MIDWEST MEDICAL CENTER EMPLOYEE PERCEPTIONS OF WORKPLACE BREASTFEEDING EXPERIENCES

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ABSTRACT

The privilege of motherhood establishes additional temporary occupational needs for women who choose to breastfeed an infant and continue full time employment. The purpose of the study was to assess the holistic needs of employed lactating women. A Perceptions of Workplace Breastfeeding Experiences Questionnaire (PWBE-Q) was developed using Bronfenbrenner's theory of social ecology and implemented with employees working in a Midwest medical center.

The study included a physical survey of the facility's lactation rooms. Three designated lactation rooms were assessed. Ninety five employees responded to the survey. Study results determined the facility's existing designated lactation space was functional. Employees perceived a need for more convenient lactation spaces along with improved policy and information defining acceptable lactation practices. Recommendations were made suggesting how to expand company lactation support. Applying lactation interventions is shown to be in the best interest for a company and sets a good example for other businesses.

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CHAPTER ONE. THE RESEARCH PROBLEM

Introduction

Breast feeding is an amazingly complex and incredibly adaptive system between a mother and her infant. When a lactating woman is exposed to a virus, the baby benefits from the mother's immunity, a function not possible with formula (Angeletti, 2008). Breast milk is naturally reformulated to meet the growing needs of an infant, including changes in the proportion of macronutrients (carbohydrates, proteins, fats) as the infant matures (Godfree and Lawrence, 2010). Experts agree that breast feeding is a species specific intricate and continuously evolving system between a mother and her infant (Angeletti, 2008; Godfrey and Lawrence, 2010).

An employee working in a hospital system is part of a complex environment of influence affecting the ability to express breast milk at work (Thulier and Mercer, 2009). Many literature sources recognize employment to negatively affect breast feeding rates (Thulier and Marcer, 2009; Johnson and Esposito, 2007; Murtagh and Moulton, 2011; Stratton and Henry, 2011). The proceeding background will explain the health benefits of breastfeeding for the mother and her baby, identify current breastfeeding rates, and establish the physiological need to express breast milk. Current federal legislation regarding lactation and employment will be explored. Bartick and Reinhold, (2010) suggest businesses who make an effort to encourage and improve employee breastfeeding can inspire healthier families, healthier employees, and save a company money.

Issues identified in the literature specific to lactation while maintaining a career begin with maternal information. A lactating female's previous experience, motivation, confidence, and intent to breastfeed affect the internal psychosocial intricacy of breastfeeding while

employed. Access to information from a lactation consultant, information regarding work policy for breastfeeding, and a mother's personal milk supply add to the employee's complex balance between work and family (Cardenas and Major, 2005). The social support a female experiences from her social circle of relatives and friends, including support from her child care provider, combined with co-worker and manager support, make a difference on the decisions of a lactating female (Johnson and Esposito, 2007; Murtagh and Moulton, 2011). At the heart of the issue, the employer's lactation policies, job flexibility, time expectations, and physical space available for expressing breast milk positively or negatively affect a lactating employee (United States Breastfeeding Committee {USBC}, 2010; Health Resources and Service Administration {HRSA}, 2015; Galson, 2009). Physical space requirements include a private space, a chair, a table, an electrical outlet, a sink, and a sanitary place to store breast milk (HRSA, 2015). From a broader spectrum, the cultural acceptance of breastfeeding including the existence of state and federal policy, influence the breastfeeding female (Murtagh and Moulton, 2011). The study presented uses a social ecological model to assess the physical breastfeeding environment of a Midwest hospital and explores female hospital employees' perceptions of workplace breastfeeding experiences.

Background

It is difficult to argue against the scientifically documented benefits breastfeeding provides a mother and her baby. Ip et al. (2007) conduced an in-depth systematic literature review of 400 studies regarding the effects of breastfeeding on short and long term infant and maternal health outcomes in developed countries. Human milk feeding has been shown to protect an infant against diarrheal disease, respiratory infections, asthma, acute otitis media,

urinary tract infections, diabetes type one and two, childhood obesity, sudden infant death syndrome, atopic dermatitis, and childhood leukemia and lymphoma (Ip. et al., 2007).

If breast feeding is best for the infant, what benefit does breast feeding provide the mother? Women who breastfeed have a decreased incidence post-partum bleeding, breast cancer, ovarian cancer, and type 2 diabetes (Ip et al., 2007; Schwartz, Ray, and Stuebe, 2009). Early cessation of breastfeeding or not breast feeding at all has been reported as an increased risk of maternal postpartum depression and impaired maternal bonding (Ip et al., 2007).

As a result of the well documented benefits breast feeding provides, the American Academy of Pediatrics (AAP) issued a policy statement recommending breastfeeding as the best source of infant nutrition. The use of human milk should be used exclusively for the first six months of life. Breast milk plus gradual introduction of solid food is recommended from six months until one year. Breastfeeding should continue as long as mutually desired by the mother and infant (American Academy of Pediatrics, 2012).

Beyond the health and social benefits breastfeeding has to offer, studies also show breastfeeding will save money for individual families, companies, and the government. Ball and Wright (1999) conducted a seminal study comparing the incidence of lower respiratory tract infections, otitis media, and gastroenteritis of formula fed infants to that of exclusively or partially breastfed infants. Results revealed both exclusive and partially breast fed infants had significantly lower incidence of office visits, follow-up visits, medications, and hospitalizations for all three illnesses. The study conclusions provided a strong evidence base for breast feeding to be a superior form of infant nutrition. In the results, Ball and Wright (1999) also translated the calculated cost of office visits, medications, and hospitalizations from lower respiratory tract infections, otitis media, and gastroenteritis into health care costs of formula fed infants and

estimated formula feeding costs at approximately $331,051 per 1,000 formula fed infants. That translates into about $331 per baby per year (Ball and Wright, 1999). More recently, the United States Department of Agriculture (USDA), (2011) studied the same three pediatric diseases and estimated the impact of raising the breastfeeding rate to 50% at six months would save an estimated $3.6 billion dollars a year in health care expenses.

Bartick and Reinhold (2010) used a similar design method used by Ball and Wright (1999) comparing infant illness rates of formula fed and breast fed infants from the year 2005 to 2007. The results concluded that if 90% of United States families' breast fed for six months the United States would save $13 billion dollars (Bartick and Reinhold, 2010).

The results of cost analysis studies and the documented benefits breastfeeding provides for both mothers and infants sparked an interest in federal government agencies. Health Resources and Service Administration (HRSA) maternal and child division (2015) published resources titled the *Business Case for Breast Feeding*. The documents encouraged companies to support breast feeding and offered advice on implementing a breast feeding friendly workplace. HRSA (2015) claimed support for employee breast feeding is cost effective, simple, and companies can enjoy significant cost savings. The needs are simple: a private, comfortable space to express breast milk, flexible break times, education regarding company policy, and breast feeding support from managers and co-workers (HRSA, 2015). Employees in a hospital setting are not exempt from the general needs of women in the work force. This study assessed the hospital employee lactation environment at a Midwest hospital.

Companies have found that implementing a lactation friendly environment does more than save money. Employees who breast feed miss work less often (Association of Women's Health, Obstetric, and Neonatal Nurses, 2008; United States Department of Health and Human

Services, 2008), have lower health care costs (Ball and Write, 1999; Bartick and Reinhold, 2010), have improved work retention (Ortiz, McGilligan, and Kelly, 2004), experience higher productivity (Brown, Poag, and Kasprzycki, 2001), and show increased employee loyalty (Brown, Poag, and Kasprzycki, 2001; HRSA, 2015) compared to new moms who could not continue breastfeeding due to a demanding work environment. Highlighting a business as "mother friendly" can be used as a recruitment tool for business leaders interested in recruiting and retaining young female employers (Mills, 2009). The United States Breast Feeding Committee, (2010) reports that for every $1 invested to support breast feeding, employers realize a cost savings of $3. Requirements for a business to claim a mother friendly place of employment include: a designated pump site that guarantees privacy, availability of refrigeration and hand washing facilities and appropriate employee break time (American Academy of Pediatrics, 2012; HRSA, 2013). Companies can take advantage of the many benefits previously explained with a simple change in work climate and physical environment to support breast feeding employees. The 2020 Healthy People initiative calls for increasing the proportion of employers who have workplace breastfeeding support programs from 25% to 38% (Center for Disease Control, 2011). The business benefits, cost savings, and maternal child health benefits of breastfeeding are summarized in Table 1.

Table 1. Benefits of Breastfeeding

Health Benefit to Child	Health Benefit to Mother	Employer/Economic Benefit
Improved immune system Reduced incidence and severity of: Diarrhea Urinary tract infections (UTI) Otitis media (OM) Sudden infant death syndrome (SIDS) Reduced risk of: Diabetes, Lymphoma, Leukemia, Atopic dermatitis and Asthma	Decreased risk of: Post-partum bleeding Ovarian and breast cancer Type II diabetes Decreased postpartum depression Positive maternal bonding	Decreased health care costs Higher employee productivity Lower absenteeism Increased employment retention Loyalty by working mothers who breast feed Lactation support can be a recruitment incentive

Breast Feeding Rates

According to Healthy People 2010, breastfeeding rates in the United States have continued to slowly creep upward. Current estimates, from the year 2012, suggest approximately 76.9% of women initiate breastfeeding in the hospital, meeting the Healthy People 2010 goal for initiation of breastfeeding. However, only 47.2% of women continue to breastfeed through six months and only 25.5% through 12 months. Healthy People 2020 proposes an increase in breast feeding rates. The new goal is set to establish 81.9 % of women ever breast feeding, 60.6 % continuing through six months of age, and 34.1 % continuing through one year (United States Department of Health and Human Services {HHS}, 2013). The rise in breast feeding goals should be realistic. However, considering we currently have a rate of only 47.2% of women continuing to breast feed through six months and 25.5% breast feeding through one year (HHS, 2012) it will be difficult to achieve the 2020 target goals. Refer to Table 2 for breast feeding rates and goals.

Table 2. Healthy People United States Breast Feeding Rates and Goals (HHS, 2013)

Objective	**Baseline (year measured) *%***	**Baseline (year measured)*%***	**2020 Target *%***
Increase the proportion of infants who are breastfed:	(2006 births)	(2012 births)	
Ever	74.0	76.9	81.9
At 6 months	43.5	47.2	60.6
At 1 year	22.7	25.5	34.1
Increase the proportion of employers that have worksite lactation support programs	25.0 (2009)		38.0

Pumping and Milk Supply

A return to work is a common barrier to breast feeding. Mothers who work full time tend to breastfeed for shorter intervals than those who work part time or are unemployed (Johnston and Esposito, 2007). More than half of mothers work outside the home before their child is one year old (Brenner and Buescher, 2011). A concern upon returning to work is maintaining milk supply. A study conducted by Wilde, Addey, Boddy, and Peaker (1995) concluded what is now clinically acceptable as evidence based practice for effective milk removal. The study found a whey protein responsible for feedback inhibition of lactation (FIL). The protein is secreted through complete emptying of the breast, encouraging continued milk production. Incomplete emptying of the breast promotes collection of FIL and decreases milk production through an autocrine process. A more current study discovered similar results and concluded that the addition of breast massage and compression during feeding and especially during pumping episodes aide in the completeness of milk removal (Morton, Hall, Wong, Thairu, Benitz, and Rhine, 2009). The bottom line for mothers in the workforce is effective and frequent expression of breast milk is necessary to maintain milk supply. Missing even one needed pumping session can have several undesirable consequences, including discomfort, leaking, inflammation and infection, decreased supply, and ultimately breast feeding cessation (United States Breast

Feeding Committee, 2010). The ability for a mother to pump at work and maintain the ability to feed her baby is very important for the employee's health and the health of her infant.

The intimate need for both mother and baby to breastfeed and the difficulty that women in the United States have with a negative cultural stigma from breast feeding places breast feeding women and their infants in a category of vulnerable population (Murtagh and Moulton, 2011). No mother should be made to feel incriminated or socially ostracized from an employer for breast feeding or expressing breast milk for her baby (Petersen and Harvey, 2004). Employers are encouraged to recognize taking simple steps to support breast feeding can save the company money, encourage healthy employees, and strengthen families (United States Breast Feeding Committee, 2010).

Problem

Health care employers are not exempt from issues that arise when it comes to employees who are returning to work after having a baby. There is a growing interest in baby friendly hospitals. Many hospitals are working to improve breast feeding rates of mothers who deliver in their facility (Grizzard, Bartick, Nikolov, Griffin, and Lee, 2005). Lengths of maternity leave may vary. However, maternity leave generally allows enough time for a mother to adequately establish a milk supply prior to a return to work. The problem is, many literature sources recognize employment to negatively affect breast feeding rates (Thulier and Marcer, 2009; Johnson and Esposito, 2007; Murtagh and Moulton, 2011; Stratton and Henry, 2011). Upon returning to work after maternity leave a lactating female employee will need to express breast milk in support of her baby for six months to approximately one year or slightly longer. This creates an imperative yet temporary need to express breast milk while away from her baby at work for as long as the employee desires to feed her baby (American Academy of Pediatrics,

2012). If denied the ability to express breast milk, the employee will no longer be able to physically produce breast milk and subsequently deny the infant sufficient nutrition in the form of breast milk (Morton, et al., 2009; Wilde, Addey, Boddy, and Peaker, 1995). The problem identified relates to the lack of literature assessing hospital systems and employer lactation support. Despite legislative encouragement, it is unknown what lactation support exists in many companies including health systems (Ryan, Zhou, and Arensberg, 2006). This study assessed the employee lactation environment at two campuses of a Midwest hospital. Perceptions of workplace breastfeeding experiences were used to identify interventions that would be helpful to a lactating employee.

Purpose

The surgeon general claimed work related needs for lactating employees are basic: time, a private location in which to physically latch or express breast milk that has a chair, table, outlet, is near a sink, a plan for milk storage, a place that is not a bathroom, and good communication between employer and employee (Galson, 2009). Legislation from section seven of the Fair Labor Standards Act (FLSA) states that employers with more than 50 employees must have a private room for female employees to express breast milk. Many companies comply with the legislative standards. However, it is unknown how well employer interventions are working (Stewart-Glenn, 2008). The purpose of this study is to describe the physical breast feeding space available for employees to breastfeed at two campus' of a large Midwest hospital facility. To assess for any potential concerns of lactating employees in a hospital setting this study surveyed employees who had breastfed in the last five years using a perceptions of workplace breastfeeding experiences questionnaire (PWBE-Q) developed by this author. The questionnaire

addressed employment lactation issues from a theoretical perspective of Bronfenbrenner's social ecology.

Significance for Nursing

In order to continue to feed an infant breast milk, a lactating female needs to express breast milk at least every three to four hours (Cardenas and Major, 2005). That translates into two milk expression breaks in an eight hour shift and three breaks in a twelve hour shift (Cardenas and Major, 2005; Payne and Nicholls, 2010). The duration of milk expression is variable for each individual and takes approximately 15 to 20 minutes. According to the American Academy of Pediatrics policy statement (2012), breast feeding is considered the optimal form of infant feeding and nutrition exclusively for the first six months followed by continued breast feeding as complementary foods are introduced for one year or as long as mutually desired by the mother and infant (Gartner, Morton, and Lawrence, 2005). For example, if a female takes 12 weeks off for maternity leave, upon a return to work the length of time she would have a need to express breast milk would be three to nine months, or slightly longer depending on the infant and mothers mutual desired length of breast feeding.

