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Breastfeeding Among Working Mothers in Saudi Arabia

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BREASTFEEDING AMONG WORKING MOTHERS IN SAUDI ARABIA

by

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Bachelor of Applied Medical Sciences
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ABSTRACT

Objective: To examine the relationship of not having breastfeeding support policy in workplace such as employees pumping breast milk or breastfeeding their infant while at work policy to early initiation of formula and cessation of breastfeeding. *Design:* Cross-sectional study. *Setting and Subjects:* A total of 273 workingwomen, working in 12 different organizations in Riyadh, KSA. *Method:* An electronic questionnaire survey was administered to 340 workingwomen in 12 different organizations in Riyadh. Questions were about participants' demographics and employment characteristics, breastfeeding support services in their workplace, knowledge about breastfeeding benefits, breastfeeding duration after return to work, and formula initiation. *Results:* Having and knowing about a policy supporting breastfeeding employees to breastfeed or express milk in their workplace was associated with lower discontinuance of breastfeeding (OR (95%CI)= 0.157 (0.019-1.299)). In addition, the hazard of discontinuance of any breastfeeding 2 months after return to work until one year working and early initiation of formula feeding after baby's birth significantly decreased with having a policy facilitating breastfeeding employees to breastfeed or express milk in their workplace, where the hazard ratios were (HR=0.390, *p-value*=0.0498) and (HR=0.448, *p-value*=0.0110), respectively. *Conclusions:* The study findings suggest that not having policies that support breastfeeding employees to breastfeed or express milk in their workplace are significantly associated with decrease any breastfeeding duration and increase early formula initiation.

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CHAPTER 1

INTRODUCTION

Successful exclusive breastfeeding of a baby for six months after delivery has many significant health benefits for both the child and the mother (Grummer-Strawn, 1996; Gartner, Morton, Lawrence, Naylor, O'Hare, Schanler, & Eidelman, 2005; Huffman, 1984; Imdad, Yakoob, & Bhutta, 2011). According to the American Academy of Pediatrics, exclusive breastfeeding protects the infant from several childhood infections, including diarrhea and ear, respiratory, and gastrointestinal tract infections (Gartner et al., 2005; US Department of Health and Human Services, 2011). Also, the incidence of certain allergic diseases such as atopic dermatitis, clinical asthma, and eczema in positive family history are reduced in the first two years of babies' lives if they are exclusively breastfed for three months, even in low-risk populations (Gartner et al., 2005; Greer, Sicherer, & Burks; 2008).

Breastfeeding positively impacts a child's development and growth (Grummer-Strawn, 1996; Gartner et al., 2005; Imdad, Yakoob, & Bhutta, 2011; US Department of Health and Human Services, 2011; Wilmoth, & Elder, 1995). Exclusive breastfeeding protects children from major chronic diseases, such as Type 2 diabetes and obesity (Gartner et al., 2005; US Department of Health and Human Services, 2011).

Breastfeeding also provides multiple benefits to the mother, including the reduction of early uterine involution, postpartum blood loss, and the risk of ovarian cancer and breast cancer (Gartner et al., 2005; Huffman, 1984; Imdad, Yakoob, & Bhutta, 2011; US Department of Health and Human Services, 2011; Wilmoth, & Elder, 1995; WHO, 2008). Continued exclusive breastfeeding can prolong lactation amenorrhea, which increases the spacing of births (Gartner et al., 2005). Further, an ongoing sense of closeness and increased bonding with the newborn baby is an important psychological benefit of breastfeeding, which may also help lower the risk of postpartum depression in the mother (US Department of Health and Human Services, 2011).

Breastfeeding is not only beneficial for the child and the mother, but it is also important for general disease prevention and economic stability, a main concern for any healthcare system (Batterjee, 2010). Increased breastfeeding rates can help reduce the prevalence of multiple health conditions and illnesses, which in turn lower healthcare costs overall (Batterjee, 2010; US Department of Health and Human Services, 2011).

Breastfeeding was the norm in Saudi Arabia for centuries. Rates of breastfeeding, however, began to decline in 1960 due to the aggressive marketing of infant formula and the erroneous presumption that bottle-feeding was healthier and a more convenient option for infant feeding (Guttman & Zimmerman, 2000; Wilmoth, & Elder, 1995). Saudi infants were thus left unprotected from the negative consequences of formula marketing and distribution, especially during the oil boom and the subsequent growing of the socioeconomic status for many (Amin, Hablas, & Al Qader, 2011; Batterjee, 2010).

Thus, today the rates of breastfeeding initiation, exclusive breastfeeding, and continued breastfeeding up to 24 months, are not as high as they should be to promote optimal health outcomes for infants and mothers (Al-Ayed, & Qureshi, 1998; Al-Shehri, Farag, Baldo, Al-Mazrou, & Aziz, 1995; Al-Hreashy, Tamim, Al-Baz, Al-Kharji, Al-Amer, Al-Ajmi, & Eldemerdash, 2008; Al-Jassir, El-Bashir, & Moizuddin, 2004; Al Jassir, El Bashir, Moizuddin, & Abu Nayan, 2006; Al Salloum, Al Herbish, & Qurachi, 2009; El Mouzan, Al Omar).

Returning to work after a child is born is one of the reasons that often deters mothers in Saudi Arabia from exclusive breastfeeding in favor of using infant formula (Amin et al., 2011; Al-Ayed, & Qureshi, 1998; Al-Binali, 2012; Al-Hreashy et al., 2008; Al-Jassir et al., 2003; El Mouzan et al, 2009; Fida, & Al-Aama, 2003; Ogbeide et al., 2004; Qadri et al., 1998). According to many international studies, work outside the home is associated with several barriers to breastfeeding, which include inflexibility in work hours and limited breaks at work, as well as inadequate or total lack of venues where the mother can express breast milk at most workplaces (Cattaneo, & Quintero-Romero, 2006; Guttman & Zimmerman, 2000). In addition, short maternal leaves and women's fear of job insecurity (Cattaneo, & Quintero-Romero, 2006; Guttman & Zimmerman, 2000) are important factors that lead to early cessation of breastfeeding.

In Saudi Arabia, less is known about whether working outside the home actually affects a mother's decision on whether to breastfeed, even though the educational messaging about the benefits of breastfeeding reaches most mothers. Further, most of the studies on breastfeeding have focused on other barriers that can affect exclusive breastfeeding, such as the mother's education and knowledge, the hospital environment

and routine, and a lack of support from health providers and social workers (Al-Jassir et al., 2003; Bella, 1997; Bella, & Dabal, 1998). These studies have so far ignored the effect on exclusive breastfeeding when the mother has to work outside the home. Because of this gap in the literature, related useful information is not known, including the difficulties associated with working, and the role that work-setting factors do indeed play in determining the choice of whether to breastfeed and return to work or simply formula-feed and early cessation of breastfeeding has not been explored fully.

This research will focus on working mothers in Riyadh, Saudi Arabia. According to the Saudi Central Department of Statistics, in 2014, Riyadh City had the highest number of females participating in the labor force (i.e., 28.4% from Riyadh) (Saudi Central Department of Statistics and Information, 2015). This proposed research could deliver important information about breastfeeding behavior among mothers who work outside their homes, the existing breastfeeding-supportive environments and policies, and how these encourage or discourage breastfeeding behavior among working mothers. It will also examine working mothers' knowledge about breastfeeding benefits. In addition, this research will examine the impact of workplace settings on the exclusive breastfeeding decision that mothers must make.

