Other (specify) _______________________

With regards to the practice: help mothers initiate breastfeeding within an hour of birth, select the best response to the following questions.

12. Skin-to-skin contact is encouraged within an hour of birth and infant is kept in skin-to-skin until completion of the first feeding.
   a. yes
   b. partially
   c. no

13. Hospital practice reflects the opportunity for mother and infant to remain in skin-to-skin contact for one hour regardless of delivery type (vaginal vs. cesarean) until completion of the first feeding or until Cesarean mother is alert and responsive.
   a. yes
   b. partially
   c. no

14. Non-emergent, routine procedures (vitamin K, eye ointment, baths) will be delayed until after the initial period of skin-to-skin or completion of initial feeding.
   a. yes
15. Mothers are provided education in order to recognize the signs that their babies are ready to feed and are offered assistance with initiation of breastfeeding during the first hour post partum.
   a. yes
   b. partially
   c. no

16. What are the common barriers to implementation of skin-to-skin contact in your facility? (select all that apply)
   a. Routine practice of mother-baby separation in the first hour for examination and cleaning of baby
   b. Perception that routine procedures (e.g., bathing, warming, observation) have priority over breastfeeding in the first hour of life
   c. Other (specify) ____________________

With regard to the practice: show mothers how to breastfeed and how to maintain lactation, select the best response to the following questions.

17. Hospital practice includes visual assessment of the mother and infant’s breastfeeding techniques.
   a. yes
   b. partially
   c. no

18. Milk expression (hand/pump) is taught to all mothers.
   a. yes
   b. partially
   c. no

19. Mothers who have chosen to formula feed are instructed in the safe preparation and handling of formula.
   a. yes
   b. partially
   c. no

20. What are the common barriers to implementation of “show mothers how to breastfeed and how to maintain lactation practices” in your facility? (select all that apply)
a. Inconsistent advice and teaching among staff
b. Limited staff competence in assessing and educating mothers
c. Limited staff time
d. Other (specify) _____________________

With regard to the practice: give infants no food or drink other than breastmilk unless medically indicated, select the best response to the following questions.

21. When a mother requests supplementation with formula, staff provides evidence-based information on the risks associated with formula feeding.
   a. yes
   b. partially
   c. no

22. Mothers are not given discharge packs that are sponsored by breastmilk substitute companies.
   a. yes
   b. partially
   c. no

23. Supplementation is ordered by a physician for a clinical condition such as galactosemia, PKU, VLBW infants.
   a. yes
   b. partially
   c. no

24. Initiation and exclusive breastmilk feeding rate is tracked and maintained by the facility.
   a. yes
   b. partially
   c. no

25. What are the common barriers to implementation of no milk formula practices in your facility? (select all that apply)
   a. Routine, non-indicated supplementation of breastfed infants
   b. Misconceptions regarding contraindications to breastfeeding
   c. Concern that parents will choose another facility if they don’t receive a discharge gift
   d. Budgetary constraints regarding purchase of formula
   e. Other (specify) _____________________
With regard to the practice: rooming-in to allow mothers and infants to remain together 24 hours a day, select the best response to the following questions.

26. Practice reflects rooming-in 24 hours a day for all infants regardless of feeding method.
   a. yes
   b. partially
   c. no

27. Staff educates the mother on the importance of rest during rooming-in.
   a. yes
   b. partially
   c. no

28. Staff educates a mother who requests her infant be taken to the nursery, discussing concerns, and educating on advantages of rooming-in.
   a. yes
   b. partially
   c. no

29. Infant is not separated from mother for more than one hour when possible, and a mother whose infant is kept in the nursery for medical reasons has access to feed her baby or for do skin-to-skin contact, when baby is stable.
   a. yes
   b. partially
   c. no

30. What are the common barriers to implementation of rooming-in practices in your facility? (select all that apply)
   a. Perception of staff and/or mothers that sleep quality is improved when mothers and babies are separated
   b. Perception that routine separation is necessary for bathing, examinations, observation and other medical procedures
   c. Other (specify) __________________________

With regard to the practice: encourage breastfeeding on demand, select the best response to the following questions.