Many health care employees are motivated to take a break in order to express breast milk so they can maintain milk supply and feed their infants. Even with motivation to breast feed, challenges in regard to time is hypothesized to be a significant barrier for hospital employees. Prior to initiation of the study, the physical space available at a Midwest hospital facility for employee lactation use was unknown. A question of hygienic milk storage options for employees was also a concern. Expressing breast milk requires a lactating employee to become skilled in the efficient production, expression, and hygienic storage of breast milk (Ryan, Zhou, and Arensberg, 2006; Stratton and Henry, 2011) regardless of place of employment. The aim of

the current study was to identify the physical space available to lactating employees, assess employee experiences and perceptions of lactation, and recommend practical interventions.

The role of employer breast feeding support is important to female employees who work in the hospital setting. Workplace interventions to promote and support breast feeding may be one route to increase breast feeding rates toward national goals and professional recommendations (Rasmussen and Geraghty, 2011; Straton and Henery, 2011). The study of hospital support for breastfeeding employees is significant for nursing because hospital support for breastfeeding can potentially improve employee, infant, and family health. As discussed earlier, lactation interventions that improve the number of women breastfeeding and encourage a longer length of breastfeeding can save money in health care costs for an organization. Nursing as a profession is concerned over the health of the individual and the family. Knowledge of laws and positive lactation interventions will assist nurses to care for patients, families, and communities. In addition, a hospital that is lactation friendly sets a good example for other businesses. Support for breast feeding hospital employees is in the best interest of everyone involved. The challenge is to change the system so that hospitals, employers and the general public work together to empower mothers to achieve the best infant-feeding goals (United Stated Breastfeeding Committee, 2010).

CHAPTER TWO. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Integration of Theoretical Framework and Literature Review

Breast feeding is not a good choice for all mothers. However, it is the best choice for all babies (Clifford and McIntyre, 2008). From the Bronfenbrenner ecological perspective on human development (1979; 2005) it is believed that an individual is an inseparable part of his or her environment and learning is influenced by the context of his or her lived environment. An ecological framework suggests health behaviors, such as breastfeeding, are influenced by interpersonal and environmental ecological factors (Bronfenbrenner, 1979; Greene, Wolfe, and Olson, 2008). The Bronfenbrenner social ecology theory examines an individual's perspective of the environment, the environment surrounding the individual, and the dynamic interaction between the individual and the environment. Thus, development is defined as an ongoing change in the way a person perceives and deals with or adapts to the environment (Bronfenbrenner, 1979). Bronfenbrenner's (1979; 2005) theoretical model guides the examination of the context that surrounds a mother as she develops her mothering roles and practices, especially those related to breastfeeding, child health promotion and health protection (Green, Wolfe, and Olson, 2008).

Bronfenbrenner conceived the ecological model of the environment as a set of nested structures, each inside the next, starting at the inner most circle as the Microsystems with each circle extending larger to represent a Mesosystem, Exosystem, and Macrosystem (Bronfenbrenner, 1979; 2005; Reifsnider, Gallagher, and Forgione, 2005). Each ecological layer influences a lactating individual and her environment. However, one layer is not any more important than another. Each layer fluidly influences a mother and her lactation behaviors (Bronfenbrenner, 1979). For the current study the literature was reviewed and phenomena were

categorized according to a framework of human ecology that considers the mother in the context of her immediate and broader environment (Johnston and Esposito, 2007). The mothers' ecological layers of influence are placed in the appropriate category of nested structures and organized into a diagram in Figure 1 (Bronfenbrenner, 1979; 2005; Reifsnider, Gallagher, and Forgione, 2005). The following section explains the study framework blending employed breastfeeding literature and Bronfenbrenner's theory of human ecology.

Bronfenbrenner's Theory of Human Ecology from an Employed Breastfeeding Perspective

Microsystems: Breastfeeding Literature Regarding the Individual and Information

The microsystem environment is viewed as the individual lactating mother and her hungry infant. Both individuals are affected by the ability to produce or receive breast milk. Factors pertaining personally to the mother and the infant are based on what the mother and infant know. The intimate communication between infant and mother relies heavily on the mother's lactation information. A mother's personal beliefs, way of being, self-reflection, and past experiences are central components of breastfeeding success during maternal employment (Johnston and Esposito, 2007). Studies have shown positive results with extended breastfeeding durations when a mother expresses an intent to breastfeed, shows interest in breastfeeding, and has confidence in the ability to breastfeed, does not offer formula supplements, and has a positive emotional conviction to breastfeed (Thulier and Mercer, 2009; Johnson and Espito, 2007). The existence of work policies and the maternal awareness of work policies has an important influence that affects the continuation of breastfeeding. Unfortunately, many companies do not have policies regarding breastfeeding and address employee needs on a case by case basis (Suyes, Abrhams, and Labbok, 2008; Stratton and Henry, 2011). Negative breastfeeding attitudes leading to early breast feeding cessation are identified as deciding late in

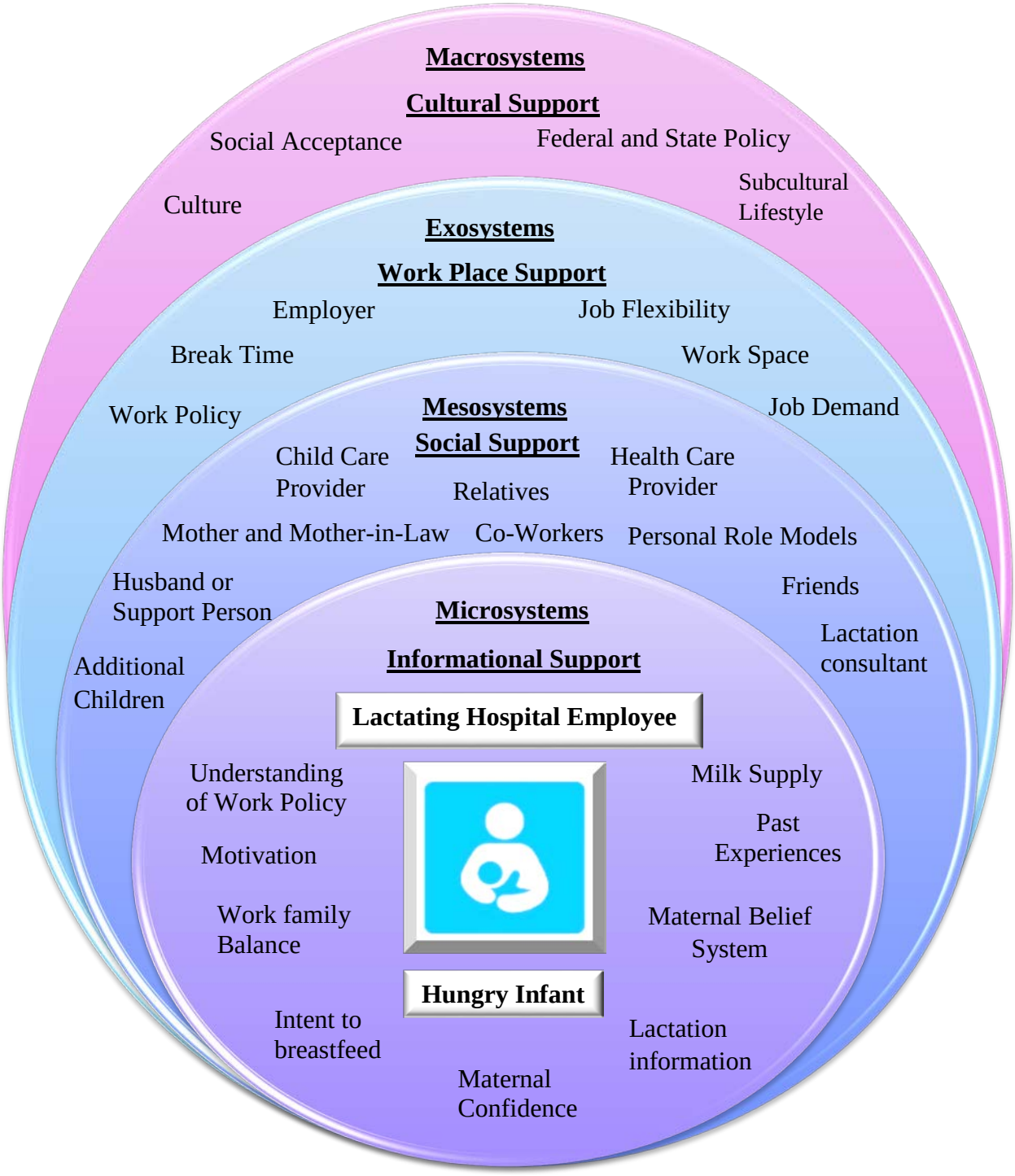

Figure 1. Modified Bronfenbrenner's Socio-Ecological Model of a Lactating Hospital Employee.
(Model adapted from Bronfenbrenner's Social Ecology Model of Human Development, 1979; 2005; Reifsniderand & Gallagher, 2005)

pregnancy to breast feed, having a negative attitude towards breast feeding, having positive attitudes toward bottle feeding, offering formula supplements, and having low self confidence in their ability toward breast feeding (Thulier and Mercer, 2009).

Some women identify a concern for the physical ability to continue breastfeeding. There is little doubt that the perception of inadequate milk supply occurs much more often than actual poor production (Thulier and Mercer, 2009). However, a few factors actually can affect milk supply. Inadequate milk supply is defined as a mother feeling that her milk supply is inadequate to either satisfy her infant's hunger or support adequate weight gain (Thulier and Mercer, 2009). Primary causes of milk supply barriers include maternal obesity, babies born premature, large babies, maternal pain and difficulty from sore nipples, engorgement, mastitis, plugged ducts, or a baby unwilling to latch appropriately (Thulier and Mercer, 2009). The previous problems affect about 5% of women. More common problems involve secondary causes of inadequate breastfeeding management. When facing the challenge of inadequate milk supply, the most common solution is to supplement with formula. The non-medical introduction to supplemental feeding is appropriate. However, early introduction to formula is associated with shorter breastfeeding durations (Thulier and Mercer, 2009).

Despite potential difficulties, the majority of women should have no problem keeping up with milk supply as long as they continue to latch an infant or express breast milk. Johnston and Esposito (2007) found when working women developed a strategic plan on how to balance self-care, breastfeeding, and work, potential milk supply difficulties were minimized. Whether perceived or real, maintenance of milk supply is an important barrier to the duration of breastfeeding.

An established amount of maternity leave (6-12 weeks) assists a mother to develop a good milk supply prior to returning to work (Fein, Mandal, and Roe, 2008). Lactation services can assist women in their ability to continue to breastfeed through difficult circumstances. (Rojjanasrirat and Sousa, 2010). The role of lactation services has been shown to have a positive effect on women choosing to breast feed when returning to work. The positive involvement from a lactation expert providing information to support breastfeeding resulted in longer durations of breastfeeding in the companies studied (Suyes, Abrahams, and Labbok, 2008; Rojjanasrirat and Sousa, 2010). Direct feeding has been shown to allow for longer feeding durations. Examples of company interventions to allow direct feeding include on-site child care, keeping the infant at work, telecommuting, allowing the mother to leave work, or having the baby brought to the mother for feeding (Fein, Mandal, and Roe, 2008). In many cases, direct feeding options are not available. Fein, Mandal, and Roe (2008) found the most common strategy for feeding at work is to pump and save milk for the infant. However, the Fein, Mandal, and Roe (2008) study found pumping and feeding to have a 7.1 week shorter duration of feeding an infant breast milk compared to direct feeding.

Since the invention of breast pumps to express breast milk, a sort of revolution has evolved in the way infants are fed human milk (Rasmussen and Geraghty, 2011). Concern has been raised toward the sanitation of expressed breast milk. Women have reported expressing breast milk in bathrooms, while driving, and storing milk without proper refrigeration (Rasmussen and Geraghty, 2011). In order for proper breast milk storage, milk must be refrigerated within at least three hours of being freshly expressed (Brill and Hughes, 2002). If the employee has an insulated bag with a blue icepack, milk can be stored for 24 hours with minimal disruption of the temperature. Under clean conditions, expressed breast milk can be

stored in a refrigerator for up to three days (Brill and Hughes, 2002). Breast milk should not be warmed in a microwave and bottles should be cleaned with soap and water after each use. Labiner-Wolfe and Fein (2012) studied how mothers in the United States store and handle expressed breast milk. The results concluded few mothers store milk longer than recommended. From the large sample, some (12%) mothers warmed milk in the microwave and some (17%) rinsed bottles and nipples with plain water. Lactating women in the work force experience special challenges as they learn how to safely express, store, and feed expressed breast milk.

Studies found that it takes a determined balance to accomplish breastfeeding and employment. Caedenas and Major, (2005) described a conflict women experienced between family and work that restricted the length of breastfeeding. The struggles were identified as time, role strain, and behavior based conflicts (Caedenas and Major, 2005). Women whose time included working fewer hours or who had an expanded maternity leave had more success with an extended length of breast feeding (Caedenas and Major, 2005; Thulier and Mercer, 2009; Johnston and Esposito, 2007). Additionally, there were time based conflicts while at work. Finding time during the work day was found to be a challenge. Employees who had sufficient and consistent time for breaks and had access to an electric breast pump were found to be more successful (Caedenas and Major, 2005; Ortiz, McGilligan, and Kelly, 2004; Johnston-Balkam, Cadwell, and Fein, 2010). Conflicts many women faced were based on lack of time required to fill the roles of both employee and breastfeeding mother (Caedenas and Major, 2005).

Strain based conflict occurred when a mother did not know the employer's expectations. The lack of information led to early infant weaning because she felt guilty about pumping and maintaining her professional role. Alternatively, she decided to stop breastfeeding and felt guilty she was not able to continue to feed her baby. The perceived lack of control from the

employment environment and unpredictable circumstances caused strain for the employed lactating mother (Caedenas and Major, 2005).

The final conflict identified by lactating women in employment was behavior based. A mother may have the intentions to express milk at work and then not take a break to express milk. This behavior leads to a diminished milk supply (Cardenas and Major, 2005; Morton, Hall, Wong, Thairu, Benitz, and Rhine, 2009). The ultimate result of conflict between employment and breastfeeding is the premature cessation of breastfeeding. Early cessation can have serious consequences in increased health care costs and potential impaired health for mothers and infants (Cardenas and Major, 2005).

