

Breastfeeding Practices, Facilitators, and Barriers among Immigrant Muslim Arab  
Women Living in a Metropolitan Area of the Southwest of United States

by

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## ABSTRACT

Scientific evidence strongly indicates that there are significant health benefits of breastfeeding. Lower breastfeeding initiation, duration, and exclusivity rates are found in vulnerable populations particularly among women of low socioeconomic status, and racial minorities such as immigrant, racial, and minority cultural groups. Breastfeeding disparities can contribute to negative health outcomes for the mothers, and their infants, and families.

Muslim Arab immigrants are a fast-growing, under-studied, and underserved minority population in the United States. Little is known about breastfeeding practices and challenges facing this vulnerable population. Immigrant Muslim Arab mothers encounter breastfeeding challenges related to religion, language, different cultural beliefs, levels of acculturation, difficulties understanding health care information, and navigating the health care system.

A cross-sectional descriptive study was used to describe infant feeding practices, and identify contributors and barriers to adequate breastfeeding using the social ecological model of health promotion. A convenience sample of 116 immigrant Muslim Arab women with at least one child, 5 years or younger was recruited from a large metropolitan area in the Southwestern United States. The results indicated that immigrant Muslim Arab mothers demonstrate high breastfeeding initiation rates (99.2%), and lengthy breastfeeding duration ( $M=11.86$ ), but low rates of exclusive breastfeeding at 6 months (21.6%). Facilitators to breastfeeding within the sample were high intentions to breastfeed, positive breastfeeding knowledge and beliefs related to the benefits of breastfeeding, religious teachings promoting breastfeeding, and encouragement to

breastfeed from the mothers' social support system. Several barriers to successful breastfeeding were related to lacking the specific knowledge of the benefits of breastfeeding, and discomfort with breastfeeding in public, and in front of strangers. High income and religious teachings encouraging breastfeeding were significantly associated with exclusive breastfeeding at six months. Greater maternal age and comfort with breastfeeding in public were associated with longer breastfeeding durations.

The socio-cultural context for support of breastfeeding is an important consideration by healthcare providers caring for Muslim Arab women. An ecological perspective needs to be applied to interventions targeting breastfeeding promotion to facilitate effectiveness in this population. Culturally tailored intervention to the specific breastfeeding concerns and needs of Muslim immigrant women could promote optimal breastfeeding in this population.

## DEDICATION

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

وَمَا تَوْفِيقِي إِلَّا بِاللَّهِ عَلَيْهِ تَوَكَّلْتُ وَإِلَيْهِ أُنِيبُ

"In the name of God, most Gracious, most Compassionate"

“And my success can only come from Allah; in Him I trust, and unto Him I return”

(Quran 11:88)

All thanks and praise is due to Allah, my Lord, we seek His help and forgiveness. We seek refuge in Allah from the evil within ourselves and the consequences of our evil deeds. Whoever Allah guides will never be led astray, and whoever Allah leads astray will never find guidance.

This work is dedicated to my family, my mother and father, sisters, and brothers for their love, and constant support and encouragement.

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## TABLE OF CONTENTS

	Page
LIST OF FIGURES .....	x
INTRODUCTION .....	1
Statement of the Problem.....	2
Purpose of the Study and Research Questions.....	3
LITERATURE REVIEW .....	5
Benefits of Breastfeeding.....	5
Factors Influencing Breastfeeding Practices.....	7
Individual Factors. ....	8
Social Factors.....	9
Physical Environment. ....	9
Societal Factors.....	10
Breastfeeding in Vulnerable Populations.....	11
Immigrant Muslim Arab Women in the US. ....	13
Islamic Values and Breastfeeding.....	14
Challenges of Breastfeeding in Immigrant Muslim Arab Women .....	18
Ecological Approach in Breastfeeding Research.....	19
Conceptual Framework.....	23
Definition of Terms.....	26

	Page
METHODS .....	28
Research Design.....	28
Sample.....	28
Setting .....	29
Subject Recruitment.....	29
Data Collection .....	30
Measurements .....	31
Demographic Information.....	32
Breastfeeding Knowledge and Beliefs.....	33
Infant Feeding Practices.....	33
Social Support.....	34
Religious Influence. ....	35
Physical Environment.....	35
Procedures.....	32
Human Subjects Protection.....	36
Data Analysis .....	38
RESULTS .....	41
Characteristics of Sample .....	41

	Page
Research Question 1: Infant Feeding Practices .....	44
Research Question 2: Facilitators and Barriers to Breastfeeding .....	48
Individual level. ....	48
Religion Influence.....	51
Social Level .....	51
Physical Level.....	52
Research Question 3: Sociodemographic Factors Associated with Breastfeeding. .....	51
Research Question 4: Sociocultural Factors Associated with Breastfeeding. ....	54
Research Question 5: Reasons for Stopping Breastfeeding.....	54
DISCUSSION .....	56
Infant Feeding Practices.....	56
Facilitators and Barriers to Breastfeeding.....	61
Factors Associated with Breastfeeding Practices .....	64
Implications for Practice .....	65
Implications for Research .....	69
Strength and Limitations.....	71
Conclusion .....	72



	Page
REFERENCES .....	73
APPENDIX	
A    RESEARCH SURVEY.....	88
B    RESEARCH INFORMATION SHEET .....	96
C    INSTITUTIONAL REVIEW BOARD EXEMPTION STATUS.....	99

## LIST OF TABLES

Table	Page
1. Demographic Characteristics of the Sample.....	42
2. Demographic Charactersitics of the Children Included in the Study .....	43
3. Breastfeeding Practices of the Mothers .....	45
4. Breastfeeding Knowledge and Beliefs of the Mothers .....	50
5. Reasons for Stopping Breastfeeding.....	55

## LIST OF FIGURES

Figure	Page
1. The Social Ecology Model of Health Promotion (SEMHP).....	26
2. Feeding Types of the Sample.....	47
3. Babies Age When the Mother Stopped Breastfeeding .....	47

## Chapter 1

### INTRODUCTION

The American Academy of Pediatrics recommends exclusive breastfeeding (i.e., without the introduction of formula or other substances) for the first 6 months of life, and continued breastfeeding until at least 12 months of age (Eidelman et al., 2012). In addition, the World Health Organization (WHO) recommends infants to be exclusively breastfed for the first 6 months and to continue breastfeeding up to 2 years (WHO, 2015). Breastfeeding initiation rates in the United States (US) have met the Healthy People 2020 national objective of 81.1% (Centers for Disease Control and Prevention [CDC], 2016). However, breastfeeding rates at 6 and 12 months as well as rates of exclusive breastfeeding at 6 months remain low; 51.8%, 30.7%, and 22.3% respectively (CDC, 2016). If 90 percent of US families followed the guidelines of exclusive breastfeeding practices, US would save \$13 billion per year in direct and indirect pediatric health costs and the cost of premature death (Bartick & Reinhold, 2010).

Lower breastfeeding initiation, duration, and exclusivity rates are found in vulnerable populations particularly among women of low socioeconomic status, and racial minorities e.g., immigrant, racial, and minority cultural groups (Chapman & Pérez-Escamilla, 2012; Jones, Power, Queenan, & Schulkin, 2015; Kruse, Denk, Feldman-Winter, & Rotondo, 2005; Ryan, Zhou, & Arensberg, 2006). Decreased breastfeeding rates, particularly among vulnerable populations, may perpetuate social inequalities in health disparities (Britton, McCormick, Renfrew, Wade, & King, 2007).

## Statement of the Problem

Arab immigrants are a fast-growing, under-studied, and underserved minority population (Matin & LeBaron, 2004). The number of immigrant Arabs in US increased from 1.1 million in 2000 to 1.9 million in 2014 (Arab American Institute Foundation, 2014). Although immigrant Muslim Arabs represent the fastest growing segment of the Arab American community, little is known about breastfeeding practices of these women and challenges they face to establish successful breastfeeding. In particular, breastfeeding research within the immigrant Muslim Arab population has been misclassified in US national data as white, non-Hispanic category (Aboul-Enein & Aboul-Enein, 2010). In Arab countries, Muslim mothers tend to breastfeed their infants for up to 1 year or longer as recommended by the Islamic teachings that every mother should breastfeed her children up to the age of two years (Dashti, Scott, Edwards, & Al-Sughayer, 2014). However, Muslim women do not implement breastfeeding practices according to WHO recommendations. Immigrant Muslim Arab women in US encounter challenges in initiating and sustaining breastfeeding. These challenges are related to religious requirements, different cultural beliefs, language, levels of acculturation, difficulty understanding health care information, navigation of the health care system, and increased social discrimination (Al-Krenawi & Graham, 2000; El-Sayed & Galea, 2009; Furman, Banks, & North, 2013). No specific data are known about breastfeeding practices and challenges facing immigrant Muslim Arab women. The increase in the number of Muslim Arab immigrant mothers and a possible trend away from breastfeeding make this a vulnerable population to study. Assessing women's breastfeeding knowledge and practices, and identifying the facilitators and barriers of

breastfeeding are essential to effectively promote and support successful breastfeeding among this population (Chapman & Pérez-Escamilla, 2009).

### **Purpose of the Study and Research Questions**

The purposes of this study are to describe breastfeeding knowledge and beliefs, and infant feeding practices, and to identify contributors and barriers to adequate breastfeeding among immigrant Muslim Arab women who reside in a metropolitan area of the Southwestern US. This study contributes to the limited research on breastfeeding in Muslim Arab women in US. Identifying breastfeeding behaviors and factors influencing breastfeeding can inform recommendations for nursing research, practice, education, and policy to promote optimal breastfeeding practices and appropriate supportive interventions to enhance breastfeeding success. Using the Barriers and Contributors to Breastfeeding survey based on Dunn, Kalich, Fedrizzi, and Phillips (2015) the following research questions were posed:

1. What are immigrant Muslim Arab mothers' infant feeding practices in terms of breastfeeding initiation, duration, and exclusivity at 6 months?
2. What are the most prevalent facilitators and barriers at individual (e.g., breastfeeding knowledge, intention, religion), social, and physical levels to initiating and continuing breastfeeding as reported by immigrant Muslim Arab mothers?
3. What are the sociodemographic factors (age, income, education, employment, and length of stay in US) associated with exclusive breastfeeding up to six months and breastfeeding duration for more than one year?

4. What are the sociocultural (religion, and breastfeeding in public) factors that predict exclusive breastfeeding up to six months and breastfeeding duration for more than one year?
5. What are the reasons for stopping breastfeeding?

## **Chapter 2**

### **LITERATURE REVIEW**

#### **Benefits of Breastfeeding**

Exclusive breastfeeding for the first six months of a child's life has been promoted by prominent healthcare organization such as the WHO, and the United States Department of Health and Human Services (USDHHS). The benefits of breastfeeding have been well documented and it is considered the “gold” standard for infant feeding (WHO, 2016). Breastfeeding provides a wide range of health benefits for mothers and infants (Victora et al., 2016). Researchers have reported nutritional, immunological, neuro-cognitive, and psychosocial benefits of breastfeeding for the baby. The composition of mother's milk has a unique combination of nutrients essential to a child's health that differ from mother's milk substitutes (Walker, 2010). The composition of proteins, fat, carbohydrates, vitamins, and minerals in mother's milk changes over time to match the changing physiology of the growing baby. In addition, human milk contains a wide range of biologically active factors that that aid in the development and maturation of the gut, protect against infection and inflammation, and contribute to immune maturation, organ development, and healthy microbial colonization (O'Sullivan, Aifric, Marie, & Jennifer, 2015).

Breastfed infants are less likely to experience acute otitis media, severe lower respiratory tract infections, atopic dermatitis, childhood leukemia, obesity, and possibly asthma (Horta & Victora, 2013; Lodge et al., 2015; Sankar et al., 2015). Breastfeeding is associated with a lower risk of sudden infant death syndrome (Hauck, Thompson, Tanabe, Moon, & Vennemann, 2011). A meta-analysis of six high-quality studies showed



that ever breastfeeding was associated with a 36% reduction in sudden infant deaths (Victora et al., 2016).

There is a general agreement that breastfeeding enhances cognitive development in children. Several breast milk components have been suggested to explain the advantages held by breastfed children, specifically long-chain polyunsaturated fatty acids (Petryk, Harris, & Jongbloed, 2007). Another explanation of the association between breastfeeding and cognitive ability are the psychosocial aspects such as mother-infant attachment. Development of the nervous system depends on the amount, quality, and timing of sensory stimulation provided to the developing infant (Swain, 2011). Components of the breastfeeding relationship that have been suggested to enhance infant stimulation include the skin-to-skin contact involved in breastfeeding and the act of breastfeeding creating a closer attachment between mother and child (Mortensen, Michaelsen, Sanders, & Reinisch, 2002). Breastfeeding nurtures the relationship between mother and child and is associated with a lower risk of post neonatal death (Gartner et al., 2005).

Breastfeeding offers important maternal health benefits such as reducing the risk of postpartum hemorrhage as it encourages uterine contractions and reduces the amount of postpartum blood loss, and increases child spacing (Chowdhury et al., 2015). Breastfeeding mothers lose weight gained during pregnancy faster as breastfeeding requires 200 to 500 extra calories per day to produce breast milk, which may reduce or eliminate the risk for developing diabetes (Aune, Norat, Romundstad, & Vatten, 2014; Neville, McKinley, Holmes, Spence, & Woodside, 2014). Not only does breastfeeding provide short-term benefits but mothers also benefit long-term from choosing to

breastfeed. Chowdhury et al. (2015) in a systematic review and meta-analysis study to evaluate the effect of breastfeeding on long-term maternal health outcomes, reported that breastfeeding is associated with reduced risk of developing breast and ovarian cancers, type 2 diabetes, and postpartum depression.

Furthermore, breastfeeding positively affects the greater community and society because of its economic benefits through improved health outcomes for both the mother and the baby, and decreased health care costs through fewer medical visits and treatments (Rollins et al., 2016). In addition, breastfeeding is an environmental friendly behavior that decreases the need for disposal of formula bottles and cans and reduces energy demands required for the production and transportation of formula (Gartner et al., 2005). The established health benefits of breastfeeding have resulted in Healthy People 2020 national objectives for breastfeeding to increase the proportion of mothers who breastfeed their babies to 81.9% initiation, 60.6% at six months, 34.1% at one year, and 25.5% of exclusive breastfeeding at 6 months (USDHHS, 2011).

### **Factors Influencing Breastfeeding Practices**

Despite scientific evidence strongly indicating that there are significant health benefits of breastfeeding for the mother, baby, family, and community, breastfeeding duration and exclusivity fall short of Healthy People 2020 breastfeeding goals. A review of the literature identified numerous variables affecting breastfeeding duration and breastfeeding exclusivity including individual, social, physical, and societal environment factors. These factors combined within the context of a woman's life create an influence on her infant feeding practices (Kaufman, Deenadayalan, & Karpati, 2010; Phillips, Brett, & Mendola, 2011; Tenfelde, Finnegan, & Hill, 2011).