31. Policy encourages mothers to breastfeed without restriction of time or frequency.
   a. yes
   b. partially
32. Staff educate mothers on the following: (select all that apply)
   a. Newborns usually feed a minimum of eight times in 24 hours.
   b. Infants use recognizable cues to signal readiness to begin and end feedings.
   c. Physical contact and nourishment are both important.
   d. Adequate feeding should be based on satiety and output.

33. What are the common barriers to implementation encourage breastfeeding on demand practices in your facility? (select all that apply)
   a. Expectations on the part of mothers and staff that feeding should occur on a regular schedule.
   b. Lack of knowledge of common feeding cues.
   c. Lack of adequate mother/baby contact.
   d. Other (specify) ________________________

With regard to the practice: give no artificial nipples or pacifiers to breastfeeding infants, select the best response to the following questions.

34. Mothers are educated on how the early use of artificial nipples or pacifiers may interfere with optimal breastfeeding.
   a. yes
   b. partially
   c. no

35. Alternate feeding methods are used if supplementation is necessary.
   a. yes
   b. partially
   c. no

36. Pacifiers are not given by the staff, with the exception of limited use to decrease pain during procedures when the baby cannot safely be held or breastfed.
   a. yes
   b. partially
   c. no

37. What are the common barriers to implementation of no artificial nipples practices in your facility? (select all that apply)
   a. Cultural expectation that pacifiers are needed to calm babies.
b. Staff familiarity with bottles as supplemental feeding devices and discomfort with alternative feeding methods
c. Concern about the safety of cup feeding
d. Other (specify) _______________________

With regard to the practice: foster the establishment of breastfeeding support groups and refer mothers to them on discharge, select the best response to the following questions.

38. Patient discharge teaching includes plans for infant feeding, with focus on importance of exclusive breastfeeding for about six months.
   a. yes
   b. partially
   c. no

39. Lactation or other staff conduct telephone follow-up after discharge for breastfeeding mothers by lactation or other staff
   a. yes
   b. partially
   c. no

40. Breastfeeding resource list provided to mother on discharge includes: (select all that apply)
   a. Access to listing of area International Board Certified Lactation Consultant (IBCLC) services for in-home consultations
   b. Breastfeeding hot or warm lines
   c. Evidenced-based website resources
   d. WIC program support services
   e. Breastfeeding support groups (La Leche League, Baby Café, WIC, etc.)
   f. Community Lactation Clinics
   g. Follow-up appointment is recommended with baby’s health-care provider for weight check/assessment at 3-5 days of age

41. What are the common barriers in your facility to implementation of the recommendation to refer mothers to breastfeeding support groups’ practice? (select all that apply)
   a. Lack of awareness of existing resources
   b. Lack of proactive resources
   c. Other (specify) _______________________

Thank you for completing this survey
OPTIONAL: Please provide your name and address so that we can send you the gift card by mail.

Name:

Address:

Only participants who complete the survey will receive a gift card.
APPENDIX E

LETTER OF SUPPORT FROM THE CHAIR OF MISSISSIPPI BREASTFEEDING COALITION

June 16, 2015

Dear Members and Friends of The Mississippi Breastfeeding Coalition,

It is my pleasure write a letter in support of the research "Hospital Practices Related to Breastfeeding in Mississippi," being conducted by one of our coalition members, Amir Alakaam, MBCHB, MS, a doctoral candidate at the University of Southern Mississippi.

I fully support the effort of the research as it can help our community make better decisions about breastfeeding practices and policies in Mississippi.

I believe this research project is important, valuable, and consistent with the goals of the Mississippi Breastfeeding Coalition. I am hopeful that this research will be a success.

Please help by filling out the attached survey.

Sincerely,

Cheryl Lloyd, President
Mississippi Breastfeeding Coalition
cheryl@lloyd.ms
APPENDIX F

INSTRUMENT II: BREASTFEEDING KNOWLEDGE AND PRACTICES

**Breastfeeding Knowledge and Practices**

- **What is this study about:**
The purpose of this study is to examine the current breastfeeding knowledge and practices of nurses who work in the maternity/birthing setting in Mississippi. Your response is important to improve breastfeeding support and to provide evidence to better inform implementation of breastfeeding practices such as the “Ten Steps to Successful Breastfeeding” in Mississippi. Information obtained from this survey will also improve breastfeeding support in Mississippi.