Mesosystems: Breastfeeding Literature Regarding Social Support and Relationships

The next three levels are the mesosystem, exosystem, and macrosystem. In these levels, the mother and infant may or may not be present but the entities involved have powerful influences affecting the mother's parenting and breastfeeding practices resulting in parenting decisions that affect the child (Bronfenbrenner, 1979). Outside and encompassing the microsystem is the mesosystem. A mesosystem is composed of a group of microsystems. Whenever a mother or child move into a new setting a mesosystem is formed or extended. In the mesosystem a mother and her child are active participants. It is important to note that the strength or weakness in the link between the microsystem and mesosystem is important (Bronfenbrenner, 1979; 2005). To summarize, the microsystem is the information a mother has regarding lactation and the mesosystem is the people she interacts with whom each possess his/her own information regarding lactation. The interaction with each person influences maternal information. Examples of mesosystems for a breastfeeding mother include support or lack of support from the following:

- Her husband/significant other (Thulier and Mercer, 2009)
- Her mother and her mother –in- law (Witters-Green, 2003)
- Social networks such as friends and relatives (Witters-Green, 2003)
- Personal role models she may have from church or other organizations in which she may be involved (Reifsnider, Gallagher, and Forgione, 2005)
- Her work environment and co-workers (Rojjanasrirat, 2004; Rojjanasrirat and Sousa, 2010; Witters-Green, 2003)
- The child's day care provider (Witters-Green, 2003) and
- Health care professionals including lactation consultants (Bonuck et al., 2014).

Research suggests the opinion of others significantly effects the breastfeeding decisions and behaviors of a lactating mother (Johnston and Esposito, 2007). The first and closest social relationship the mother experiences is often the infant's father. Studies show that if the father is knowledgeable and supportive, the woman has a longer duration of breastfeeding. Alternatively, high relationship distress is predictive of early breastfeeding cessation (Thulier and Mercer, 2009; Witters-Green, 2003).

Research has found other female family members and close friends, such as a mother or mother in law, are influential. The positive influence was stronger if the family member or friend had previously successfully breastfed an infant (Witters-Green, 2003). In addition, some child care workers were found to be uneasy handling breast milk. Some breastfeeding women found their child care worker would feed the baby formula instead of their breast milk, making breastfeeding seem unimportant despite efforts to express milk causing the mother's breastfeeding environment to be less supported and more challenging (Witters-Green, 2003).

Health care providers in primary care clinics play a role in the mesosystem of a lactating female. Johnson, Correll, Greene, Hein, and McLaughlin (2013) studied barriers to breast feeding in a resident clinic. The study found most women they surveyed requested more breastfeeding information from their primary care provider. The principal request was for a visit with a lactation consultant. Bonuck et al. (2014) initiated an intervention with a lactation consultant in a primary care clinic. The study compared lactation duration and intensity based on usual care, electronic prompted guidance from a health care provider, and a lactation consultant. Results concluded that lactation consultants alone and combined with electronic prompted guidance from a health care provider increased breast feeding intensity and duration at three months post-partum. Health care providers including lactation consultants play a role in the health decisions made by lactating females.

Social relationships within employment are identified as important. Co-workers were shown to be barriers and facilitators of workplace lactation (Rojjanasrirat, 2004; Rojjanasrirat and Sousa, 2010; Witters-Green, 2003). Co-workers who previously had successfully combined breastfeeding and work had a positive influence and served as an informational role model to new breastfeeding mothers (Suyes, Abrahams and Labbok, 2008). However, negative social pressure from unsupportive co-workers and supervisors made breastfeeding very difficult. Women in negative situations responded to the hostile social environment by tending to skip milk expression breaks at work resulting in a decreased milk supply (Rojjanasrirat, 2004; Abrahams and Labbok, 2008). Flexibility by a supportive supervisor can greatly diminish workplace stress associated with lactation. Alternatively, a non-supportive boss made breastfeeding at work difficult (Johnston and Esposito, 2007; Rojjanasrirat and Sousa, 2010). This study qualitatively focused on workplace relationships regarding breastfeeding. The

mesosystem is subcategorized and labeled as informal company support. Informal work place support includes manager support, co-worker support, and an organization's ability to communicate respect for an employee (Hojnacki, Bolton, Flumer, and Olson, 2012). An employee's perception of a company's informal support makes a difference to a lactating employee's ability to successfully continue breastfeeding (Hojnacki et al., 2012).

Exosystems: Breastfeeding Literature Regarding Workplace / Employer

Exosystems do not involve the mother or breastfed child as an active participant. Exosystems involve events that affect the mother's parenting practices to occur with her infant (Bronfenbrenner, 1979; 2005; Reifsnider, Gallagher, and Forgione, 2005). Examples include companies, schools, faith communities, and within them accompanying policies, expectations, rules, policies, and expected etiquette (Bronfenbrenner, 1979). Examples of an exosystem for an employed mother include the maternal employer, an employer's lactation policies, physical facilities available at work, job schedule flexibility, time for milk expression breaks, and the demand of job performance (Johnston-Balkam, Cadwell, and Fein, 2010; Fein, Mandel, and Roe, 2008; Ortiz, McGilligan, and Kelly, 2004; Ogbuanu, Glover, Probst, Hussey, and Liu, 2011). For this study the exosystem environment was described as work place support. The workplace exosystem was divided into subcategories of structural and formal support. Structural support is the physical space available and used for lactation. Formal means of company support for breastfeeding work-family balance are categorized as written policy, schedule flexibility, job demand, and time (Hojnacki, Bolton, Fulmer, and Olson 2012). The literature review of exosystems discovered what structural and formal workplace environments were important to lactating employees.

It has been identified that human lactation is a complex phenomenon and the duration of breastfeeding is influenced by many support systems (Thulier and Mercer, 2009). The breastfeeding mother, with unique characteristics and behaviors, is at the center of the workplace ecosystem. Several literature studies concentrated on breastfeeding attitude and duration. The results indicated that women tend to wean breastfeeding prior to a return to work (Kombro, 2006; Fein, Mandal, and Toe, 2008; Ogbuanu, Glover, Probst, Hussey, and Liu, 2011). The majority of women were found to pump to express breast milk during the work day. The most successful lengths of working and breastfeeding either directly fed the baby at work or pumped breast milk at work and directly fed the baby during off hours (Fein, Mandal, and Toe, 2008). Women in service occupations, professional occupations and stay at home mom's breastfed longer than women in administrative and manual occupations (Kombro, 2006; Ogbuanu, Glover, Probst, Hussey, and Liu, 2011). There was a significant correlation between hours worked and length of breastfeeding. Full time employees were 10% less likely to initiate breastfeeding. Among full time employees who initiated breastfeeding there was a 19% lower likelihood of any breastfeeding beyond six months. Stay at home moms and part time employees had similar breastfeeding durations (Ogbuanu, Glover, Probst, Hussey, and Liu, 2011; Ryan, Zhou, and Arensberg, 2006). Many of the employment and breastfeeding duration studies recommended part time employment flexibility to be a feasible option for extending the duration of breastfeeding (Kombro, 2006; Ogbuanu, Glover, Probst, Hussey, and Liu, 2011; Ryan, Zhou, and Arensberg, 2006; Fein, Mandal, and Toe, 2008).

Although part time employment is an optional breast feeding intervention, part time employment is not necessarily a viable consideration for many employers or employees. Instead of reducing the solution to part time employment, it is essential to look at effective workplace

interventions. Unfortunately, very little is known about how workplace interventions improve breastfeeding behavior or what interventions work more effectively (Ortiz, McGilligan, and Kelly, 2004).

Corporate lactation program (CLP) interventions identified as helpful for improving breastfeeding rates and lengths with full time employment included: written policy ensuring employees who decided to breastfeed would be supported, ensuring regular breaks, providing private locked rooms to pump, and providing employees with lightweight electric pumps, a battery pack, and insulated tote bag with ice packs for milk storage. Some companies paid for electric pumps and accessories. Classes and consults were offered through certified lactation consultants (Ortiz, McGilligan, and Kelly, 2004; Johnston-Balkam, Cadwell, and Fein, 2010). No study compared lactation interventions or assessed what interventions were more effective. However, the degree the employee was engaged in lactation interventions correlated with the length and degree of breastfeeding success (Johnston-Balkam, Cadwell, and Fein, 2010). It was found that with a lactation program in place a high number of full times employed mothers (84.2%) breastfed an average of 9.1 months (Ortiz, McGilligan, and Kelly, 2004). The numbers allude to the possibility that good corporate lactation programs could be an option over part time flexibility (Ortiz, McGilligan, and Kelly, 2004; Johnston-Balkam, Cadwell, and Fein, 2010).

Results from existing corporate lactation programs were promising. However, how employers viewed their role of supporting a breastfeeding employee varied greatly by company. Studies conducted on a wide range of businesses suggested the majority of workplaces do not have policies on breastfeeding and supervisors dealt with requests of lactating employees on a need by need basis (Stratton and Henry, 2011; Witter-Green, 2003). Stratton and Henry (2011) suggested public leaders should create tools for businesses to use assuring companies that

implementing lactation interventions is not a daunting task. Together, employers, public health care providers, and policy makers can work together to increase employee breastfeeding rates (Stratton and Henry, 2011; HHS, 2011). Barriers and facilitators to breastfeeding and employment have been identified throughout the preceding text and are gathered together in Table 3. Although lactation interventions were not individually studied for effectiveness, combined interventions used and assessed in the existing programs worked to improve breastfeeding rates overall (Stewart-Glenn, 2008).

Structural support provides resources for breast feeding or pumping while at work such as lactation rooms and onsite breast pumps (Hojnacki et al., 2012). The presence or absence of a convenient private place to express breast milk affects breastfeeding health behaviors. Physical space needed for breastfeeding employees is defined as "a place, other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public, which may be used by an employee to express breast milk" (Wage and Hour Division, 2010). The physical space should include a door that locks from the inside, chair, table, and outlet. The room should be near a sink and should NOT be a bathroom (Galson, 2009; HRSA, 2015). For this study physical space includes any space designated by a Midwest hospital for the purpose of expressing breast milk.

On a formal level, the health care employer relates to a lactating employee through an environment of mother friendly policies, information of what is expected, job flexibility, time, and job demand. Time supports include maternity leave and work break time needed to establish and maintain breastfeeding (Hojnacki et al., 2012). Job demand requires the ability to leave work in order to take a needed lactation break. Accommodating job demand involves good communication between employees, co-workers, and managers (HRSA, 2015). Company

lactation policy may be formally written or may be implied. Information the lactating employee understands of work policy (implied or written) guides her understanding of what is expected of her behavior after a return to work while she maintains a physical need to express breast milk (Paune and Nicholls, 2010).

Table 3. Barriers and Facilitators of Breast Feeding While Continuing Employment

Barriers to Breast Feeding	**Facilitators to Breastfeeding**	**Workplace Interventions**
Negative motivation and intent Lack of confidence in ability to breastfeed Positive value of bottle feeding Perceived or biological lack of milk supply and offering supplements Working full time / rigid schedule Unsupportive or uninvolved father Unsupportive friend family and/or child care Unsupportive co-worker or manager attitude Administrative or manual occupation	Positive motivation, intent, and confidence Adequate milk supply Not offering supplements Working part time / flexible schedule Supportive significant other Supportive friends, family and child care Company, manager, and co-worker supportive attitude Service jobs, professionals, and stay at home mom's	Direct feeding options: a. On-site child care b. keeping the infant at work c. allowing the mother to leave d. having baby brought to the mother Flexible scheduling (part time and PRN positions) Availability of lactation consultants **Physical Space Needs**: Convenient private location Electric outlet, sink. Milk storage options Time to express breast milk Maternity leave Company policy and employee education of existing policy and/or company breastfeeding options.

According to the Surgeon General's call to action to support breastfeeding, improvement in breastfeeding duration is dependent on active support from families, friends, communities, clinicians, health care leaders, employers, and policy makers. Respectful collaboration with each support system is needed to fulfill the goals set forth for the nation's breastfeeding rates to improve, one woman, one community, one workplace at a time (HHS, 2011; Gallson, 2009). In order to help advance the rates and duration of breastfeeding, the government has become involved by passing legislation and developing programs to support lactating women and their need to feed infants.

Macrosystems: Breastfeeding Literature Regarding Culture / Legislation

The macrosystem refers to contextual patterns of systems (microsystem, mesosystem, and exosystem) that exist at the level of the culture or subculture as a whole. These contextual patterns are underpinned by belief systems, ideology, and language (Bronfenbrenner, 1979). The following will illustrate what is meant by contextual patterns. Within a given society, settings (e.g., day care, hospital units, doctor's office, or school) function similarly as if they worked from the same blueprint or pattern (Bronfenbrenner 1979; 2005). Yet, when these American settings are compared with settings in a different society (e.g., Mexican settings), differences in characteristics and function were noted. These distinctions are the result of the differing blueprints that the two countries follow. Within each country, the various systems (i.e., microsystem, mesosystem, and exosystem) are constructed from the same set of blueprints or patterns. Thus, interactions between the systems in the United States differ from those in Mexico. These system blueprints also vary within a given country by diverse socioeconomic, ethnic, religious, and other subcultural groups, reflecting contrasting belief systems, language, and lifestyles. These blueprints or patterns that frame the microsystem, mesosystem, and

exosystem help perpetuate the ecological environments specific to each group in a given country (Bronfenbrenner, 1979; 2005; Reifsnider and Gallagher, 2005). In the United States, legislation and state policy is an important part of the macrosystem and contributes to the overlying culture that affects breastfeeding mothers.

In response to protect the rights a nursing mother has to express human milk in order to feed her baby, section 4207 of the 2010 federal Patient Protection and Affordable Care Act (PPACA) which amends section seven of the Fair Labor Standards Act (FLSA) states:

> An employer shall provide a reasonable break time for an employee to express breast milk for her nursing child for 1 year after the child's birth. A place, other than a bathroom, that is shielded from view and free from intrusion from co-workers and the public, which may be used by an employee to express breast milk. An employer shall not be required to compensate an employee receiving reasonable break time for any work time spent for such purpose (Wage and Hour Division, 2010).

The amendment also states that "Nothing in this subsection shall preempt a state law that provides greater protections to employees than the protections provided in this subsection."(Patient Protection and Affordable Care Act {PPACA}, 2010). Investigation done by Murtagh and Moulton (2011) found 23 states to have breast feeding or lactation provisions. The provisions are variable and somewhat inconsistent among states. North Dakota state provisions are as follows: Engrossed Senate Bill No. 2344 of the Sixty-first legislative assembly in 2009 section two added two new sections to chapter 23-12 of the North Dakota Century Code. They were created and enacted as follows:

Right to Breastfeed.

If the woman acts in a discreet and modest manner, a woman may breastfeed her child in any location, public or private, where the woman and child are otherwise authorized to be.

Workplace Breastfeeding Policies - Infant Friendly Designation.

1. An employer may use the designation "infant friendly" on its promotional materials if the employer adopts a workplace breastfeeding policy that includes the following:

a. Flexible work scheduling, including scheduling breaks and permitting work patterns that provide time for expression of breast milk;

b. A convenient, sanitary, safe, and private location, other than a restroom, allowing privacy for breastfeeding or expressing breast milk;

c. A convenient clean and safe water source with facilities for washing hands and rinsing breast-pumping equipment located in the private location specified in subdivision b; and

d. A convenient hygienic refrigerator in the workplace for the temporary storage of the mother's breast milk.