Study Hypothesis

H1. Workplace policies are associated with working mothers' early initiation of formula and with the early cessation of breastfeeding.

H2. Women's knowledge about the benefits of breastfeeding positively affects their intention to seek changes in workplace policies.

1.1 Overall Document Structure

This thesis is contain the following:

1. Chapter 1: Introduction
2. Chapter 2: Literature Review
3. Chapter 3: Methods
4. Chapter 4: Results
5. Chapter 5: Conclusion
6. Appendix A: Institutional Review Board (IRB) Approval Letter
7. Appendix B: English Survey

CHAPTER 2

LITERATURE REVIEW

2.1 Benefits of Breastfeeding

Successful exclusive breastfeeding of a baby for 6 months delivers many significant health benefits to both child and mother (Grummer-Strawn, 1996; Gartner, Morton, Lawrence, Naylor, O'Hare, Schanler, & Eidelman, 2005; Huffman, 1984; Imdad, Yakoob, & Bhutta, 2011). According to the American Academy of Pediatrics, exclusive breastfeeding gives the infant protection from several childhood infections, including diarrhea and ear infections (Gartner et al., 2005; US Department of Health and Human Services, 2011). Among infants who are exclusively formula-fed, there is a 100% increase in risk of ear infections compared to infants that are exclusively breastfed (Chung et al., 2007; US Department of Health and Human Services, 2011). There is also an 178% increase in the risk of diarrhea among infants who are never breastfed compared to infants who are breastfed, where the risk in both developed and developing countries were 3.5 to 4.9 times higher in infants who did not receive breast milk to infants who exclusively breastfed for the first 6 months of life (Chung et al., 2007; US Department of Health and Human Services, 2011). The risk of rare but serious infections such as respiratory and gastrointestinal tract infections are also low for breastfed infants (Gartner et al., 2005; US Department of Health and Human Services, 2011). The risk of hospitalization for lower tract infections if an infant is exclusively breastfed for 4 months

is reduced by 72% compared with those who were formula-fed, and infections of the nonspecific gastrointestinal tract among infants exclusively breastfed for any duration is reduced to 64% compared to infants who never breastfed (Chung et al., 2007; Duijts et al., 2010; Gartner et al., 2005; US Department of Health and Human Services, 2011).

Breastfeeding positively impacts a child's development and growth (Grummer-Strawn, 1996; Gartner et al., 2005; Imdad, Yakoob, & Bhutta, 2011; US Department of Health and Human Services, 2011; Wilmoth, & Elder, 1995). Exclusive breastfeeding protects children from major chronic diseases, such as Type 2 diabetes, and obesity (Gartner et al., 2005; US Department of Health and Human Services, 2011). The incidence of Type 2 diabetes is reduced by 40% in infants who were exclusively breastfed for at least 3 months, and adolescent and adult obesity by 15% and 30%, respectively compare to infants who received formula (Gartner et al., 2005; US Department of Health and Human Services, 2011).

Exclusive breastfeeding for 6 months protects babies from sudden infant death syndrome (SIDS) and may reduce the risk of SIDS by 36% compared to the formula-fed babies (Chung et al., 2007; Gartner et al., 2005). Also, the incidence of certain allergic diseases such as atopic dermatitis, clinical asthma, and eczema in positive family history are reduced in the first 2 years of babies' life if they exclusively breastfed for 3 months, even in the low-risk population (Gartner et al., 2005; Greer, Sicherer, & Burks; 2008).

Breastfeeding also provides multiple benefits to the mother, including the reduction of early uterine involution, postpartum blood loss, and the risk of ovarian cancer and breast cancer (Gartner et al., 2005; Huffman, 1984; Imdad, Yakoob, & Bhutta,

2011; US Department of Health and Human Services, 2011; Wilmoth, & Elder, 1995; WHO, 2008). Continued exclusive breastfeeding can prolong lactation amenorrhea, which increases the spacing of births (Gartner et al., 2005). Further, an ongoing sense of closeness and increased bonding with the newborn baby is an important psychological benefit of breastfeeding that may also help lower the risk of postpartum depression in the mother (US Department of Health and Human Services, 2011).

Breastfeeding is not only beneficial for the child and the mother, but it is also important for general disease prevention and economic stability, a main concern for any health care system (Batterjee, 2010). Increased breastfeeding rates can help reduce the prevalence of multiple health conditions and illnesses, which in turn lowers health care costs overall (Batterjee, 2010; US Department of Health and Human Services, 2011). In addition to the more obvious economic benefits to the families, for example, optimal breastfeeding can save more than \$1,200-\$1,500 in spending on infant formula for the first year (US Department of Health and Human Services, 2011).

2.2 Breastfeeding in Saudi Arabia

Breastfeeding was the norm in Saudi Arabia for centuries. Rates of breastfeeding began to decline in 1960 due to the aggressive marketing of infant formula and the erroneous presumption that bottle-feeding was healthier and was also a more convenient option to choose for infant feeding (Guttman & Zimmerman, 2000; Wilmoth, & Elder, 1995). Saudi Arabia infants thus were not protected from the negative consequences of formula marketing and distribution, especially during the oil boom and the growing of the

socioeconomic status for many (Amin, Hablas, & Al Qader, 2011; Batterjee, 2010). Thus, today the rates of breastfeeding initiation, exclusive breastfeeding, and continued breastfeeding to 24 months are not as high as they should be to promote optimal health outcomes for infants and mothers (Al-Ayed, & Qureshi, 1998; Al-Shehri, Farag, Baldo, Al-Mazrou, & Aziz, 1995; Al-Hreashy, Tamim, Al-Baz, Al-Kharji, Al-Amer, Al-Ajmi, & Eldemerdash, 2008; Al-Jassir, El-Bashir, & Moizuddin, 2004; Al Jassir, El Bashir, Moizuddin, & Abu Nayan, 2006; Al Salloum, Al Herbish, & Qurachi, 2009; El Mouzan, Al Omar). According to earlier national studies, exclusive breastfeeding rates at 6 months of age declined from 33% in 1987 to 0.8% in 2004 (Al-Jassir, El-Bashir, & Moizuddin, 2004; El Mouzan et al, 2009). This declining trend in breastfeeding was obvious in Riyadh, the country's capital and one of its largest cities where 24.8% of the Saudi population lives. There the rates of exclusive breastfeeding at 6 months were 22.1% in 1998, but only 1.7% in 2005 (Al-Ayed, & Qureshi, 1998; Al-Hreashy et al, 2008).

In Saudi Arabia, there is an absence of recent national statistical data on breastfeeding that can monitor the rates, duration, and patterns of breastfeeding in the country. Even the World Health Organization does not report any breastfeeding statistics in the country's 2013 profile (Al-Jassir, Moizuddin, & Al-Bashir, 2003; Al Juaid, Binns, & Giglia, 2014; Ministry of Health, 2011; UNICEF, 2013). Therefore, data on breastfeeding rates, patterns, practices, and duration in Saudi Arabia come from the published literature. Previous literature reviews on breastfeeding patterns and practices in Saudi Arabia further indicate a lack of clarity in the classification of breastfeeding practice in relation to the WHO feeding practice definitions (Al-Jassir et al., 2003; Al Juaid et al., 2014; WHO, 2008). Some studies report the duration and rate of

breastfeeding without designating an appropriate feeding classification (e.g., exclusive or partial) and the term “breastfed” was used to indicate that the infant received any breast-milk and may have also received other liquids such as non-human milk and formula. Only the term “exclusive breastfed” can indicate that infants received only human milk without any other liquids or formula (WHO, 2008).