- **Who can participate in this survey?**
You must be adults 18 and older of any ethnicity; and Registered Nurse (RN), Nurse Practitioner (NP) or Licensed Practical Nurse (LPN).

- **How long will the survey take to complete:**
On average, the survey will take about 10-15 minutes to complete.

- **Confidentiality:**
Your responses are completely anonymous. Your name, facility name, and any other personal identifiers will be coded and will not be included in either oral or written presentation of study results. Your participation in the study is completely voluntary.

- **Who do I contact if I have questions about the survey:**
Amir Alakaam, MBChB. MS.
Doctoral Candidate
(570) 290-6899, amir.alakaam@eagles.usm.edu
Jennifer Lemacks, PhD. RD
Assistant Professor
(601) 266-6825, jennifer.lemacks@usm.edu

- **Who do I contact if I have questions regarding my rights as a study participant:**
The chair of the Institutional Review Board, The University of Southern Mississippi, 118, College Drive #5115=6, Hattiesburg, MS 39406, (601) 266-5997.

Thank you very much for taking the time to complete this survey.
Breastfeeding Knowledge and Practices

Do you work in either an obstetric-, birthing-, or maternity setting in a hospital in Mississippi?

a. Yes (If yes, continue to participate in this survey)
b. No (If no, we are sorry, you are not eligible to participate in this survey)

A. With regard to your own knowledge about breastfeeding benefits, please answer the following questions by placing an “X” in the correct box.

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<thead>
<tr>
<th>Yes</th>
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<tr>
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<tr>
<td>2. Breastfeeding is beneficial for 6 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Breastfeeding decreases infectious diseases</td>
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<td></td>
</tr>
<tr>
<td>4. Breastfeeding increases allergic response protection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Most infant formulas are nutritionally equivalent to breast milk</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Breastfeeding provides benefits for infant that cannot be produced by formula feeding</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7. Babies can get all the nutrition they need from breast milk until at least 6 months of age</td>
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With regard to your own knowledge about breastfeeding, please answer the following questions by placing an “X” in the correct box.

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<thead>
<tr>
<th>Yes</th>
<th>Unsure</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. When the mother has breast abscess</td>
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<tr>
<td>9. When the mother has mastitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. When the mother has an insufficient milk supply</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. When the baby is not satisfied</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. When the baby has teething</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13. When the baby has frequent loose stools</td>
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<td></td>
</tr>
</tbody>
</table>

B. With regard to your own practices and experience related to breastfeeding, please answer the following questions:

14. What is your current practice of breastfeeding support? (select all that apply)
   a. Counsel patients prenatally
   b. Counsel patients regarding infant feeding methods
   c. Assist with breastfeeding techniques
   d. Assist with lactation problems
   e. Other (specify _____________________

15. What are your sources of information regarding breastfeeding? (select all that apply)
   a. Undergraduate nursing program
   b. Training program in your facility
   c. Continuing education offering by your facility
   d. Lactation consultant
   e. Other colleagues
   f. Personal experience
   g. Other (specify) ____________________

16. How effective do you believe you are in meeting the needs of your patients regarding breastfeeding support?
   a. Not effective
   b. Slightly effective
   c. Neutral
   d. Effective
   e. Very effective

17. Are you familiar with Baby Friendly Hospital Initiative of breastfeeding support (the Ten Steps to Successful Breastfeeding)?
   a. Yes (If yes, continue to section C)
   b. No (If no, move to section D)

C. With regard to your own experience related to the Ten Steps to Successful Breastfeeding, please select how strongly you agree or disagree with the following statements by placing an “X” in the corresponding box.