2. The state department of health shall establish guidelines for employers concerning workplace breastfeeding and infant friendly designations (ND senate bill 2344).

It is important to note that North Dakota legislation only deals with promotional materials. There are no laws enacted that encourage or enforce breast feeding friendly or “infant friendly” employers. Therefore, North Dakota businesses are bound to federal

PPACA amendments. As discussed earlier, it is good business to be able to claim "infant friendly" employment. However, North Dakota has no enforcing authority beyond that of what must be enacted in order to advertise an "infant friendly" work place.

Legislation helping the vulnerable nursing mother and her infant have been beneficial toward improving the rights and ability of a working women's need to feed her infant (Murtagh and Moulton, 2011). It is unknown if the current legislation will improve breast feeding rates. However, it is a step forward in an attempt to appropriately target an activity (employment outside the home) and reverse a known negative relationship between breast feeding duration and returning to employment. Options to maximize the benefit of the relatively new laws include informing new mothers and employers and advocating for resources needed to implement and enforce relevant legislation (Murtagh and Moulton, 2011).

CHAPTER THREE. RESEARCH DESIGN AND METHODOLOGY

Objectives

No lactation study was found specifically addressing lactation in a hospital setting. Studies have found improved lengths of breastfeeding, ease of employee lactation, and employee longevity when a lactation policy and plan were in place (Ortiz, McGilligan, and Kelly, 2004; Johnston-Balkam, Cadwell, and Fein, 2010). However, most companies more commonly deal with lactation needs on a case by case basis. Companies with no existing lactation policy or plan for the needs of a lactating employee reported employee frustration and a shortened length of breastfeeding (Kombro, 2006; Ogbuanu, Glover, Probst, Hussey, and Liu, 2011). A common theme seen as a barrier to lactation at work is time, job demand, and a lack of physical space available to an employee when needing to express breast milk (USBC, 2013).

As previously explained, a lactating employee's breastfeeding behaviors and reactions to other mother's breastfeeding in the workplace influence lactating employees in the social space they occupy, making them a part of a web of informal teaching and learning (Bronfenbrenner, 2005; Reifsnider and Gallagher, 2005). Managers and co-workers who are knowledgeable and supportive of breastfeeding can positively influence the significant health decisions made by a breastfeeding employee (Rojjanasrirat, 2004; Witters-Green, 2003; Johnston and Sposito, 2007). Assessing the physical space available to express breast milk and learning from experiences of lactating employees in a hospital setting is important to an understanding of breastfeeding behavior patterns. It is hypothesized that by gaining an understanding of breastfeeding experiences and perceptions of lactating employees, appropriate interventions can be recognized and recommended. With that understanding, the objectives of the study were to:

1. Describe the structural breastfeeding support through an assessment of the physical environment designated for breastfeeding employees at a Midwest hospital. The physical space was assessed for a lockable door, privacy, a chair, table, outlet, electric pump, location of a sink, and any additional items. The assessment also included a review of policy and any employee breastfeeding information.

2. Explore the results of a questionnaire on perceptions of breastfeeding experiences questionnaire to identify barriers and facilitators based on formal and informal organizational support for breastfeeding hospital employees.

3. Discuss findings with hospital management and hospital employees to recommend interventions that encourage positive change.

Research Questions

1. Do employees working in a health care setting perceive sufficient support to continue breastfeeding an infant to the American Academy of Pediatrics standard of six months followed by continued breast feeding as complementary foods are introduced for one year or as long as mutually desired by the mother and infant?"

2. What interventions will advance the perception of support for lactating hospital employees?

Study Design

The descriptive, correlational study plan had two components. The first was to assess the physical environment of each lactation room designated at two hospital campuses in a Midwest community. The physical environment of the designated breastfeeding room was assessed for: location, privacy, chair, table, electrical outlet, electric pump availability and location of the

nearest sink. Any additional objects were observed and recorded. See Appendix A for the systematic tool used to assess each designated physical space.

The second component of the study was implemented as an online survey. The survey began with consent to participate, see Appendix B. A literature search for tools designed to measure breastfeeding support in United States companies was conducted. For a variety of reasons, the tools found were deemed not to be the best tools for this study. Alternately, a survey tool was developed by the author to address facilitators and barriers of breastfeeding as discussed in the literature review. The phenomena were categorized in sections congruent with Bronfenbrenner's (1979; 2005) social ecological model. The tool categories include the following areas: microsystems, mesosystems, exosystems, and macrosystems which were previously explained in chapter two. Questions were developed based on influences identified in the literature review as important to breastfeeding employees. Microsystem questions addressed employee perceptions of information regarding company expected lactation behaviors (Green, and Olson, 2008). Mesosystem questions asked about social relationships found to influence breastfeeding decisions (Reifsnider, Gallagher, and Forgione, 2005). Exosystem questions studied the current culture specific to the hospital employee breastfeeding environment and was an important category to the study. Because the exosystem questions were a significant focus of the study, the questions were further separated into more specific categories of structural, formal, and informal work culture influencing women in their decision to breastfeed (Green, Wolf, and Olson, 2008). Structural support evaluated the availability and use of existing physical space (Galson, 2009). Formal support surveyed formally written or implied policy, information regarding the employees understanding of what was expected of them, time expectations for milk expression breaks, demand of job performance, job schedule flexibility, and any existing

company expected lactation etiquette (Hojnacki,et al., 2012). Informal support explored manager, co-worker, and the organizations general ability to communicate respect for employee lactation needs (Hojnacki et al., 2012). Macrosystem questions studied the broad community and geographical social influence on lactation (Bronfenbrenner, 1979). The study questions concluded with demographic information (age, income, shift work, length of service, length of breastfeeding), and an informal qualitative question to assess further information about breastfeeding employees and their jobs.

The tool was titled: The Perceptions of Workplace Breastfeeding Experiences – Questionnaire (PWBE-Q). Refer to appendix C. Interestingly, subscales of the tool are congruent with a literature review conducted by Johnston and Esposito (2007) regarding barriers and facilitators for breastfeeding among working women in the United States. Johnston and Esposito (2007) categorized literature information from 20 studies that fit the inclusion criteria into Bronfenbrenner's social ecological framework. The study results subcategorized facilitators and barriers of breastfeeding as: workplace environment (social support from the organization, manager and co-workers), time and timing (maternity leave, flexible scheduling), instrumental support (child care on site, physical design of the setting), and policies on breastfeeding (Johnson and Esposito, 2007). The congruence between instrument subscales, the literature review, and theoretical underpinnings supports the contention that the PWBE-Q survey is appropriate to use in the assessment of workplace perception of breastfeeding support in the hospital setting.

Protection of Human Subjects

An application for institutional review board (IRB) authorization was submitted and approved (Appendix D and E). The tool used to assess perceived breastfeeding support was changed after initial IRB approval. An appropriate amendment was submitted to the IRB

(Appendix F). Verbal support was obtained from the Chief Executive Nursing officer of the organization indicating agreement and approval for nurse leaders and employees to participate in the study. The PWBE-Q tool was approved by the medical facility and data was collected. There were no identified conflicts of interest by the student researcher.

Population Sample and Setting

The population assessed was female employees from two campuses of a Midwest hospital who had a baby and breastfed within the last five years. Any employee who had delivered an infant and needed to express breast milk at work within five years was eligible to participate. Exclusion criteria included: clinic staff, employees less than 18 years of age, employees who breastfed an infant prior to transferring to the hospital, non-English speaking breastfeeding employees, employees who had a baby and breastfed more than five years ago. The actual number of qualified employees was unknown. Therefore, the actual percent of eligible employees participating was unknown.

Data Collection

Response rates are often an issue with surveys (Hojnacki et al., 2012). In order to encourage higher response rates, a script was prepared to invite employees to participate. The script was delivered at a nursing senate meeting and nurses were encouraged to elicit participation of qualifying colleagues. The same script was delivered to a hospital leadership meeting in order to explain the study and generate participation and approval. Signs encouraging and inviting employees to participate through an online survey were posted on each unit in the break rooms and in the designated lactation rooms. With assistance from the department of nursing practice, an e-mail link was sent to all hospital managers explaining the study and asking each manager to forward the e-mail with a link to the workplace breastfeeding survey to each

employee who reported to them. The e-mail forwarded to each employee included an explanation of the purpose of the study. Participants were informed of the confidentiality and voluntary nature of participation in the study. The survey was only available online. The Survey link was managed through the University Group Decision Center using a Qualtrics survey program for research. The survey was available June 2 through June 16, 2014.

General Terms

A mother's ability to physically breast feed her baby or pump expressed breast milk are both considered breastfeeding. Both require work breaks and accommodations from an employer. The term breastfeeding is used throughout the paper as a blanket term to include both physical breastfeeding and expressed breast milk through pumping (Balkam, Cadwell, and Fein, 2010).

Length of feeding establishes a connection between a measurable dependent variable, length of feeding, and perception, something difficult to measure. As previously discussed, many literature studies focus on the length of feeding as a measure of perceived support (Kombro, 2006; Ogbuanu, Glover, Probst, Hussey, and Liu, 2011; Ryan, Zhou, and Arensberg, 2006; Fein, Mandal, and Toe, 2008). This study differs as it explores employee perceptions of formal, informal, and structural support that included length of feeding as an important dependent variable.

Theoretical and Operational Definitions

The variables in the study were assessed using the Perceptions of Workplace Breastfeeding Experiences Questionnaire (PWBE-Q) developed for this study along with a tool designed to systematically assess structural space. The Perception of Workplace Breastfeeding Experience Questionnaire (PWBE-Q) developed for the study was designed using the

environmental systems described by Bronfenbrenner's theory of human ecology. The questionnaire used examined themes based on Bronfenbrenner's four social ecological layers of influence including microsystems, mesosystems, exosystems, and macrosystems. The study further divided ecological variables into categories of structural support, formal support, informal support, perceived "successful" breastfeeding and demographics. The following conceptual and operational definitions provide an understanding of variables used as well as how the variables were measured in the study:

- Microsystem was conceptually defined as "a pattern of activities, roles, and interpersonal relations experienced by the developing person in a given setting with particular physical and material characteristics" (Bronfenbrenner, 1979 p.22). An analysis of the microsystem must take into account the full interpersonal system operating in any given setting. The mind of the person, her personal way of knowing and being is central to this level of ecology. The system will typically include all the participants present and involve reciprocal relations between them. (Bronfenbrenner, 1979). Microsystem was operationally defined as responses to questions 3, 4, 5, 19, 20, and 21 of the PWBE-Q. Refer to Appendix C. The questions were measured using a Likert scale with scores ranging from 1-5. Higher scores (5) represented strong agreement to the defined question and low scores (2) represented strong disagreement. A score of 1 represented an unknown or unsure response.
- Mesosystems were conceptually defined as "the interrelations among two or more settings in which the developing person actively participates (child and her mother, relations with significant other, school, family, work, social life" (Bronfenbrenner, 1979 p.25). Mesosystems are a system of microsystems, comprised of institutional or

organizational factors within the environment where individual or interpersonal relationships exist (Reifsnider, Gallagher, and Forgione, 2005). This study included a subcategory of informal support that identified relationships among co-workers, managers, and organizational respect for an employee as part of an employed breastfeeding mother's mesosystem. For this study mesosystems were operationally defined as responses to questions 8, 9, 10, and 11 of the PWBE-Q. Refer to Appendix C. The questions were measured using a Likert scale with scores ranging from 1-5. Higher scores (5) represented strong agreement to the defined question and low scores (2) represented strong disagreement. A score of 1 represented an unknown or unsure response.

- The conceptual definition for Exosystem was "one or more settings that do not involve the developing person as an active participant, but in which events occur that affect, or are affected by, what happens in the setting containing the developing person" (Bronfenbrenner, 1979 p.25). Within the exosystem a mother establishes an identity. For example, if she worked for NDSU she could consider herself a "proud bison" and function under the policy rules (formally written or implied) of breastfeeding at NDSU. In the context of hospital employee, the lactating female and her baby are affected by the identity of hospital employee and are subject to the culture of that institution's breastfeeding environment. This includes the hospitals accompanying structural space design, policies (formally written or implied), demand of job performance, schedule flexibility, time expectations for milk expression breaks, rules, and expected breastfeeding etiquette (Bronfenbrenner, 1979). Exosystems were operationally defined as responses to questions 12 through 18 of the PWBE-Q. Refer to Appendix C. The

questions were measured using a Likert scale with scores ranging from 1-5. Higher scores (5) represented strong agreement to the defined question and low scores (2) represented strong disagreement. A score of 1 represented an unknown or unsure response.

- Macrosystems consist of various cultural contexts. These environmental contexts are inter- culturally, emotionally, philosophically and ideologically centered along with geographically based. The conceptual definition for a Macrosystem referred to "consistencies, in the form and content of lower-order systems (micr-meso-exo) that exist, or could exist, at the level of the subculture or the culture as a whole along with any belief systems or ideology underlying such consistencies" (Bronfenbrenner, 1979 p. 26). Macrosystems were operationally defined as responses to questions 1, 2, 6, and 7 of the PWBE-Q. The questions were measured using a Likert scale with scores ranging from 1-5. Higher scores (5) represented strong agreement to the defined question and low scores (2) represented strong disagreement. A score of 1 represented an unknown or unsure responses.

From Bronfenbrenner's ecological systems, workplace environment categories were then divided into structural, formal, and informal support groups (Greene, Wolfe, and Olson, 2008). Questions used for operational definitions were from the PWBE-Q found in Appendix C and used the same Likert scale previously described.

- Structural Support is a subgroup of the exosystem category of Bronfenbrenner's environment. Structural support needed for breastfeeding employees was conceptually defined as "physical space other than a bathroom, that is shielded from view and free from intrusion from coworkers and the public, which may be used by an employee to

express breast milk" (Wage and Hour Division, 2010). This includes a convenient private place to express breast milk that contains a lockable door, chair, table, electrical outlet, and a near- by sink. Additional structural support included an electric pump, decorations, sanitation supplies, any other existing items, and the number of designated rooms in the building (Galson, 2009; Hojnacki et al., 2012; USBC, 2015). Structural support was operationally defined using the following methods: 1) description of results to a systematic tool designed for assessing the physical breastfeeding space of designated lactation rooms found in Appendix C; 2) responses to question 16. "The designated space for breastfeeding is available when I need it"; 3) responses to question 17. "The designated space for breastfeeding is comfortable"; 4) responses to question 18. "I am able to find space to store expressed breast milk properly." Questions 16, 17, and18 were from the PWBE-Q and used the same Likert scale previously described. Additionally, results to an open ended question at the end of the PWBE-Q survey asking "Please provide any comment you have about your perception of workplace breastfeeding experiences" was analyzed for structural comments that described structural or physical space needs.

- Formal Lactation Support for employees were broken down into categories that included hospital written policy, employee understanding of company lactation information, break time, job demand, lactation room availability, and employee schedule flexibility (Hojnacki, Bolton, Fulmer, and Olson 2012). Formal support is a subgroup of the Exosystem category of Bronfenbrenner's (1979) environment. Formal support categories are defined separately.