## **Individual Factors**

Evidence shows a mother's breastfeeding knowledge and attitudes, self-confidence in the ability to breastfeeding, and previous exposure to breastfeeding have an impact on breastfeeding behaviors (Atchan, Foureur, & Davis, 2011; Avery & Magnus, 2011). According to USDHHS (2011) most women recognize that breastfeeding is the best source of nutrition for infants, but they lack the knowledge about its benefits for the child and mother and the risks associated with not breastfeeding. Lewallen and Street (2010) reported that lack of knowledge about breastfeeding benefits and management of breastfeeding challenges were related to early cessation of breastfeeding. In addition, in a national survey of mothers enrolled in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) , those who scored high on breastfeeding knowledge were also twice as likely to breastfeed (McCann, Baydar, & Williams, 2007).

Mothers with high breastfeeding self-efficacy demonstrate comfort in breastfeeding, and those who had previous breastfeeding exposure were more likely to exclusively breastfeed (Nommsen-Rivers, Chantry, Cohen, & Dewey, 2010). Furman, Banks & North (2013) found mothers who expressed confidence in their ability to breastfeed and commitment to overcome breastfeeding obstacles, subsequently breastfed longer and more exclusively

Maternal beliefs of insufficient milk, lack of knowledge of management of breastfeeding challenges such as sore nipples, engorged breasts, mastitis, leaking milk, pain, and incorrect infant position and latch are barriers to breast feeding (Furman et al., 2013; USDHHS, 2011). It is possible that a woman's perception of insufficient milk may be related to a lack of self-confidence in the ability to breastfeed.

## **Social Factors**

Social support and guidance from family and friends may have a significant impact on the initiation and duration of breastfeeding (Bevan & Brown, 2014). Arora, McJunkin, Wehrer, and Kuhn (2000) found that husbands' or partners' support exert an important influence on the mother's initiating and continuing to breastfeeding. Cross-Barnet, Augustyn, Gross, Resnik, and Paige (2012) indicated that the support a mother received from her own mother, friends, and others in the woman's social network is vital to continue breastfeeding. It is believed that social support increased the mother's confidence in her abilities to breastfeed by sharing advice regarding infant feeding. Women who did not receive adequate support and encouragement from family and friends were less likely to continue breastfeeding (Murimi, Dodge, Pope, & Erickson, 2010).

## **Physical Environment**

Physical environment such as the healthcare system and public settings are salient in influencing breastfeeding behavior. For example, hospital policies and clinical practices which include separating mothers from their babies during their hospital stays, lack of support from healthcare professionals, and distribution of formula samples have negative impact on the initiation and duration of breastfeeding (Dabrowski, 2007; Gill, 2009; Lawrence & Lawrence, 2010). Maintaining exclusive breastfeeding is positively associated with the encouragement and educational support from nurses and other healthcare providers, especially among mothers who are faced with breastfeeding challenges (Textor, Tiedje, & Yawn, 2013). Brand, Kothari, and Stark (2011) conclude that providing breastfeeding instruction has been found to be positively associated with

breastfeeding initiation and duration. Professional support from health care professionals such as doctors, nurses, or lactation consultants, especially in the first few weeks after delivery, when lactation is being established, can improve breastfeeding duration (Chung, Raman, Trikalinos, Lau, & Ip, 2008). Professional support may include helping the mother and baby with latch and positioning, counseling with a lactation crisis, counseling mothers returning to work or school, or addressing concerns of mothers and their families. The lack of support, encouragement, and education from healthcare professionals, especially when faced with breastfeeding problems, can become barriers to exclusive breastfeeding (Cross-Barnet et al., 2012).

Embarrassment about breastfeeding in public settings and disapproval of breastfeeding in front of others make it difficult for women to integrate breastfeeding into their daily lives (Gill, Reifsnider, Mann, Villarreal, & Tinkle, 2004; B. Spencer, Wambach, & Domain, 2015). A Health Styles survey, which is a large annual national mailed survey built through quota sampling of adults to yield a sample reflective of the general adult population weighted on demographic variables, asked participants about their beliefs of breastfeeding. Thirteen percent of respondents disagreed that women should have a right to breastfeed in public places (CDC, 2015). This is related to the view of breasts as sexual objects, leading to the practice of concealing breastfeeding from others (B. Spencer et al., 2015).

### **Societal Factors**

Societal environment such as lack of a supportive workplace can influence a mother's decision to continue breastfeeding. Employed mothers find it difficult to maintain breastfeeding after returning to work (Noonan & Rippeyoung, 2011; USDHHS,

2011). Women often face unsupportive working environments for breastfeeding such as inflexibility in their work hours and locations, lack of privacy for breastfeeding or expressing milk, having no place to store expressed breast milk, inability to find child care facilities at or near the workplace, and having limited maternity leave benefits which impairs their ability to successfully continue to breastfeed while employed (Noonan & Rippeyoung, 2011; USDHHS, 2011). In addition, employer attitudes and practices toward breastfeeding mothers are key factors for breastfeeding continuation (Stewart-Glenn, 2008).

### **Breastfeeding in Vulnerable Populations**

Research indicates that racial/ethnic disparities exist in breastfeeding behavior. Women who are more likely to breastfeed are older, non-Hispanic White, of high socioeconomic status, well educated, have attended prenatal classes, have friends or family members with breastfeeding experience, and have had successful previous breastfeeding experience (Tenfelde et al., 2011). African-American women have the lowest rates of breastfeeding in US compared to white and Hispanic/Latino women (CDC, 2013b). In 2008, 59% of African American women initiated breastfeeding, compared to 75% of white women and 80% of Hispanic women (CDC, 2013b). Similar trends were found for the number of women breastfeeding for at least six months (30 percent, 45 percent, and 46.6 percent, respectively) and one year (12 percent, 24.3 percent, and 26 percent, respectively). These rates underscore a significant racial/ethnic disparity in breastfeeding rates.

Findings from several studies report that breastfeeding rates among immigrant women declined following immigration when compared to breastfeeding rates in their

countries of origin (Celi, Rich-Edwards, Richardson, Kleinman, & Gillman, 2005; Harley, Stamm, & Eskenazi, 2007). For example, breastfeeding initiation and duration rates have been found to drop sharply among Hispanic and Latino American women, following immigration to the US (Gibson, Diaz, Mainous, & Geesey, 2005). Researchers have shown that there are various factors associated with initiation of breastfeeding in immigrant populations, including time since immigration, maternal attitudes, and social factors such as the support of a spouse or health care professional.

There are barriers that are unique and more prevalent among racial/ ethnic minority women. Major barriers to breastfeeding reported by low-income minority women include lack of social support, need to return to work, cultural acceptance/support of formula, language and literacy barriers, lack of access to information that promotes and supports breastfeeding, and acculturation (Jones et al., 2015). For example, barriers to breastfeeding for low-income, Mexican women included lack of support from caregivers and professionals, embarrassment, pain, and inconvenience (Gill et al., 2004). Also, minority mothers reported lack of breastfeeding encouragement and support from healthcare providers (Spencer et al., 2015). Returning to work is a significant barrier to initiating or continuing to breastfeed by low-income minority women, especially for women with no paid maternity leave, poor support at work, and those with hourly wages or with less flexible jobs (Colen & Ramey, 2014). Textor et al. (2013) stated that ethnic minority women who have low incomes and low social support are the least likely to breastfeed. Therefore, several researchers identified the need to identify factors affecting initiation and continuation of breastfeeding among immigrant groups in the US (Bai, Wunderlich, & Fly, 2011; Gill, 2009).

The USDHHS, Office of the Surgeon General issued the Blueprint “Call to Action to Support Breastfeeding” which identified lack of sufficient research regarding breastfeeding disparity, and called for the need for research that identifies the social, cultural, economic, and psychological factors that influence infant feeding behaviors (USDHHS, 2011, p. 20). Thus, to overcome breastfeeding disparities, it is essential that future breastfeeding studies consider ethnic/racial minorities.

### **Immigrant Muslim Arab Women in the US.**

Immigrant Muslim Arab women are a fast-growing, and underserved minority group in the US. This is because of an increase in the number of immigrants from Arab countries and relatively high fertility rates. The states with the largest percentage of Arab immigrants are California, Michigan, Virginia, Texas, and New York (Arab American Institute Foundation, 2014). The selected state is the number 12 state for highest number with 31,809 Arab, a majority of whom reside in the southwest region (22,000) (Laird, Amer, Barnett, & Barnes, 2007). The vast majority of Arabs in their countries of origin follow the Islamic religion (e.g., 60% in Lebanon to 99% in Kingdom of Saudi Arabia, (Pew Research Center, 2015). Religious teachings are based on strong principles that influence Muslims health perceptions and actions (Zaidi, 2014). These teachings have their origins in the *Quran*, which is believed by Muslims to be a direct revelation from God through the angel Gabriel to the Prophet Muhammad (*Peace be Upon Him [PBUH]*) for all human kind (Al-Mateen & Afzal, 2004). The ways that the Islamic religion shapes many aspects of health across national boundaries of Muslim Arabs are not homogenous due to differences in ethnicity and local customs (Ott, Al-Khadhuri, & Al-Junaibi, 2003).



Islam plays a significant role in the lives of Muslims and is the lens through which Muslims view the world. Islam is a religion and a comprehensive way of life. Islamic regulations formulate Islamic law (*Sharia*) based on Quran and the life and narrations of the prophet Mohammed (*PBUH*) (*Sunnah* and *Hadith*). Islamic principles are the legal framework, and code of ethics designed to regulate the rights of an individual (Hedayat & Pirzadeh, 2001). These Islamic laws address faith and religious traditions, cultural, health, political, social, legal, and economic regulations for the individual, family, and society. Religious teachings are strong principles influencing Muslims' health perceptions and actions independent of race, ethnicity, and socioeconomic status (Padela & Curlin, 2013; Zaidi, 2014). Islamic law addresses a wide range of health issues such as conception, contraception, birth, circumcision, breastfeeding, menstruation, intercourse, dietary habits, treatment and management of disease and illnesses, and health promotion.

### **Islamic Values and Breastfeeding**

Breastfeeding has a religious context in Arab culture. The Islamic values of Muslim Arab women can play a role in these breastfeeding practices. Breastfeeding is mentioned in seven verses in the *Quran*. Five of the *Quranic* verses contain instruction and rules that are considered mandated aspects of breastfeeding in Islam. In *Surah Al-Baqarah* (The Cow), the *Quran* mandates women to breastfeed their babies for up to 2 years, if possible, and states that every newborn infant has the right to be breastfed. The translation (Khan & Al-Hilali, 1999) of the verse states:

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, but the father of the

child shall bear the cost of the mother's food and clothing on a reasonable basis. No person shall have a burden laid on him greater than he can bear. No mother shall be treated unfairly on account of her child, nor father on account of his child. And on the (father's) heir is incumbent the like of that (which was incumbent on the father). If they both decide on weaning, by mutual consent, and after due consultation, there is no sin on them. And if you decide on a foster suckling-mother for your children, there is no sin on you, provided you pay (the mother) what you agreed (to give her) on reasonable basis. And fear Allah and know that Allah is All-Seer of what you do. (*Quran 2:233*).

In the second verse the duration of breastfeeding is addressed: “And we have enjoined on man (to be dutiful and good) to his parents. His mother bore him in weakness and hardship upon weakness and hardship, and his weaning is in two years give thanks to Me and to your parents, unto Me is the final destination” (*Quran 31:14*). The duration of breastfeeding in months is clearly stated in the third verse: “And we have enjoined on man to be dutiful and kind to his parents. His mother bears him with hardship and she brings him forth with hardship, and the bearing of him, and the weaning of him is thirty (30) months” (*Quran 46:15*). In *Surah At-Talaaq* (The Divorce) Islamic text outlines the breastfeeding regulations in case of divorce as:

Lodge them (the divorced women) where you dwell, according to your means, and do not treat them in such a harmful way that they be obliged to leave. And if they are pregnant, then spend on them till they deliver. Then if they give suck to the children for you, give them their due payment, and let each of you accept the

advice of the other in a just way. But if you make difficulties for one another, then some other woman may give suck for him (the father of the child. (*Quran* 65:6).

The other *Quranic* verse focuses on wet nursing practices and challenges in Islam. Wet nursing is approved in Islamic laws and considered a legal relationship between the wet nurse and suckled child as stated in *Surah An-Nisa'* (The Women)

Forbidden to you (for marriage) are: your mothers, your daughters, your sisters, your father's sisters, your mother's sisters, your brother's daughters, your sister's daughters, your foster mother who gave you suck, your foster milk suckling sisters, your wives' mothers, your step daughters under your guardianship, born of your wives to whom you have gone in - but there is no sin on you if you have not gone in them (to marry their daughters), - the wives of your sons who (spring) from your own loins, and two sisters in wedlock at the same time, except for what has already passed; verily, Allah is Oft-Forgiving, Most Merciful. (*Quran* 4:23).

The story of Moses (*PBUH*) and God's suggestion to his mother to suckle him to calm her emotions is presented in the next verses.

And we inspired the mother of Musa (Moses), (saying): "Suckle him [Musa (Moses)], but when you fear for him, then cast him into the river and fear not, nor grieve. Verily! We shall bring him back to you, and shall make him one of (Our) Messengers. And We had already forbidden (other) foster suckling mothers for him, until she (his sister came up and) said: "Shall I direct you to a household who will rear him for you, and sincerely they will look after him in a good manner? So did We restore him to his mother, that she might be delighted, and that she might

not grieve, and that she might know that the Promise of Allah is true. But most of them know not (*Quran* 28:7).

The last verse refers to breastfeeding as maternal instinct as states “The Day you shall see it, every nursing mother will forget her nursling, and every pregnant one will drop her load, and you shall see mankind as in a drunken state, yet they will not be drunken, but severe will be the Torment of Allah (*Quran* 22: 2). Both of these teachings are congruent with our current understandings of the hormonal effects of breastfeeding (Groër & Kendall-Tackett, 2011).

The recommended time in Islam for breastfeeding is approximately two years. This is congruent with current research and WHO recommendations (World Health Organization, 2015). Islamic teachings identified that breastfeeding is a shared responsibility of the child’s parents. If it is decided that the biological mother cannot nurse the baby, the mother and the father can mutually agree to let a wet nurse feed the child (Mohamad, Ahmad, Rahim, & Pawanteh, 2013). The Islamic teaching commanded that breastfeeding should be continued even if a couple is divorced. Quran teachings emphasized that breastfeeding is a mother’s responsibility and the infant’s father has an obligation to provide shelter and financial support so that his ex-wife can continue breastfeeding the child including paying for a wet nurse if it is necessary (Khattak & Ullah, 2007). This demonstrates the strong and long standing preference in Islamic teachings regarding feeding children human milk instead of animal milk (Shaikh & Ahmed, 2006).

## **Challenges of Breastfeeding in Immigrant Muslim Arab Women**

Immigrant Muslim Arab women in US encounter challenges in initiating and sustaining breastfeeding related to religion, different cultural beliefs, language, levels of acculturation, difficulties understanding health care information and challenges navigating the health care system, and increased social discrimination (Al-Krenawi & Graham, 2000; El-Sayed & Galea, 2009; Furman et al., 2013). The Islamic teachings recommend that the mother suckle her offspring for two years if possible, and state that every newborn infant has the right to be breastfed. Religious teachings are reported as valuable sources of motivation that promote breastfeeding in this group of women (Dashti, Scott, Edwards, & Al-Sughayer, 2010; Mahsa Jessri, Anna P. Farmer, & Karin Olson, 2013a). Although Muslim Arab mothers are motivated to breastfeed from religious teaching they often lack the knowledge of exclusive breastfeeding practices or hold cultural myths that hinder successful breastfeeding (Abdul Ameer, Al-Hadi, & Abdulla, 2008; Eldeek, Tayeb, & Habiballah, 2012; Nassar et al., 2014). For example, prelacteal feeding (e.g. water, sugar water, salt solution, crushed dates, artificial milk, animal milk, yogurt, gripe water, herbal tea, and black tea) is given for the first three days after delivery with the belief that it cleansed the bowels of the newborn until the production of ‘white’ milk (Al-Hreashy et al., 2008; Al Ghwass, 2011; Radwan, 2013). Prelacteal feeding interferes with exclusive breastfeeding, and makes breastfeeding more difficult to establish.

Immigrant Muslim Arab women face challenges in accessing and seeking healthcare because of language barriers, communication, and difficulty in understanding and interpreting health information (Salman, 2012; Shirazi, Bloom, Shirazi, & Popal,

2013). Immigrant Muslim patients reported that their healthcare provider's lack of understanding of their religious and cultural needs result in delaying or avoiding healthcare services (Hasnain, Connell, Menon, & Tranmer, 2011; Matin & LeBaron, 2004; Simpson & Carter, 2008). For instance, many Muslim women avoided talking about prenatal fasting because they did not want to be treated disrespectfully or to be told to stop fasting (Robinson & Raisler, 2005). A study conducted among Muslim Canadian women identified lack of support and lack of confidence in their ability to breastfeed, and environmental barriers such as no nursing rooms in public places as challenges to initiate and maintain breastfeeding (Mahsa Jessri, Anna P Farmer, & Karin Olson, 2013b).

Immigrant Muslim Arab women may find it difficult to follow breastfeeding religious teaching due to aforementioned barriers. The barriers experienced by immigrant Muslim Arab women may increase risk for breastfeeding failure, which can lead to feelings of guilt related to failure to meet religious expectations and failure to provide infants with breast milk, and may influence the mother to formula-feed. Therefore, immigrant Muslim Arab mothers constitute a vulnerable population in which to study breastfeeding challenges.

### **Ecological Approach in Breastfeeding Research**

The ecological approach has been widely used in breastfeeding research to describe multiple settings and social contexts that shape breastfeeding behavior. It is designated by different labels including the ecological perspective, ecological model(s), and multilevel model(s). For instance, Dunn, Kalich, Fedrizzi, et al. (2015) used the social ecological perspective to explore determinants that influence women's decisions to initiate and continue breastfeeding among mothers enrolled in WIC program. The

researchers identified barriers and facilitators of breastfeeding at individual, interpersonal, community, organization, and policy levels. Results at the individual level revealed that high education level, beliefs, and intentions were related to high initiation and durations. For example, a mother who initiated and continued breastfeeding up to six months or more was more likely to agree that babies fed breast milk are less likely to get sick, and breastfeeding helps prevent obesity. At the interpersonal level, mothers who breastfed for six months or more had a greater number of people support their breastfeeding decision. At the community level, women who breastfed in public tended to breastfed for longer durations. At the organizational level, women who were employed full-time were less likely to continue breastfeeding more than 6 months.

Reeves and Woods-Giscombé (2015) used Bronfenbrenner's human ecological model to examine factors affecting the infant feeding decision-making processes of African American women. The authors reported that individual characteristics and knowledge, microsystem (social support), exosystem (work and neighborhood), and macrosystem (cultural beliefs) environments can be deterrents to the woman's decision to breastfeed. For example, women may have adequate knowledge about the benefits of breastfeeding for themselves and their infants, but they do not have adequate practical knowledge about breastfeeding. The availability and quality of social support a mother receives can significantly affect her decision to initiate and continue breastfeeding. The influence of a woman's work environments, neighborhoods, and cultural beliefs must also be taken into account as factors that affect women's infant-feeding choice. For instance, the use of improper latching techniques and misconceptions about how to

manage breast engorgement can contribute to painful breastfeeding experiences and subsequent breastfeeding cessation.

Tiedje et al. (2002) tested the goodness of fit of the human ecology model of Bronfenbrenner with the mothers' reported experiences of infant breastfeeding practices based on the 5 levels of influence: mother/infant, family, healthcare delivery system, community, and society/culture. At the mother/infant level, mothers reported the need for more information about breastfeeding such as illnesses and medical conditions that could affect breastfeeding, managing breastfeeding challenges, and whether the babies were "getting enough" to eat. Also, mother-infant dyad factors related to maternal characteristics (e.g., confidence, coping, and problem solving skills) that helped breastfeeding mothers to get through breastfeeding problems. That social support from friends, and family members is needed for breastfeeding was agreed by several respondents who were still breastfeeding at 6 weeks postpartum. There was a general lack of consistency in the definition of positive or negative support for breastfeeding from healthcare delivery system. Most of the community influences on breastfeeding were related to breastfeeding in the workplace. Many women who wanted to combine work and breastfeeding were unclear how to manage the two. Comfort with one's body and body changes were the primary cultural category that influenced their breastfeeding.

Bueno-Gutierrez and Chantry (2015) identified the main social obstacles to breastfeeding in a low-income population in Tijuana, Mexico using the social ecological framework. The researchers identified the context in which mothers' feeding practices occur at the individual-level related to the mother, infant, and the mother-infant dyad, group-level (e.g., the environments that enable or disable mothers to breastfeed, such as



the hospital and health care facilities, home and work environments), and societal-level (including the acceptability and expectations about breast-feeding). Various social factors affected breastfeeding in this population such as embarrassment about breastfeeding in public, association of formula with higher social status, marketing by the infant food industry, perception of a non-breastfeeding culture, and lack of breastfeeding social programs. Other Mexican beliefs and practices that have detrimental effects on breastfeeding are early complementary feeding, the preference for a chubby baby, and gender roles that determine that infant feeding is the mother's responsibility.

Bentley, Dee, and Jensen (2003) applied a social ecological framework to breastfeeding to investigate the linkage between micro-level factors including African American women's breastfeeding beliefs, features of the community, neighborhoods, social and personal networks and cultural norms, and workplaces, and macro-level (e.g., the media, marketing of breastmilk substitutes, welfare reform, hospital policy and breastfeeding legislation). The authors reported that these two levels interact to influence women's breastfeeding choices. Dodgson, Duckett, Garwick, and Graham (2002) used a focused ethnographic approach guided by the socioecological model to describe the sociocultural patterns that promote breastfeeding in a Native American community in Minneapolis. The contextual patterns that influenced infant-feeding decisions are family, community, Ojibwe traditions, and mainstream society. These four patterns encompassed the influences of Ojibwe and mainstream cultures (traditions), communication-related barriers from a variety of sources (e.g., mixed messages from healthcare providers, family, and friends), socioeconomic issues, and social support.

## Conceptual Framework

The social ecological model of health promotion (SEMHP) was used to guide this proposal (Stokols, 1996). Social ecological models of human behavior have evolved over a number of decades in the fields of sociology, psychology, education and health and focus on the nature of people's interactions with their environment (Stokols, 1996). The SEMHP offers a theoretical framework for understanding the complex interaction of persons, groups, and their socio-physical milieu (Stokols, 1996). It is a comprehensive approach that addresses the individual, as well as their family-community contexts that play either an etiologic or moderating role in human health. Individual well-being is understood as a complex concept centering on the experience of the individual (breastfeeding women) in relation to a range of life domains (family), situations (societal changes) and settings (geographic locations). In this framework, the physical and social features of settings directly influence the health of their occupants and in reverse, the occupants of settings influence the healthfulness of their surroundings through their actions.

Stokols (1996) outlined core assumptions of the SEMHP. First, well-being is influenced by multiple interacting facets of both the physical and the social environments coupled with personal factors. Efforts to promote well-being should be focused on understanding this dynamic interplay between the factors involved rather than examining these factors separately. SEMHP emphasizes interrelationships between personal and environmental factors. Second, analysis of health issues should address the complex nature of human environments. Environments are described in terms of physical and social components using objective or subjective qualities. Environmental factors were

defined as sociocultural and geographic (Stokols, 1996) . The sociocultural environment comprises the influence of the culture and the society with whom the individual interacts. Examples of sociocultural factors are political, economic, sociological, technological, legal, ethical, and cultural aspects. Geographic factors refer to geographical setting, or regions of country, urban/rural areas, and neighborhood factors.

According to Stokols (1996) the "level of congruence (or compatibility) between people and their surroundings is viewed as an important predictor of well-being" (p. 286). Therefore, the health status of individuals and groups is influenced not only by environmental factors but also by a variety of personal attributes. Personal factors were defined as biogenetic (e.g. genetics, gender, and age), psychological (e.g. psychological status, stress, and anxiety), and behavioral (e.g. choice of breastfeeding vs formula) (Stokols, 1996).

Finally, the social ecological approach incorporates components of systems theory to understand the dynamic and mutual relationship of people and their environments. Systems theory principles such as interdependence, deviation amplification, homeostasis, and negative feedback characterize people-environment transactions in terms of cycles of mutual influences and thus allow researchers to understand and better anticipate the outcome of any event. In such a characterization, physical and social settings both influence health, and the participants may engage in individual or collective action to modify both the social and the physical settings.

Figure 1 is a conceptual model of SEMHP and includes four nested spheres (e.g. individual, social environment, physical environment, and societal structure) which represent the levels of influence that can promote or hinder breastfeeding. The individual

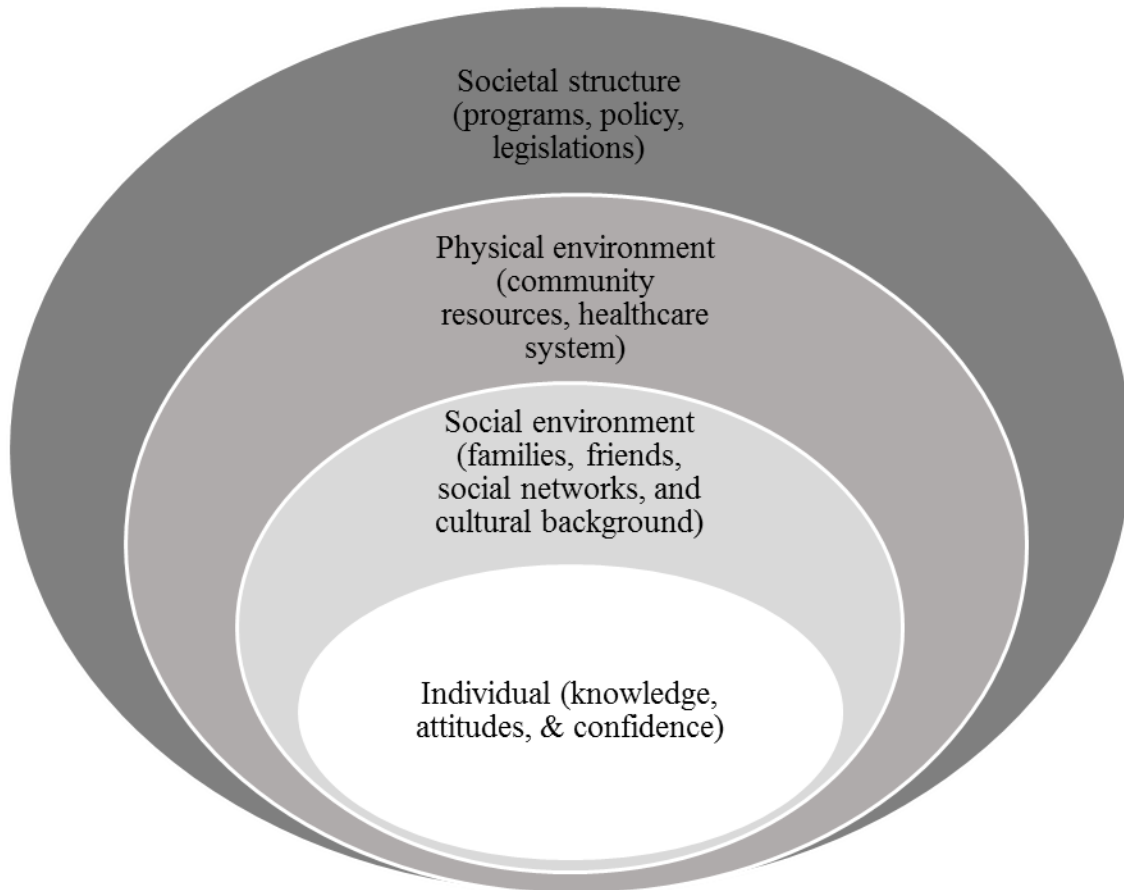
level encompasses the breastfeeding mother's personal characteristics such as age, education, religion, knowledge, beliefs, skills, attitude, employment, racial/ethnic identity and socioeconomic status. The next socioecological domain comprises social environment that can influence individual behaviors and includes family, friends, peers, co-workers, religious networks, cultural customs or traditions.

The physical environment includes organizations, institutions, and informational networks within defined boundaries (e.g., Special Supplemental Nutrition Program for Women, Infant, and Children [WIC] clinics or La Leche League groups, and healthcare providers or breastfeeding spaces in public areas) that influence women's breastfeeding decision. The next level in SEMPH is the societal structure and includes political, economic, and social structure affecting breastfeeding. Societal structures address the societal arrangement that can support or hinder breastfeeding (e.g. maternal health services, health policy, breastfeeding at work, and maternity leave). Societal structures can support and enhance breastfeeding practices, or they can be the source of psychosocial problems for vulnerable populations.

The SEMHP was used to identify factors that contribute and hinder breastfeeding among immigrant Muslim Arab women. Facilitators and barriers to breastfeeding are defined as factors that encourage or discourage mothers to breastfeed. For the purposes of this study, these factors were assessed at the individual level (intention, breastfeeding knowledge and beliefs, and religion), social environmental level (breastfeeding support from husband, family, and friends or healthcare providers), and physical environmental levels (breastfeeding in front of others, and in public places). In its entirety, the SEMHP

contributes to comprehensive understanding of the multiple factors that influence women's breastfeeding behavior.

Figure 1. *The social ecology model of health promotion (SEMHP).*



### **Definition of Terms**

Exclusive breastfeeding practices were defined according to WHO criteria (WHO, 2008):

1. Exclusively breastfed infants are fed only breast milk (including their own expressed milk or from a wet nurse) allowing for medicine, oral rehydration, drops or syrups or vitamins.

2. Predominately breastfed infants: an infant receives breast milk (including milk expressed or from a wet nurse) as the predominant source of nourishment and allows water and water based drinks, fruit juice, ritual fluids, oral rehydration salts, drops or syrups (vitamins, minerals and medicine).
3. Breastfeeding: infant receives breastmilk (including milk expressed or from a wet nurse) and any food or liquid including non-human milk, and formula.
4. Bottle-feeding: any liquid (including breast milk) or semi-solid food from a bottle with nipple/teat including non-human milk and formula.

Artificial feeding refers to infants who are fed only breastmilk substitute (United Nations Children's Fund [UNICEF], 2013). Prelacteal feed is the administration of any food or drink to the infant before the first breastfeeds (WHO, 2009). Colostrum is the special milk that is secreted in the first 2–3 days after delivery (WHO, 2009). The initiation time of the first breastfeeding is the time when the mother starts breastfeeding her newborn after delivery. It is recommended by the WHO that the initiation of the first breastfeeding take place within an hour after delivery. Duration of breastfeeding refers to the length of the breastfeeding period (in terms of number of months or days) of infants who were breastfed originally, but who had stopped being breastfed by the time of the measurement. Culture is defined as a set of learned “values, beliefs, attitudes, and practices” that are passed from generation to generation within a community (Kittler & Sucher, 2008, p. 5). Attitude towards breastfeeding is defined as a mother’s attitude toward breastfeeding as determined by her salient sets of beliefs about breastfeeding (Fishbein & Ajzen, 1975, p. 218).

## **Chapter 3**

### **METHODS**

#### **Research Design**

A nonexperimental-one group, cross-sectional, descriptive, retrospective design. was used to identify breastfeeding knowledge and beliefs, infant feeding practices, and to describe the facilitators and barriers to breastfeeding among immigrant Muslim Arab women. A descriptive research design seeks to define the phenomena by describing its nature such as incidence, size, and measurable attributes, or determine the factors or variables that are relevant to phenomena (Polit & Beck, 2012). The researcher observes, describes, and documents aspects of a phenomenon as it naturally occurs. In the quantitative descriptive design, variables are not manipulated, and there is no intervention or treatment tested (Polit & Beck, 2012). This design fits well with the research questions for this study that aimed to describe breastfeeding practices and factors that influence breastfeeding behaviors. Therefore, this approach was appropriate to the purpose of the study as little is known about breastfeeding practices among this population.

#### **Sample**

A convenience sample of Muslim Arab women were invited to participate in this study. The sample was recruited from four Islamic community centers, and two Islamic schools located in the Southwest region of US. To participate in this study, a mother must have met the following inclusion criteria: (a) a Muslim; (b) first-generation immigrant mother from one of the Arab countries; (c) greater than or equal to 18 years old; (d) lives in the southwest region of US; (e) has given birth to at least one child in the US within the past 5 years; and (f) is able to write and read in English. Mothers were excluded from

participation in this study if they did not meet these inclusion criteria, or if the mother's youngest baby was a multiple birth as these infants are more likely to be weaned early and less likely to be exclusively breastfed compared to their singleton peers (Damato, Dowling, Madigan, & Thanattherakul, 2005). It is helpful for nurses to understand that Arab countries share religiously informed views on health, illness, and the healing process, as well as similar cultural, socioeconomic and demographic characteristics. Despite the local differences among Arabic people, more similarities in health behavior exist than differences; therefore, for the purposes of this study we will consider these countries as a population.

To estimate the proportion of mothers with exclusive breastfeeding at 6 months, proportions with a 95% confidence interval (CI) will be calculated and reported.

Assuming a proportion of 0.16 as reported by Saaty, Cowdery, and Karshin (2015) and setting the width of the CI at 0.15, the required sample size is 92, determined through tabular entry of Hulley et al. (2013) using the following equation:

$n = [4(Z_{\alpha})^2] \times p(1-p) / W^2$ , where  $n$  is the required sample size,  $Z_{\alpha}$  is a value from the normal distribution related to the confidence level (equal to 1.96 for 95% confidence),  $p$  is the expected proportion who have the characteristic of interest, and  $W$  is the interval width.

### **Setting**

This study was conducted within a metropolitan area in a state within the southwestern US. According to the Arab American Institute Foundation (2012), the southwest region of US has one of the fastest growing Arab populations in the country. It is estimated that in the state recruitment occurred, the population of Arabs is close to



31,809. Moreover, the Arab American Institute Foundation indicated that the majority of Arab immigrants are clustered in one county within this state (Arab American Institute Foundation, 2012). The largest number of Arab immigrants to this region came from Egypt, Jordan, and Morocco.

### **Subject Recruitment**

Participants were recruited from four Muslim community based organizations, and two Islamic schools located in the southwest region of US. These community organizations were thought to be able to refer potential participants for the study based on the participants' involvement in the community centers. The mosques hold five daily and Friday prayers as well as evening classes or events on Friday, Saturday, and Sunday. The majority of Muslims visit these places for praying or for attending classes or social events. In addition, participants were recruited electronically through the social networking site, Facebook. Recruitment was done through advertising on the social networking site, (i.e., Facebook). An event page was created, where participants could enter, read about the research, and click on a link to the online survey (using the REDCap data collection system).

Flyers advertising the study's objectives, the researcher's contact information, the study's online link, and survey access code were posted in the Muslim community centers and schools. In addition, the researcher was available in the mosques during special community events, and during Muslim Friday prayer. The researcher traveled to the recruitment sites on Fridays, weekends, and during special events to administer questionnaires to participants. Other recruiting methods included referral through

acquaintances, in-person introduction in community and public gatherings, and snowball sampling through participants.

### **Data Collection**

This study used a retrospective questionnaire to collect data. The advantage of using a self-administrated questionnaire is standardized response as women are asked the same set of questions in the same order (Polit & Beck, 2012). The questionnaire was in English. Although the official language of Arab countries is Arabic, large differences in Arabic dialects between different countries make it incomprehensible to an Arabic speaker from another country or region. Pilot testing of the questionnaire was done to check clarity, sequence and the time needed for completion of questions. A convenience sample of five mothers from the target population, not included in the main survey, was used for the pilot survey. No modifications to the survey were suggested.

This questionnaire survey was adapted from Dunn, Kalich, Henning, and Fedrizzi (2015) *Barriers and Contributors to Breastfeeding: A Social Ecological Perspective* survey tool. The *Barriers and Contributors to Breastfeeding* survey is a multifaceted, comprehensive survey developed using a socio-ecological model to identify individual and environmental barriers and contributors to breastfeeding initiation and continuation among low-income women. Field-based professionals from diverse backgrounds (e.g., obstetricians, nurses, midwives, lactation consultants, social workers, and WIC providers) participated in focus groups to provide their perceptions of factors that determine a woman's decision to breastfeed to inform the development of a survey focused on breastfeeding barriers and contributors. Based on the results of the focus groups, review of the literature, and review of breastfeeding surveys, Dunn et al. (2015) developed a

survey to identify individual and environmental contributors and barriers to breastfeeding initiation and continuation at the individual, interpersonal, community, organizational, and policy levels. The final survey was reviewed by experts in breastfeeding research to establish content validity and by WIC mothers to establish face validity. No reliability metrics are available for this instrument. For the present study, the researcher adapted this survey for the present population by adding questions related to the influence of religion.

The benefit of using this instrument is that it captures the influence of external environments on feeding practices of immigrant mothers, since one of the significant components of change for immigrant mothers is their external living environment. However, the limitation was that no other studies have ever used it and the validity of this tool has only been tested in the initial developmental study. A permission to use this survey for this study was granted from the principal researcher, who was contacted through email. This survey (Appendix A) assesses (a) demographic information, (b) breastfeeding knowledge and beliefs, (c) infant feeding practices, (d) social support, (e) religion influence, and (e) physical environment factors related to breastfeeding.

### **Measurements**

**Demographic information.** Sixteen demographic questions assessed for social and economic characteristics of the sample. Maternal characteristics questions included age in years, marital status (married, divorced, widowed), employment status (full-time, part-time, stay at home mom, or student), and education. Highest level of education obtained was categorized into eight levels: primary/elementary school, some high school, but did not finish, regular high school diploma, some college, associate degree, bachelor's degree, some graduate school, and graduate degree. Income was measured

using 4 income brackets (e.g., less than \$30,000, \$30,000-69,999, \$70,000-99,999, and \$100,000 or more). Country of origin was assessed using an open-ended item. Also, mothers were asked about their parity (number of children), number of years living in US, city where they live, preferred language of communication (Arabic or English), if they were breastfed as a child (yes, no, or unsure), and whether their pregnancy was planned or not. In addition, the survey assessed for the child in question's child-related gender, age, and whether the child was born at full-term (yes or no response).

**Breastfeeding knowledge and beliefs.** Breastfeeding knowledge and beliefs were measured by asking participants to report their level of agreement with statements about the value of breastfeeding. The breastfeeding knowledge and beliefs questionnaire derived from Dunn, Kalich, Fedrizzi, et al. (2015) contains 17 items related to the value of breastfeeding with response options on a 5-point Likert scale ranging from “strongly disagree” to “strongly agree”. Approximately half of the items are worded in a way that favors formula feeding and the remaining questions favor breastfeeding. Total score ranges from 17-80 and was calculated by reverse-coding the items favoring formula feeding and then summing all item scores. Total score was grouped into 3 categories: positive to breastfeeding (49-80), neutral (33-48), and positive to formula feeding (16-32).

**Infant feeding practices.** Infant feeding practices were operationalized as initiation of breastfeeding after delivery, exclusive breastfeeding until age 6 months, months of exclusivity (if they did not breastfeed exclusively for 6 months as recommended by WHO), and duration of breastfeeding. Items related to infant feeding practices were derived from infant feeding practices developed by Dunn, Kalich,

Fedrizzi, et al. (2015). The infant feeding practice portion of the questionnaire consists of 11 items related to breastfeeding initiation, exclusivity, duration, and reasons not to breastfeed or to terminate breastfeeding. The breastfeeding initiation question asked how long after delivery the mother breastfed or tried to breastfeed for the first time (within 1 hour, 1 to 6 hours, more than 6 hours, next day or can't remember).

Exclusivity and duration of infant feeding were measured through answers to two questions: "Did you ever supplement with substances other than breast milk, like formula, juice, cow's milk, sugar water, herbal tea, or anything else, even water?" and "How old was your baby the first time he or she had any other liquids or solids, not counting vitamins, minerals or medicines". Breastfeeding duration was assessed by asking "how old was your baby when you stopped breastfeeding?" One question included reasons not to breastfeed or for terminating breastfeeding ("Did any of the following reasons influence your decision to not breastfeed or to stop breastfeeding"). Mothers chose from a checklist with 17 possible reasons such as "It was easier to give my baby formula", "I felt more comfortable giving my baby formula", and "I got free formula from WIC", "I didn't want to have to watch what I ate and drank" and "I don't have enough milk". A frequency distribution was calculated for each response.

**Social support.** This scale measured the social and professional encouragement the mother received for breastfeeding from different individuals including her husband, family, friends, peers, and different healthcare providers. Dunn, Kalich, Fedrizzi, et al. (2015) included 11 questions about the level of influence the social support system had on the mother's decision to breastfeed. Mothers were asked "Out of the following list, who has encouraged or discouraged you to breastfeed?" Mothers responses ranged from

encourage, discourage, no influence, or not applicable. Percentages of the individuals who encouraged and discouraged the mothers to breastfeed were calculated.

**Religious influence.** Two questions addressing the influence of religion on breastfeeding decision were added to the survey by the researcher. Mothers were asked if their religion encouraged them to breastfeed with a response range “yes or no”. An open-ended question “please specify how your religion influenced your breastfeeding decision” was available for participants to describe how their religion influenced their breastfeeding, purely for informational purposes. Content analysis of the written responses was examined to identify patterns and trends in their responses.

**Physical environment.** Physical environment influence on breastfeeding was defined as cultural norms of breastfeeding in public places. Twelve questions related to physical environment are derived from Dunn et al. (2015) breastfeeding barriers and contributors survey. Physical influence was addressed by asking questions on whether a woman can breastfeed comfortably in front of others, and in public places. If a participant breastfed her child, she was asked how comfortable she would be breastfeeding among close women friends, among close male and female friends, or in public. Response options are “yes, no, or somewhat”. Also, the survey asked about the reactions of strangers and family members while breastfeeding in public with choices range from positive, some positive and some negative, negative, and no reaction. Percentage frequency for each item on the physical environment was calculated.

### **Procedures**

Once the survey was finalized and the Arizona State University (ASU) Collaborative Institutional Review Board (IRB) approval for the main study was

obtained, the student investigator approached potential participants. The researcher introduced herself and identified the academic affiliation of the researcher as well as the purpose of the study. Mothers were told that the study is intended for Muslim Arab immigrants with children who are born in US and less than 5 years of age. Potential participants who met the inclusion criteria were asked if they were willing to participate and complete the study survey. Participants were informed that the survey would take approximately 20-25 minutes to complete. Potential participants who agreed to participate were presented with the research information sheet (Appendix B) that clarifies the purpose of the study as well as informed them of their rights to refuse to answer any questions or to exit the survey at any time. The participants were assured of their confidentiality as the survey was anonymous and has no means of collecting identifying information from participants. The participant had the opportunity to read the research information sheet before taking the survey. A verbal consent was obtained from prospective mothers. Potential participants were then given the survey. If the woman has more than one child, she was asked to give information on her youngest child who was born in US. After handing the completed surveys back to the researcher, the participants were thanked for their participation in this study. No incentive to participate in the study was offered. The approach for data collection was almost identical in every mosque, community center, and school. The researcher kept track of data and daily activities of the study. Data collection started on September 28, and ended on November 4, 2016.

For participants who took the online survey, the survey consisted of several sections. The first section contained the research information section. The second section determined eligibility to participate in the study by asking if the mother is immigrant

Muslim Arab of a child less than five years who was born in US. Mothers who met the inclusion criteria were allowed to complete the questionnaire online. Informed consent was implied by completing the survey online. Participants who did not meet the inclusion criteria were informed that they are not eligible to continue the study and were thanked for their participation.

### **Human Subjects Protection**

The researcher completed the Collaborative Institutional Review Board (IRB) Training Initiative (CITI) Program in the Protection of Human Research Subjects. Approval was granted by the Arizona State University's IRB (Appendix C). The IRB guidelines for conducting research were strictly followed throughout the course of this research. To ensure privacy and confidentiality of all participants, no identifying information were collected on the data collection forms, and all of the information disclosed by participants were coded by number, and were kept in locked files. For electronic data, the survey software, REDCap, has built-in physical and operational securities to address confidentiality and compliance requirements for data transmission and storage. All data was encrypted, and had no personal identifying information. Only the research team had access to REDCap data. Username and password were authorized to individual research staff who is CITI trained.

Participants were notified that participation in this study was voluntary and anonymous and participants had the right to withdraw from participation at any time. No risks or adverse effects were expected from participating in the study. However, participants were informed that minor discomfort and/or fatigue may be experienced from completing the survey as the survey took approximately 20-25 minutes to be



completed. To minimize the discomfort, participants were not to be rushed to complete the survey and were given enough time to answer the survey. Additionally, some questions in the survey such as questions related to personal demographics may cause discomfort or some anxiety to some participants. To address this risk, participants were fully informed of their rights to refuse to answer any questions or to withdraw from the study.

Lipson and Meleis (1989) recommended obtaining verbal consent with Arab immigrants as written consents could have a negative consequence for the subject due to the different meanings the written consent may imply. For example, asking a research participant to sign a written consent may imply lack of trust in the participant's word or an insult to be asked to sign after the individual verbally agreed to participate. The researcher obtained a waiver of documentation of consent to comply with Arab immigrant cultural practices. A research information sheet that explained the purpose of the study and provided assurance about confidentiality was used instead of written consent. Verbal expression of willingness to participate was accepted in instead of the written consent.

### **Data Analysis**

The data from the online surveys was directly downloaded to Statistical Package for the Social Sciences version 23 (SPSS software) program. For the hardcopy survey, the researcher transferred records from written to electronic format using a double entry system to reduce rates of errors. The researcher entered all of raw data into REDCap program. The researcher and one dissertation committee member doubled check the data to identify inconsistencies in data entry.

Descriptive statistics including means, ranges, standard deviations, and frequency distribution tables were used to describe the demographic data of the participants. Measures of central tendencies were used to summarize continuous variables for normally distributed variables, and medians for skewed variables. Estimates of internal consistency using Cronbach's alpha for breastfeeding knowledge and beliefs, social support, and physical scales were .65, .99, and .85 respectively. Scales used in this study were found to be internally consistent.

Outlined below is the approach used to answer each question:

Question 1. What are immigrant Muslim Arab mothers' infant feeding practices in terms of breastfeeding initiation, duration, and exclusivity at 6 months? Descriptive statistics were used to describe infant feeding practices, including calculating means, standard deviations, and ranges for continuous variables and counts with frequencies for categorical variables.

Question 2. What are the most prevalent facilitators and barriers at individual (e.g., breastfeeding knowledge, intention, religion), social, and physical levels to initiating and continuing breastfeeding as reported by immigrant Muslim Arab mothers? Frequency distribution and percentage were calculated for each facilitator and barrier factor.

Question 3. What are the sociodemographic factors (age, income, education, employment, and length of stay in US) associated with exclusive breastfeeding up to six months and breastfeeding duration for more than one year? Logistic regression was used to examine relationships between the sociodemographic factors and exclusive breastfeeding of six months and breastfeeding duration (statistical significance set at  $p <$

0.05 was used to examine the effect of each factor). The dependent variable was classified as either mothers exclusively breastfeeding their infants for 6 months or not (exclusive breastfeeding =1 or not =0). Duration of breastfeeding as the dependent variable was classified breastfeeding for either less than 12 months or 12 months and more (less than 12 months=0 and  $\geq 12$  months=1).

Question 4. What are the sociocultural (religion, and breastfeeding in public) factors that predict exclusive breastfeeding up to six months and breastfeeding duration for more than one year? Logistic regression was executed to analyze this question. The dependent variable was classified as either mothers exclusively breastfeeding their infants for 6 months or not (exclusive breastfeeding =1 or not =0). Duration of breastfeeding as the dependent variable was classified as breastfeeding for either less than 12 months or 12 months and more (less than 12 months=0 and  $\geq 12$  months=1). Results are presented as odds ratios and their respective confidence intervals at 95 %.

Question 5. What are the reasons for stopping breastfeeding? Frequency distribution and percentages were calculated to answer question five. For the open response question about the influence of religion on breastfeeding, a simple listing of the most common statements relating to religious factors affect breastfeeding were included in the data synthesis.

## Chapter 4

### RESULTS

#### Characteristics of Sample

A total of 116 mothers were included in the study, 69 (59.5%) participants completed hard copy survey, while 47 (40.5%) respondents were enrolled from online. Table 1 describes the demographic characteristics of the participants. The mean age of respondents was 33.1 years ( $SD = 5.36$ ) and ranged from 21 to 46 years. Twenty mothers did not answer the demographic information regarding their age. Almost half (48.7%) of mothers were in the age group of 26–34 years. The number of years of living in US ranges from 1 to 27 years ( $M = 10.44$ ,  $SD = 5.9$ ). Nearly two third (63.8%) of participants were stay at home mom, and 25 (21.5%) were either were employed full- or part-time. Thirty-six percent had annual household incomes of \$30,001-\$69,999, and 19% reported an annual household of \$100,000 or more. Twenty-one participants did not report their income.

About half (44.7%) had completed bachelor's degree, and 18 (15.8%) had graduate degree. In terms of the preferred language of communication, 49.1% of mothers preferred English, whereas 50.9% chose Arabic. About two third of women (66%) had delivered their babies vaginal delivery. The number of children range from 1 to 7 ( $M = 2.79$ ,  $SD = 1.22$ ). Table 2 describes the demographic characteristics of the children included in this study. One quarter of the children were under 12 months, and 57% were female. The mean age of children was 28.77 months ( $SD = 17.6$ ).

Table 1 Demographic characteristics of the sample (N=116)

Variables	n	Percent
<b>Age (years)</b>		
18-25	4	4.2
26-34	56	58.3
35-44	35	36.5
≥45	1	1.1
<b>Employment</b>		
Full-time	13	11.2
Part-time	12	10.3
Stay home mom	74	63.8
Student	17	14.7
<b>Highest level of education</b>		
High school or less	15	13.2
Some college	10	8.8
Associate degree	14	12.3
Bachelor's degree	51	44.7
Some graduate school	6	5.3
Graduate degree	18	15.8
<b>Income</b>		
\$30,000 or less	22	21.1
\$30,001 to \$69,999	36	37.9
\$70,000 to \$99,999	20	21.1
\$100,000 or more	19	20
<b>Country of origin</b>		
Palestine	24	20.7
Jordan	21	18.1
Syria	17	14.7
Sudan	10	8.6
Egypt	8	6.9
Kingdom of Saudi Arabia	8	6.9

Lebanon	6	5.2
Morocco	3	2.6
Iraq	3	2.6
Kuwait	1	.9
Yemen	1	.9
Mauritania	1	.9
Libya	1	.9
Algeria	1	.9
<b>Years living in the US</b>		
Less than 5 years	12	13.3
5-9 years	37	41.1
10-15 years	25	27.8
>15 years	16	17.8
<b>Number of children</b>		
1	6	6.8
2-4	76	86.4
5-7	6	6.8

*Note.* Numbers may not add up to the total due to occasional missing data

Table 2 Demographic characteristics of the children included in the study (N=116)

Variables	n	Percent
<b>Age of the child</b>		
Less than 12 months	22	25
12-24 months	23	26.1
25-36 months	19	21.6
37-48 months	13	14.8
49-60 months	11	12.5
<b>Gender</b>		
Boy	54	46.4
Girl	62	53.4
<b>Full term baby</b>		

Yes	110	4.3
No	5	95.7

*Note.* Numbers may not add up to the total due to occasional missing data

### **Research Question 1: Infant Feeding Practices**

The findings related to this question are grouped into breastfeeding practices (e.g., initiation rate and time, exclusivity, and duration), and feeding practices (e.g., predominant breastfeeding, and mixed feedings). Breastfeeding practices of the mothers in this study are described in Table 3 in relation to the national and state standards. About 99.1% women stated that they had breastfed or fed their baby breast milk. Only one mother did not breastfeed since birth (0.9%). Of the mothers who attempted to breastfeed in the hospital, 57.5% put their infants on their breast within the first hour after delivery, while 34% breastfeed their babies within 1-6 hours, and the rest breastfeed their babies within the first day after delivery.

Despite high initiation rates, low rate of exclusive breastfeeding at 6 months was reported. Of the sampled mothers, 28 (26.2%) mothers were exclusively breastfeeding for less than 3 months, and 22 (21.6%) mothers were exclusive breastfeeding for 6 months. About 9.8% of the mothers (n = 10) were predominant breastfeeding, and 67.6% (n=69) of the mothers were practicing breastfeeding (formula and breastfeeding), and 1 (1%) mother was exclusively formula feeding. Figure 2 illustrates these percentages.

Table 3 Breastfeeding practices of the mothers

<sup>a</sup> HP Healthy People; <sup>b</sup> Breastfeeding

Breastfeeding Practices	Current study	HP <sup>a</sup> 2020 BF <sup>b</sup> Objectives	National BF Rates	BF Rates in the Selected State
Ever breastfeed	99.2%	81.9%	81.1%	85%
Breastfeed at 6 months	75.4%	60.6%	51.8%	54.8%
Breastfeed at 1 year	50.8%	34.1%	30.7%	30.0%
Exclusive breastfeeding through 3 months	27.5%	46.2%	44.4%	46.3%
Exclusive breastfeeding through 6 months	21.6%	25.2%	22.3%	23.8%

The median duration of any breastfeeding was 11.86 months ( $SD=8.04$ ) with a wide range varying from 1 month through 36 months (figure 2). Of those mothers, 33.3% said they breastfed 6 months or less, and 20.53% and 7.7% said they breastfed for 12 and 24 months, respectively. Figure 2 illustrates the ages of the babies' when the mothers stopped breastfeeding.

For predominant breastfeeding, 40 (38.5%) mothers reported use of ritual fluids. The most common used supplemental fluids were: herbs (61.3%) and water (22.6%).



Almost half ( $n=17$ , 47.2%) of the mothers introduced these feeding during the first month. For mixed feeding (breastfeeding and formula feeding), 69 mothers reported use of mixed feeding. Of those mothers, 64.4% ( $n = 38$ ) mothers reported starting supplementary feeding for their babies in the first month. The mean age of formula supplementation was 2.57 months ( $SD=3.28$ ).

Figure 2. Feeding types of the sample

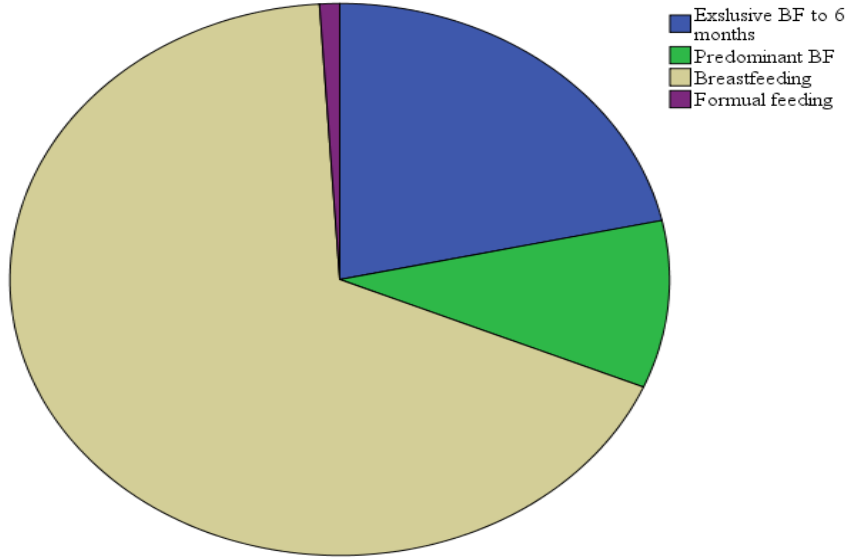
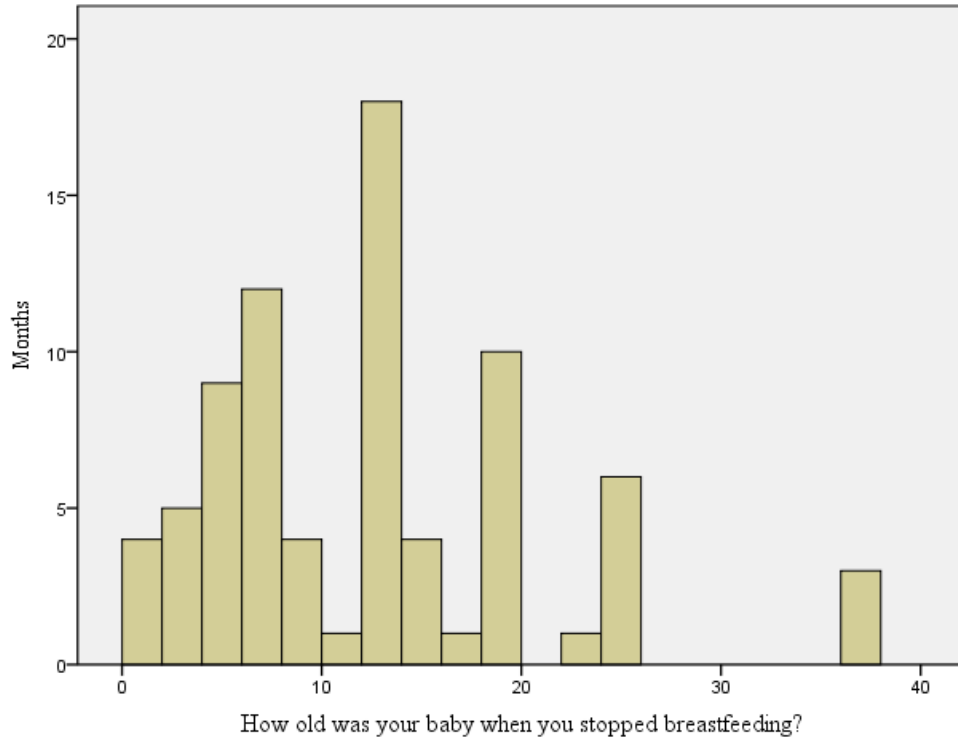


Figure 3. Babies Age when the mother stopped breastfeeding



## **Research Question 2: Facilitators and Barriers to Breastfeeding**

The facilitators and barriers to breastfeeding are presented at the individual, social, and physical levels in accordance with the SEMHP.

**Individual level.** Facilitators and barriers to breastfeeding at this level are related to mother's intentions to breastfeed, and breastfeeding knowledge, and beliefs. The majority (94.4%) of women intended to breastfeed prior to the birth of the baby, 2.8% didn't plan to breastfeed, while 2.8% were undecided about breastfeed. Most mothers (n = 103, 91.2%) scored in the range indicating positive knowledge and beliefs toward breastfeeding and 10 (8.8%) were neutral to breastfeeding indicating these mothers possessed positive breastfeeding knowledge and beliefs that encourage breastfeeding, and had some knowledge gaps about healthy feeding practices. Table 4 summarizes women's knowledge and beliefs related to breastfeeding.

The majority of mothers had positive knowledge about the benefits of breastfeeding as almost all the mothers (99.1%) agreed that breastfeeding is cheaper than formula-feeding, and 92% (n=104) of the participants agreed or strongly agreed that breastfeeding helps mothers bond with their babies more quickly than formula feeding. About four out of five participants (n=92, 81.4%) agreed or strongly agreed that breastfeeding reduces the risks of certain types of cancers, 73.4% (n=83) of participants agreed or strongly agreed that breastfeeding helps prevent obesity in children, and 82.2% (n=92) of the participants agreed or strongly agreed that babies who are breastfed are less likely to get sick than babies who are formula fed.

In addition, 81.1% (n=90) agreed that breastfeeding is calming, and 67% (n=75) of the respondents strongly agreed or agreed that breastfeeding is convenient. About half

(n=58, 51.3%) of the participants strongly disagreed or disagreed that breastfeeding is difficult to learn, and 56.3% (n=63) strongly disagreed or disagreed with the statement that breasts are not meant for feeding. Thirty-eight mothers (34.6%) agreed or strongly agreed that WIC benefits are better for women who are not breastfeeding, and 42 (38.2%) mothers were unsure about it.

There were knowledge barriers related to the disadvantages of formula feeding such that 50.5% (n=57) strongly agreed or agreed that babies fed formula sleep longer. About one-fifth of the participants (19.5%; n=23) agreed or strongly agreed with the statement that “formula is as healthy as breastmilk”, and 28 (24.8%) were unsure. About 43% of women (n=47) strongly agreed or agreed that pumping breastmilk is too much effort, 31% (n=35) strongly agreed or agreed that breastfeeding makes leaving the home difficult. There was a knowledge gap about breastfeeding in relation to dieting or losing weight as about one third of the women (n=41, 36.3%) agreed or strongly agreed that mothers cannot safely diet while breastfeeding, while 17 mothers (15%) were unsure about diet while breastfeeding, and 31 (27.9%) mothers disagreed or strongly disagreed that breastfeeding assists with losing baby weight, and 18 (16.2%) mothers were unsure.

Table 4 Breastfeeding knowledge and beliefs of the mothers <sup>a</sup>

<b>Statements</b>	<b>Strongly Agree n (%)</b>	<b>Agree n (%)</b>	<b>Unsure n (%)</b>	<b>Disagree n (%)</b>	<b>Strongly Disagree n (%)</b>
Breastfeeding costs less money than formula feeding	69 (61.6)	42 (37.5)	1 (.9)	0 (0%)	0 (0%)
You cannot safely diet while breastfeeding <sup>b</sup>	10 (8.8)	31 (27.4)	17(15)	39 (34.5)	16 (14.2)
Breastfeeding assists with losing the “baby weight”	33 (29.7)	29 (26.1)	18 (16.2)	22 (19.8)	9 (8.1)
Babies that are fed breast milk are less likely to get sick than formula fed babies	45 (40.2)	47(42)	10 (8.9)	8 (7.1)	2 (1.8)
Babies fed formula sleep longer than babies fed breast milk <sup>b</sup>	21 (18.6)	36 (31.9)	16 (14.2)	24 (21.2)	16 (14.2)
Breastfeeding helps mothers bond with their babies more quickly than formula feeding	67 (59.3)	37 (32.7)	6 (5.3)	1 (.9)	2 (1.8)
Breastfeeding helps to prevent obesity in children	37 (32.7)	46 (40.7)	18 (15.9)	9 (8)	1 (.9)
Formula is as healthy as breastmilk <sup>b</sup>	1 (.9)	21 (18.6)	28 (24.8)	38 (33.6)	25 (22.1)
Breastfeeding reduces the risk of certain types of cancers for women	48 (42.5)	44 (38.9)	12 (10.6)	4 (3.5)	3 (2.7)
Breastfeeding is difficult to learn <sup>b</sup>	3 (2.7)	28 (24.8)	24 (21.2)	34 (30.1)	24 (21.2)

Pumping breastmilk is too much effort <sup>b</sup>	15 (13.6)	32 (29.1)	14 (12.7)	41 (37.3)	8 (7.3)
Breastfeeding is convenient	33 (29.5)	42 (37.5)	8 (7.1)	26 (23.2)	2 (1.8)
Breasts are not meant for feeding <sup>b</sup>	1 (.9)	27 (24.1)	17 (15.2)	29 (25.9)	34 (30.4)
Breastfeeding makes leaving the home difficult <sup>b</sup>	7 (6.2)	28 (24.8)	9 (8)	46 (40.7)	23 (20.4)
Breastfeeding is calming	30 (27)	60 (54.1)	7 (6.3)	12 (10.8)	1 (.9)
Women, Infant, and Child Clinic benefits are better for women who are not breastfeeding <sup>b</sup>	18 (16.4)	20 (18.2)	42 (38.2)	16 (14.5)	14 (12.7)

*Note.* Numbers may not add up to the total due to occasional missing data; <sup>a</sup> Participants' breastfeeding knowledge and beliefs ranging from 1=Strongly Disagree to 5=Strongly Agree"; <sup>b</sup> items favoring formula feeding and were reverse-coding.

**Religion influence.** About two third of the participants (n=65, 63.1%) agreed that their religion influenced their breastfeeding decisions. Thirty-eight mothers explained how their religion influenced their feeding choices. Of those mothers, 13 (34.2%) commented that the Holy Quran influenced the duration of their breastfeeding, while 7 (18.4%) stated that Islam encouraged them to breastfeed, and 14 (36.8%) explained that Islam encouraged them to breastfeed, and influenced the duration of breastfeeding.

**Social level.** The facilitators and barriers to breastfeeding identified at the social level focused on the influence of the social support system. Of those mothers who reported positive influence from their social support figures, 93 mothers (94.9%) reported their husbands supported them to breastfeed, 92 participants (95.8%) agreed that their mothers encouraged them to breastfeed, and 63 mothers (90%) reported receiving support

from their mothers-in law. In addition, 72 participants (92.3%) received breastfeeding support from their sisters, 58 mothers (87.9%) reported support from sisters in law, and 39 (73.6%) from grandparents. Furthermore, 93.2% of the mothers (n =69) received breastfeeding encouragement from their friends while 50% of women obtained breastfeeding support from their co-workers (n =22). About 94.2% of mothers received support from hospital staff (n=81), and 92.1% (n=82) received support from their child's doctor. Overall, 67.4% of respondents agreed that WIC staff encouraged breastfeeding (n=31).

**Physical level.** Respondents answered questions on their comfort toward breastfeeding in public. Over half of the women agreed that they were comfortable with breastfeeding in the presence of female friends (56.6%) or female family members (65.1%), and in front of their other children (68.6%). However, 37.9% (n=39) mothers indicated they would breastfeed around other women who are breastfeeding in public places, and 37% (n=37) breastfeed in public place if it had a sign that it was breastfeeding friendly. There was consistency in responses among mothers with issues of discomfort to breastfeed in front of others. The most common barrier identified at the physical level was the discomfort to breastfeeding in front of male family members (n=86, 81.92%), male friends (n=95, 90.5%), strangers (n=91, 87.5%), and in public (n=75, 71.4%) or semipublic places (n=63, 60.6%). Only 43 (40.2%) participants reported breastfeeding in public places. Among mothers who have breastfeed in public, 11 mothers have received positive reactions, 6 mothers received mixed reactions, 1 mother received a negative reaction, and 25 mothers had no reactions from strangers, respectively. While breastfeeding in public, 14 mothers received positive reactions, 7

mothers received mixed reactions, 1 mother received a negative reaction, and 19 mothers received no reactions from family members or friends, respectively.

### **Research Question 3: Sociodemographic Factors Associated with Breastfeeding**

The relationships between the sociodemographic factors, and breastfeeding practices (e.g., exclusive breastfeeding and breastfeeding duration) were examined using simple logistic regression models. The initial plan was to conduct a multivariate logistic regression model to answer this research question; however, this model revealed no significant relationships between exclusive breastfeeding or breastfeeding duration, with any of sociodemographic variables. This is most likely due to not performing a power analysis prior to conducting the study. Therefore, it was necessary to run simple logistic regression models for each variable separately and collapse some of the demographic variables into new categories. Initially, for example, household income had four categories then it was collapsed into two categories (i.e.  $<70,000$  and  $\geq 70,000$ ). The higher income group was taken as a reference population in the regression. A similar procedure was done for education (e.g., less than bachelor's degree and bachelor's degree or higher).

The results of simple logistic regression models indicated that age, education, employment, and length of stay in US were not significant related to exclusive breastfeeding at six months. Household income was the only variable that was significantly related to exclusive breastfeeding. The odds of exclusive breastfeeding in mothers with incomes of \$70,000 or more was 2.43 (95% CI 1.01-5.86;  $p=0.048$ ) compared to mothers with incomes less than \$70,000.



Maternal age was the only variable that was statistically significant when associated with breastfeeding duration. Results of this study indicated that older mothers were less likely to stop breastfeeding at 12 months (OR=.10; 95% CI 0.83- 0.99,  $p = .042$ ).

#### **Research Question 4: Sociocultural Factors Associated with Breastfeeding**

Simple logistic regression models were executed to assess the predictive value of the sociocultural factors of religion and breastfeeding in public on breastfeeding duration and exclusivity. Mother's breastfeeding in public was significantly related to breastfeeding duration but not exclusivity. Mothers who breastfeed in public are more likely to breastfeed for longer duration than mothers who did not breastfeed in public (Odds=13.08; 95% CI 3.90-43.90;  $p = .000$ ). Religion was significantly related to exclusive breastfeeding. Mothers who reported that their religion influenced their feeding choice were more likely to exclusive breastfeed than mothers who indicated religion did not influence their feeding choice (OR=.378; 95% CI .16-.90;  $p = .027$ ).

#### **Research Question 5: Reasons for Stopping Breastfeeding**

Table 6 summarizes the reasons the mothers stopped breastfeeding. The most frequent reasons for early termination of breastfeeding were: perceived insufficient milk (44.4%), child was still hungry after breastfeeding (37.5%), and the belief that the child was old enough to stop breastfeeding (32.9%). Other reasons identified were the mothers felt more comfortable with the idea of formula feeding (20.8%), and the mothers did not have time to breastfeed (20.8%).

Table 5 Reasons for stopping breastfeeding

<b>Reason</b>	<b>n</b>	<b>Percent</b>
Breastfeeding problems	11	15.3
I didn't have enough milk	32	44.4
I had to go back to work/school	8	11.1
My baby was fussy and crying	14	19.4
Child was still hungry after breastfeeding	27	37.5
Did not have time to breastfeed	15	20.8
Doctor/Nurse/Lactation Consultant recommendation	7	9.9
Child did not take breast	12	16.4
Medical reasons	11	14.9
Felt the child was old enough to stop breastfeeding.	24	32.9
I felt more comfortable giving my baby formula	15	20.8
I got free formula from WIC	8	11.1
I didn't want to have to watch what I ate and drank	5	6.9
I became pregnant or wanted to become pregnant again.	4	5.6

## **Chapter 5**

### **DISCUSSION**

The results of this study are discussed in relation to three areas: infant feeding practices, facilitators and barriers to breastfeeding, and factors associated with breastfeeding practices. A description of infant feeding practices in Arabic countries provides an understanding of those countries' influences on feeding practices - due to the fact that immigrant Arab women in the US tend to bring their cultural beliefs and practices with them (Oweis, Tayem, & Froelicher, 2009).

#### **Infant Feeding Practices**

Almost all participants breastfed their babies. The percentages of initiation of breastfeeding during the first hour after birth in the present study were higher than national standards of 81.9%. High breastfeeding initiation rates show that most mothers want to breastfeed as evidence by high numbers of women who planned to breastfeed before having the baby.

Global, public health evidence recommend exclusive breastfeeding for the first six months of life and continued breastfeeding up to two years of age and beyond. Although this study showed that almost all immigrant Muslim Arab mothers breastfed their babies, exclusive breastfeeding to six months of baby's life was practiced by only 21.6% of mothers. This is compared with the 22.3% of national exclusive breastfeeding rates at 6 months (CDC, 2016). This is slightly higher than the reported exclusive breastfeeding rate of 15.6% of Arab mothers in Michigan (Saaty et al., 2015). Researchers in Arab countries reported similar exclusive breastfeeding rates. The lowest prevalence of exclusive breastfeeding for infants' aged less than six months was 1.7% in

Kingdom of Saudi Arabia ([KSA], Al-Hreashy et al., 2008) and the highest rate of 51% occurred in a study in Jordan (Amayreh, Khader, & Alissa, 2010). The sizable gap between breastfeeding practice in this population and international recommendations indicates that more attention should be given to the promotion of exclusive breastfeeding in this group. One of the goals of Healthy People 2020 is to increase exclusive breastfeeding rates to approximately 25% at 6 months. Given the protective benefits of exclusive breastfeeding, intervention efforts should focus primarily on the practices that encourage and support exclusive breastfeeding among this group.

Of those that predominantly breastfed, supplementation was mostly from the practice of giving ritual fluids. Supplemental feedings are common in Arab cultures and are designed to protect humans from real or assumed health hazards. Supplemental feeding (e.g. water, sugar water, salt solution, yogurt, gripe water, herbal tea, and black tea) is a common traditional practices among Arab culture and interferes with exclusive breastfeeding (Al-Hreashy et al., 2008; Al Ghwass, 2011; Radwan, 2013). These practices can be improved by counseling and confidence building. Healthcare providers must provide breastfeeding education and support among these women.

In this study, many mothers reported mixed feeding. Many researchers from Arab countries reported mixed feeding as a common feeding practice (Alwelaie et al., 2010; Dashti et al., 2010; Khassawneh, Khader, Amarin, & Alkafajei, 2006). Supplementation with formula often starts around 4 months. The rates of mixed feeding vary between countries with highest in Egypt (86%), followed by KSA (15% to 79%), Jordan (30% to 43%), and Lebanon (17%). The most common reasons for mixed feeding were insufficient milk, return to work/school, the belief that mixed feeding is the ideal method

of feeding, and various breastfeeding difficulties (El Mouzan, 2009; Nabulsi, 2011). Other studies reported difficulties in managing breastfeeding problems (e.g., difficulty in positioning and latching, nipple soreness, pain, and infection). Other reasons for mixed feeding were the beliefs that breast milk was not enough to satisfy or nourish their infants as evidenced by the hunger or crying after the feeding (El Mouzan, 2009; Nabulsi, 2011). It is unclear from this study if mixed feedings were related to these problems. A better understanding of maternal beliefs towards mixed feeding will allow more effective breastfeeding education and promotion.

Mothers in this sample breastfeed for a median duration of 11.86 months. The median duration of any breastfeeding in Arab countries had a wide range varying from 8.6 months in United Arab Emirate (Radwan, 2013) through 11.1 months in KSA (Al-Shoshan, 2007; Eldeek et al., 2012). Immigrant Arab women in this study breastfed for longer duration than women in Arab countries. The key identified reasons for discontinuing breastfeeding in this study were not enough breast milk, and the child was still hungry after breastfeeding. Perceived insufficient milk supply is one of the most common reasons women stop breastfeeding worldwide (Ware, Webb, & Levy, 2014; Wood, Woods, Blackburn, & Sanders, 2016). These results suggest that women's perception of having a low milk supply might, in many cases, be attributable to their lack of knowledge regarding the physiology of lactation. In addition, researchers from Arab countries indicated that Arab mothers often hold cultural myths that hinder successful breastfeeding (Abdul Ameer et al., 2008; Eldeek et al., 2012; Nassar et al., 2014).

Women in Arab cultures hold cultural myths about (1) their ability to produce sufficient

milk, (2) bad/spoiled/harmful” milk can harm the baby through breastfeeding, and (3) baby’s behavior during feedings can harm the mother.

A common belief is that mother’s inadequate intake of food contributes to lack of production of enough milk for the baby (Abdul Ameer et al., 2008; Amin, Hablas, & Al Qader, 2011; Nabulsi, 2011). Therefore, mothers need to eat more to produce more milk and thus breastfeeding causes maternal obesity. Some mothers were concerned that their inability to breastfeed was inherited from their mothers (Osman, El Zein, & Wick, 2009). These women are discouraged from breastfeeding because they were told by their mothers and sisters that this issue run in the family and their milk is not nutritious (Osman et al., 2009).

Women from different Arab countries used the concept of “bad milk” to refer to the mother’s ability to harm her baby through breastfeeding. For example, several mothers believed that a mother’s illness such as respiratory infection or cracked nipples or maternal abdominal cramps can harm the baby through breastfeeding (Osman et al., 2009). A common cultural belief is that taking medications can harm the baby through breastfeeding. Another cultural myth is mothers’ negative emotions and stress can impact the quality of the milk and can cause abdominal pain for the baby (Osman et al., 2009). These beliefs reflect that women view breastfeeding as a method of feeding and transmission of feeling and emotions between the mother and baby. This same belief also applies to breastfeeding during pregnancy, which is believed to harm the fetus and infant (Oweis et al., 2009).

Several mothers believed that the infant can harm the mother through breastfeeding. For instance, if the baby burped while breastfeeding the mother can

develop a breast infection (Osman et al., 2009). These breastfeeding beliefs can have determinant effects on breastfeeding practices. Although these practices were not assessed in this study, they could have contributed to negative breastfeeding beliefs. Increasing breastfeeding knowledge and beliefs is a process that can be improved with increased scientific knowledge and support through input from healthcare providers. The explanation of ‘insufficient milk’ therefore could mask a range of underlying factors that undermine breastfeeding.

Other reasons reported for termination of breastfeeding were that the mothers felt more comfortable giving the baby formula and did not have time to breastfeed. The perceived inconvenience of breastfeeding is a barrier to continued breastfeeding (USDHHS, 2011). These reasons reflect immigrant Muslim Arab challenges and pressures related to balancing their breastfeeding commitment and household responsibilities. It is a traditional norm that Arab men should not involve themselves with infant feeding because it is believed to be a “women’s job”. This had an impact on breastfeeding patterns. The importance of involvement of fathers with breastfeeding has shown to be significantly associated with breastfeeding duration (Arora et al., 2000). These issue of inconvenience could be solved by encouraging the mother to use breast pumps, which allow the father to participate in infant feeding by using breast milk rather than formula.

Only a few women in the study noted that return to work/school was barriers that prevented breastfeeding; however, there was not a significant relationship between employment and duration or exclusivity of breastfeeding. These findings were in contrast with the findings of a research study conducted by Dagher, McGovern, Schold, and

Randall (2016) that indicated working mothers who returned to work were less likely to continue breastfeeding. This is due to the fact that the number of women in the sample that worked was low.

### **Facilitators and Barriers to Breastfeeding**

The most common facilitator identified at the individual level was the positive beliefs and knowledge on the importance of breastfeeding. Even though most mothers knew the benefits of breastfeeding for the mother and the baby, they lacked the knowledge of the optimal breastfeeding practices. For example, knowledge about the hazards of infant formula feeding (e.g., the expectation of sleeping through the night with a formula-fed infant), and managing breastfeeding (e.g., pumping breastmilk, breastfeeding and diet, and leaving home while breastfeeding) were low.

Majority of the women in Arab countries had a positive attitude toward breastfeeding and believe that breastfeeding is the best choice of feeding for the benefits of the mothers and child (Alwelaie et al., 2010; Eldeek et al., 2012; Khassawneh, 2006; Nabulsi, 2011; Oweis et al., 2009). However, mothers lacked the knowledge of the definition of exclusive breastfeeding, and its practices (Abdul Ameer et al., 2008).

At social level, mothers received support from a range of sources including family members, friends, hospital staff, and child's doctor. Researchers in Arab countries found that family members (i.e., husband, mother's family, husband's extended family, and relatives) could have both positive and negative influence on breastfeeding (Hamade, Chaaya, Saliba, Chaaban, & Osman, 2013; Nabulsi, 2011; Osman et al., 2009; Oweis et al., 2009). The support of breastfeeding from the family was shown to be significant upon a mother's decision to breastfeed and subsequent feeding success. Family was identified



as facilitating breastfeeding by providing emotional support, assisting with childcare and house chores, and sharing relevant personal experiences. On the other hand, families were reported as making breastfeeding more difficult by providing breastfeeding information that contradicted evidence-based breastfeeding practices. Sometimes mothers experienced pressure to introduce formula from older family members. For instance, Kuwaiti mothers cited parents/in-laws pressure as the main reason for giving water to their infants in the first six months, rather than breastfeeding exclusively, as healthcare providers recommended (Dashti et al., 2010). It is not clear what kind of encouragement and support these mothers received from their close social network.

Mothers in this study identified receiving support from hospital staff to initiate breastfeeding early in the first few hours after delivery. In 1991, the WHO and UNICEF launched the Baby Friendly Hospital Initiatives (BFHI) to ensure hospitals and maternity centers practices demonstrate their commitment to providing an optimal environment for breastfeeding mothers. Breastfeeding in the first hour of life is listed as step four of the BFHI to ensure hospital practices are supportive of breastfeeding. Hospitals who have incorporated BFHI have found that breastfeeding rate disparities can largely be eliminated (WHO, UNICEF, 2009). The Maternity Practices in Infant Nutrition and Care (mPINC) Survey (2013) is a national survey from the CDC that assesses infant feeding care processes, policies, and staffing expectations in maternity care settings, reported that 90% of facilities in Arizona provide breastfeeding advice and instructions to patients who are breastfeeding, or intend to breastfeed (CDC, 2013a). This is congruent with the reported support mothers received from hospital staff.

Most women in the sample reported the influence of the religion on their feeding choices. Religious beliefs and values shaped breastfeeding practices of Arab mothers (Al-Sahab et al., 2008). Jessri et al. (2013a) identified the religious beliefs of Middle Eastern immigrant Muslim women in Canada as a contributing factor to their breastfeeding success. The women in this study identified the influence of Islamic teaching on their breastfeeding decision. A study of Saaty et al. (2015) of immigrant Arab women in Michigan showed that 75% of women reported that Islam influenced their breastfeeding choices.

At physical level, embarrassment towards breastfeeding in public has been cited as a major barrier to breastfeeding in this study. Most of the participants indicated that they do not breastfeed in public. Disapproval of breastfeeding in public remains a barrier to breastfeeding in the US. Stewart-Knox, Gardiner, and Wright (2003) indicated that embarrassment to feed in public is a major barrier to breastfeeding experienced by the mothers, close family members, and friends. An important aspect of breastfeeding in Muslim cultures is the mother's emphasis on privacy and modesty when breastfeeding. This emphasis stems from the Islamic belief that there are parts of the body of men and women that must be covered always in front of those who are not close family members (Roberts, 2002; Sheikh & Gatrad, 2001). These concerns may have led the Muslim woman to formula-feed when leaving the house especially in situation in which the mother may not have accessible private room to breastfeed. In addition, many Arabic women hold cultural beliefs that could influence their ability to breastfeed in public. Some women believed that evil eye can affect the quality of breast milk if the mother nurses near other mothers (Osman et al., 2009). These cultural beliefs influence mothers'

breastfeeding ability in front of other women and can encourage the mother to supplement with formula.

Instances of positive comments for breastfeeding in public were not frequently acknowledged by family members/friends. Mannion, Hobbs, McDonald, and Tough (2013) report that verbal negative comments about breastfeeding received from the father discouraged mothers to continue breastfeeding.

### **Factors Associated with Breastfeeding Practices**

Sociodemographic characteristics including maternal age, income, employment, and education have been reported to influence exclusive breastfeeding practices. However, the results of this study indicated that income is the only variable associated with exclusive breastfeeding. Mothers with high income tend to exclusive breastfeed more than the mothers from low income. These results are congruent with those reported in developed countries (Heck, Braveman, Cubbin, Chávez, & Kiely, 2006). Religion was a predicted factor for exclusive breastfeeding practice in this sample. Al-Sahab et al. (2008) stated that religion plays a significant role in predicting breastfeeding at 4 months. In a prospective cohort study in Lebanon, the authors reported that the rate of breastfeeding in Muslim women were twice that of Christian mothers.

Successful breastfeeding is dependent multiple factors related to the mother, and socioecological environment. In this study, mother's age was significantly related to breastfeeding duration. This is in contrast to results reported in US which have shown that older maternal age is associated with longer duration of breastfeeding (Bolton, Chow, Benton, & Olson, 2009; Thulier & Mercer, 2009). This is congruent with the results of many Arab studies which suggested that breastfeeding is more common among

younger mothers (Al-Jassir, El-Bashir, Moizuddin, & Abu-Nayan, 2006; Al-Kohji, Said, & Selim, 2012; Al-Sahab et al., 2008; Al-Shoshan, 2007; Amayreh et al., 2010; Batal, Boulghourjian, Abdallah, & Afifi, 2006; A.-H. El-Gilany, Shady, & Helal, 2011; A. El-Gilany, Sarraf, & Al-Wehady, 2012; Hamade et al., 2013; Oweis et al., 2009).

There was a significant relationship between breastfeeding in public and breastfeeding duration. The social and cultural norms are associated with women's breastfeeding duration (Hannan, Li, Benton-Davis, & Grummer-Strawn, 2005). Women who breastfeed for 12 months or more had breastfed in public, which could indicate their comfort level with breastfeeding. Those women who discontinue breastfeeding prior to 12 months may have experienced discomfort or found themselves in environments in which breastfeeding was not the social norm.

### **Implications for Practice**

Findings from this research offer new insights into facilitators and barriers of breastfeeding practices in immigrant Muslim Arab woman. These findings could be used to leverage support and resources for developing culturally-appropriate and sustainable programs to address the specific needs of these immigrant women in order to improve their breastfeeding practices. An ecological perspective on interventions is needed. Findings from the present study inform the need for development of educational interventions to raise women's awareness of the importance of exclusive breastfeeding for the first six months of their infants' life, the advantages of breastfeeding for the mother and child, and potential hazards of formula feeding. Healthcare providers should help women gain confidence in their ability to produce enough milk, and be advised on the physiology of breastfeeding though to successfully continue breastfeeding. Accessible

healthcare information, and breastfeeding classes should be provided to immigrant women in Arabic, and employ bilingual healthcare staff or offer translated educational resources.

The Islamic practices of immigrant Muslim Arab women play a significant role in how breastfeeding promotion needs to be approached in this population. Exclusive breastfeeding practices can be promoted through Islamic teachings. Mottaghi, Esmaili, and Rohani (2011) recommend using Quranic verses in educational materials to promote mental health. Opportunities of introducing similar approaches to promote breastfeeding are needed. There is a need to include educational materials from the Quranic verses regarding the importance of breastfeeding in Islamic teachings. Religious quotations that emphasize the importance of providing breast milk to infants for two years should be used in educational materials to help promote optimal breastfeeding practices (Aboul-Enein, 2016). Healthcare providers should be aware of the need to establish religious based breastfeeding programs to ensure effective interventions. Religious leaders can be especially influential in promoting these programs as they are considered trusted and respected members of the Muslim community and instrumental in shaping public opinion and values.

It is essential to understand and integrate culturally tailored intervention to the specific breastfeeding concerns and needs of immigrant Muslim Arab women in order to improve breastfeeding practices among this group. Nurses should be trained to understand the religious and cultural context of breastfeeding practices. A clear and open communication should be encouraged between the mother, and healthcare providers to allow better understand of their breastfeeding needs and practices. For example, Muslim

families practice *Tahneek* which is rubbing a small piece of softened date on the newborn's palate shortly after birth and before the first feeding, *Tahneek* is performed based on the practice of the Prophet Muhammad (PBUH). This practice has been supported by current evidence based practice as the first-line treatment to manage hypoglycemia in late preterm and term babies in the first 48 hours after birth (Harris, Weston, Signal, Chase, & Harding, 2013).

Educational interventions should be targeted at the level of women's social support system including family, friends, and healthcare providers. Women's social support system should receive messages regarding optimal breastfeeding practices, and ultimately make decision within their culturally and religious determined behavior. Banks, Killpack, and Furman (2013) found that fathers are interested in and positive about breastfeeding, yet lack knowledge about their role in supporting breastfeeding. The need to develop education materials and programs designed specifically for fathers to provide them with the necessary knowledge and skills to successfully support their wives.

Healthcare providers should ensure that members of the social network understand the importance of their support for the mother to successfully breastfeed. For example, encouraging close family members or friends to attend breastfeeding classes is needed. It is important for the social support system of the mother to create a positive environment for breastfeeding, as well as to help the mother to feel comfortable breastfeeding in public.

The study findings also suggest that healthcare providers have an important role in promoting and supporting breastfeeding. Hospitals and birthing centers can strongly influence breastfeeding practices by adopting the BFHI principles, and implementing

policies that promote exclusive breastfeeding practice such as rooming-in, uninterrupted immediate skin-to skin contact, and initiating breastfeeding within the first hour for normal vaginal delivery, and within two hours for a cesarean section (WHO, UNICEF, 2009).

The breastfeeding support should be extended beyond the hospital into community supports. Health care professionals play an important role in community-wide breastfeeding advocacy. Establishing peer to peer breastfeeding supports within the Muslim Arab community is need to support immigrant women in their breastfeeding. The goal is to create appropriate and accessible community supports to aid these mothers in reaching their breastfeeding goals.

The physical environment related to breastfeeding was found to have an impact on the breastfeeding practice of the mothers in this study. These women need to be encouraged to breastfeeding in public. Nursing in public is permissible in Islamic law if the mother is covered. There are many products designed to help a mother nurse with appropriate cover such as aprons, cover-ups, and clothing with special openings. Additionally, healthcare providers should emphasize the need for the mother to develop a strategic plan for milk expression before leaving home and to ensure the availability of a high-quality electrical pump. Finally, health care professionals should support and promote local policies as well as state and federal legislation that encourage adequate facilities for breastfeeding privacy. Healthcare providers can engage the public in breastfeeding discussions to increase awareness of the importance of breastfeeding promotional campaigns. By promoting breastfeeding at the population level, public health can strive to increase public acceptance of breastfeeding.

## **Implications for Research**

This research has laid the foundation for describing, and understanding breastfeeding practices of immigrant Arab Muslim immigrant women in the US. To have a better understanding of the immigrant Muslim Arab women sociocultural context of infant feeding, their common concerns, cultural beliefs and practices, and the way these factors work together to shape infant feeding practices, descriptive qualitative studies are needed. Descriptive qualitative research is increasingly recognized as a vital tool in providing an understanding of breastfeeding from the perspective of women (Spencer, 2008). Religious teachings are said to be valuable sources of information that help to promote breastfeeding in this group of women. The importance of having qualitative research to explore the significance of Quran teachings on breastfeeding is highlighted. Cultural practices and beliefs were not addressed in this study, and thus future researchers might look at these issues in greater depth. This study identified facilitators and barriers among Muslim Arab women even though there are some differences among women from different cultures and ethnicities. Future researchers may explore the diversity in breastfeeding practices among Muslim Arab women.

Future research on determinants of breastfeeding behavior is needed with particular emphasis on the factors influencing exclusive breastfeeding at all levels of influence according to the SEMHP. Reliable and culturally sensitive instruments are needed to evaluate breastfeeding beliefs and guide development of targeted interventions that promote breastfeeding among immigrant Muslim Arab mothers. A longitudinal study examining exclusive breastfeeding practices would provide deeper understanding of the facilitator and barriers of breastfeeding practices, and thus would guide healthcare



professionals the most effective support and intervention. Larger sample sizes and random sampling would be ideal to increase the ability to generalize the research.

Further research is thus warranted to better understand the role paternal encouragement and support play in breastfeeding decisions. It is important to understand the specific forms of support that mothers perceive as encouraging breastfeeding, and identify types and forms of support that mothers experienced and needed.

## **Strength and Limitations**

This study has some limitations. The transferability of the study is limited by the small convenience sample that was drawn from a population of immigrant Muslim Arab women living in the southwest region. The conclusions that are reached may be applicable only to immigrant Muslim Arab mothers sharing the participants' personal characteristics, and using similar kinds of health facilities or living in similar geographic areas.

One important limitation of this study is recall bias due to the retrospective nature of the approach to data collection and the effect it may have on the results of the study. This might lead to over/under estimation of actual practices and inaccuracy about dates particularly in the survey. However, an important strength of this study is using a cross-sectional approach, which is relatively cost effective as fewer resources are required and it provides a snap shot of variables at a moment in time. However, cross-sectional studies do not provide cause and effect relationships. Ideally, a prospective longitudinal study that measures determinants of breastfeeding behaviors over time would provide more definitive conclusions. Due to the significant lack of comparable breastfeeding data on immigrant Muslim Arab women, it was difficult to evaluate the findings from this study in the context of other research results in US. However, this study provides initial data that will be foundational of future research.

Conducting this research was challenging. An important element of any research study is to have an adequate knowledge of the sociodemographic characteristics of the target population. The major barrier to complete the survey among participants was the general fear, suspicion, and distrust of conducting research on Muslim Arab women.

Study questionnaires related to age, and income were potential obstacles to participation, and were viewed as intrusive and raised concerns over confidentiality issues and racial profiling. Explanation of the research information sheet and the study purposes were undertaken to address those concerns. Moreover, attending major public events and programs involving the community by the principal investigator of the same ethnicity served to increase visibility and promote the study. Information regarding potential refusals and any misconceptions or conflicts that were communicated by the principal investigator were addressed and corrected. Other barriers included the inconvenience and time commitment to complete the survey. Approaches to overcome the barriers included taking survey home, returning it for the next community meeting, and providing an online address for returning the survey.

### **Conclusion**

This study contributed to the limited breastfeeding research in immigrant Muslim Arab women. Despite high rates of initiation and breastfeeding duration, exclusive breastfeeding practices of immigrant Muslim Arab mothers are lower than WHO recommendations. Breastfeeding knowledge and beliefs, religious beliefs, social support, and physical environment influence mothers' breastfeeding practices. Findings from this research make a number of important contributions to the literature in identifying the current of breastfeeding practices in relation to national and international guidelines, and identifying facilitators, and barriers, and factors associated with these practices.

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APPENDIX A  
RESEARCH SURVEY

## **Breastfeeding Knowledge and Beliefs.**

**In your opinion, how much do you agree or disagree with the following statements?**

- 1. Breastfeeding costs less money than formula feeding.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 2. You cannot safely diet while breastfeeding.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 3. Breastfeeding assists with losing the “baby weight”.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 4. Babies that are fed breast milk are less likely to get sick than formula fed babies.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 5. Babies fed formula sleep longer than babies fed breast milk.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 6. Breastfeeding helps mothers bond with their babies more quickly than formula feeding.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 7. Breastfeeding helps to prevent obesity in children.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 8. Formula is as healthy as breastmilk.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 9. Breastfeeding reduces the risk of certain types of cancers for women.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 10. Breastfeeding is difficult to learn.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 11. Pumping breastmilk is too much effort.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 12. Breastfeeding is convenient.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure
- 13. Breasts are not meant for feeding.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure

**14. Breastfeeding makes leaving the home difficult.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure

**15. Breastfeeding is calming.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure

**16. Women, Infant, and Child Clinic (WIC) benefits are better for women who are not breastfeeding.**  
Strongly Agree    Agree    Disagree    Strongly Disagree    Unsure

**This Section asks about Infant Feeding Practices**

**17. Prior to the birth of your baby did you plan to breastfeed?**

- Yes
- No
- Was undecided

**18. Did you ever feed your breastmilk to your baby?**

↓  
Yes

↓  
No

<p><b>19. How soon (if at all) after the birth of your child did you start breastfeeding?</b></p> <ul style="list-style-type: none"><li>a. Within 1 hour</li><li>b. Within 1-6 hours</li><li>c. More than 6 hours</li><li>d. Next day</li><li>e. Can't remember</li></ul> <p><b>20. Did hospital staff first help with breastfeeding?</b></p> <p><input type="checkbox"/> Yes    <input type="checkbox"/> No</p> <p><b>21. Did you ever supplement with substances other than breast milk or formula, such as juice, sugar water, herbal tea, or anything else, even water?</b></p> <p><input type="checkbox"/> Yes    <input type="checkbox"/> No</p>	<p><b>Please Continue to QUESTION NUMBER 27</b></p>
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<p>Please specify: _____</p> <p><b>22. How old was your baby the first time he or she had these supplementation (such as juice, sugar water, herbal tea, or anything else, even water) not counting vitamins, minerals or medicines?</b></p> <p>_____ Days <b>or</b> _____ weeks <b>-or-</b> _____ months</p> <p><input type="checkbox"/> not yet    <input type="checkbox"/> Did not use</p>	
<p><b>23. How old was your child when you introduced formula?</b></p> <p>_____ days _____ weeks _____ months</p> <p><input type="checkbox"/> Not yet <input type="checkbox"/> Did not use</p> <p><b>24. Are you currently breastfeeding?</b></p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p><b>If <u>YES</u>, what age (of baby) do you hope to breastfeed until?</b></p> <p>_____ weeks <b>-or-</b> _____ months <b>-or-</b> _____ years</p> <p><b>* Please continue with survey at QUESTION 27</b></p> <p><b>25. If <u>NO</u>, to currently breastfeeding, how old was your baby when you stopped breastfeeding:</b></p> <p>_____ weeks <b>-or-</b> _____ months <b>-or-</b> _____ years</p> <p><b>26. Did you breastfeed as long as you wanted to?</b></p> <p><input type="checkbox"/> Yes <input type="checkbox"/> No</p>	

**27. Did any of the following reasons influence your decision NOT to breastfeed or STOP breastfeeding?**

**Breastfeeding problems**

**Yes No Somewhat**

<b>I didn't have enough milk</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>I had to go back to work/school</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>My baby was fussy and crying</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>Child was still hungry after breastfeeding</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>Did not have time to breastfeed</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>Doctor/Nurse/Lactation Consultant recommendation</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>Child did not take breast</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>Medical reasons</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>Felt the child was old enough to stop breastfeeding.</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>I felt more comfortable giving my baby formula</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>I got free formula from WIC</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>I didn't want to have to watch what I ate and drank</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>
<b>I became pregnant or wanted to become pregnant again.</b>	<b>Yes</b>	<b>No</b>	<b>Somewhat</b>

**Social Support:**

**Out of the following list, who has encouraged you or discouraged you to  
breastfeed?**

- 28. Father of the baby    Encouraged    Discouraged    No influence    Not available
- 29. Your mother            Encouraged    Discouraged    No influence    Not available
- 30. Your husband's mother Encouraged Discouraged No influence Not available
- 31. Your sisters            Encouraged    Discouraged    No influence    Not available
- 32. Your sisters in law    Encouraged    Discouraged    No influence    Not available
- 33. Your grandparents    Encouraged    Discouraged    No influence    Not available
- 34. Friends                Encouraged    Discouraged    No influence    Not available

- 35. Co-workers            Encouraged    Discouraged    No influence    Not available
- 36. WIC Staff            Encouraged    Discouraged    No influence    Not available
- 37. Hospital staff        Encouraged    Discouraged    No influence    Not available
- 38. Child's doctor        Encouraged    Discouraged    No influence    Not available

**39. Did your religion influence your decision about how to feed your baby?**

**Yes**

**No**

**Please Explain:**

**This Section asks about Support Received about Breastfeeding**

**40. Were or would you be comfortable breastfeeding in the following situations:**

**Breastfeeding your baby in the presence of close women friends.            Yes    No    Somewhat**

**Breastfeeding your baby in the presence of close men friends.**

**Breastfeeding your baby in front of women family members.            Yes    No    Somewhat**

**Breastfeeding your baby in front of male family members.    Yes    No    Somewhat**

**Breastfeeding your baby in front of your other children        Yes    No    Somewhat**

**Breastfeeding your baby in front of strangers.                    Yes    No    Somewhat**

**Breastfeeding your baby in semi-public places (e.g., doctor's office, playgroup, car)            Yes    No    Somewhat**

**Breastfeeding your baby in a public place (e.g., restaurant, store, bench)            Yes    No    Somewhat**

**Being around other women who are breastfeeding in public places.            Yes    No    Somewhat**





**47. What is the highest level of education you completed?**

- Primary/Elementary school only (K – 8)
- Some high school, but did not finish
- Regular high school diploma
- Some college or technical school, but did not finish
- Associates degree or technical school (e.g., AA, AS)
- Bachelors degree (e.g., BA, BS)
- Some graduate school, but did not finish
- Graduate degree (masters or doctoral)

**48. What town/city do you currently live in?** \_\_\_\_\_

**49. What is your country of origin?** \_\_\_\_\_

**50. How many years have you lived in the United States?** \_\_\_\_\_ years

**51. What is your preferred language of communication?**      English      Arabic

**52. How many children do you have?** \_\_\_\_\_

**53. Was your most recent child/children born in US?**      Yes      No

**54. How old is your youngest child?** \_\_\_\_\_

**55. What is the gender of your youngest child?**      Boy      Girl

**56. How was your youngest child delivered?**      Vaginally      C-section

**57. Was your pregnancy planned?**      Yes      No      Somewhat

**58. Was your child full term? (37 weeks +)**      Yes      No

**59. Were you breastfed as a child?**      Yes      No      Unsure

**60. What is your total household income?**

- \$30,000 or less
- \$30,001 to \$69,999
- \$70,000 to \$99,999
- \$100,000 or more

**THANK YOU FOR YOUR TIME!**

APPENDIX B  
RESEARCH INFORMATION SHEET

## Breastfeeding in Immigrant Arab Muslim Women

I am a graduate student under the direction of Professor Pauline Kommenich, RN, PhD. in the College of Nursing and Health Innovation at Arizona State University. I am conducting a research study to describe breastfeeding knowledge, beliefs, and infant feeding practices, and to identify contributors and barriers to successful breastfeeding among immigrant Muslim Arab women who reside in the Southwest region of US.

I am inviting your participation, which will involve providing answers to a series of questions related to your infant feeding knowledge and beliefs, and practices. It is estimated that completing the questionnaire will take 20 minutes of your time. You have the right not to answer any question, and to stop participation at any time.

Your participation in this study is voluntary. If you choose not to participate or to withdraw from the study at any time, there will be no penalty. You must be 18-years or older, a Muslim Arab immigrant mother of a single child less than 5 years, and resident of southwest region to participate.

You will not directly benefit from your participation in the research. However, results of the study may benefit the society and the Arab community through providing information that will be helpful in creating intervention research to promote breastfeeding among Arab immigrant women. There are no foreseeable risks or discomforts to your participation.

Your responses will be anonymous. The results of this study may be used in reports, presentations, or publications but your name will not be used.

If you have any questions concerning the research study, please contact the research team at: [wafa.khasawneh@asu.edu](mailto:wafa.khasawneh@asu.edu) or my supervisor Professor Pauline

Kommenich at paulina@asu.edu. If you have any questions about your rights as a subject/participant in this research, or if you feel you have been placed at risk, you can contact the Chair of the Human Subjects Institutional Review Board, through the ASU Office of Research Integrity and Assurance, at (480) 965-6788. Please let me know if you wish to be part of the study. Completion of this survey will constitute your consent to participate in this study.

APPENDIX C

INSTITUTIONAL REVIEW BOARD EXEMPTION STATUS



EXEMPTION GRANTED

Pauline Kommenich  
CONHI - DNP  
602/496-0861  
paulina@asu.edu

Dear Pauline Kommenich:

On 9/27/2016 the ASU IRB reviewed the following protocol:

Type of Review:	Initial Study
Title:	Breastfeeding Practices, Facilitators, and Barriers among Immigrant Muslim Arab Women Living in a Metropolitan Area of the Southwest of United States
Investigator:	Pauline Kommenich
IRB ID:	STUDY00004853
Funding:	None
Grant Title:	None
Grant ID:	None
Documents Reviewed:	<ul style="list-style-type: none"><li>• verbal-script.pdf, Category: Recruitment Materials;</li><li>• Breastfeeding Survey.pdf, Category: Measures (Survey questions/Interview questions /interview guides/focus group questions);</li><li>• HRP-502c - CONSENT DOCUMENT -SHORT FORM.pdf, Category: Consent Form;</li><li>• recruitment material , Category: Recruitment Materials;</li><li>• Khasawneh-Breastfeeding Beleifs and Practices Survey-IRB Applicationpkcomments.docx, Category: IRB Protocol;</li></ul>

The IRB determined that the protocol is considered exempt pursuant to Federal Regulations 45CFR46 (2) Tests, surveys, interviews, or observation on 9/27/2016.

In conducting this protocol you are required to follow the requirements listed in the INVESTIGATOR MANUAL (HRP-103).