In a cross-sectional, national survey of 3608 children and their mothers carried out in 1991 by Al-Shehri et al., 93% of infants in Saudi Arabia were breastfed for one month, but the number being breastfed continued to drop to 89% at the age of 2 months, 84% at 3 months, 78% at 6 months, and 45% by the end of first year (Al-Shehri et al., 1995). Exclusive breastfeeding was present only in 53% of infants younger than 5 months (Al-Shehri et al., 1995). In another cross-sectional national study with 4872 mothers, which was conducted by Al Jassir et al. between 2002 and 2003, 23.9% of mothers breastfed their infants for the first 3 months after birth (Al Jassir et al., 2006). In the following year, another national study conducted by El Mouzan et al. between 2004 and 2005 interviewed mothers of children less than 3 years, and 5339 children were included; exclusive breastfeeding declined from 70.8% at birth to 16.4% at 4 months of age (El Mouzan et al., 2009).

In a survey carried out in 1998 in Riyadh City with 347 mothers, 32.4% of infants were exclusively breastfed at 3 months, and that number declined at age 6 months to 22.1% and to mixed feeding of 29.5% (Al-Ayed, & Qureshi, 1998). Only 0.8% of the infants were exclusively breastfed for the first 4 to 6 months of their lives. In a survey conducted in 10 primary healthcare centers located in west, north, east, central, and south

areas of Riyadh with 21,507 infants, during period between 1999-2002, 34.3% of infants were breastfed for more than 6 months (Al-Jassir, El-Bashir, & Moizuddin, 2004).

In a survey intended to evaluate early initiation and exclusive breastfeeding among mothers in the Eastern region in 2008, particularly in Al Hassa, the exclusive breastfeeding rate at birth was 66.5% and increased to 76.1% at the age of one month. This figure dropped to 32.9% at 2 months and 12.2% at 6 months (Amin et al., 2011). In the most recent study, conducted in 2011 on mothers working in the teaching sector in Abha City (i.e., the Southern region), 31% of the mothers exclusively breastfed their infants at birth and only 8.3% of these mothers continued exclusive breastfeeding to 6 months (Al-Binali, 2012).

In Saudi Arabia, breastfeeding at age 3 months declined from 84% (i.e., n=3608) in 1991 to 23% (i.e., n=4872) in 2000 (Al Jassir et al., 2006; Al-Shehri et al., 1995). In addition, the prevalence of continuing to breastfeed for up to 6 months dropped from 88% to 10.2% from 1987 to 2006 (Al Juaid et al., 2014; El Mouzan et al, 2009). Furthermore, the most common feeding practice among Saudi mothers is mixed feeding, where they initiate formula at age 3 months (Ogbeide et al., 2004).

2.3 Breastfeeding in Islam

Saudi Arabia is a religious country, where both legislation and traditions derive from the Qur'an and Hadiths. This reported significant alteration in breastfeeding practices contradicts the Holy Qur'an instruction that advises the mother to continue breastfeeding her child for all of the first two years of life (Al-Shehri et al., 1995; Al-Jassir et al., 2003; Al Jassir et al., 2006; Al-Hreashy et al., 2008; Batterjee, 2010). The

Holy Quran says: “The mothers shall give suck to their children for two whole years, (that is) for those (parents) who desire to complete the term of suckling” This reference is from the chapter 2, 'Al-Baqarah', verse 233. This stipulation is similar to the WHO and UNICEF recommendation which where recommends that infants be breastfed exclusively for the first 6 months of life, followed by appropriate complementary feeding introduced along with continued breastfeeding for 24 months (WHO, 2008).

2.4 Individual Predictors of Breastfeeding in Saudi Arabia

Predictors for exclusive breastfeeding behavior include maternal age, residence, employment status, education, income level, number of children, and delivery type (Amin et al., 2011; Al-Hreashy et al., 2008; Al-Shehri et al., 1995; Fida, & Al-Aama, 2003; Shawky, & Abalkhail, 2003). Overall, housewives with three or more children and an older maternal age are more likely to initiate exclusive breastfeeding (Amin et al., 2011; Al-Hreashy et al., 2008; Al-Shehri et al., 1995). Mothers who are living in a rural residence, have a low income and education level, and experienced normal deliveries are also more likely to initiate exclusive breastfeeding (Amin et al., 2011; Al-Shehri et al., 1995; Shawky, & Abalkhail, 2003).

2.5 Barriers to Breastfeeding

A review of the literature on breastfeeding practices and patterns in the United States indicates that the majority of mothers there introduced breast milk to their infants in the first days after their birth, which means they intended to breastfeed (Teich, Barnett, & Bonuck, 2014). Most also stopped breastfeeding shortly after giving birth. About

25%–50% of mothers stopped breastfeeding in the first month, and more than 50% stopped during the first 2 weeks (Teich, Barnett, & Bonuck, 2014). The same rates of breastfeeding initiation are seen in Saudi Arabia, where studies show that 93% of mothers initiated breastfeeding in 1991, 92% did so in 2003, 91.6% in 2005, but only 77.8% in 2008 (Amin et al., 2011; Al-Hreashy et al., 2008; Al-Shehri et al., 1995; El Mouzan et al., 2009; Shawky, & Abalkhail, 2003). Most also ceased breastfeeding at some point in the first month after giving birth (Amin et al., 2011; Al-Hreashy et al., 2008; Al-Shehri et al., 1995; El Mouzan et al., 2009; Shawky, & Abalkhail, 2003). These statistics suggest that mothers in different parts of the world face early barriers that generally deter them from continuing to breastfeed even after successful initiation. Insufficient milk supply and mother's illness are two of the main reasons cited for early cessation of breastfeeding in Saudi Arabia (Amin et al., 2011; Al-Ayed, & Qureshi, 1998; Al-Binali, 2012; Al-Hreashy et al., 2008; Al Jassir et al., 2006; Al-Shehri et al., 1995; El-Bashir, & Moizuddin, 2004; El Mouzan et al., 2009; Fida, & Al-Aama, 2003; Kordy et al., 1992; Ogbeide, Siddiqui, Al Khalifa, & Karim, 2004; Qadri, Al-Harfi, & Al-Gamdi, 1998; Shawky, & Abalkhail, 2003; Teich, Barnett, & Bonuck, 2014), which prompts the question: Why are mothers having difficulty maintaining their milk supply, or think they are having difficulty, in the first few weeks after giving birth? Although physiological factors may affect a mother's breast milk supply, especially the introduction of formula feeding in the early neonatal stage (El Mouzan et al., 2009,6), it is not the main cause of perceived insufficient milk. Only one study asked mothers an open-ended question about their explanation for the insufficient milk supply, and their answers were: "no milk in the early days after birth," "milk was not enough," "baby crying a lot," "baby looking

hungry,” and “breast milk alone is not enough for general health of the infant” (Al-Hreashy et al., 2008).

Although social support from the family, especially from the birth father, is crucial for successful breastfeeding, only a few studies have reported fathers’ support to mothers to initiate or continue breastfeeding. Mothers were more likely to initiate and remain exclusive to breastfeeding when their husbands encouraged them to do so (Ogbeide et al., 2004). On the other hand, no association was found between a father’s attitude toward breastfeeding and breastfeeding initiation (Al-Ayed, & Qureshi, 1998). In addition, inadequate family support significantly influenced mothers who wished to breastfeed their baby to continue to breastfeed (Al-Madani, Vydelingum, & Lawrence, 2010).

Additional barriers to breastfeeding have also been described in the Saudi literature, including becoming pregnant (Al-Jassir, El-Bashir, & Moizuddin, 2004; Kordy et al., 1992; Qadri et al., 1998), the use of oral contraceptives (Amin et al., 2011; Al-Jassir et al., 2003; Al-Shehri et al., 1995; Shawky, & Abalkhail, 2003), the baby’s dislike of the mother’s milk (Al-Ayed, & Qureshi, 1998; Al-Jassir et al., 2003), the infant’s illness, and the mother having to work outside the home (Fida, & Al-Aama, 2003; Al-Jassir, El-Bashir, & Moizuddin, 2004; El Mouzan et al, 2009).

Returning to work after a child is born is one of the reasons that often deter women from exclusive breastfeeding in favor of using infant formula (Amin et al., 2011; Al-Ayed, & Qureshi, 1998; Al-Binali, 2012; Al-Hreashy et al., 2008; Al-Jassir et al., 2003; El Mouzan et al, 2009; Fida, & Al-Aama, 2003; Ogbeide et al., 2004; Qadri et al., 1998). According to many international studies, work outside the home is associated with

the several barriers to breastfeeding, which include inflexibility in work hours and limited breaks at work as well as inadequate or total lack of venues where the mother can express breast milk at most workplaces (Cattaneo, & Quintero-Romero, 2006; Guttman & Zimmerman, 2000). In addition, short maternal leaves and a woman's fear of job insecurity (Cattaneo, & Quintero-Romero, 2006; Guttman & Zimmerman, 2000) are important factors that lead to early cessation of breastfeeding.

2.6 Work Force Participation of Mothers in Saudi Arabia

Saudi Arabia has seen a dramatic change in women's socioeconomic status, as well as employment and educational opportunities. For instance, Saudi women working outside their home made up around 30% of the country's employment rates as of 2014, with 95% working in the public sector, 85% working in education in administrative or teaching positions, 6% working in public health, and 4% working in administration; 5% worked in the private sector (Amin et al., 2011; Islam, 2014). In addition, the percentage of Saudi female students at university increased over a short time from one woman to more than two women for every man enrolled (Amin et al., 2011). Women also work outside their homes in special work sittings where they are not in direct contact with men; for example, they may work in a girl's school or university, the female section in a bank, in a development program or social work to help women, or in medicine and medical services for women (Amin et al., 2011).

Saudi mothers' employment significantly affects the prevalence of breastfeeding and the increased early cessation of breastfeeding in favor of formula (Amin et al., 2011; Fida, & Al-Aama, 2003; Gartner et al., 2005; Shawky, & Abalkhail, 2003). Short

maternal leaves, which are only about 10 weeks in the governmental sectors, and embarrassment when breastfeeding, even around the same gender, as well as a lack of special facilities outside the home, such as lactation rooms, lead to the early introduction of formula so a foreign nanny can feed the baby during work hours (Amin et al., 2011).

Therefore, it is important to support breastfeeding among working mothers in Saudi Arabia because working outside the home appears to be a major negative influence on the duration of breastfeeding in Saudi Arabia, especially among young mothers in urban areas, who constitute most of the working women in the country. Also, expressing breast milk in the workplace will help working mothers maintain optimal milk supply after they return to work and leave their child for long period, through efficient emptying of the breasts and increase prolactin levels, which lead to the greatest milk volume possible (Meek, J. 2001).

2.7 A Knowledge Gap

In Saudi Arabia, little is known about whether working outside the home affects a mother's decision to breastfeed or not, even though the educational messaging about the benefits of breastfeeding does reach most mothers. Furthermore, most of the studies on breastfeeding have focused on other barriers that can affect exclusive breastfeeding, such as the mother's education and knowledge, the hospital environment and routine, and a lack of support from health providers and social workers (Al-Jassir et al., 2003; Bella, 1997; Bella, & Dabal, 1998). These studies have so far ignored the effect on exclusive breastfeeding and even continued breastfeeding when the mother has to work outside the home. Because of this gap in the literature, related useful information is also not known,

including mothers' feelings, their personal explanations for their feeding choices, and their understanding of the alternative options and strategies available to let them continue exclusive breastfeeding inside and outside the home and in the workplace. The difficulties are associated with working and the role that work setting factors play in determining the choice of whether or not to breastfeed. This same information is easily found in developed countries because many studies promote breastfeeding among working mothers and have led to new legislation or improvements in the existing law to support and even protect breastfeeding in the workplace (Cattaneo, & Quintero-Romero, 2006; Huffman, 1984; Imdad, Yakoob, & Bhutta, 2011). Therefore, this study will focus on breastfeeding behavior among working mothers in Saudi Arabia and the effect of work settings on discontinued breastfeeding. In addition, this research topic is derived from the limited knowledge that currently exists on supportive environments and policies and how these encourage or discourage breastfeeding behavior among working mothers; the research is grounded on the perspective that women have the right to access accurate and reliable information to enable them to make informed decisions about whether to breastfeed or not.

Therefore, the study will mainly focus on working mothers in Riyadh, Saudi Arabia. According to the Central Department of Statistics, in 2014, Riyadh had the highest number of females participating in the labor force (i.e., 28.4% from Riyadh) (Saudi Central Department of Statistics and Information, 2015). Indeed, this research delivers important information about how unsupportive work environments make it difficult for women to exclusively breastfeed or even continue breastfeeding and why efforts should be made to make women's worksites breastfeeding friendly. It also

explores working mothers' knowledge about breastfeeding benefits as well as their practices and identify their awareness regarding the availability of any policy supporting employees to breastfeed or express milk in their workplace.

In developed countries, breastfeeding advocates promote and encourage breastfeeding for working mothers through new policies, such as allowing longer maternal leave, providing a lactation room and daycare at the workplace, and scheduling breaks for nursing; in Saudi Arabia, these policies have not yet been implemented. To achieve this, research must first identify and measure the barriers to breastfeeding among working mothers, urban Saudi society, and other urban Arabic-speaking communities. In addition, approaches must be developed to integrate the findings into program development and implementation that can best support working mothers and the whole family.

2.8 Study hypotheses:

The proposed study will examine the following two hypotheses:

H1. Workplace policies are associated with working mothers' early initiation of formula and with the early cessation of breastfeeding.

H2. Women's knowledge about the benefits of breastfeeding positively affects their intention to seek changes in workplace policies.

CHAPTER 3

METHODS

3.1 Study Design

This retrospective study of employed mothers' breastfeeding practice and the effect of their work setting environment on their feeding practice was conducted in Riyadh, Saudi Arabia between February and March 2016. The researcher created an electronic survey and distributed it among different female work facilities in Riyadh, where the target sample size was 336 responses.

Data were obtained from women working in 12 different working facilities in Riyadh, including public schools, private schools, public universities, private universities, and hospitals. In each facility, one person was identified and asked to pass along emails or text messages that included information about the research and the researcher's contact information (see Appendix B).

3.2 Target Population

As the research focuses on working mothers in Saudi Arabia, the research was conducted in Riyadh, Saudi Arabia. According to the Central Department of Statistics, in 2014, Riyadh had the highest number of females participating in the labor force.

Furthermore, the target population was mothers and non-mothers as well as married and

single women working in the 12 different organizations.