<table>
<thead>
<tr>
<th>Statement</th>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Neither/Neutral</th>
<th>Agree</th>
<th>Strongly Agree</th>
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<tbody>
<tr>
<td>18. I am determined to adopt the Ten Steps in my practice.</td>
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<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>19. I should adopt the Ten Steps in my practice.</td>
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<td></td>
<td></td>
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</tr>
<tr>
<td>20. I would feel guilty if I was not adopting the Ten Steps in my practice.</td>
<td></td>
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<tr>
<td>21. I would adopt the Ten Steps in my practice if there were facilitating factors such as lactation consultant in the maternity unit.</td>
<td></td>
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<tr>
<td>22. I would adopt the Ten Steps in my practice, despite the difficulties such as lack of support from the facilities and lack of motivation of the mothers towards breastfeeding.</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
23. With regards to your experiences, what are the facilitators to implement the Ten Steps in your facility? (select all that apply)
   a. Raising awareness about breastfeeding practices and the importance of the Ten Steps
   b. Providing lactation consultant in the unit
   c. Providing nurses with specific knowledge and skills to directly support breastfeeding
   d. Implementing policies and protocols related to the Ten Steps
   e. Other ____________________________________________

24. With regard to your current experience, what are the barriers to implementing the Ten Steps in your facility? (select all that apply)
   a. Lack of knowledge and training
   b. Busy workload
   c. Shortage of staff
   d. Resistance to change
   e. Others ____________________________________________

D. Demographic Information

25. Select the Mississippi Public Health District where the facility in which you primarily work is located.
   a. District 1: Northwest
   b. District 2: Northeast
   c. District 3: Delta Counties
   d. District 4: Tombigbee Area
   e. District 5: West Central
   f. District 6: East Central
   g. District 7: Southwest
   h. District 8: Southeast
   i. District 9: Gulf Coast/Costal Plains

26. With regard to average deliveries per year, select the category of the facility where you primarily work.

a. **Category I (more than 1000 deliveries/year):** Anderson Regional Medical Center, Baptist Memorial Hospital DeSoto, Baptist Memorial Hospital Union, Forrest General Hospital, Memorial Hospital Gulfport, Mississippi Baptist Medical Center, North Mississippi Medical Center, River Oaks Hospital, Rush Foundation Hospital, St. Dominic Jackson Memorial Hospital, University Hospital & Health System, Wesley Medical Center, Woman's Hospital.

b. **Category II (500 – 1000 deliveries/year):** Baptist Memorial Hospital Golden Triangle, Baptist Memorial Hospital North Mississippi, Biloxi Regional Medical Center, Central Mississippi Medical Center, Delta Regional Medical Center Main Campus, Garden Park Medical Center, Gilmore Memorial Regional Medical Center, Greenwood Leflore Hospital, King's Daughters Medical Center, Magnolia Regional Health Center, Northwest Mississippi Regional Medical Center, Ocean Springs Hospital, OCH Regional Medical Center, River Region Health System, Singing River Hospital, South Central Regional Medical Center, Southwest Mississippi Regional Medical Center.

c. **Category III (fewer than 500 deliveries/year):** Bolivar Medical Center, George Regional Hospital, Hancock Medical Center, Highland Community Hospital Pearl, Madison River Oaks Medical Center, Magee General Hospital, Natchez Community Hospital, Natchez Regional Medical Center, NMMC West Point, South Sunflower County Hospital, Tri Lakes Medical Center, University of Miss. Medical Center Grenada, Wayne General Hospital.

27. Are you considered?
   a. Part-time employee
   b. Full-time employee

28. Which of the following best describes your credentials?
   a. Registered Nurse
   b. Nurse Practitioner
   c. Licensed Practical Nurse
   d. Other ___________

29. How long have you been practicing nursing in an obstetric-, birthing-, or maternity setting (in years)?
   (Please write in the number)_______________

30. What is your sex?
   a. Male
   b. Female

31. What is your age (in years)?
   (Please write in the number) _____________
32. What is your race?
   a. White  
   b. Black, African American  
   c. American Indian or Alaska Native  
   d. Native Hawaiian or other Pacific Islander  
   e. Hispanic  
   f. Asian  
   g. Mixed Race  
   h. I refuse to answer  

THANK YOU FOR COMPLETING THIS SURVEY  

OPTIONAL: Please provide your name and address to enter the gift cards giveaway.  
If you are selected, we will send you $10 gift card by mail.