- The conceptual definition of Hospital Written Policy is: any written statement of decision regarding a goal in health care and a plan for achieving that goal (Hojnacki et al., 2012). Policy may also be implied and was defined as behavior of an informed individual (Greene and Olson, 2008). Hospital policy was operationally defined through responses to question 4. "I know where to find the company policies for breastfeeding or expressing breast milk at work." The hospital policy and procedure manual was surveyed by the author for any written breastfeeding policy. Qualitative responses to the question "Please provide any comment you have about your perception of workplace breastfeeding experiences" were assessed for comments regarding implied hospital policy.
- The Employees Understanding of Company Lactation Information regarding what lactation behavior was expected of the employee was conceptually defined as: an employee's perception of events, practices, and procedures regarding lactation and the kind of behaviors that get rewarded, supported, and expected in the employment setting. The information was interpreted by the employee as acceptable lactation etiquette. This included information that helped employees balance their work and home lives (Honjacki et al., 2012). Employee information was operationally defined through responses to questions 5 and 14 of the PWBE-Q. Question 5 read "I am able to find information about what is expected of me when planning to return to work and breastfeed after having a baby." Question 14 read "I am aware of where the designated lactation rooms are located." Additionally, qualitative responses to the question "Please provide any comment you have about your perception of workplace breastfeeding experiences" were assessed for comments regarding employee knowledge of acceptable lactation etiquette.

- The conceptual definition of Job Demand was allowing the employee to temporarily leave her job duties in order to take a needed lactation break (HRSA, 2009). Job demand was operationally defined through responses to question 12 "My break times are flexible when needed in order for me to breastfeed." Additionally, qualitative responses to the question "please provide any comment you have about your perception of workplace breastfeeding experiences" were assessed for comments regarding job demand.
- Break Time was conceptually defined as the amount of time needed to take a break in order to express or feed a baby breast milk (Greene and Olson, 2008). The expression of breast milk takes a minimum of 15 minutes (USBC, 2013). The definition of break time included the number of lactation breaks needed during a work day (Greene and Olson, 2008). Break time was operationally defined through qualitative responses to the question "Please provide any comment you have about your perception of workplace breastfeeding experiences."
- Room Availability was conceptually defined as physical space that is usable upon demand for an employee to occupy in order to perform the designated tasks necessary for lactation (Hojnacki et al., 2012). Room availability was operationally defined through responses to question 15. "The designated space for breastfeeding is available when I need it." Additionally, qualitative responses to the question "Please provide any comment you have about your perception of workplace breastfeeding experiences" were assessed for comments regarding room availability.
- Scheduling Flexibility was operationally defined as the ability to choose work hours and the amount of full time equivalent (FTE) an employee is scheduled. Full time was considered 0.6, 0.8, and 1.0. Part time was considered 0.4. Employees wrote "PRN" if

they were scheduled on an as needed basis. Schedule flexibility was operationally defined through responses to questions 13 "My work schedule is flexible." Additionally, qualitative responses to the question "Please provide any comment you have about your perception of workplace breastfeeding experiences" were assessed for comments regarding schedule flexibility.

- Informal Support includes manager support, co-worker support, and an organization's ability to communicate respect for an employee (Hojnacki et al., 2012). Informal support is a subgroup of the mesosystem category of Bronfenbrenner's (1979) environment. Informal support was conceptually defined as information a mother receives from her manager, co-workers, and the general system of employment (Greene and Olson, 2008). Manager, co-worker, and institutional support were operationally defined through qualitative responses to the question "Please provide any comment you have about your perception of workplace breastfeeding experiences."
- Successful Breastfeeding was conceptually defined as breastfeeding completely (using breast milk only) or partially (offering formula at times) for the American Academy of Pediatrics (2012) recommended length of six month followed by continued breastfeeding as complementary foods are introduced for one year or as long as mutually desired by the mother and the infant. The operational definition of successful breastfeeding were responses to questions 20 and 21 of the PWBE-Q. Question 20 asked "I am confident in my ability to breastfeed." Question 21 asked "I have been successful breastfeeding an infant while continuing employment." Success of breastfeeding was also operationally defined through responses to the question "What is the longest length of time you have breastfed a child?"

Assumptions

Assumptions for the study were:

- Breastfeeding is the healthiest feeding option for babies (Bartick and Reinhold, 2010; Ip et al., 2007; American Academy of Pediatrics, 2012).
- Most mothers have the physical ability to breastfeed with success.
- Lactation is beneficial to the health of both the infant and mother.
- Lactation and employment needs are understood to be universal across occupations (Ortiz, McGilligan, and Kelly, 2004; Johnston-Balkam, Cadwell, and Fein, 2010).
- The aim of health systems and the employees who work within a health system is to support the holistic health and wellness of individuals, families, and communities based on sound science and best practice recommendations.

CHAPTER FOUR. RESULTS

Data Measurement and Analysis

The physical assessment of designated breast feeding rooms was completed using a tool designed for systematic assessment of structural space (Appendix A). The number and content of designated breastfeeding rooms in each building were compared to nurse employee survey responses concerning the structural environment section of the survey (questions 16, 17, and 18 of the PWBE-Q). The EPBS-Q Survey (Appendix C) uses a five point Likert scale. The response categories are scored as: Strongly agree = 5, Agree = 4, Disagree = 3, Strongly disagree = 2 and Unknown/uncertain = 1. In this study the Likert scale measured the degree of perceived breastfeeding support employees subjectively experienced while working in a hospital setting. The categories "strongly agree" and "agree" were collapsed and reported as "agree." The categories "strongly disagree" and "disagree" were collapsed and reported as "disagree." The variables length of breast feeding and infant age were measured in months. Length of employment was measured in years. Shift work was divided into Days (7am-3pm) Evenings (3pm-11pm) and Nights (11pm-7pm). Employees working 12 hour shifts were divided into Days (7am-7pm) and Nights (7pm-7am).

Data collection was completed June 2, 2014 through June 16, 2014. There were 95 responses to the PWBE-Q (N=95). From the 95 survey responses 42 (45%) participants offered a response to the open ended question "Please provide any comment you have about your perception of workplace breastfeeding experiences." The number of potential participants is an unknown limitation to the study. Two responses did not meet the requirements of the sample population because they responded they breastfed at another facility. Data analysis was conducted on the remaining 93 responses. Statistical analysis was conducted using SAS Institute

Inc. 2008. SAS/STAT® 9.3 software. Data analysis for the study was guided by the research questions: 1. Do employees working in a health care setting perceive sufficient support to continue breastfeeding an infant according to the American Academy of Pediatrics standard of the first six months followed by continued breast feeding as complementary foods are introduced for one year or as long as mutually desired by the mother and infant. 2. What interventions will advance the perception of support for lactating hospital employees?

Descriptive statistics and frequencies were calculated from the demographic variables and PWBE-Q results. From results of the PWBE-Q answers to organizational structural, formal and informal support questions were calculated and compared using means, linear regression model correlations, t-tests, and p values from responses. The p value level of significance was 0.05. Pearson's correlation coefficient (r) was used to measure demographic results and determine a linear relationship between questions assessing different levels of the ecosystems. Correlation is demonstrated with the possible value being -1.0 to +1.0. A positive correlation indicates all variables increase or decrease together. A value of -1.0 would indicate a perfect inverse negative relationship. A score of 0 indicates no linear relationship. A score below 0.3 is considered a weak linear relationship, 0.3-0.5 as a moderate linear relationship, and a score above 0.5 as a strong linear relationship (Burns and Grove, 2009). Written responses and comments at the end of the survey were assessed for patterns, categorized and discussed throughout the appropriate sections and in the qualitative results section of the research project.

Results for Structural Support

The hospital studied reported a total of three lactation rooms designated specifically for lactation. The main campus had two designated lactation rooms available and the secondary

campus had one designated lactation room. Figure 2, Figure 3, and Figure 4 display images of the 2015 lactation spaces assessed for this study.

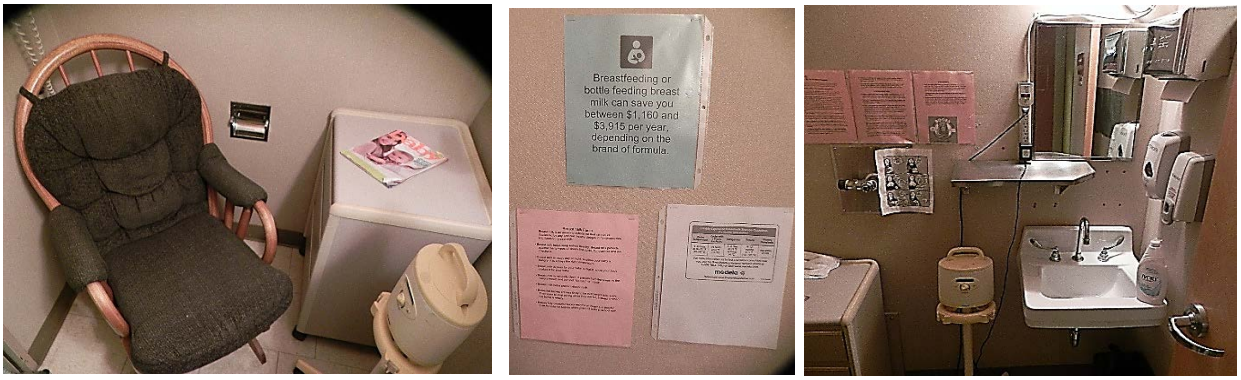

Figure 2. Room One (R1)

Figure 3. Room Two (R2)

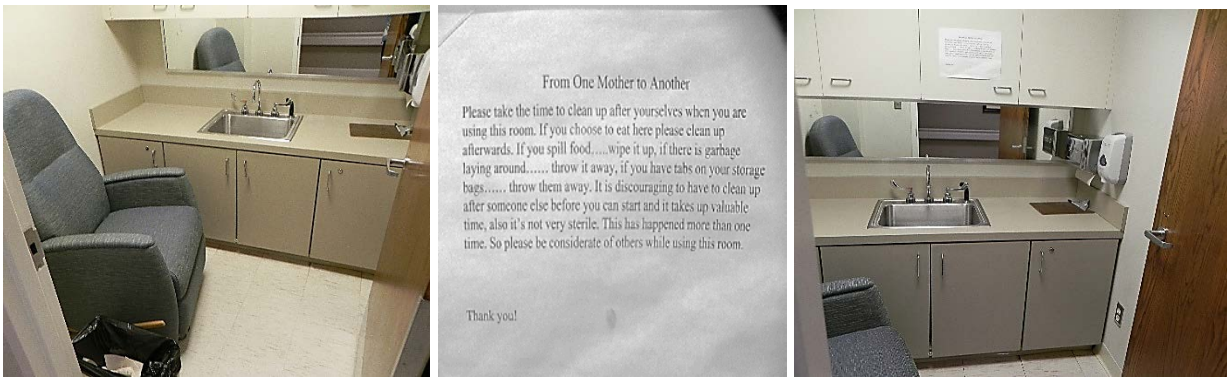

Figure 4. Room Three (R3)

Results from the assessment of the structural space available using the systematic tool for assessing breast feeding space at the two Midwest hospital campus buildings are shown in Table 4. Both campus buildings are of considerable size. It is difficult to know if the location was

convenient. Due to the size of the buildings it is not possible that the three existing rooms were considered convenient by all employees. All three rooms were private, provided lockable doors, and included a rocking chair. Two rooms had tables (Figure 2 and Figure 3) and one room had a counter on which supplies could be set (Figure 4). All three rooms had at least one outlet. One out of the three rooms (Figure 2) had an electric pump. Results assessed from the qualitative entries suggest the room with the pump was the most popular of the three rooms. If access to the pump was the reason for the room's popularity is unknown. Two of the three rooms included a sink (Figure 2 and Figure 4). The location with no sink in the room (Figure 3) had a sink available around the corner in a room with a beverage machine or across to the opposite end of the cafeteria. One of the three rooms included ivory dish soap for cleaning lactation supplies (Figure 2). All three rooms provided hand sanitization. Additional items discovered in the rooms included signage designating each of the rooms as mothers' rooms with a sliding sign designating the room as open or occupied. Two rooms had telephones (Figure 2 and Figure 3). During the time of assessment a manager pointed out the telephone was important. Employees responsible for patient care sometimes need to be available even when on break to answer questions or return to patient care. One room had motherhood magazines, signs and cartoons encouraging breastfeeding (Figure 2). All three rooms had adequate light. Each room was small. The more popular designated room on the primary campus appeared to be a converted bathroom. None of the rooms displayed any art work. None of the rooms included a refrigerator or addressed any milk storage needs.

Table 4. Results of Structural Space Assessment

Question	Room # 1 (R1)	Room # 2 (R2)	Room # 3 (R3)
Where is the room located?	North Campus. Third floor (south) next to manager's offices.	North Campus. Main Floor. Employee break room between the clinic and hospital	South Campus. 4th floor. Off of the 'B' elevators.
Is the room private with a lockable door?	Yes	Yes	Yes
Does the room have a chair?	Yes Padded rocking chair	Yes Padded Rocking chair	Yes Padded rocking chair
Does the room have a table?	Yes – night stand	Yes - night stand	No – counter
Is there an outlet?	Yes	Yes	yes
Does the room include a breast pump?	Yes	No	No
Where is the location of the nearest sink?	In the room	(1)Across the room in a Kitchenette and (2) Around the corner	In the room
Are there any other items in the room?	Telephone, Hand Sanitizer, Mother Magazine, Cartoons and signs encouraging breastfeeding. Ivory dish soap.	Telephone, Hand sanitizer, Extra chairs.	Hand soap Sanitary Bleach wipes Signs encouraging clean up after use of the room.
Describe additional items in the room	Cartoons are on faded, crumpled paper. Signs are faded and out dated. Lack of art. Small space. Converted bathroom. Appropriate Signage	Small very awkward shaped room. White bare walls. Appropriate Signage No additional items.	Sign encouraging clean up in good condition, small stain. Appropriate Signage
Number of designated rooms per building?	1 of 2	2 of 2	1 of 1

Questions 16 and 17 of the PWBE-Q assessed perception of the space used. Question 16 asked "The designated place for breastfeeding is in a convenient location." Using frequency

distribution tables from the 93 responses, 42% agreed with the statement, 50% disagreed, and 8% were neutral. Question 17 asked "The designated space for breastfeeding is comfortable." Results were that 33% agreed, 53% disagreed, and 14% answered neutral, suggesting the space is not perceived as comfortable. Calculations completed to assess the time it took to use the designated rooms compared with the number of rooms per building were not significant. However, this was very difficult to assess considering 63% of participants responded they were unaware of designated space or stated in the open ended question that they used alternative space for lactation. It also made it difficult to assess if the existing designated rooms were perceived to be in a convenient location. Of the 42 participants who responded to the open ended question at the end of the survey, five stated they used a manager's office, six used a patient's empty room, and four used a storage closet on the unit. Survey responses suggest the available rooms were considered moderately comfortable and convenient. Overall, the hospital designated structural lactation spaces were perceived to be private, functional places to express breast milk.