In each of the 12 work facilities, more than 28 responses were planned to be obtained to achieve the target sample size of 336. The necessary sample size was estimated to be 23 per facility, for a total of 280, assuming no clustering occurred within facilities. This sample would provide 90% power for differences in proportions of two groups of 0.20 or greater for a two-tailed test at alpha of 0.05. For a modest design effect of 1.2 due to clustering, the estimate of the sample size needed was 336. In total, more than 340 surveys were distributed; 273 surveys were collected, and 60 people refused to complete the survey, resulting in an 81.25% response rate.

3.3 Data Collection Procedures

3.3.1 Surveys

An electronic questionnaire survey was developed using SurveyMonkey[®] to obtain data from the study's participants (see Appendix B). The electronic questionnaire was the best data collection technique for the research goals because it allowed the researcher to collect data from a distance. The questionnaire was initially written in English and then translated into Arabic (i.e., the main language of the study respondents). The translation was done by the principal investigator, who is bilingual; Arabic is her native language. The translation was proofed by an accredited translation company. Signed informed consents were obtained from every respondent. The electronic survey started with information about the research and the benefits of taking part in the research, the survey duration and number of questions, and the researcher's contact information. After that, respondents were asked if they were an adult above 18 years of age and were

interested in participating in answering the survey questions (see Appendix B). As the only data collection in the study was the electronic questionnaire created in SurveyMonkey[®], respondents' privacy was protected by turning on the *Anonymous Responses* option. In addition, the study plan was submitted to the University's Institutional Review Board (IRB) for review and was approved (see Appendix A).

3.4 Study Variables

3.4.1 Dependent Variables

Mothers' continued breastfeeding after returning to work was a categorical variable (i.e., yes or no), and the duration of continuing any breastfeeding after returning to work was a numeric variable (i.e., number of months). Mothers were first asked: "Did you breastfeed your baby during maternity leave?" If the answer was "yes," they moved on to the next question: "Did you continue to breastfeed after returning to work?" If the answer was again "yes," they moved on to the next question: "How long did you continue to breastfeed?" (they had to provide a number of months in response). Initiating the use of formula at any time after the baby's birth was a categorical variable, where mothers were asked: "How old was your child in months when you began feeding him or her formula?" The possible answers were never feed him or her formula, one, two, three, four, five, six, or seven months and above.

The employed mothers' approach to the leadership in their workplaces that had any policy offering support to mothers to express milk or breastfeed their infants in the workplace was a categorical variable (yes or no). Mothers were asked: "Did you ever approach anyone in leadership about having any policy that offers support to express

milk or breastfeed your baby in the workplace?”

3.4.2 Independent Variables

Demographics and employment characteristics. Respondents’ demographics included age (20–29 years, 30–39 years, or 40 years and above), level of education (primary, secondary, high school, or university and above), marital status (single, married, divorced, or widow), children (yes or no), and number of children. Employment characteristics included employment status (full-time or part-time), employer category (hospital, private university, public university, private school, or public school), shift work (yes or no), and hours worked per day (7 hours per day, 8 hours per day, 9 hours per day, or 10 hours or more per day).

Breastfeeding support services. The availability of breastfeeding or breast pumping was a categorical variable, where every employed woman was asked if her job offered breastfeeding or breast pumping break hours during work hours (yes or no). In addition, they were asked if there was a lactation room or any other private place for employees to breastfeed or express milk (yes or no); if the answer was yes, they were asked two additional questions: “Does it contain an electric breast pump?” and “Does it provide refrigeration for milk storage?” Finally, all respondents were asked if their employers had any policy supporting employees to breastfeed or express milk in their workplace; their response options were yes, no, or I don’t know.

Knowledge. The overall responses on knowledge about breastfeeding benefits to both the mother and her child were evaluated by asking respondents about 14 true breastfeeding benefits facts (Tsai, S, 2014), and creating a new variable measurement of

their overall percentage of correct answers. The internal reliability of the summed scale from the 14 breastfeeding benefits variables was calculated using the Cronbach coefficient alpha. The standardized alpha coefficient (= 0.7718) did not change after removing any of the breastfeeding benefits knowledge variables. Therefore, all variables were used.

Table 3.1. Breastfeeding benefits knowledge (Tsai, S, 2014), among all study sample (n=241, 32 were missing).

Breastfeeding Benefits	Employed Mother		Employed not Mother	
	<i>n</i>	%	<i>n</i>	%
1. Breast milk is more easily digested than formula (<i>Yes</i>)				
No	3	1.24	0	0
Yes	184	76.35	54	22.41
2. Breastfeeding helps mothers to lose weight after pregnancy (<i>Yes</i>)				
No	16	6.61	5	2.07
Yes	171	70.66	51	20.66
3. Breastfeeding helps the uterus to return to its pre- pregnancy state more quickly. (<i>Yes</i>)				
No	8	3.29	7	2.88
Yes	180	74.07	48	19.75
4. Breast milk contains all the essential nutrients for a newborn child. (<i>Yes</i>)				
No	5	2.06	1	0.41
Yes	183	75.31	54	22.22

Breastfeeding Benefits	Employed Mother		Employed not Mother	
	<i>n</i>	%	<i>n</i>	%
5. Colostrum contains essential antibodies necessary to help the child's immune system. (Yes)				
No	3	1.24	0	0
Yes	183	75.93	55	22.82
6. Breastfeeding may decrease the chances of becoming pregnant (Yes)				
No	37	15.29	21	8.68
Yes	151	62.40	33	13.64
7. Breastfeeding increase level of prolactin as well as oxytocin, and these hormones are thought to enhance mood (Yes)				
No	27	11.11	9	3.70
Yes	161	66.26	46	18.93
8. Breastfeeding mothers report a special bond or closeness with the infants they breastfeed (Yes)				
No	20	8.26	7	2.89
Yes	167	69.01	48	19.83
9. Pumping at work provides the mother with a sense that she is doing something for her infant while working (Yes)				
No	24	9.92	9	3.72
Yes	164	67.77	45	18.6

Breastfeeding Benefits	Employed Mother		Employed not Mother	
	<i>n</i>	%	<i>n</i>	%
10. The incidence, severity, and duration of infectious disease are also significantly decreased, including diarrhea, respiratory infections, otitis media, urinary tract infections, and meningitis (<i>Yes</i>)				
No	25	10.46	10	4.18
Yes	161	67.36	43	17.99
11. Oral development is enhanced, perhaps because of the action of the mouth when sucking the breast (<i>Yes</i>)				
No	70	29.05	26	10.79
Yes	117	48.55	28	11.62
12. Infants exclusively breastfed for 4 months exhibit advanced physical and behavioral development during their first year of life. (<i>Yes</i>)				
No	58	23.97	15	6.20
Yes	130	53.72	39	16.12
13. Children who are breastfed score about 7 or 8 points higher on intelligence tests than children who are not breastfed (<i>Yes</i>)				
No	63	26.14	24	9.96
Yes	124	51.45	30	12.45
14. Mothers of breastfed babies tend to be more productive at work and miss fewer days because of staying home with a sick child less often (<i>Yes</i>)				
No	87	36.40	30	12.55
Yes	98	41	24	10.04

3.5 Overall Analysis Plan

3.5.1 Data Analysis

All data analyses were performed using Statistical Analysis System (SAS 9.4) software. Multiple logistic and Cox proportional hazard regressions were used to model the main dependent variables on the multiple predictor variables, including mother's age, education, number of children, shift work, work hours per day, breastfeeding or breast pumping break hours during working hours, breastfeeding venue, and employer having a policy supporting breastfeeding employees to breastfeed or express milk in the workplace. Stepwise selection was used to predict the significant predictor for early cessation of any breastfeeding among working mothers. A significance level of 0.15 was required to allow the predictor variables into the models, and a significance level of 0.25 was required for the predictor variables to stay in the models.

CHAPTER 4

RESULTS

4.1 Descriptive Statistics

About three-quarters of the study sample (i.e., $n=273$) were married and around only 22% were single, and almost half of them (49.45%) were 30-39 years old and 37.36% were 20-29 years old (Table 4.1). Most participants (92.31%) had university and higher degrees, and only 6.1% had a high school or lower education. Among all the employed women in the study sample, 77.78% were mothers; the mean number of the children they had was ~3 children. Full-time employees comprised 89.01% of the sample; 43.5% work 7 hours a day and 36.6% work 8 hours a day.

Among the working mothers ($n=198$, 12 were missing), 168 or around 84.5% of them breastfed their baby during maternity leave; of these, 100 (59.5%) continued breastfeeding and 40.5% discontinued once they returned to their jobs (Table 4.2). Of all the working mothers who continued breastfeeding while working outside the home, 30% continued for 1 to 3 months, 25% for 4 to 6 months, 25% for 7 to 12 months, and 20% for more than a year. In addition, almost 48.5% of mothers initiated formula feeding during the first two months of their child's infancy, 18.7% at age 3 to 4 months, 8% at age 5 to 6 months, and 8.6% at 7 months or above.

Table 4.1. Participants' demographics and working characteristics (n=273)

Variables	<i>n</i>	%
Age		
20-29 years	102	37.36
30-39 years	135	49.45
40 years and above	36	13.19
Marital Status		
Single	60	21.98
Married	207	75.82
Divorced	6	2.20
Education		
Primary	1	0.37
Secondary	2	0.73
High School	14	5.13
University or higher	252	92.31
Other	4	1.47
Working Mothers (3 missing)		
No	60	22.22
Yes	210	77.78
Working Status		
Part-time employed	30	10.99
Full-time employed	243	89.01
Shift Work		
No	237	87.13
Yes	35	12.87

Variables	<i>n</i>	%
Work Hours per Day		
7 hours/day	119	43.59
8 hours/day	100	36.63
9 hours/day	54	19.78

Table 4.2. Breastfeeding behavior among working mothers (n=198)

Breastfeeding behavior	<i>n</i>	%
Breastfed during Maternal Leave (<i>12 missing</i>)		
No	30	15.08
Yes	168	84.42
Continued to Breastfeed after Returning to Work (<i>Any Breastfeeding</i>)		
No	68	40.47
Yes	100	59.52
Continue Breastfeeding Duration (<i>continue breastfeed for one month and above</i>)		
1-3 months	30	30
4-6 months	25	25
7-12 months	25	25
> 12 months	20	20
Formula Initiation (<i>first start in months</i>)		
Never	32	16.16
1-2 months	96	48.48
3-4 months	37	18.68

Breastfeeding behavior	<i>n</i>	%
Formula Initiation (<i>first start in months</i>)		
5-6 months	16	8.08
7 months and above	17	8.58

Regarding the availability of the breastfeeding-friendly policy in the employees' workplace, among all female employees, 43.6% did not have breastfeeding breaks during work time, and 56.4% of them had it (Table 4.3). Only 6.34% of the employees reported that they had a policy supporting breastfeeding employees to breastfeed or express milk in their workplace, 29% did not, and 64.55% did not know if they had any supportive policy. Also, most of the study sample, 95%, reported that their workplaces lacked a lactation room or any other private place for employees to breastfeed or express milk.

Table 4.3. Breastfeeding-friendly policies of the study sample's worksites.

Breastfeeding-Friendly Policy	<i>n</i>	%
Breastfeeding Hours during Work Time		
No	119	43.59
Yes	154	56.41
Employees Pumping Breast Milk or Breastfeeding their Infant while at Work Policy		
No	78	29.10
Yes	17	6.34
Doesn't know	173	64.55
Breastfeeding or Breast Milk Pumping Venue		
No	238	95.20
Yes	12	4.80

4.2 Prediction of Breastfeeding Continuance

Having a policy supporting breastfeeding employees to breastfeed or express milk in their workplace was associated with lower discontinuance of breastfeeding (OR (95%CI)= 0.157 (0.019-1.299), compared to working mothers who did not know if they have this policy (Table 4.4). Mothers aged 20-29 years old (OR (95%CI)= 2.921 (0.943-9.049), p -value=0.0632) and aged 30-39 years old (OR (95%CI)= 2.865 (1.048-7.836), p -value=0.0403) were more likely to discontinue breastfeeding, compared to mothers aged 40 years or older. Discontinuing any breastfeeding between 2 months after returning to work to 12 months and formula initiation any time after baby’s birth were modeled on the independent variables using the Cox proportional hazards regression (Table 4.5). The hazard of discontinuance of any breastfeeding 2 months after return to work until one year working (Figure 4.1) and early initiation of formula feeding after baby’s birth (Figure 4.2) significantly decreased with having a policy facilitating breastfeeding employees to breastfeed or express milk in their workplace, where the hazard ratios were (HR=0.390, p -value=0.0498) and (HR=0.448, p -value=0.0110), respectively.

Table 4.4. The effect of breastfeeding policy and mother’s characteristic (i.e. age) on early cessation of any breastfeeding by the logistic regression

<i>Independent Variable</i>	<i>Complete discontinued any breastfeeding immediately when start working outside home (Yes or No)</i>	
Employees Pumping Breast Milk or Breastfeeding their Infant while at Work Policy	<i>OR (95% CI)</i>	<i>p-value</i>
Yes	0.157 (0.019-1.299)	0.0859

<i>Independent Variable</i>	<i>Complete discontinued any breastfeeding immediately when start working outside home (Yes or No)</i>	
Employees Pumping Breast Milk or Breastfeeding their Infant while at Work Policy	<i>OR (95% CI)</i>	<i>p-value</i>
No	1.302 (0.658-2.579)	0.4488
Don't Know (<i>Reference</i>)		
Age		
20-29 years	2.921(0.943-9.049)	0.0632
30-39 years	2.865(1.048-7.836)	0.0403
40 years and above (<i>Reference</i>)		

Note: Stepwise selection was used to predict the significant factor for early cessation of any breastfeeding among working mothers. A significance level of 0.15 is required to allow a variable into the model (SLENTY=0.15), and a significance level of 0.25 is required for a variable to stay in the model (SLSTAY=0.25).

Table 4.5. The effect of breastfeeding policy on early cessation of any breastfeeding and formula initiation by the Cox survival analysis.

<i>Independent Variable</i>	<i>Discontinued any breastfeeding after start working outside home (in months)</i>		<i>Formula initiation any time after delivery (in months)</i>	
	<i>HR</i>	<i>p-value</i>	<i>HR</i>	<i>p-value</i>
Employees Pumping Breast Milk or Breastfeeding their Infant while at Work Policy				
Yes	0.390	0.0498	0.448	0.0110
No	0.878	0.6425	0.814	0.2325
Don't Know (<i>Reference</i>)				

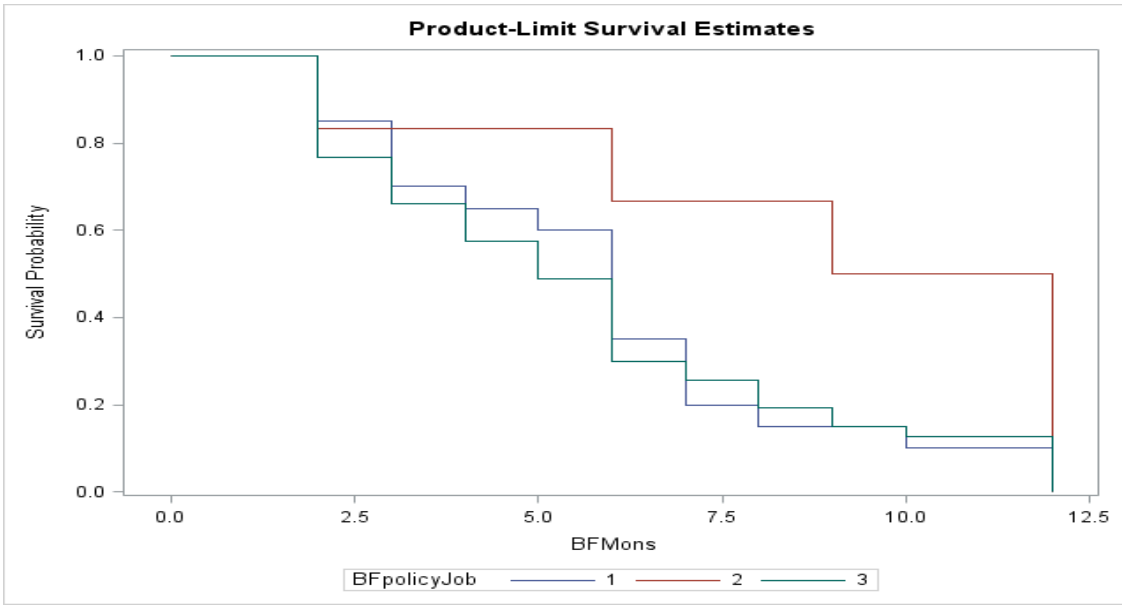


Figure 4.1. Cumulative probability of discontinued any breastfeeding after start working outside home (*in months*) by workplace breastfeeding supporting policy

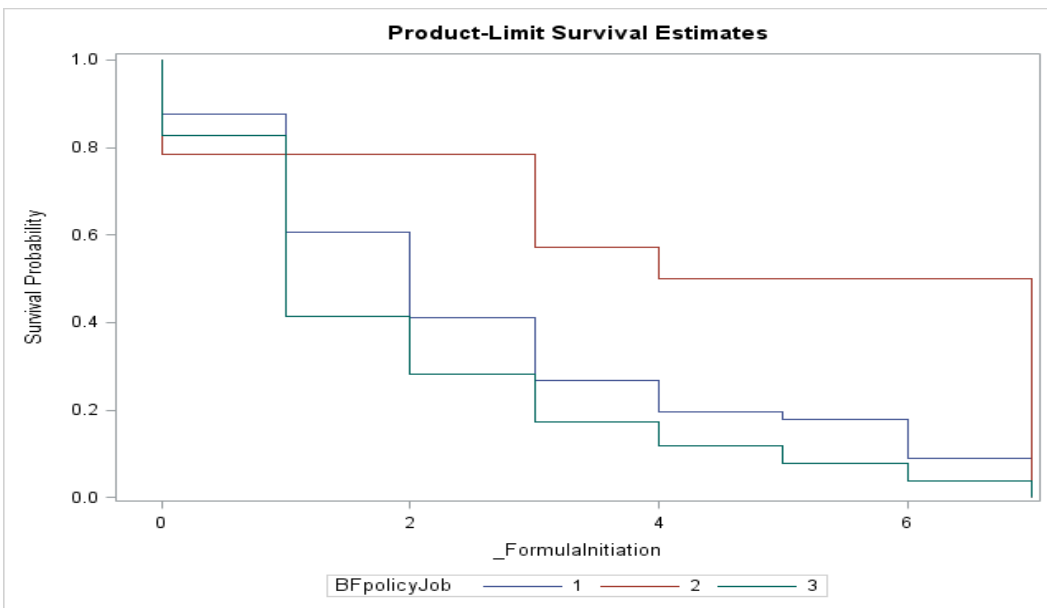


Figure 4.2. Cumulative probability of formula initiation any time after delivery (*in months*) by workplace breastfeeding supporting policy.

4.3 Mothers Knowledge and Approach Leadership for Change

The overall score of the mothers' knowledge about breastfeeding benefits was not significantly associated with the employed mothers' approach to the leadership in their workplaces to have any policy that offers support to mothers to express milk or breastfeed their infant in the workplace (OR (95%CI)= 0.970 (0.869-1.084), p-value=0.5919, Table 4.6). The evaluation was modeled based on the mothers who did not approach the leadership in their workplaces to have the policy.

Table 4.6. The effect of mothers overall knowledge about breastfeeding benefits and their intention to ask for breastfeeding supporting policies in their workplace.

Independent Variable	<i>Employed mothers did not approach leadership in their working settings to have any policy that support mothers to express milk or breastfeed their infant in the workplace.</i>	
	<i>OR (95% CI)</i>	<i>p-value</i>
Mothers overall knowledge about breastfeeding benefits (in %)*	0.970 (0.869-1.084)	0.5919

* The internal reliability of the 14-breastfeeding benefits variables was scaled using the Cronbach Coefficient Alpha. The Standardized Alpha Coefficient=0.7718 did not change after removing any of the breastfeeding benefits knowledge variables.

CHAPTER 5

CONCLUSION

5.1 Summary and Implications

In Saudi Arabia, barriers to breastfeeding among mothers in the workplace and in urban Saudi society have not yet been clearly identified and measured. In this study, the data analysis revealed that having a policy in support of breastfeeding employees to breastfeed or express milk in their workplace during work hours was associated with lower discontinuance of breastfeeding (OR (95%CI)= 0.157 (0.019-1.299), compared to working mothers who did not know if they have this policy available (Table 4.4). Thus, not only having a policy but also knowing about the policy is positively affecting the continuance of breastfeeding. Also, the hazard of discontinuance of any breastfeeding 2 months after return to work until one year working (Figure 4.1) and early initiation of formula feeding after the baby's birth (Figure 4.2) significantly decreased with the presence of a policy facilitating breastfeeding employees to breastfeed or express milk in their workplace, in which case the hazard ratios were (HR=0.390, *p-value*=0.0498) and (HR=0.448, *p-value*=0.0110), respectively (Table 4.5). These findings support the study's proposed hypothesis that workplace policies are negatively associated with working mothers' early initiation of formula feeding and with the early cessation of breastfeeding. Working mothers who do not have any breastfeeding support policies are

1.302 times more likely to completely discontinue any breastfeeding immediately when starting to work outside home than mothers who didn't know of such a policy. Also, working mothers without such policy are 2.25 times quicker to discontinue any breastfeeding after starting to work outside the home and 1.8 times quicker to initiate formula any time after delivery, than those who have it.

These results are in agreement with other international studies ((Hawkins, S., Griffiths, L., & Dezateux, C., 2007; Tsai, S., 2013). In a study conducted in Singapore, in which the impact of breastfeeding-friendly workplaces on breastfeeding duration was examined, the researchers found that having a lactation room with dedicated space to spend breast-pumping breaks were significant predictors of continued breastfeeding for more than 6 months after returning to work (Tsai, S., 2013). Another study conducted in the United Kingdom also found that mothers were more likely to breastfeed for at least 4 months if the employer offered flexible work arrangements (Hawkins, S., et al., 2007)

On the other hand, the study findings did not support the second hypothesis, which indicates that women's knowledge about the benefits of breastfeeding positively affects their intention to seek changes in workplace policies. The overall score of the mothers' knowledge about breastfeeding benefits was (OR (95%CI)= 0.970 (0.869-1.084), p-value=0.5919, Table 4.6), which is not significantly associated with the employed mothers' approach to their workplace leadership to have any policy that offers support to mothers to express milk or breastfeed their infant in the workplace. Therefore, other potential variables that could explain the mother's attitude to approach leadership such as mothers' age and number of children must be measured in the future. Also, mothers further detailed information about their job characteristics, include job position,

monthly salary, and the gender of the leadership, must be obtained in the future studies. Especially that mothers who have more influence and control over their workplace condition are more likely to be successful in obtaining the breastfeeding supportive services at workplace (Visness, C. & Kennedy, K., 1997).

5.2 Recommendation

Creative solutions must found to improve breastfeeding protection at work, so mothers will be able to breastfeed longer, which will improve health and development for both child and his or her mother. Therefore, in the future more qualitative studies should be conducted to explore how returning to work affects mother's decision to early discontinue any breastfeeding and early initiate formula feeding.

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November 2007 in Washington, DC

APPENDIX A INSTITUTIONAL REVIEW BOARD (IRB) APPROVAL LETTER



OFFICE OF RESEARCH COMPLIANCE

INSTITUTIONAL REVIEW BOARD FOR HUMAN RESEARCH

APPROVAL LETTER for EXEMPT REVIEW

This is to certify that the research proposal: **Pro00048479**

Entitled: *Breastfeeding behavior among working mothers in Saudi Arabia, and the effect of work settings on breastfeeding initiation*

Submitted by:

Principal Investigator: Maryam Alhabas
College/Department: Arnold School of Public Health
Health Promotion, Education, and Behavior
Columbia, SC 29208 USA

was reviewed in accordance with 45 CFR 46.101(b)(2), the referenced study received an exemption from Human Research Subject Regulations on **2/4/2016**. No further action or Institutional Review Board (IRB) oversight is required, as long as the project remains the same. However, the Principal Investigator must inform the Office of Research Compliance of any changes in procedures involving human subjects. Changes to the current research protocol could result in a reclassification of the study and further review by the IRB.

Because this project was determined to be exempt from further IRB oversight, consent document(s), if applicable, are not stamped with an expiration date.

Research related records should be retained for a minimum of three (3) years after termination of the study.

The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). If you have questions, contact Arlene McWhorter at arlenem@sc.edu or (803) 777-7095.

Sincerely,

A handwritten signature in blue ink, appearing to read "Lisa M. Johnson".

Lisa M. Johnson
IRB Manager

APPENDIX B ENGLISH SURVEY

You are being asked to participate in this study because you are a female working outside her home and are over the age of 18. I am a graduate student at the University of South Carolina, and I am conducting a brief survey of workingwomen and breastfeeding. This survey will help inform researchers about breastfeeding behavior among working mothers in Saudi Arabia, and the effect of work settings on breastfeeding initiation. This survey has fewer than 35 questions and should take about 10 minutes to complete.

Please contact me if you have any questions.

Thank you!

Maryam S. Alhabas.

MSPH Candidate

Department of Health Promotion, Education, and Behavior

Arnold School of Public Health

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I am at least 18 years old, a working woman, and agree to participate in this study.

Please choose only one of the following:

Yes

No

Demographics and Employment Characteristics

1. What is the highest level of education you have completed? *Please choose only one of the following:*
 - a. Some primary
 - b. Primary
 - c. Secondary
 - d. High School
 - e. University or higher
 - f. Other.....

2. How old are you?
 - a. 20-29 years
 - b. 30-39 years
 - c. 40 years or above

3. What is your current marital status?
 - a. Single.
 - b. Married
 - c. Divorced
 - d. Widow

4. Do you have children?
 - a. Yes
 - b. No

5. How many children do you have? *Please provide the number:*
.....

6. Were you employed outside the home in the past 6 months? *Please choose only one of the following:*
 - a. Yes, full-time employed
 - b. Yes, part-time employed
 - c. No

7. In which working sector do you work?

- a. Hospital
- b. Private University
- c. Public University
- d. Private School
- e. Public School
- f. Other.....

8. Your work hours per day are... *Please choose only one of the following:*

- a. 7 hours/day
- b. 8 hours/day
- c. 9 hours/day
- d. More than 10 hours/day

9. Do you have shift work?

- a. Yes
- b. No

10. Does your current job allow you to have breastfeeding hours during work time?

- a. Yes
- b. No

Breastfeeding Behavior

11. If you have a baby do you plan to breastfeed him or her?

- a. Yes
- b. No

If you are a working mother, please answer each of the following questions:

12. Did you breastfeed your baby during maternity leave?

- a. Yes
- b. No

13. Did you continue to breastfeed after returning to work?

- a. Yes, I exclusive breastfed my baby (breast milk only).
- b. Yes, I mixed-fed my baby (breast milk and formula).
- c. No, I fed only formula.

If yes (a or b),

14. How long did you continue to breastfeed? *Please provide the number:*

.....Months.

If fed formula,

15. How old was your child in months when you began feeding him or her formula?

.....Months

Breastfeeding Policy

16. Is there a policy regarding employees pumping their milk or breastfeeding their infant while at work?

- a. Yes
- b. No
- c. I don't know

If yes,

17. Did you ever use this policy regarding pumping milk or breastfeeding after returning to work?

- a. Yes
- b. No

If no,

18. Did you ever approach anyone in leadership about having this policy?

- a. Yes
- b. No

19. Do you have a private room for pumping (not a restroom or lunchroom) at your work?

- a. Yes
- b. No

If yes,

20. Does it contain an electric breast pump?

- a. Yes
- b. No

21. Does it provide refrigeration for milk storage?

- a. Yes
- b. No

Breastfeeding Benefits Knowledge

22. For each of the following statements about breastfeeding, is the statement true? *For each statement, please answer Yes if you think the statement is true and No if it is not true:*

1. Breast milk is more easily digested than formula.	a. Yes b. No
2. Breastfeeding helps mothers to lose weight after pregnancy.	a. Yes b. No
3. Breastfeeding helps the uterus to return to its pre- pregnancy state more quickly.	a. Yes b. No
4. Breast milk contains all the essential nutrients for a newborn child.	a. Yes b. No
5. Colostrum contains essential antibodies necessary to help the child's immune system.	a. Yes b. No

6. Breastfeeding may decrease the chances of becoming pregnant	a. Yes b. No
7. Breastfeeding increase level of prolactin as well as oxytocin, and these hormones are thought to enhance mood	a. Yes b. No
8. Breastfeeding mothers report a special bond or closeness with the infants they breastfeed	a. Yes b. No
9. Pumping at work provides the mother with a sense that she is doing something for her infant while working	a. Yes b. No
10. The incidence, severity, and duration of infectious disease are also significantly decreased, including diarrhea, respiratory infections, otitis media, urinary tract infections, and meningitis	a. Yes b. No
11. Oral development is enhanced, perhaps because of the action of the mouth when sucking the breast	a. Yes b. No
12. Infants exclusively breastfed for 4 months exhibit advanced physical and behavioral development during their first year of life.	a. Yes b. No
13. Children who are breastfed score about 7 or 8 points higher on intelligence tests than children who are not breastfed	a. Yes b. No
14. Mothers of breastfed babies tend to be more productive at work and miss fewer days because of staying home with a sick child less often	a. Yes b. No

THANK YOU VERY MUCH FOR YOUR PARTICIPATION