Name:  
Address:  

Only participants who complete the survey will receive a gift card.
APPENDIX G

PERMISSION TO USE THE INSTRUMENTS

Permission to use an instrument
3 messages

Amir Alakaam <amir.alakaam@eagles.usm.edu> Thu, Apr 16, 2015 at 11:01 AM
To: gfreed@med.umich.edu

Dear Dr. Freed,

I am a doctoral candidate from the University of Southern Mississippi writing my dissertation title “Hospital practices related to breastfeeding in Mississippi: A Socio-Ecological approach” under the direction of my dissertation committee, chaired by Dr. J. Lerman, PhD, RN.

I would like your permission to use your survey instrument regarding “Breastfeeding Knowledge and attitudes” in my research study. I will use this survey only for my dissertation and I will not use it with any compensated activities. I would like also to request if you are willing to share any recent information about this valuable instrument.

Thank you so much for the cooperation.

Sincerely,

Amir Alakaam, MBChB, MS.
Doctoral student
Graduate assistant
Department of Nutrition & Food Systems
The University of Southern Mississippi
Fritzsche-Gibbs Hall Room 211
118 College Drive # 5172
Hattiesburg, MS 39406

Kennedy, Joyce <joykenne@med.umich.edu> Mon, Apr 20, 2015 at 9:56 AM
To: amir.alakaam@eagles.usm.edu

Dear Amir,

Sending the attached instruments to you per Dr. Freed’s request.

Best wishes in your research.
Joyce Kennedy
Administrative Assistant to:
Gary L. Freed, MD, MPH
Matthew J. Greenhawt, MD, MBA, MSc
Lisa A. Prosser, PhD, MS
Child Health Evaluation and Research (CHEAR) Unit
Division of General Pediatrics, University of Michigan Health System
300 N. Ingalls St., Room 6A08, SPC 5456, Ann Arbor, MI 48109
Phone: 734-232-0657, Fax: 734-232-1400
Email: joykenne@umich.edu
Web: CHEAR | National Poll on Children’s Health

From: Amir Alakaam [amir.alakaam@eagles.usm.edu]
Sent: Thursday, April 16, 2015 12:01 PM
To: Freed, Gary (gary)
Subject: Permission to use an instrument

[quoted text hidden]

------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------
Electronic Mail is not secure, may not be read every day, and should not be used for urgent or sensitive issues

6 attachments

Breast Feeding Survey- Family Physicians.pdf
262K
Breast Feeding Survey- Fathers.pdf
122K
Breast Feeding Survey- Nursing.pdf
158K
Breast Feeding Survey- OB-Gyn Residents.pdf
267K
Breast Feeding Survey- Pediatric Residents.pdf
286K
Breast Feeding Survey- Pediatricians.pdf
259K

Amir Alakaam <amir.alakaam@eagles.usm.edu> Mon, Apr 20, 2015 at 10:17 AM
To: "Kennedy, Joyce" <joykenne@med.umich.edu>

Received. Thanks

Amir
# APPENDIX H

## STUDY VARIABLES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement Unit</th>
<th>Variable Type</th>
<th>Data Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Characteristics of each facility</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Region</td>
<td>Within Mississippi metro area</td>
<td>Categorical</td>
<td>Appendix B</td>
</tr>
<tr>
<td></td>
<td>Outside Mississippi metro area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Location by Mississippi Public Health District</td>
<td>District I District II District III District IV District V District VI District VII District VIII District IX</td>
<td>Categorical</td>
<td>Appendix B</td>
</tr>
<tr>
<td>Size: Number of beds</td>
<td>Fewer than 150 150-250 250 or more</td>
<td>Categorical</td>
<td>Appendix B</td>
</tr>
<tr>
<td>Number of deliveries per year</td>
<td>Fewer than 500 500-1000 1000 or more</td>
<td>Categorical</td>
<td>Appendix B</td>
</tr>
<tr>
<td>Number of Cesarean sections per year</td>
<td>Fewer than 200 200-400 400 or more</td>
<td>Categorical</td>
<td>Appendix B</td>
</tr>
<tr>
<td>Variable</td>
<td>Measurement Unit</td>
<td>Variable Type</td>
<td>Data Source</td>
</tr>
<tr>
<td>----------</td>
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<td>-------------</td>
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<tr>
<td>The current level of implementation of the Ten Steps in the hospital</td>
<td>Total score (0-100)&lt;br&gt;Low (scores 0-24.9), Partial (scores 25-74.9)</td>
<td>Continuous Categorical</td>
<td>Instrument I: The scores of all 31 questions.</td>
</tr>
<tr>
<td>Barriers to implement the Ten Steps in the hospital</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Step 1</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 5</td>
</tr>
<tr>
<td>Step 2</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 8</td>
</tr>
<tr>
<td>Step 3</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 11</td>
</tr>
<tr>
<td>Step 4</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 16</td>
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<tr>
<td>Step 5</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 20</td>
</tr>
<tr>
<td>Step 6</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 25</td>
</tr>
<tr>
<td>Step 7</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 30</td>
</tr>
<tr>
<td>Step 8</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 33</td>
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<td>Variable</td>
<td>Measurement Unit</td>
<td>Variable Type</td>
<td>Data Source</td>
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<td>-----------------------------------------------</td>
<td>------------------</td>
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<td>------------------------------------</td>
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<tr>
<td>Step 9</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 37</td>
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<tr>
<td>Step 10</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument I: Question 41</td>
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<tr>
<td>Nurses’ knowledge and practices about breastfeeding</td>
<td>Total score: 15-49 Poor (score ( \leq 31 )) Good (score ( \geq 32 ))</td>
<td>Continuous</td>
<td>Instrument II: Question 1-16 (except question 15)</td>
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<tr>
<td>Nurses’ knowledge about breastfeeding</td>
<td>13 – 39 points</td>
<td>Continuous</td>
<td>Instrument II: Question 1-13</td>
</tr>
<tr>
<td>Nurses’ practices about breastfeeding</td>
<td>1-5 points</td>
<td>Continuous</td>
<td>Instrument II: Question 14</td>
</tr>
<tr>
<td>Nurses’ effectiveness of practices about breastfeeding</td>
<td>1-5 points Not effective =1 Slightly effective =2 Neither/Neutral =3 Effective =4 Very effective =5</td>
<td>Ordinal</td>
<td>Instrument II: Question 16</td>
</tr>
<tr>
<td>Sources of information regarding breastfeeding among nurses</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument II: Question 15</td>
</tr>
<tr>
<td>Familiarity with the Ten Steps</td>
<td>Yes or No</td>
<td>Categorical</td>
<td>Instrument II: Question 17</td>
</tr>
<tr>
<td>Variable</td>
<td>Measurement Unit</td>
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<tr>
<td>-----------------------------------------</td>
<td>----------------------------------------------</td>
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<td>---------------------------------------------</td>
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</tbody>
</table>
| Nurse’s interest to adopt the Ten Steps | 5–25  
Strongly disagree =1  
Disagree =2  
Neither/Neutral =3  
Agree =4  
Strongly agree =5 | Continuous | Instrument II: Questions 18-22 |
| Facilitators to implement the Ten Steps in the nurses’ practices | Yes or No                                   | Categorical  | Instrument II: Question 23 |
| Barriers to implement the Ten Steps in the nurses’ practices | Yes or No                                   | Categorical  | Instrument II: Question 24 |
| Nurses’ Socio-demographic               |                                              |               |                                             |
| Nurse’s hospital location, by Public Health District | I  
II  
III  
IV  
V  
VI  
VII  
VIII  
IX | Categorical | Instrument II: Question 25 |
| Nurse’s hospital delivery rate          | Fewer than 500  
500-1000  
1000 or more | Categorical | Instrument II: Question 26 |
| Type of employment                      | Full time  
Part time | Categorical | Instrument II: Question 27 |
<table>
<thead>
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<th>Variable</th>
<th>Measurement Unit</th>
<th>Variable Type</th>
<th>Data Source</th>
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<td>Professional credentials</td>
<td>Registered Nurse</td>
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<td></td>
<td>Licensed Practical Nurse</td>
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</tr>
<tr>
<td></td>
<td>Nurse Practitioner</td>
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<td></td>
</tr>
<tr>
<td>Years of experience</td>
<td>Years</td>
<td>Continuous</td>
<td>Instrument II: Question 29</td>
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<tr>
<td></td>
<td>Fewer than 5 years</td>
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<tr>
<td></td>
<td>5-10 years</td>
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<td></td>
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<tr>
<td></td>
<td>10 years or more</td>
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<td></td>
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<tr>
<td>Sex</td>
<td>Male</td>
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<tr>
<td></td>
<td>Female</td>
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<td></td>
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<tr>
<td>Age</td>
<td>Years</td>
<td>Continuous</td>
<td>Instrument II: Question 31</td>
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<td>Younger than 40 years</td>
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<td>40 years or older</td>
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<td>White</td>
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</tr>
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<td></td>
<td>Black/African</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>American</td>
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<tr>
<td></td>
<td>American Indian</td>
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</tr>
<tr>
<td></td>
<td>or Alaska Native</td>
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</tr>
<tr>
<td></td>
<td>Native Hawaiian</td>
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</tr>
<tr>
<td></td>
<td>or other Pacific Islander</td>
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<tr>
<td></td>
<td>Hawaiian</td>
<td></td>
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<td></td>
<td>or other Pacific Islander</td>
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<tr>
<td></td>
<td>Islander</td>
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<td>Hispanic</td>
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<td></td>
<td>Asian</td>
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</tr>
<tr>
<td></td>
<td>Mixed Races</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>I refuse to answer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX I

INSTITUTIONAL REVIEW BOARD APPROVAL FOR THE PILOT STUDY

THE UNIVERSITY OF SOUTHERN MISSISSIPPI

INSTITUTIONAL REVIEW BOARD
118 College Drive #5147 | Hattiesburg, MS 39406-0001
Phone: 601.266.5997 | Fax: 601.266.4377 | www.usm.edu/research/institutional-review-board

NOTICE OF COMMITTEE ACTION

The project has been reviewed by The University of Southern Mississippi Institutional Review Board in accordance with Federal Drug Administration regulations (21 CFR 21, 111), Department of Health and Human Services (45 CFR Part 46), and university guidelines to ensure adherence to the following criteria:

- The risks to subjects are minimized.
- The risks to subjects are reasonable in relation to the anticipated benefits.
- The selection of subjects is equitable.
- Informed consent is adequate and appropriately documented.
- Where appropriate, the research plan makes adequate provisions for monitoring the data collected to ensure the safety of the subjects.
- Where appropriate, there are adequate provisions to protect the privacy of subjects and to maintain the confidentiality of all data.
- Appropriate additional safeguards have been included to protect vulnerable subjects.
- Any unanticipated, serious, or continuing problems encountered regarding risks to subjects must be reported immediately, but not later than 10 days following the event. This should be reported to the IRB Office via the “Adverse Effect Report Form”.
- If approved, the maximum period of approval is limited to twelve months.

Projects that exceed this period must submit an application for renewal or continuation.

PROTOCOL NUMBER: 15043004
PROJECT TITLE: Hospital Practices Related to Breastfeeding in Mississippi: A Pilot Study
PROJECT TYPE: New Project
RESEARCHER(S): Amir Alakaam
COLLEGE/DIVISION: College of Health
DEPARTMENT: Nutrition and Food Systems
FUNDING AGENCY/SPONSOR: N/A
IRB COMMITTEE ACTION: Exempt Review Approval
PERIOD OF APPROVAL: 05/01/2015 to 04/30/2016

Lawrence A. Hosman, Ph.D.
Institutional Review Board
REFERENCES


*Breastfeeding practices and barriers to implementing the Ten Steps to Successful Breastfeeding in Mississippi hospitals.* Manuscript in preparation.


*Nurses’ knowledge and practices related to breastfeeding and interest to adopt the Ten Steps to Successful Breastfeeding in Mississippi hospitals.* Manuscript in preparation.


doi:10.2105/AJPH.2008.135236


doi:10.1089/bfm.2011.0082


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Comparison of evoked arousability in breast and formula fed infants. *Archives of Disease in Childhood, 89*(1), 22-25.

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*Agency for Healthcare Research and Quality, 07-E007.*

http://kff.org/other/state-indicator/total-registered-nurses/


Multivariate analysis of state variation in breastfeeding rates in the United States.
doi:10.2105/AJPH.2007.127118

Kovach, A. C. (2002). A 5-year follow-up study of hospital breastfeeding policies in the