Structural space allowed for milk storage was addressed in question 18 of the PWBE-Q asking: "I am able to find space to store expressed breast milk properly." The responses were that 17% agreed while 82% disagreed and 1% were neutral. Responses from the open ended question regarding milk storage space were few and varied. One response said "I was able to store my milk properly." Two written responses stated they had no problems storing breast milk in the break room fridge. One written response stated "I do not know where to store my milk." One stated "Some are uncomfortable with storing breast milk in a fridge which holds other workers lunch meals."

Several other responses regarding structural space emerged from qualitative themes. Three people commented the space was not comfortable, "We do not have adequate and

comfortable space for pumping." Four commented on the lack of sanitization stating "the storage room I use when the designated space is busy has no way for me to clean up after myself or my supplies." Four commented on lack of privacy from using a non- designated room and three commented on small room size. By far the strongest results from the qualitative data was a request for more rooms convenient to the employee. Eighteen employees responded they would like more frequent places to express breast milk. All 18 requested a room close to them on their unit or floor of the hospital. One example was: "Wishing we had a nice lactation room HERE on the unit to use."

Sample Demographics

The variable length of feeding was used as the dependent variable for most of the analysis. The average length of breastfeeding was 11.2 months. The answers to survey question 21: "I have been successful breastfeeding an infant while continuing employment" revealed 61% of employees considered themselves successful at breastfeeding and were able to feed an infant six months or more. According to the American Academy of Pediatrics (2012) recommended definition of breastfeeding success used for this study, employees were significantly successful at breastfeeding.

Using a regression model with length of feeding as the response, variables age, education, income, length of employment and shift work were explored for variability. Results of the regression values are available in Table 5. Outcomes revealed age was significant in predicting the length of breastfeeding with a p value of 0.003. A Pearson correlation assessment among these variables revealed a moderate positive correlation between age and length of breastfeeding, indicating older women tended to breastfeed longer. No statistical significance was found among income, education, and length of breast feeding. Income and education were homogenous

groups considering 64% of respondents reported income over $70,000 a year and 68% had a bachelor's degree of education or higher. Length of service was significant in predicting length of breastfeeding (p value of 0.0018). In this study, employees who reported longer durations of breastfeeding also had worked for the organization a longer period of time. Factors affecting this finding will be further evaluated in the discussion. Additional information assessed was the difference in shift work. No significant variance was found in length of breast feeding among day, evening, or night shift working employees. Race was not considered as a variable because racial groups other than white (N=2) included too few employees for meaningful analysis. Full time equivalents (FTE) were assessed and later not considered as a relevant variable because too few respondents (N=3) worked less than full time.

Table 5. Regression Results for Demographics Age, Income, Education, Length of Service, and Shift Work

Response variable: Length of feeding	Age	Income	Education	Length of Service	Shift work
P-value : Significance Level P <0.5	0.0003	0.1094	0.3896	0.0018	0.5436
Pearson Correlation (r)	0.36777	0.16897	0.09075	0.32291	0.057161

Survey categories of mesosystem, microsystem, macro system, and ecosystem questions were separated into frequency distribution tables then compared using a linear correlation procedure and Pearson's co-efficient with a p value significance at the level of 0.05 to assess if any one level of the environment had a more significant effect on a mother's length of breastfeeding. Results were generally not significant (See Table 6). The exception was a significant p-value with a weak negative correlation found in the category of macrosystems. The numerical outcome suggested there was a weak correlation suggesting the longer a female breastfeeds, the less likely she is to be influenced by the overriding general breastfeeding culture.

Table 6. Environmental Layers of Influence

Dependent Variable Length of Breastfeeding Significance level P<0.05	Microsystem	Mesosystem	Exosystem	Macrosystem
P-Value	0.5650	0.9275	0.6627	0.0377
Pearson Correlation (r)	0.0611	0.00967	0.04635	-0.21708

Formal Support

Formal support identified within the theoretical construct of the study included hospital policy, information of what is expected of the employee, job demand, break time, room availability, and schedule flexibility. No written employee breastfeeding policy was discovered at the medical center facility studied. No breastfeeding information regarding what to expect upon return to work was included in the maternity leave packet given to expecting mothers. With no formal policy to define acceptable breastfeeding procedures, qualitative responses to the open ended question "Please provide any comment you have about your perception of workplace breastfeeding experiences" was assessed for comments that reflected behavior regarding perceived acceptable breastfeeding etiquette. What perceived acceptable breastfeeding etiquette entailed was difficult to assess from the results. Female employees had differing ideas regarding what was expected of them. However, employees were able to achieve successful lengths of breast feeding. The mean length of breastfeeding was 11.2 months, suggesting lactating females perceived they could breastfeed at work. Question 4 of the PWBE-Q asked "I know where to find the company policies for breastfeeding or expressing breast milk at work." From participants who responded (N=93) 42% agreed, 42% disagreed and 16% were neutral. Comments from qualitative responses suggested support from managers, co-worker, and the general organization empowered employees who requested to breastfeed and employees were

then creative in finding the time and space needed to express and store breast milk. Lactation needs in general were not handled by policy, but were managed on a case by case basis.

Information of what was expected of the employee was assessed through responses to questions 5 and 14 of the PWBE-Q. Question 5 asked "I am able to find information about what is expected of me when planning to return to work and breastfeed after having a baby." Responses were 40% agree, 48% disagree, and 10 % neutral. Qualitative results did not reflect information regarding what was expected of an employee who required breastfeeding breaks. Information was assessed to be offered and acted upon through implied policy and managed on a case by case basis. Question 14 of the PWBE-Q asked "I am aware of where the designated lactation rooms are located." Most participants, 63% disagreed while 31% agreed and 6% answered unknown/unsure. Information regarding the location of designated lactation space was a strong theme in the qualitative responses. Eleven people made comments such as "I have no idea where the actual lactation room is" or "I did not know there was a designated place to pump." Seven participants responded they knew the location of the lactation room. However, each of those responses were followed by a comment about the lack of availability of the room or the time it took to get there.

The employee's ability to temporarily leave her job duties in order to take a needed lactation break was assessed in question 12 of the PWBE-Q which asked "My break times are flexible when needed in order for me to breastfeed." Responses were 42% agree, 56% disagree, and 2% unsure. Many qualitative responses reflected the ability to take required milk expression breaks and the difficulty to sometimes make a break happen. The theme evolved and was given the title job demand/work load in the qualitative analysis. Fourteen negative comments were made regarding the difficulty managing job demand with lactation. One example stated:

> "It was difficult to get in my breaks. Morning pumping session was always easier to get in than after noon. It was soooo busy. The charge RN was very accommodating to get us our pump breaks. My supply decreased immensely after about 5 months because I found it harder and harder to get time to pump. All in all, I expected the experience of pumping at work to be worse. I'd rate it about a 7/10."

Six positive comments were made regarding job demand. Three comments were from nurses who identified themselves as working in the NICU. For example, "As a NICU nurse I had full support and had no problems breastfeeding and pumping." Three comments were from employees who had their own office. One responded, "I was lucky to have an office space where I could pump."

Qualitative themes emerged as women discussed the time it took to pump, the number of pump breaks needed, the job demand that made it a challenge to take the necessary breaks, and the positive balance they were able to achieve in order to make breastfeeding at work successful. Break time needed for expressing breast milk was 15 minutes. Concern was expressed when it took time to travel to a room as it took extra time away from the needed task of expressing breast milk. Hospital policy allowed for one 15 minute break and one 30 minute break on an eight hour shift and two 15 minute breaks and one half-hour break on a twelve hour shift. However, taking each break was expressed by employees to be a challenge. For example: "Most of the time the designated room is occupied when I am free to pump and I have to stay longer than my break is allowed or pump on my lunch break and end up not eating by the time I am done waiting for the room to become available." Another response was: "I often pump in the conference room. The actual pump room is so far away it takes a good 5 minutes out of my 15 minute break to get

there." The number of breaks needed in a shift varied by age of the infant. Comments regarding getting the appropriate number of breaks in a shift evolved into a theme of milk supply in the qualitative analysis. Women voiced concern over not getting frequent enough breaks that resulted in a decreased milk supply. Six comments were made regarding a drop in milk supply after returning to work. One employee wrote "I was lucky to get one break to breastfeed. By the end of my week end I was ill, and often got mastitis. I had to stop breastfeeding due to that and lack of milk production. I was heartbroken to stop nursing my daughter." Another participant responded "Truly a nursing mother should pump every 3-4 hours a shift to keep supply up but that never happens. More like every 6-8 hours, which causes a big supply drop." Despite the challenges recognized in the qualitative results, data responses from question 20 "I am confident in my ability to breastfeed" and 21 "I have been successful breastfeeding an infant while continuing employment" suggested female employees were able to be successful with the skills required to express breast milk at work.

To assess for room availability question 15 of the PWBE-Q asked "The designated space for breastfeeding is available when I need it". A significant number of respondents (52%) agreed, 40% disagreed, and 8% answered unsure. The question was difficult to interpret considering results previously discussed indicated many employees were unaware of designated space. The definition of "designated space" by the employer may be different than the definition of "designated space" by the employee. A number of qualitative responses (N=15) voiced concern over the lack of available spaces. A few examples were: "Sometimes a mom cannot leave the department and a designated room should be put in place." "ALL departments should have a designated room to store expressed milk and pump in private." Another example was:

"Wishing we had a nice lactation room designated HERE in the unit to use. Would be a bit more convenient."

Flexible work schedule was the last category of formal work support assessed. Questions 13 of the PWBE-Q asked "My work schedule is flexible." Of the 93 participants, 40% responded agree, 59% responded disagree and 1% responded unsure. None of the qualitative results addressed schedule flexibility. The majority of respondents (N = 90) worked full time.

Qualitative Data Analysis

In order to gain a more intimate understanding for the needs of lactating hospital employees, an open ended qualitative question asking: "Please provide any comment you have about your perception of workplace breastfeeding experiences" was placed at the end of the survey. There were 42 (45%) participants who responded. Ten common themes emerged from the results. Common themes can be viewed in Figure 5. These themes were disclosed in the previous results and are investigated further in the discussion.

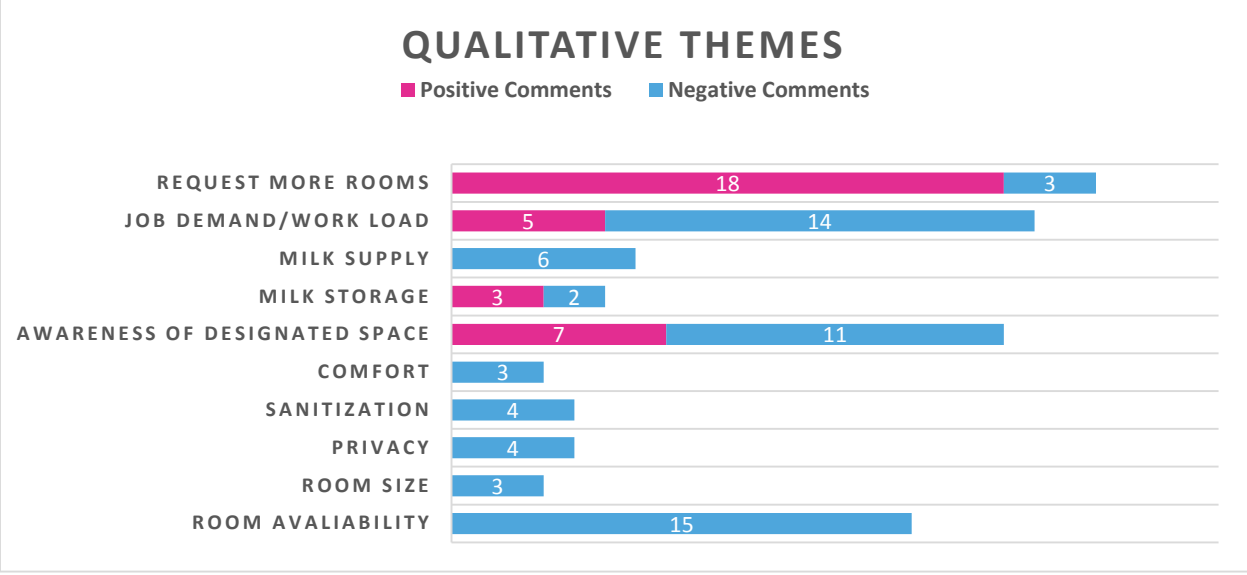

Figure 5. Qualitative Results

Informal Support

Results from the question "please provide any comment you have about your perception of workplace breastfeeding experiences" were assessed for positive and negative comments made by participants about co-worker, manager, and general organizational support. Figure 6 displays the number of positive and negative comments made toward co-worker, manager, and general organizational support.

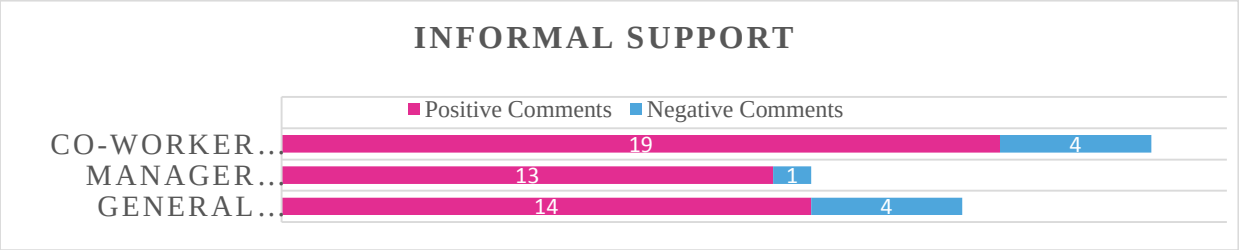

Figure 6. Informal Support for Breastfeeding

Overall, the results from the qualitative themes suggested that the hospital supports breastfeeding in general. Many more positive comments were made regarding how positive support was received from each manager and co-worker. Co-workers at large were willing to cover for breaks and encourage breastfeeding colleagues. Managers were willing to give up his/her office to allow an employee to pump breast milk. Examples of comments included: "I feel the workplace is supportive of breastfeeding." Another comment stated "The managers are VERY supportive with employees who are breastfeeding" and another stated "I do have support from my co-workers to pump during my shifts." Themes generated from the qualitative results indicated positive informal breastfeeding support from the hospital system, managers, and co-workers to the lactating employees. A few non supportive comments were made. One example stated:

"There is no designated area for breastfeeding…During busy days this gets complicated when there is not time to take a break or no open room to pump in. Would be amazing if our facility would acknowledge this problem and encourage breastfeeding. The hospital as a whole advocate's breastfeeding but does nothing to facilitate its own employees in the process."

CHAPTER FIVE. DISCUSSION

Interpretation of Results

While considering the discussion of the results of the study, it is important to keep in mind the homogeneity of the group. The population studied falls into a demographic that other research has consistently shown has a longer duration of breastfeeding including income greater than $70,000 a year, college education or higher, and age 26-35 (Balkam, Cadwell, and Fein, 2010).

The length of breastfeeding results indicating a moderate positive outcome from a regression analysis using the demographic length of employment as the predictor variable were interesting. It could be the longer an employee stays with a company, the more secure she feels about breastfeeding at work. The number of children the employee had at the time was not taken into consideration. If a mother felt empowered by successfully breastfeeding one child, she may have felt like she could do it again. The more children she had the longer she could have been employed with the organization. At any rate, the positive results seem to agree with literature that suggested a positive link between breastfeeding and longevity of employment (Brown, Poag, and Kasprzycki, 2001; HRSA, 2013).

Environmental ecosystem results were found to be generally not significant. This is encouraging for two reasons. It alludes to the possibility that the tool was able to measure each of the environmental factors important to a breastfeeding mother. It also indicates that individuals are influenced by each ecosystem in different ways. Alluding to the possibility that, central to Bronfenbrenner's theory, individuals are inseparable from each layer of their environment. The positive finding in the macrosystem layer of influence is interesting. It is difficult to give the results substantial weight. The tool only asked four question regarding

culture and 93 people answered these four questions pertaining to a general cultural and legislative support for breastfeeding. However, it does make sense that the longer a female breastfeeds the less influenced she is by how the culture at large views breastfeeding. It is difficult to consider the results beyond the boundaries of this study with this organization. The tool used was a new tool and Cronbach alpha reliability coefficient values were not calculated. Without knowledge of the reliability or validity of the tool the results are subject to an unknown level of value.

Lactating employees in a hospital setting results were neutral when asked about job flexibility, suggesting that work schedules encountered vary considerably across disciplines. Job flexibility was not specifically defined and could have been interpreted differently by each participant. The majority of respondents worked full time. Johnson, Cadwell, and Fein (2010) found job flexibility was an important part of employee lactation programs. Despite neutral responses, job flexibility is assessed as important to lactating employees.

It was difficult to assess from this study if the results reflect the use of hospital designated rooms. Many responses indicated employees found their own space deemed acceptable by unit colleagues and managers. Each lactation situation was managed on a case by case basis with managers. Most information employees gained was through implied policy. Any space accepted by the unit climate could be interpreted by an employee as "designated." The hospital studied labeled three designated rooms specifically for lactation use. However, it was discovered that manager offices, storage closets, and empty patient rooms were also used for lactation. The alternative spaces used varied in availability of sanitization, privacy, and comfort.

The strongest message sent from the results was a need for an increased number of strategically located lactation rooms. The majority of respondents were very clear with their

request for a room available to them. The law reads any employer with over 50 employees must be able to accommodate a female employee's lactation needs (Wage and Hour Division, 2010). Laws do not dictate the proximity of space from each work area or how many rooms are expected per large facility (HRSA, 2015). The frustrations from lack of available space coupled with a fear of wasted time resounded through many comments such as: "I can use the very small pump room, but if it is in use already I feel like I have wasted a lot of my break walking around."

An employee in need of a lactation break is focused on the task of expressing breast milk. Job demand within the current health care work load coupled with the uncertain knowledge of lactation room availability generated an uncertain climate to lactation support. The apprehension a lactating employee consistently expressed was the knowledge that they need 15 minutes to express breast milk. If it takes extra time to travel to a room, precious and limited time is perceived as wasted. If the room is occupied, even more time is lost. One respondent commented "Many times I get to the designated room and it is already in use. I do not have time on my shift to wait for someone else to finish. Also, running around to check and see if the designated rooms are available takes time away from my work on top of the time I need to pump." In order to meet the lactation needs of employees, it is recommended the organization consider planning for increasing the number of lactation spaces in frequent and accessible locations.

The employees who were the most supported and had the best breastfeeding experiences were those who had an office of their own in which to pump in or who worked in the Neonatal Intensive Care Unit (NICU). A personal conversation led to a guided tour of the NICU from the director of the Midwest hospital's Children's unit. The NICU has a room specific for parents that is also acceptable for employees to occupy when not in use. If a parent is using the room,

there are other spaces located within the unit that are found acceptable for lactation use. A pump was available in the parent room and in a physician sleep room. A sink was available in two locations, labels were easily available, and milk storage was not an issue. Soap, gloves and sanitary wipes were available for cleanup. Each space had a chair, a table, and outlets. The parent room had a T.V. The NICU space was not space designated by the Midwest hospital for employee lactation use.

Another strong message gained from the results revealed a general lack of institutional lactation information. Several respondents admitted "I have no idea where the actual lactation rooms are." A few others reported "I do not know where to store my milk." Lactation information in each area is assumed, passed on, and supported through individual disciplines and units on a case by case basis. The lack of cohesiveness in information support stemmed from a lack of written policy combined with a lack consistent information given to lactating employees. Considering the high volume of female employees of child bearing age working at the hospital, a policy should be developed or at the very least an information fact sheet included in the Family Medical Leave Act (FMLA) packets for expecting mothers. It is very helpful for employees to know what is expected of them when they return from maternity leave. Improving informational support is in the best interest of the employees and the hospital.

Milk storage was a concern brought up by a few respondents. Most replied they had no difficulty storing their milk. "Milk can be stored in our break room fridge." The milk is contained in bottles inside a black insulated freezer bag and often tucked into a second personal lunch bag. When left in a black insulated bag, the milk is contained and there is little to no chance of contaminating the item sitting next to it (USBC, 2015). One respondent claimed being bothered by the knowledge that breast milk was located in the same refrigerator as personal

employee food. There is no foundation to this claim. However, it brings forward to need to provide information to employees who plan to breastfeed after returning to work. Employees need to know that it is acceptable to store breast milk contained in an insulated bag in the refrigerator.

Labeling of the stored breast milk was found to be inconsistent. This may have potential implications. Milk should be labeled with the time and date expressed along with the name of the mother to whom the milk belongs. This eliminates the potential for any mix up and or use of expired breast milk.

Job demand and the work load associated with patient care was cited as challenging for making break times available. However, the employees voiced they were able to express milk once or twice on a shift. The greatest frustration was making the time and not having the space to privately express breast milk. The ability to maintain a milk supply depends on the frequency of milk expression. Many women who return to work easily sustain their milk supply and avoid the pressure and discomfort of becoming overly full by simply expressing their milk every two or three hours for around 15 minutes per session. After the baby is six months old and begins eating solid foods, the number of needed milk expression breaks diminishes (HRSA, 2015). A few employees recognized a decrease in milk supply and voiced their frustrations. "I felt like my milk supply went down because of the stress and inability to always pump when I wanted. I was definitely able to, but not as frequently as I desired (every 3-4 hours)." A few respondents admitted they felt good about being able to pump once or twice on a 12 hour shift. Others were upset over the decreased milk supply less frequent pumping caused. "Truly a nursing mother should pump every 3-4 hours a shift to keep supply up but that never happens. More like every 6-8 hours, which causes a big supply drop." Concern was voiced that employees were not

getting frequent enough breaks to continue providing adequate milk supply for an infant. Some responses had an emotional undertone to the disappointment of not getting enough lactation breaks that led to decreased milk supply and early infant weaning.

It was important that the environment allowed for pumping was found comfortable enough to promote milk let down and contained all that was needed for lactation. A private, warm, comfortable feminine room with a chair and desk or table on which a person could place food and equipment on was found to be ideal. All respondents that requested more space suggested a lactation room located on each floor or unit of the hospital. The room needs identified included an electric outlet, chair, table, gloves, sanitary bleach wipes for cleanup. The ability to wash hands and pumping equipment is ideal (Stratton and Henry, 2011; Galson, 2009; Murtagh and Moulton, 2011). Although a near- by sink is ideal, the theme generated from respondents indicated lactating employees would prefer a room in close proximity to their work space over a sink. One respondent stated "I would rather use the room closest to me even with no sink, rather than walk the halls of the hospital to a location with a sink."

A few women expressed concern over the inability to let down milk due to a cold room, uncomfortable space, or fear someone would walk in on them that led to early breastfeeding discontinuation. One discouraged respondent stated "the lactation room is a bathroom with a chair." Comments of participants encouraged the need for a private room. A few respondents commented on the comfort and quality of the room. However, a lactation room does not need to be large. As little as a four foot by five foot room can be used to express milk comfortably (HRSA, 2015). The concern was the existing toilet paper holder and plumbing in one room (Figure 2) was found unappealing and gave the feeling of being in, as one respondent stated, "a dirty closet." Each of the rooms had hand sanitizer. Two rooms on one campus did not have

sanitary bleach wipes or any provisions for disinfecting surfaces after a pumping session (Figure 2 and 3). This lack of ability to clean up spilled food or potential breast milk was concerning. For sanitation reasons, employees should be wiping down surfaces prior to leaving the room. One room did provide sanitary wipes along with a note encouraging participants to clean up after themselves (Figure 4). Employees who used spaces other than those designated for lactation indicated a variety of ways to clean supplies including using a bathroom sink, employee break room sinks, or disposable wipes for washing supplies.

At large, the climate generated from employee comments suggested lactating employees were supported by managers, co-workers, and the hospital. Results conclude the answer to the research question: 'Do employees working in a health care setting perceive sufficient support to continue breastfeeding an infant to the American Academy of Pediatrics recommendation of six months followed by continued breastfeeding as complementary foods are introduced for one year or as long as mutually desired by the mother and infant' is a resounding yes. One respondent replied "breastfeeding is best for my babies and I will continue to do so until I cannot."

Interventions

The results of the study identified some specific lactation needs for health care employees. A list of needs and interventions based on the categories of structural, formal and informal support study results, as previously discussed, was accumulated and is displayed in table 7. The interventions table outlines the answer to the question: 'What interventions will advance the perception of support for lactating hospital employees?

Table 7. Company Interventions

Category	Needs Identified	State of the Art Interventions
Structural	Increased number of centrally located private rooms with lockable doors (should not take more than 2-3 minutes to get to) Electric outlet Table (that you can place your knees under) Chair Wipes to clean up the space used Place to store milk (knowledge that it is acceptable to store in a contained freezer bag in the staff refrigerator)	Private room with lockable door on each unit (can be a small space) Sign labeling mothers room, sign identifying room is open or occupied. Feminine wall color and art, motivational breastfeeding material, relaxing space, soft lighting Telephone (optional – for the floor to call in if a work issue arises) Desk or table (a simple tray table that you can put your knees under to pump and eat) Labels Gloves, bleach sanitary wipes (to clean up the area when finished) Sink, hand and dish soap, paper towels Bulletin board for posting lactation resources, notes of encouragement, or baby pictures. Push pins or magnets for bulletin board Consider a T.V. or Radio (not essential, assists with letdown if it helps an employee relax and helps temporarily distract from job duties) Provide a breast pump. Provide breast pump accessories including a black freezer bag for milk storage.
Informal	Manager co-worker and organizational support	Continued support through considering and implementing identified interventions

Table 7. Company Interventions (Continued)

Category	Needs Identified	State of the Art Interventions
Formal	Information: Consistent manager/employee information regarding available space, plan for milk storage, and encouraged break times. Policy for employee milk expression Plan for milk storage Flexible schedule	Information: Fact sheet that encourages breastfeeding and explains company available resources and expectations from employees when they return to work and plan to continue breastfeeding. The fact sheet should include: • Locations of designated lactation rooms (space with a sink) including mother's rooms (space with no sink) available for use. Consider a generic fact sheet for the hospital and one specific for each floor. • Explain bottles stored in an insulated freezer bag are safe to keep in the employee refrigerator. • Explain the need to label milk packages / freezer bags • Encourage breastfeeding and identify an understanding of job demand and the need to use break times. Written policy that identifies employee lactation expectations Flexibility in scheduling Encourage use of Lactation Consultants Hospital wide breast feeding committee

A few interventions stood out as being more specific to the needs of the hospital system assessed. The primary need identified was the addition of more frequent and centrally located rooms. Another equally important intervention involved the distribution of information for mothers returning to work after maternity leave. The development of written policy could assist in consistency of information. A fact sheet given to expecting mothers could also help define acceptable breastfeeding etiquette for lactating mothers returning to work. The fact sheet should explain what maternal options are for breastfeeding in that facility. The fact sheet should also contain information regarding the location of each lactation room, explain acceptable milk storage, explain the importance of labeling and dating expressed breast milk, and encourage

breastfeeding and the acceptance of taking the necessary breaks. The fact sheet should encourage breastfeeding and maternal child health (American Academy of Pediatrics, 2012).

In an effort to disseminate the study findings the author arranged to present the study findings with nursing colleges at a hospital nursing meeting, to hospital leadership meeting, and through a poster presentation at a hospital nursing symposium. Highlights of the presented findings encouraged the organization to follow the HRSA (2015) challenge to develop a task force and move forward with steps to provide an advanced corporate lactation design. Needs identified in Table 7 were presented and discussed. The study provided a valuable beginning assessment to the needs of lactating employees. The organization was encouraged to follow the assessment and interpretation of the results with advanced planning including goal setting, and implementing positive change. Evaluation should be done one year and three years after implemented interventions to assess for effectiveness.

Limitations

There are a number of limitations to the study. The five year time span has potential for recall bias. However, a recent study found that maternal recall is a valid and reliable estimate of breastfeeding initiation and duration, especially when duration of the recall is after a short period of time (<3 years) (Li, Scanlon, and Serdula, 2005; Balkam, Cadwell, and Fein, 2010). Even with the potential for recall bias, the majority of respondents identified they were currently breastfeeding or had recently weaned an infant within the last year.

Although the study was meant to be conducted with participants throughout a health care organization, the majority of respondents identified themselves as nurses. Conducting a study across disciplines, even nursing specialty areas, posed unique challenges. However, professionals, mainly nurses, were identified as respondents. Income, education, and race

demographic results were generally the same. The homogeneity of the demographics makes it difficult to generalize results across populations. Additionally, the study was conducted with professionals, a group already shown to be motivated to breastfeed for longer lengths of time despite challenges (Murtagh and Moulton, 2011; Stratton and Henry, 2011). Studying motivated professionals made comparing length of breastfeeding to breastfeeding perceptions a challenge.

Information concerning the number of births and actual sample size of qualifying employees was not available. Therefore, it could not be determined how representative the group surveyed was of the worksite population as a whole. The percentage of eligible employees was also unable to be determined. An accurate account of the sample size and its representativeness was an unfortunate limitation. It was possible those who participated were those who struggled and women who were more successful chose not to participate. Alternatively, the opposite could have been true and those who were more successful chose to participate while women who struggled did not. The study did not measure motivation or intent to breast feed. The purpose of the study was to identify areas of strengths and weaknesses then recommend interventions. The challenge was limited by the lack of breastfeeding interventions identified as effective in the health care literature.

The first open ended question asked "Please list the most recent area and campus you worked at while breastfeeding an infant?" The question was meant to assess the campus (North or South) the employee was from and also the participant's unit and profession. The question fell short of its intent. It is possible some employees skipped that question, did not answer it honestly, or did not understand what it was asking. This left a gap in knowledge of exactly which professionals were answering the questions. Consequently, it was impossible to assess if

there was a difference in needs between nurses, pharmacists, physical or occupational therapists, or any other health professionals.

Implication for Nursing Practice

The preceding study identified some common concerns lactating women face in many work environments (HRSA, 2015). The role of employer breastfeeding support is important to female employees who work in the hospital setting. The study revealed women working in health care are able to achieve an acceptable lactation duration. The hospital where the study was conducted has established strong generalized support for breastfeeding from the overall organization, managers, and co-workers. Environments in which supervisors and co-workers are supportive combined with clear accommodations for breastfeeding (eg.: lactation programs, pumping rooms and equipment) send a signal about the acceptability of breastfeeding in the workplace and to the public that breastfeeding is accepted in the hospital (Cardenas and Major, 2005). Current significant findings encourage change to the existing environment to improve the existing breastfeeding climate. The challenge is to take the existing positive support and advance the prevailing climate through implementing the identified interventions. Lactation interventions that improve the lactation environment and ease the ability to breastfeed at work in a company dominated by female employees is in the best interest of the company.

The studies of companies who have developed a lactation intervention program claim a positive return on their investment (Bartick and Reinhold, 2010; Johnston-Balkam, Cadwell, and Fein, 2010; Ogbuanu, Glover, Probst, Hussey, and Liu, 2011). Studies have also found a decrease in absentee ill time for the mother and infant and an increased longevity of employment in companies with lactation interventions (HRSA, 2015; Association of Women Health Obstetric and Neonatal Nurses, 2008). This investment of opportunity potential may be significant

considering the current demand for health care employees. According to HRSA (2015), the best beginning would be to take a business approach. It is important for institutions to determine stake holders, develop a task force, identify resources, determine an administrative home, and take steps to implement a program that includes interventions suggested in this study.

The study of hospital support for breastfeeding employees has significant implication for nursing practice because hospital support for breastfeeding can potentially improve employee, infant, and family health. Nursing as a profession is concerned over the health of the individual and the family. Knowledge of laws and positive lactation interventions will assist nurses to care for themselves, patients, families, and communities. Health care employees working in a lactation friendly environment could feel empowered to help with legislation and promotion efforts that further advance research and education. Such efforts could advance an evolution of lactation friendly policy and practice based on a documented need (HRSA, 2015; Johnston, Cadwell, and Fein, 2010). In addition, hospitals that are lactation friendly not only help themselves through helping its employees, it sets a good example for other businesses. Support for breast feeding hospital employees is in the best interest of everyone involved. The challenge is to change the system so that hospitals, employers and the general public work together to empower mothers to achieve the best infant-feeding goals (United Stated Breastfeeding Committee, 2010).

Suggestions for Future Research

There is a growing need for research regarding a mother's return to work while breastfeeding. Much information is needed to identify what specific interventions help a mother extend the length of breast feeding after a return to work (Abdulwadud and Snow, 2008). Randomized control trials to evaluate current workplace breastfeeding interventions and provide

evidence of the effectiveness of workplace interventions are needed to support actions (Abdulwadud and Snow, 2008). Nationally representative descriptive information is needed on who is expressing breast milk, how long they are expressing breast milk, how the infant is fed, infant patterns of feeding, and causes of early breastfeeding discontinuation (Thulier and Mercer, 2009). There also is an identified need to study and determine if expressing breast milk provides the same health benefits to mother and baby as physical latching of the infant (Rasmussen and Geraghty, 2011).

Conclusion

According to Godfrey and Lawrence, (2010) breastfeeding is connected to the creation of a new person, establishing an effective immune system, building brain function, developing socialization, and to the promotion of long term health for women and infants. For employed women, breastfeeding at work adds complexity to the issue of 'difference' in women's labor market participation. Unlike pregnancy and child birth, breastfeeding is not an expected biological feature of modern day maternity (Galtry, 2003). An employee working in a hospital system is part of a complex environment of influence affecting the ability to express breast milk at work (Thulier and Mercer, 2009). Some sources claim that health care workers, who are predominantly female, are generally dissatisfied with the profession and feel as though administrators are not acknowledging their lactation needs (Angeletti, 2008). Taking time during a busy work schedule to perform a personal task specific to the needs of a family member is difficult. Female and family friendly initiatives, such as workplace lactation programs may help demonstrate a willingness to support a female employee's task of balancing familial and professional roles. Consistent with other sources, the study revealed a modest positive link between length of breastfeeding and longevity of employment (Brown, Poag, and Kasprzycki,

2001; HRSA, 2013). Implementing programs that demonstrate support for breastfeeding mothers is in the best interest of the organization. Support for Lactating mothers may lead to increased levels of employee satisfaction, increased productivity, and improved retention. A family friendly hospital sends a positive image, influential to the public and potential employees that may serve as a powerful recruitment tool in today's tight health care labor market.

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APPENDIX A. SYSTEMATIC TOOL FOR ASSESSING BREASTFEEDING SPACE

Where is the room located?

Is the room private with a lockable door?

Does the room have a chair?

Does the room have a table?

Is there an outlet?

Does the room include an electric pump?

Where is the location of the nearest sink?

Are there any other items in the room?

Describe additional item in the room.

How many designated breast feeding rooms are there in the building?

APPENDIX B. CONSENT

North Dakota State University
Department of Nursing Sudro Hall
PO Box 6050 Fargo, ND 58108-6050
701.231.7775

Fargo Sanford Hospital Female Employee Perceptions of Work Place Breastfeeding Experience

Dear Sanford Colleagues:

My name is Michelle Brown. I am a graduate student in the Nursing Education program at North Dakota State University, and I am conducting a research project to assess the Sanford Hospital female employee perception of lactation support. It is our hope, that with this research, we will learn more about the needs of breast feeding employees at Sanford.

Because you are an employee at Sanford Health and have breastfed an infant in the last five years, you are invited to take part in this research project. Your participation is entirely your choice, and you may change your mind or quit participating at any time, with no penalty to you.

It is not possible to identify all potential risks in research procedures, but the researcher(s) have taken reasonable safeguards to minimize any known risks. Completing the survey is associated with no more than minimal risk.

By taking part in this research you will be assisting in the assessment of the lactation environment at Sanford. However, there are no direct benefits to participants. The study results may be used by Sanford Health facilities in Fargo North Dakota's future use of space and construction planning.

It should take about 20 minutes to complete the questions about breastfeeding support. Please respond to the e-mail sent to you or go to the Sanford connect web page and click on the link to the Sanford Employee Breastfeeding survey to participate.

We will keep private all research records that identify you, to the extent allowed by law. Your information will be combined with information from other people taking part in the study, we will write about the combined information that we have gathered. You will not be identified in these written materials. We may publish the results of the study; however, we will keep your name and other identifying information private.

With that understanding, reading this consent form and taking the following survey indicates your consent.

If you have any questions about this project, please call me at 701-367-8155, or e-mail michelle.a.brown@ndsu.edu or call my advisor Dr. Norma Kiser-Larson at 701-231-7775, norma.kiser-larson@ndsu.edu.

You have rights as a research participant. If you have questions about your rights or complaints about this research, you may talk to the researcher or contact the NDSU Human Research Protection Program at 701.231.8908, ndsu.irb@ndsu.edu, or by mail at: NDSU HRPP Office, NDSU Dept 4000, PO Box 6050, Fargo, ND 58108-6050.

Thank you for your taking part in this research.

APPENDIX C. PERCEPTION OF WORKPLACE BREASTFEEDING EXPERIENCES

QUESTIONAIRRE (PWBE-Q)

Perceptions of Workplace Breastfeeding Experience Questionnaire (PWBE-Q)

Employee Survey

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1. **Provide one response per statement unless otherwise specified.**
2. **Select the appropriate boxes to complete this questionnaire.**
3. **For each of the following statements breastfeeding includes breastfeeding a baby and/or using a breast pump.**
4. **Answer each statement as it most applies to you.**
5. **Please fill in the box under the option that most closely describes how you feel about each statement.**

Instructions:

If you have breastfed an infant in the last FIVE (5) years please proceed with the survey.

	List the answer that best fits the perceptions of your experience	**Strongly Agree**	**Agree**	**Disagree**	**Strongly Disagree**	**Unsure**
1.	Breastfeeding is accepted in the community where I live.					
2.	In general, I feel enough support to continue to breastfeed and work.					
3.	I have the option to work with a lactation specialist after having a baby.					
4.	I know where to find the company policies for breastfeeding or expressing breast milk at work.					
5.	I am able to find information about what is expected of me when planning to return to work and breastfeed after having a baby.					
6.	I am aware of federal policy that supports breastfeeding and employment.					
7.	My state has legislative policies that encourage employers to be lactation friendly.					
8.	People in my social network support my decision to breastfeed after a return to work.					
9.	My husband or support person supports my decision to breastfeed after a return to work.					
10.	My baby's caregiver supports my decision to feed breast milk and breastfeed while at work.					
11.	My family supports breastfeeding.					
12.	My break times are flexible when needed in order for me to breastfeed.					
13.	My work schedule is flexible.					

	List the answer that best fits the perception of your experience	Strongly Agree	Agree	Disagree	Strongly Disagree	Unsure
14.	I am aware of where the designated lactation rooms are located.					
15.	The designated space for breastfeeding is available when I need it.					
16.	The designated place for breastfeeding is in a convenient location.					
17.	The designated space for breastfeeding is comfortable.					
18.	I am able to find space to store expressed breast milk properly.					
19.	I made a decision during my pregnancy to breastfeed when I returned to work.					
20.	I am confident in my ability to breastfeed.					
21.	I have been successful breastfeeding an infant while continuing employment.					

Perceptions of Workplace Breastfeeding Experiences Questionnaire (PWBE-Q)

Please list the most recent area and campus you worked at while breastfeeding an infant?

What is the longest length of time you have breastfed a child?

How old is your youngest child?

Do you work shift work? If yes what shift(s) do you work? Example: Days PMs Nights

How many FTE's do you usually work? Example: 0.4, 0.6, 0.8, 1.0.

How long have you worked for your current employer?

What is your age range?

- **18-25**
- **26-35**
- **36 and older**

What is your highest level of education?

- **Less than high school**
- **High school diploma or GED**
- **Associate degree**
- **Bachelor degree**
- **Master's degree**
- **Other**

What is the range of your yearly household income?

- **Less than 20,000/year**
- **20,000-30,000**
- **31,000-40,000**
- **41,000-50,000**
- **51,000-60,000**
- **61,000-70,000**
- **Over 70,000**

What race category do you consider yourself?

- **White**
- **Black or African American**
- **American Indian or Alaskan Native**
- **Asian**
- **Other**

Thank you for your time sharing this information. Please provide any comment you have about your <u>perception</u> of workplace breastfeeding experiences.

APPENDIX D. IRB APPROVAL PAGE

NDSU NORTH DAKOTA STATE UNIVERSITY

March 7, 2014 FederalWide Assurance FWA00002439

Dr. Norma Kiser-Larson
Department of Nursing
Sudro Hall

IRB Approval of Protocol **#PH14186, "Fargo Sanford Medical Center Female Employee's Perceptions of Workplace Breastfeeding Experiences"**
Co-investigator(s) and research team: **Michelle Brown**

Approval period: 3/7/14 to 3/6/15 **Continuing Review Report Due: 2/15/15**

Research site(s): **Sanford Medical Center** Funding agency: **n/a**
Review Type: Expedited category # 7
IRB approval is based on original submission, with revised: protocol (received 3/5/2014).

Please provide a copy of the Sanford IRB protocol and approval prior to beginning the research.

Additional approval is required:

- prior to implementation of any proposed changes to the protocol (*Protocol Amendment Request Form*).
- for continuation of the project beyond the approval period (*Continuing Review/Completion Report Form).* A reminder is typically sent two months prior to the expiration date; timely submission of the report is your responsibility. To avoid a lapse in approval, suspension of recruitment, and/or data collection, a report must be received, and the protocol reviewed and approved prior to the expiration date.

A report is required for:

- any research-related injuries, adverse events, or other unanticipated problems involving risks to participants or others within 72 hours of known occurrence (*Report of Unanticipated Problem or Serious Adverse Event Form*).
- any significant new findings that may affect risks to participants.
- closure of the project (*Continuing Review/Completion Report Form*).

Research records are subject to random or directed audits at any time to verify compliance with IRB regulations and NDSU policies.

Thank you for cooperating with NDSU IRB procedures, and best wishes for a successful study.

Sincerely,
Kristy Shirley

Kristy Shirley, CIP
Research Compliance Administrator

INSTITUTIONAL REVIEW BOARD
NDSU Dept 4000 | PO Box 6050 | Fargo ND 58108-6050 | 701.231.8995 | Fax 701.231.8098 | ndsu.edu/irb
Shipping address: Research 1, 1735 NDSU Research Park Drive, Fargo, ND 58102

NDSU is an EO/AA university

APPENDIX E. IRB APPROVAL PAGE

SANFORD HEALTH

March 10, 2014

PI: Norma Kiser-Larson, Ph.D.
Project: 03-14-029 Fargo Sanford Medical Center Female Employee's Perceptions of Workplace Breastfeeding Experiences

The study submission for the proposal referenced above has been reviewed via the procedures the Sanford Health Institutional Review Board.

The activity described is not considered research per the HHS definition at 45. CFR 46.102-a systematic investigation including: research development, testing and evaluation, designed to develop or contribute to generalizable knowledge. If in the future, you decide to collect human subject data in a systematic investigation, including: research development, testing and evaluation, you must submit an application to the IRB for review. It is advisable to submit a study to the IRB and let the IRB determine if the research activity constitutes human subject research.

Please maintain a copy of this letter in your study file for documentation that your study does not meet the regulatory requirements for human subject's research.

Sincerely,

Deb Langstraat, CIP
Director-Sanford IRB

Sanford Health Human Research Protection Program, Route #5033 • 1305 W. 18th Street • Sioux Falls SD 57117-5039 • P 605-312-6430

APPENDIX F. IRB AMENDMENT

☒ no
☐ yes

If information in your previously approved protocol has changed, or additional information is being added, incorporate the changes into relevant section(s) of the protocol. Highlight (e.g. print and highlight the hard copy, or indicate changes using all caps, asterisks, etc) the changed section(s) and attach a copy of the revised protocol to this form. *(If the changes are limited to addition/change in research team members, a revised protocol form is not needed.)*

Impact for Participants (future, current, or prior):

1. Will the change(s) alter information on previously approved versions of the recruitment materials, informed consent, or other documents, or require new documents?
   ☐ No
   ☒ Yes - attach revised/new document(s)

2. Could the change(s) affect the willingness of *currently* enrolled participants to continue in the research?
   ☒ No
   ☐ Yes - describe procedures that will be used to inform current participants, and re-consent, if necessary:

3. Will the change(s) have any impact to *previously* enrolled participants?
   ☒ No
   ☐ Yes - describe impact, and any procedures that will be taken to protect the rights and welfare of participants:

----------FOR IRB OFFICE USE ONLY---------

Request is: ☒ **Approved** ☐ **Not Approved**

Review: ☐ **Exempt, category#:** ____ ☐ **Expedited method, category #** ____ ☐ **Convened meeting, date:** ____
☑ **Expedited review of minor change**

IRB Signature: Kristy Shirley **Date:** 5/30/14

Comments: