2020

Mothers' Knowledge, Clinic Staff, Community Support, and Breastfeeding Practices

Ubong Usua
Walden University

Walden University

College of Health Sciences

This is to certify that the doctoral dissertation by

Ubong M. Usua

has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
the review committee have been made.

Review Committee
Dr. Srikanta Banerjee, Committee Chairperson, Public Health Faculty
Dr. Michael Schwab, Committee Member, Public Health Faculty
Dr. Richard Palmer, University Reviewer, Public Health Faculty

Chief Academic Officer and Provost
Sue Subocz, Ph.D.

Walden University
2020

Abstract

Mothers' Knowledge, Clinic Staff, Community Support, and Breastfeeding Practices

by

Ubong M. Usua

MA, University Port Harcourt, 2006

BS, University of Calabar, 2001

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

February 2020

Abstract

Among low-income mothers enrolled in the Women Infant and Child (WIC) program and Medicaid, the rate of initiating breastfeeding immediately after delivery is low (57%) compared to high income mothers (74%). Among the many factors contributing to this are low income mothers' poor knowledge of the benefits of breast-feeding and lack of support and encouragement from clinical staff, family, and community. However, few studies have singled out the role of community and family support in improving maternal knowledge and breastfeeding practices. Using the Theory of Planned Behavior framework, this quantitative study used WIC data from the Texas Department of Health and Human Services and was conducted to examine the influence of mothers' knowledge and support from clinic staff, family and community, on breastfeeding practices. Most participants were > 24 years old, and the majority (61.3%) had secondary or high school education. Most participants (83.5%) initiated breastfeeding after child delivery, 39.4% used breast milk, and 42.1% used both breast milk and formula. After controlling for socioeconomic variables, chi squared analysis and multivariate logistic regression analysis indicated that mothers' knowledge and support from clinic staff, and community are significant contributing factors to breastfeeding practice. These findings can lead to positive social change that includes the development and improvement of appropriate strategies for breastfeeding education and support for low-income women enrolled in WIC and Medicaid.

Mothers' Knowledge, Clinic Staff, Community Support, and Breastfeeding Practices

by

Ubong M. Usua

MA, University of Port Harcourt, 2006

BS, University of Calabar, 2001

Dissertation Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Philosophy

Public Health

Walden University

February 2020

Dedication

This dissertation is dedicated to the Almighty God, Jehovah, who has been my rock throughout the whole journey. I also dedicate this to my mom Mary, and my four lovely daughters, Mb, Yene, Unyi, and Nono.

Acknowledgement

I would like to acknowledge all who played a role in my academic accomplishment. First is my mom who was a real source of encouragement in times where I nearly gave up. Also, my daughters who had to give up valuable times with me as I was working on my studies. Thanks for your sacrifice of love.

I also want to thank my committee members for their tireless edits and critiques pointing me in the right direction. My sincerest thanks to my late chair, Dr. Ernest Ekong who was available at all times to take my phone calls at odd hours. May his soul rest on. Thank you all, for your unwavering support.

Table of Contents

List of Tables

List of Figures

Chapter 1: Introduction to the Study

Breastfeeding of infants provides health benefits to both mothers and infants (Mandal, Roe, & Fein , 2014). For infants, breastfeeding offers benefits like immunologic fortification, allergy protection, as well as psychological advantages (Mandal et al., 2014). Infants who are exclusively breastfed tend to have reduced hypercholesterolemia, low blood pressure, and no obesity or diabetes. Breast milk contains water, fat soluble vitamins, fat, and minerals, which are more bio-available than in infant formula (Ballard & Morrow, 2014). In terms of maternal benefits, lactating women have decreased levels of fasting glucose and higher functioning glucose metabolism at 6 weeks than their non-lactating counterparts (Ballard & Marrow, 2014). Additionally, breastfeeding results in infant spacing and decreased problems of blood pressure (Ballard & Marrow, 2014).

Many studies have been focused on the challenges and predictors of breast feeding (Achaya & Khanal, 2015; Brown et al., 2014; Dudenhausen, 2014), and support from health practitioners (Bozzette & Posner, 2013; Nolan et al., 2015; Vincent, 2015). However, there is little research on the influence of clinical staff and committee support on women's breastfeeding practice. Darwent and Kempanaar (2014) compared mothers' breastfeeding attitudes with nurse and peer support. Using available data from the Texas Women, Infants and Children (WIC) program, the authors examined the impact of the support mothers received from community and clinical staff on their decisions to initiate and sustain breastfeeding.

The results of the present study will hopefully assist healthcare providers and other stakeholders to better plan interventions for mothers making choices about

breastfeeding. It could also contribute to improving exclusive breastfeeding and identifying new framework that can be used by the medical and healthcare community to develop more effective strategies to increase breastfeeding rates.

In Chapter 1, I discuss the background of the study, the problem statement, the purpose of the study, and the research questions and hypotheses. I explain the conceptual framework and theoretical model, highlighting the major constructs in the study. I then describe the nature of the study, provide definitions for key terms used, and review the scope of the study, its delimitations and limitations, and the significance of the the study.

Background of the Study

Breastfeeding is generally in the interest of mothers due to the health effects for themselves and their babies. According to Chowdhury et al. (2015), breastfeeding reduces a mother's risk of developing breast and ovarian cancer, and other chronic illnesses like obesity related to pregnancy. In addition, it reduces postpartum bleeding incidence (Chowdhury et al., 2015). Mothers also have individual interests in their social status and physical health. Hence, breastfeeding has a significant influence on their lives. Mothers also acquire emotional benefits such as suffering less from depression when they practice exclusive breastfeeding (Chowdhury et al., 2015). In terms of health for babies, breast milk contains amino acids that prevent damage to the brains of infants, leading to optimal development of important physiologic functions such as the immune system (Colen & Ramey, 2014). Breast milk composition also tends to change throughout lactation, according to the requirement of each infant, maintaining appropriate nutrient balance and making it bioavailable and easily digested (Colen & Ramey, 2014).

The decision to breastfeed varies among mothers. Pregnant women are not primed physiologically to breastfeed their babies and practice breastfeeding at different times and levels; there is variation in the way mothers decide on feeding patterns for their infants. Maternal involvement in breastfeeding tends to be less when perceived costs of breastfeeding (e.g., giving up work to breastfeed, loosing breast shape, or lack of support from the father or husband) and infant care appear to be high (Tully & Ball, 2014). They are less likely to breastfeed if they believe the cost of doing so outweighs the benefits. The mother's prevailing circumstances are important to consider when making the decision to breastfeed or not to breastfeed, and for how long. Adaptive decisions can be made by mothers on offspring investment depending on both maternal conditions and infant cues. For example, low birth weight infants who are perceived as 'high risk' are breastfed by mothers for shorter period compared to infants who are born normal or of heavier weight. (Tully & Ball, 2014). According to Karanci and Yenal (2014), mothers will invest part of their effort and time towards breastfeeding their baby if they have adequate knowledge of the benefits of exclusive breastfeeding, or they will consider using alternative methods for baby care by use of substitutes for human milk or wet-nurses, if they have inadequate or poor knowledge about breastfeeding (Dashti, Scott, Edwards, & Al-Sughayer, 2014). This means mothers are more likely to choose to breastfeed their infants if they understand the benefits of breastfeeding.

The "maternal instinct" of raising only a few children while investing more in each child is debatable. Such behavior of mothers toward their offspring is meant to protect the physical and emotional engagement of the mother with her babies (Tully &

Ball, 2013). Preferentially caring for infants is adaptive from the perspective of mothers because the investment level required from them to lactate and gestate is considerable (Tully & Ball, 2013). The conflict between infants and mothers over the duration and level of breastfeeding can be depicted as a mother-offspring conflict with cost and benefit tradeoffs over time while relatedness is constant (see Figure 1).

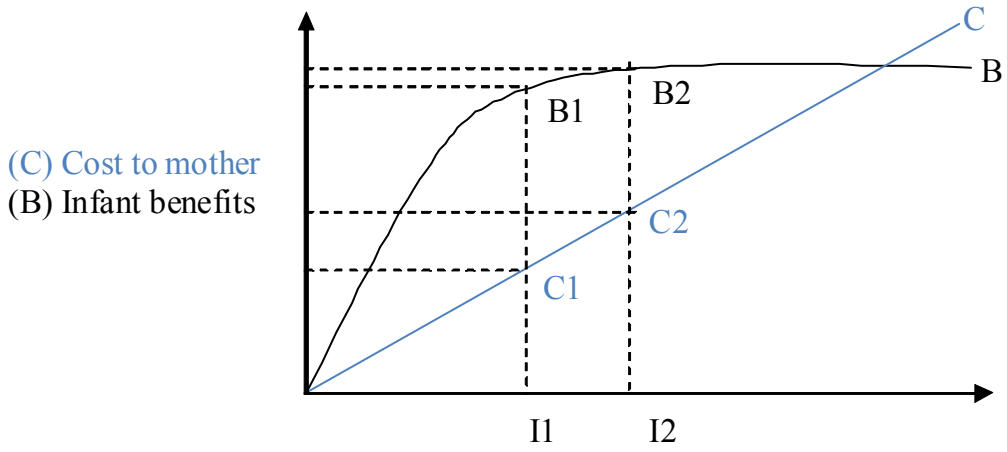

Figure 1. Infant-mother breastfeeding tradeoff over time. From "Trade-offs Underlying Maternal Breastfeeding Decisions: A Conceptual Model," by K. P. Tully and H. L. Ball, 2014, *Maternal & Child Nutrition, 9*, p. 90. Copyright 2014 by K. P. Tully and H. L. Ball. Reprinted with permission.

Tradeoffs between infant benefits and costs to mother during breastfeeding can be based on diminishing return and rational decision making. However, it is also an emotional one. The x-axis of Figure 1 portrays the effort and time to be invested on a given infant when the mother is devoted to breastfeeding, while the y-axis represents the costs incurred by a mother and benefits accrued by the infant at various investment

levels. Costs incurred by a mother when breastfeeding vary among mothers and are defined based on the perceived cost and knowledge about benefits of breastfeeding, as well as physical impact on the mother during breastfeeding. If the mother does not make any investment (time and effort), then the infant gains no benefits since it is assumed that breastfeeding is an effort by the mother, which is the benefit for an infant (Tully & Ball, 2013). Hence, $I1$ is optimum investment that can be made by the mother which involves lower costs to the mother while $I2$ is the optimum benefit that can be gained by the infant which involves higher cost to the mother. $B2$ is the theoretical peak for the infant benefits, at which the infant can no longer breastfeed when given an opportunity.

Generally, all mothers tend to resist additional investment when they believe they have reached point $I1$ since the required additional effort and time associated with breastfeeding is perceived to involve greater cost which the mother finds difficult to consider (C2 to C1) (Tully & Ball, 2013). A mother's perception that they have reached point $I1$ is subjective and varies among mothers, which explains the disparity in exclusive breastfeeding. For example, a significant proportion of mothers discontinue breastfeeding after a few months for various reasons relating to cost of breastfeeding, which is not recommended by the World Health Organization (WHO) and medical practitioners (Meneses & Rodríguez, 2015). For instance, in the United States, 48.2% of mothers discontinue breastfeeding before 6 months and 69.3% discontinue breastfeeding before 12 months (Centers for Disease Control [CDC], 2014).

The benefits of breastfeeding, both long term and short term, are well established and documented by evidence-based studies. Breastfeeding has a number of positive

aspects including benefits to society, mothers, and infants due to its nutritional advantages, promotion of development and infant growth, as well as improvement to psychological, educational, and social interactions (Neville et al., 2014). Despite this, breastfeeding practice is far from WHO-recommended duration, which shows that gaps exist between the practice of breastfeeding, its recommended duration, and exclusive breastfeeding.

Mothers may incorrectly perceive childcare and breastfeeding as reproductive costs. Such costs are generally neglected by public health practitioners, who develop 'infant-centric' policies that ignore the perceived deleterious impacts of prolonged breastfeeding on the health of the mother. Therefore, it is important to clarify those costs and perceptions so that healthcare practitioners can better care for women who engage in prolonged breastfeeding.

Investment in a given infant can be dynamic, which leads to suboptimal care and breastfeeding for infants. For example, mismatches between actual breastfeeding practices and recommendations for breastfeeding exclusively for 6 months occur in many countries, including the United States. According to the CDC (2014), about 81.1% of mothers in the United States initiate breastfeeding immediately after birth, which is below the required levels despite the various recommendations given by health organizations and the government.

Although mothers are generally able to meet the various breastfeeding recommendations, their breastfeeding behaviors are often affected by poor knowledge of the psychological and physiological processes required to maintain and produce adequate

milk (Fahmida et al., 2015). When mothers have poor knowledge and perceptions towards breastfeeding, initiation of breastfeeding becomes difficult, which affects ability to meet the breastfeeding recommendations of WHO and UNICEF. Poor knowledge about breastfeeding can lead to disruption of exclusive breastfeeding, despite the benefits to the infant (Haqhiqhi & Varzande, 2016).

It is important for community and clinical support to instill knowledge regarding the benefits of breastfeeding for the infant, the mother, and society. For example, exclusive breastfeeding can result in cost saving because it is free, unlike formula-feeding, particularly for low-income mothers who spend a substantial portion of family income on purchasing food (O'Sullivan et al., 2015). Adult earning and breastfeeding have a positive relationship (Cesur et al., 2017). Breastfeeding increases parent to infant bonding which leads to more productive investments by parents. In terms of maternal benefits, mothers practicing exclusive breastfeeding experience higher calcium absorption, decreased osteoporosis incidences, and hip fractures compared to non-lactating women. Sankar et al. (2015) argued that exclusive breastfeeding contributes to more weight loss for women, while women feeding infants formula retain greater weight after delivery. Moreover, it was noted by Neville et al. (2014) that exclusively breastfed infants walk and crawl sooner than those who are not breastfed. Linear growth between ages 2 and 3 years has a relationship with prolonged breastfeeding for over 24 months. Infants are also kept adequately hydrated by breast milk even in tropical areas. Breastfeeding positively contributes to neurodevelopment because of presence of polyunsaturated fatty acids (i.e., docosahexaenoic acid and eicosapentaenoic acid) in

breast milk (Sankar et al., 2015). Improved visual function and higher erythrocyte docosahexaenoic acid was observed among exclusively breastfed infants in comparison to infants fed formula (Sankar et al., 2015).

Breastfeeding support from close ones, spouses, and other mothers can also improve knowledge on breastfeeding, which can result in breastfeeding intention and actual breastfeeding behavior (Furman et al., 2013). Moreover, the perception of mothers about the physical and emotional support which they receive from their spouses during breastfeeding can influence the success of achieving exclusive breastfeeding and breastfeeding continuance. Fathers can be a source of understanding and encouragement to the mothers, especially in situations involving feeding challenges.

Globally, health organizations, medical communities, and governments advocate for increased breastfeeding initiation and breastfeeding continuance as key health promotion and public health issues because of the many health benefits and positive advantages for mothers and infants, both in the long- and short-term (CDC, 2014). Kottwitz et al. (2016) stated that infants who are not fed on human milk are at a higher risk for childhood mortality and morbidity, which has long lasting effect on social and health prosperity. Furthermore, a number of international and national strategies and policies, such as Baby Friendly Initiative by UNICEF, act as the main drivers for enhancing the breastfeeding rates. Breast milk is important, partly because it is the natural food that babies should receive immediately after birth, and also because it provides a number of nonnutritional and nutritional components that infants require for healthy development and growth in the first few months of life (Reeves & Woods-

Giscombé, 2015). Breastfeeding is associated with decreased neurological abnormalities among children below 9 years, is known to improve emotional development and is correlated with educational benefits such as improved cognitive abilities (Kottwitz et al. 2016). Nassar et al. (2014) asserted that breastfeeding is important even during stressful situations because breast milk tends to be available with unlimited supply for free, it is sanitary, and has antibodies which help the infant to fight disease and infection. Moreover, breast milk is always warm and fresh and helps the infant to calm down even in emergency and stressful situations.

New mothers and pregnant women are encouraged to breastfeed by many international and national health agencies. WHO recommends optimal breastfeeding duration of 6 months (Meneses & Rodríguez, 2015). In particular, exclusive breastfeeding is recommended by WHO for infants from 0 to 6 months in conjunction with nutritionally safe and adequate complementary food from 6 months until the infant becomes 2 years old or older (Melo et al., 2017). Exclusive breastfeeding refers to feeding of an infant on breast milk only, without any water, solids, or other liquids. According to Melo et al. (2017), the transition to solid and semisolid feeding from liquid feeding occurs mainly in the first year and to other diets and intake of family food before the infant reaches 24 months. Similarly, recommendations by UNICEF and WHO indicate that infants aged 0 to 6 months should only feed on breast milk and receive adequate, appropriate, safe, and timely complementary foods afterwards and while continuing on breast milk up to 24 months or beyond (Meneses & Rodríguez, 2015).

WHO developed indicators that can be used for assessing mothers' breastfeeding practices or infant feeding which are important for evaluating efforts and progress on breastfeeding promotion (Greiner, 2014). Such indicators target infants aged below 24 months. There are three key indicators for breastfeeding, including (a) early breastfeeding initiation (percentage of infants aged < 24 months who began breastfeeding within 60 minutes of birth), (b) exclusive breastfeeding (percentage of infants aged < 6 months who feed exclusively on breast milk), and (c) breastfeeding continuance (percentage of children aged 12 to 15 months still feeding on breast milk).

In addition, UNICEF and WHO recommendations to enable exclusive breastfeeding to be sustained and established by mother are (a) exclusive breastfeeding should be initiated within the first 60 minutes of life, (b) breastfeeding should occur both night and day as demanded by the infant, and (c) no use of pacifiers, teats, and bottles (Danso, 2014). Breastfeeding is an individual experience, but the prevailing conditions and surrounding realities in which infant and mother live can be obstacles that hinder successful breastfeeding experiences (Reeves & Woods-Giscombé, 2015). Therefore, breastfeeding practices and rates vary widely in different contexts and from one mother to another.

Globally, exclusive breastfeeding is estimated at 34.8%, with the remaining infants (65.2%) receiving other fluids or food within 6 months; complementary foods tend to be introduced early, which is nutritionally unsafe and inadequate (Sanusi et al., 2016). Breastfeeding practices are influenced by psychological, circumstantial, sociocultural, and personal factors that can impact the intention of women to breastfeed,

as well as the physiological changes that occur during the initiation and continuation of breastfeeding practices (Dornan et al., 2015). The complexity of mothers' intentions to breastfeed can result in complications for medical community when supporting and preparing women to attain their goals of breastfeeding. Therefore, I conducted this study in order to better understand mothers' intentions and attitudes regarding breastfeeding.

Problem Statement

Breastfeeding provides benefits to both maternal and infant health. Therefore, it is a key issue in public health (Saaty et al., 2015; Wood et al. 2016). Breastfeeding can be a strategy for improving mortality and morbidity because of the many benefits associated with exclusive breastfeeding to infants. Breast milk contains a number of enzymes that are important in nutrient digestion (Haschke et al., 2016), meets infants' nutritional requirements, and protects the infant from infections (Bergmann et al., 2014), as breast milk has defense capabilities (DeLuca et al., 2016). Mothers can also gain long-term breastfeeding benefits such as reduced chance of developing diabetes, better parental role, and empowerment, among other health outcomes. The benefits of breastfeeding to society include economic benefits and healthcare cost reduction. It also leads to economic benefits through conferring benefits on recipients through immunologic protection during infancy to even adulthood, which results in more productivity (Cesur et al., 2017).

Despite the increasing evidence from research based on the benefits of breastfeeding for infant, mothers, and society, there is still a dramatic reduction in prevalence of breastfeeding a few weeks after delivery. Local, national, and international policy efforts to improve the prevalence of breastfeeding have been initiated, but a

mother's decision to initiate and maintain breastfeeding is a complex process that involves health system, community, and individual factors (Bevan & Brown, 2014; Dinour et al., 2015). In addition, some factors such as negative experience in reproductive health, poor knowledge of breastfeeding, prior breastfeeding experience, and mistrust of health system can affect the breastfeeding and reproductive decisions of mothers. These factors can be compounded by individual biases, lack of support, and disempowerment within healthcare system and within the community.

Although implementation of breastfeeding initiatives and strategies have increased initiation of breastfeeding immediately after delivery and increased breastfeeding rates, there is little evidence of improved rates of exclusive breastfeeding and breastfeeding continuance as recommended (Neville et al., 2014). The CDC (2016) noted that most infants (81.1%) receive breast milk soon after their birth, but the figure of infants receiving breast milk up to 6 months drops to 51.8 %, whereas only about 30.7% are still breastfed by the age of 12 months.

Socioeconomic factors are related to low rates of exclusive breastfeeding (Kottwitz et al., 2016; McCann et al., 2007). Demographic factors that influence rate of breastfeeding include marital status, income level, maternal age, education level, and knowledge of breastfeeding. Among low-income mothers enrolled in WIC program and Medicaid, the trend of initiating breastfeeding immediately after delivery (57%) is low compared to high income mothers (74%) according to the CDC (2014). In low-income families, breastfeeding barriers reported include cultural support and acceptance of infant formula, low social support, need to resume work, pain, embarrassment, and inadequate

exposure to information that supports and promotes breastfeeding (Dunn, Kalich, Fedrizzi, & Phillips, 2015; Swigart et al., 2017). In addition, breastfeeding continuance as recommended by WHO is less likely among low-income mothers enrolled in WIC program compared to their high-income counterparts (CDC, 2014). Dunn et al. (2015) argued that mothers sometimes fail to breastfeed because of lack of support and encouragement from clinical staff. Work resumption is one of the barriers to continuation and initiating breastfeeding among mothers of low-income status, particularly if they are not paid during maternity leave, have jobs that are less flexible, do not receive employer support, or are on hourly wages (Thrasher, 2017).

The low rates of continued breastfeeding among low-income families imply that the mothers are willing to breastfeed, but they lack the support they need to continue breastfeeding (Neville, McKinley, & Holmes, 2014). Although mothers may have good intentions and knowledge on breastfeeding, they face unexpected difficulties that influence their decision to continue breastfeeding. For example, lack of clinician support can complicate the ability of a mother to consider breastfeeding. On the other hand, support given by clinicians can positively contribute to breastfeeding promotion given that they can encourage mothers to change their behavior. Most importantly, clinicians can influence family members, mothers, and the community to accept breastfeeding recommendations, all of which positively contribute to the choices made by mothers about breastfeeding (Flood, 2017).

Additionally, many mothers, including first time mothers, choose whether to bottle-feed or breastfeed depending on their level of knowledge about breastfeeding

benefits and perception about time and effort required to breastfeed (Christopher et al., 2014; Haqhiqhi & Varzande, 2016). Jones et al. (2015) found low education and maternal knowledge were major factors affecting duration of breastfeeding. Similarly, Chavan et al. (2017) noted various factors such as maternal attitude and knowledge as impacting the decision on breastfeeding initiation. Some of the reasons that mothers cited when they stopped breastfeeding during the first 7 days or weaned the infant before 6 months ranged from painful breasts to reporting that the infant rejected or could not suck the breast, or that the breast milk supply was insufficient (Spencer et al., 2015). These concerns were expressed by mothers who appeared to have made a decision to not breastfeed or that they were not able to breastfeed. The process of making decisions can be difficult for mothers who have low-income due to the multiple factors that influence their choices (Dagher et al., 2016). However, breastfeeding awareness can contribute to intention of breastfeeding for mothers before they deliver.

The complexity of variables impacting breastfeeding choices requires strategies to increase knowledge and uptake of recommended breastfeeding behaviors for optimal infant benefits. Danso (2014) noted breastfeeding barriers among low-income families include inadequate support from clinicians. In addition, although breastfeeding intervention or promotion programs have recommended maternal education, awareness on the importance of supporting breastfeeding can target other family members and the community. Thus, to overcome the disparities on breastfeeding, I conducted this study on maternal knowledge and breastfeeding factors. Furthermore, little literature exists on how maternal choices about breastfeeding can be influenced by health professionals.

Few studies have singled out the role of community and family support in improving maternal knowledge breastfeeding practices (Hudson et al., 2015). Additionally, few studies have incorporated both community support and clinician support for lactating mothers. Darwent and Kempanaar (2014) conducted the only study that includes the influence of both peer support and nursing support on the attitudes of mothers toward breastfeeding. Mothers in communities with negative perceptions of breastfeeding receive less support for breastfeeding. Mothers may also opt for infant formula if there is no role model in the family who supports breastfeeding or if the father of the infant does not encourage breastfeeding (Chavan et al., 2017). Moreover, community support is important in breastfeeding because mothers prefer community and peer support once they leave the hospital setting, where they received support from healthcare staff and nurses in the initial stages of breastfeeding. Efforts by the government to promote breastfeeding rates are being impeded by lack of community and clinical support and maternal knowledge. It is important that mothers receive help to achieve their intentions of breastfeeding through continued and active support from clinicians, families, spouses, community, and even employers (Bozzette & Posner, 2013; Nolan et al., 2015; Vincent, 2015).

A study about the influence of community support, clinician support, and maternal knowledge on breastfeeding practices could help to close the gap in the literature and promote the recommended breastfeeding experience. In this study, breastfeeding phenomena from the perspective of mothers were explored in order to determine the effect of maternal knowledge and perceived value of community support

and clinician support on the breastfeeding intention and behavior. The findings of this study may contribute to the establishment of appropriate measures for breastfeeding improvement and strategies for education and support for low-income women enrolled in Medicaid and WIC program.

Purpose of the Study

The purpose of the study was to examine the impact of support mothers receive from community and clinical staff on their decision to initiate and sustain breastfeeding, as mediated by mothers' knowledge about breastfeeding. Consequently, factors influencing breastfeeding behavior and breastfeeding intention were explored while controlling for income level, age, breastfeeding experience, and education level. The results of this study add to the literature about factors influencing breastfeeding practices among low-income mothers enrolled in WIC program. No other studies have examined the influence of clinician support and community support on the breastfeeding practices of low-income mothers, with maternal knowledge as a mediator. The information provided by the findings of this study may impact current trends on breastfeeding prevalence and become a reference for future studies. The results can also assist policy makers in developing evidence-based approaches for improving current strategies. In general, the study provides insight into the breastfeeding behaviors and intentions of mothers receiving WIC services, along with how these practices are influenced by maternal knowledge and encouragement from clinicians and the community.

Research Questions and Hypotheses

Research Question 1: Is there a relationship between a mother's knowledge about breastfeeding and her decision to breastfeed?

$H_0$1: There is no relationship between a mother's knowledge about breastfeeding and her decision to breastfeed.

$H_1$1: There is a relationship between a mother's knowledge about breastfeeding and her decision to breastfeed.

Research Question 2: Is there a relationship between encouragement by the clinic staff on breastfeeding and a mothers' intention to breastfeed?

$H_0$2: There is no relationship between encouragement by the clinic staff on breastfeeding and a mothers' intention to breastfeed.

$H_1$2: There is a relationship between encouragement by the clinic staff on breastfeeding and a mothers' intention to breastfeed.

Research Question 3: Is there a relationship between support by the community on breastfeeding and a mothers' intention to breastfeed?

$H_0$3: Mothers who receive community breastfeeding support are less likely to breastfeed.

$H_1$3: Mothers who receive community breastfeeding support are more likely to breastfeed.

Theoretical Foundation

In this study, the theoretical framework was based on the theory of planned behavior (TPB). The reasoning behind the TPB is that the behavior of humans depends

on behavioral beliefs (i.e., beliefs about the expected consequences of a given behavior), normative beliefs (social pressures), and other factors that may either positively or negatively influence the behavior (control beliefs). Together, these concepts make up a person's intention (Jokonya, 2017). The TPB proposes that what determines behavior is the person's intention to execute the behavior. However, the theory does not predict the execution of behavior or any emotional aspect involved in real life setting (Jokonya, 2015). For instance, mothers may be willing to practice breastfeeding and try to do so; however, because of other factors, they may or may not actualize the behavior (Bueno-Gutierrez & Chantry, 2015). Hence, this study examined the effect of breastfeeding intention on actual breastfeeding behavior in consideration of factors such as maternal knowledge, community support, clinician support, and maternal demographic factors.

The TPB can be important in pointing out cognitive goals for change. Cognitive approaches used for behavior change include persuasion and information. The TPB has been resourceful in transforming health behavior through persuasion and identifying the factors impacting intentions, as there could be a probability to change them and as a result be helpful when motivation of an individual to change have not yet been established (Ismail et al., 2016). The TPB is appropriate in explaining and predicting a number of health issues, such as substance abuse, drinking, smoking, and breastfeeding (Bueno-Gutierrez & Chantry, 2015). The TPB in this study offered the necessary understanding of how community encouragement and support from healthcare providers contribute to helping women decide to breastfeed their newborns.

The intention of a person to perform a given behavior develops as a result of the attitude that the person has toward the selected behavior (Jokonya, 2017). The attitude of mothers toward breastfeeding, her support group's attitude, her perception about support from the society, and her belief in her capability to breastfeed generate the woman's intention to breastfeed. Positive attitudes and knowledge on breastfeeding among mothers can enhance the duration of breastfeeding and initiation of breastfeeding (Mueffelmann et al., 2015). For example, support from the family and the infant's father contributes to breastfeeding decisions made by mothers and motivates a longer duration of breastfeeding (Wasser et al., 2013). Women require support from friends, society, and family members in addition to correct education, that will help them to develop feelings of empowerment towards breastfeeding their infants (McInnes et al., 2013). It is important that breastfeeding, not bottle-feeding, be viewed as a societal norm, thus providing a motivating environment for other mothers to consider breastfeeding. The TPB was important to understand how maternal knowledge, community support, and encouragement by clinicians affect breastfeeding behavior and intention (Bueno-Gutierrez & Chantry, 2015).

Conceptual Framework

Figure 2 depicts the conceptual framework on interaction among the variables for this study. This conceptual framework was developed based on the theoretical framework and literature review. The conceptual framework shows the connections between study variables in line with the hypotheses tested in the study. This conceptual framework predicted that community support, clinician support, and maternal knowledge all have a

positive effect on breastfeeding intention and breastfeeding behavior. Previous studies reported that such factors play a vital role in mothers' decisions to breastfeed (McInnes et al., 2013; Wasser et al., 2013). Hence, in this conceptual framework, breastfeeding intention and breastfeeding behavior were the dependent variables, while age, income level, education and breastfeeding experience of mothers were the control variables. Maternal knowledge, community support, and clinician support were the independent variables.

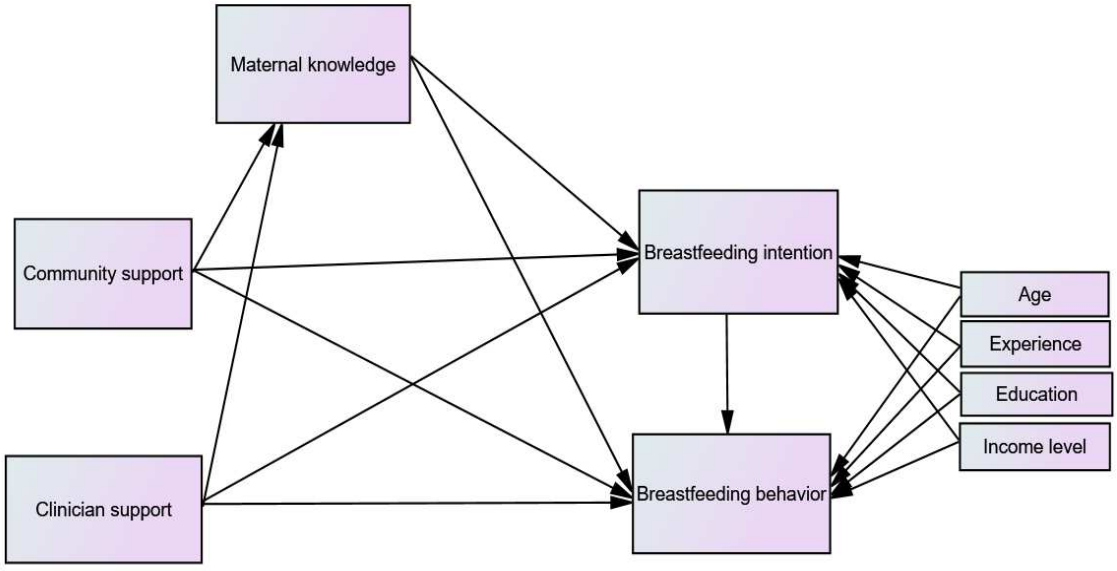

Figure 1. Conceptual framework on interaction among variables, adapted and developed from literature review.

The direction of impact between variables, in line with the research questions, is indicated in this framework. The analysis of the data focused on estimating the directions as depicted in the framework to address the study objectives. The arrows in the conceptual framework between the dependent and independent variables represented the hypotheses tested in the study. Therefore, developing this conceptual framework was

appropriate for achieving the overall purpose of the study and developing a new structural model for understanding breastfeeding intentions and behaviors among mothers.

Nature of the Study

This quantitative study involved a nonexperimental, descriptive, cross-sectional design on breastfeeding behaviors and intentions among low-income populations. The phenomenon of breastfeeding was studied, as it occurred naturally among the study subjects without manipulation of the factors impacting on breastfeeding. The focus of the study was on the effect of community support and healthcare support on breastfeeding intention and breastfeeding behavior, with maternal knowledge as the mediator variable, while controlling for maternal age, income, breastfeeding experience, and education level among the low-income women enrolled in WIC program. Secondary data obtained by the study were the WIC Infant Feeding Practices Survey State Report (WIFPSSR) provided by Texas Department of State Health Services (TDSHS). Therefore, primary data were not gathered. The mediating effect of maternal knowledge on the influence of community support and clinician support on breastfeeding intention and breastfeeding behavior has not been previously studied. Considering the significant effect of demographic variables on breastfeeding practices as depicted in a number of past studies (McInnes et al., 2013; Mueffelmann et al., 2015; Wasser et al., 2013)., the study included the demographic factors as control variables. The rationale for using a cross-sectional study design was based on the fact that the existing secondary data used in the WIFPSSR in this study were gathered at a point in time across a large number of participants. The quantitative data

also enabled me to adopt scientific statistical methods, thus allowing for hypotheses to be tested, and size and direction of effects between variables to be estimated.

Definitions

Breastfeeding intention: Breastfeeding intention was defined in this study as the intention that a mother has to engage in breastfeeding of her infant (Cynthia et al., 2016; McInnes et al., 2013).

Breastfeeding behavior: Breastfeeding behavior was defined in this study as the breastfeeding practices by a mother that involves giving an infant the breast milk whether expressed or directly from a mother's breast. Breastfeeding behavior included breastfeeding initiation, breastfeeding continuance, and exclusive breastfeeding (Crenshaw, 2014; Jones et al., 2015; Mandal et al., 2014).

Community support: Community support was defined in this study as the encouragement and help given to the mother by family, the infant's father, breastfeeding support groups, and employers or colleagues in workplace, with regards to breastfeeding of the infant (Odom et al., 2014; McInnes et al., 2013)**.**

Clinician support: Clinician support was defined in this study as the encouragement and help given to the mother by lactation consultants and healthcare providers (like nurse, midwife, or doctor) that supports the breastfeeding practices or aims at solving problems and challenges experienced by a mother (Johnson et al., 2016; Melo et al., 2017).

Maternal knowledge: Maternal knowledge was defined in this study as the understanding of nourishment, lactation and benefits of breastfeeding an infant which is

based on the established facts about that concept (Dashti et al., 2014; Mithani et al., 2015).

Assumptions

Based on existing literature, it was assumed that maternal knowledge could be defined as the understanding of nourishment, lactation, and benefits of breastfeeding an infant, which is based on the established facts about that concept (Mithani et al., 2015; Dashti et al., 2014). I expected that the knowledge sought was gained by the mothers from association, education, or experience. It was assumed that healthcare professionals and community members were informed on how to provide encouragement and support for mothers regarding breastfeeding infants and dealing with breastfeeding challenges. Hence, community support and clinician support were expected to have positive effects on breastfeeding behavior and breastfeeding intention among mothers. In addition, I assumed that community support and clinician support influence decisions on breastfeeding through increasing maternal knowledge or persuading the mothers to engage in breastfeeding because of the associated benefits. Because I used secondary data provided by TDSHS in this study, I assumed that all subjects participated in the survey by TDSHS voluntarily during the collection of data and that the TDSHS created a culturally suitable survey questionnaire when gathering the data. I also assumed that the respondents answered honestly to the questionnaire and did not encounter any recall bias. A final assumption in this study was that the mothers had the intention to breastfeed prior to delivery and eventually transformed their intention into actual breastfeeding behavior.

Therefore, breastfeeding intention was expected to impact the breastfeeding practices of the participants.

Scope and Delimitations

The scope of this study included estimating the effect and direction of relationships between variables. Because the study design did not allow for establishing causal links between variables, causation for breastfeeding intention and behavior was not established. Moreover, the study was nonexperimental, meaning the independent variables were not manipulated. The breastfeeding experience and practices of women can be shaped by factors like the support they receive, including workplace accommodation, paid leave during maternity, and social monetary assistance, but these factors were beyond the scope of this study. I addressed these factors in the literature review. In addition, maternal demographic factors like race and ethnicity may affect breastfeeding intention, which I addressed in the Data Analysis section of this study.

In terms of the delimitations, the study population was comprised of women receiving WIC services. As such, the study was limited to only mothers of low-income backgrounds. I examined mothers' breastfeeding intention and behavior based on secondary data with maternal knowledge as a mediating factor. Hence, the study is generalized to mothers of low-income status, and particularly those enrolled on WIC and Medicaid services. The results of this study are not generalizable to high income women because they are not eligible for WIC programs.

Limitations

The secondary data gathered in this study were quantitative, which enabled me to identify only the factors impacting the dependent variable. However, quantitative data cannot provide insights into a phenomenon and develop new theories. In addition, using secondary data has limitations in that the data were not originally collected for use in the current study. Therefore, the results may not accurately depict the constructs developed for the study. Moreover, the use of secondary data did now allow me to introduce new or emerging issues during the collection of data. For instance, in primary research involving primary data, the interviews allow for introduction of new insight based on the responses being received during the interviews. In addition, the use of a small size relative to total population would limit the generalizability of the results to all target population. The study results will be difficult to be taken as causal connection between the variables. Causal conclusions and interferences regarding temporal relationships are difficult to develop based on descriptive research in which there is no manipulation of the study subjects. The secondary data used in this study was gathered using questionnaires that contained closed-ended questions, which limited the exploration and probing of questions not listed in the measurement items. As a result, my ability to identify the exact cause of termination of breastfeeding within a few months after delivery was limited. Moreover, biases may have existed in the data collection during the original study.

Significance of the Study

Breastfeeding is recognized by the government and several other health institutions as the ideal infant feeding method from birth until 6 months of age. Despite

its numerous benefits to mothers and infants, the breastfeeding continuation rates are low globally, including in the United States. In particular, the rates of initiation are lower and breastfeeding periods are shorter in women from low-income families. It is important to comprehend how several factors influence breastfeeding practices to increase the exclusive breastfeeding period. Existing research has consistently shown positive links between biological, social, and maternal demographic, and increased periods of breastfeeding. To raise breastfeeding rates effectively, multi-dimensional strategies and interventions are needed to simultaneously handle the different breastfeeding determinants. Low rates of breastfeeding from 0 to 6 months show that mothers constantly face several barriers to breastfeeding continuance (Aksu et al., 2011). The early postnatal period tends to be considered a critical time for supporting and establishing breastfeeding practices. Though several scholars have researched on the occurrence of breastfeeding within the United States, only a limited number of the studies exist that provide information on nursing support and encouragement from other health professionals. Several studies have examined the obstacles in continuing to breastfeed exclusively within the initial one month postpartum.

Summary

In Chapter 1, I described the background of the study and highlighted the various reasons for, and significance of, conducting the study. I discussed the problem statement, the research questions, the conceptual framework, and the theoretical framework. In Chapter 2, I reviewed the literature in order to address the research questions and to provide further insight into the problem that was investigated by the study. Within my

review of the literature, I explained a number of key concepts in the study in order to comprehensively address breastfeeding behaviors and intentions among low-income populations.

Chapter 2: Literature Review

Introduction

The breastfeeding objectives of Healthy People 2020 were formulated to increase duration and initiation rates of breastfeeding among U.S. mothers (U.S. Department of Health and Human Services [USDHHS], 2016). Healthy People 2020 calls for 25.5% of infants to be exclusively breastfed for 6 months, 60.6% of infants to be receiving some breast milk at 6 months, 34.1% to be receiving some breast milk at 1 year, and 81.9% of infants to ever be given breast milk (USDHHS, 2016). However, as per reports by the CDC (2016), these breastfeeding objectives are not being met. The reason for noncompliance with these recommendations, and for goals not being met, are complex. Therefore, examining the role of support on mothers' knowledge may have some effect on breastfeeding support and hence the rates of breastfeeding initiation or duration (Furman et al., 2013). Human behavior is influenced by surrounding environment, including geographical area, workplace, and family (Furman et al., 2013; Kottwitz et al., 2016). Education on breastfeeding that mothers receive after or before delivery can influence their choices of infant feeding methods (Dunn et al., 2015). It is essential for women to understand the different aspects of infant feeding, especially breastfeeding, to arrive at more informed choices on infant feeding.

In Chapter 2, I present the literature review, carefully developed in line with the research questions. A number of concepts are reviewed in this chapter and the findings from past studies presented to address the objectives in this study. In particular, I review studies about the role of maternal knowledge in breastfeeding, demographic factors and

their effect on breastfeeding, and the relationship of support to breastfeeding women on breastfeeding practices. I describe the theoretical framework to show the underlying theories that explain the associations among variables. Another important section in this chapter includes a discussion of the conceptual framework, which provides further details about the concepts in the study and indications from past studies on their linkages. I start the chapter with the literature search strategy, followed by a discussion of maternal knowledge and infant feeding and summary of the chapter.

Literature Search Strategy

I used various electronic databases to obtain relevant reports and past studies related to the various concepts examined in this study. Search terms included *knowledge*, *breastfeeding*, *clinician support*, *community support*, and *demographic factors*, as well as their related terms. The timeline for literature search was limited to studies conducted between 2013 and 2018. The language used during the literature search was English. Hence, search limits were set to English and sources from 2013-2019. The databases included ProQuest, Ebscohost, Emerald, and Medline. A number of research papers and journal articles were retrieved from these databases. I grouped the studies into various categories, including breastfeeding among low-income mothers, breastfeeding attitudes, breastfeeding knowledge, breastfeeding experiences, breastfeeding among nurses, nursing support, interventions for breastfeeding, theory of planned behavior, family support, and father support for breastfeeding.

For the purpose of this study, the search was limited to studies published from 2013-2019, although older articles were also discussed in order to add a historical

perspective to the study. I scanned the reference sections of the articles I gathered to obtain related articles. I selected articles relevant to the phenomenon of breastfeeding, whether they were conducted among low-income women or not. In addition, I retained studies if they included maternal knowledge of breastfeeding. However, the articles were not considered for the literature review if breastfeeding was not among humans or breastfeeding was not measured as an outcome of the study. The studies gathered were conducted in the United States, Canada, and the United Kingdom, and other countries globally since breastfeeding guidelines by WHO are international.

Theoretical Foundation

The TPB was originally developed by Icek Ajzen and is based on the premise that human behavior tends to be guided mainly by three considerations: (a) beliefs of the individual on likely outcomes associated with a certain behavior, (b) their evaluations of such outcomes, and (c) the beliefs of normative expectations held by individuals (Jokonya, 2017). Behavioral beliefs lead to attitude toward engaging in a behavior, which is also influenced by social pressure or normative beliefs as well as control beliefs, which result in behavioral control (Jokonya, 2017). These considerations result in behavioral intention. The more an individual has a favorable subjective norm and attitude and higher perceived control, it is expected that the individual will have a stronger intention of conducting the behavior under consideration.

In summary, given that the actual control relating to a certain behavior is in sufficient levels, people will be expected to accomplish their intentions given the opportunity to do so. That is, human behavior will often be based on various subjective

probabilities, which suggests beliefs about outcomes of certain behaviors, beliefs individuals have about normative expectations that other people have, as well as the belief about other factors that may impede or facilitate the actual behavior (Yu et al., 2015). Yu et al. articulated that the beliefs people base on the underlying factors encompass the behavioral beliefs that generate attitudes toward the given action or usage. Furthermore, normative beliefs lead to subjective norms, while control beliefs lead to perceived control over one's actions. Instructions that individuals receive from others can produce behavior in some form which includes behavioral intentions, thus representing the motivation plan of an individual to make an effort to conduct the behavior. In the TPB, the immediate behavioral antecedent is the prior intention (Jokonya, 2017). The TPB is depicted in Figure 3.

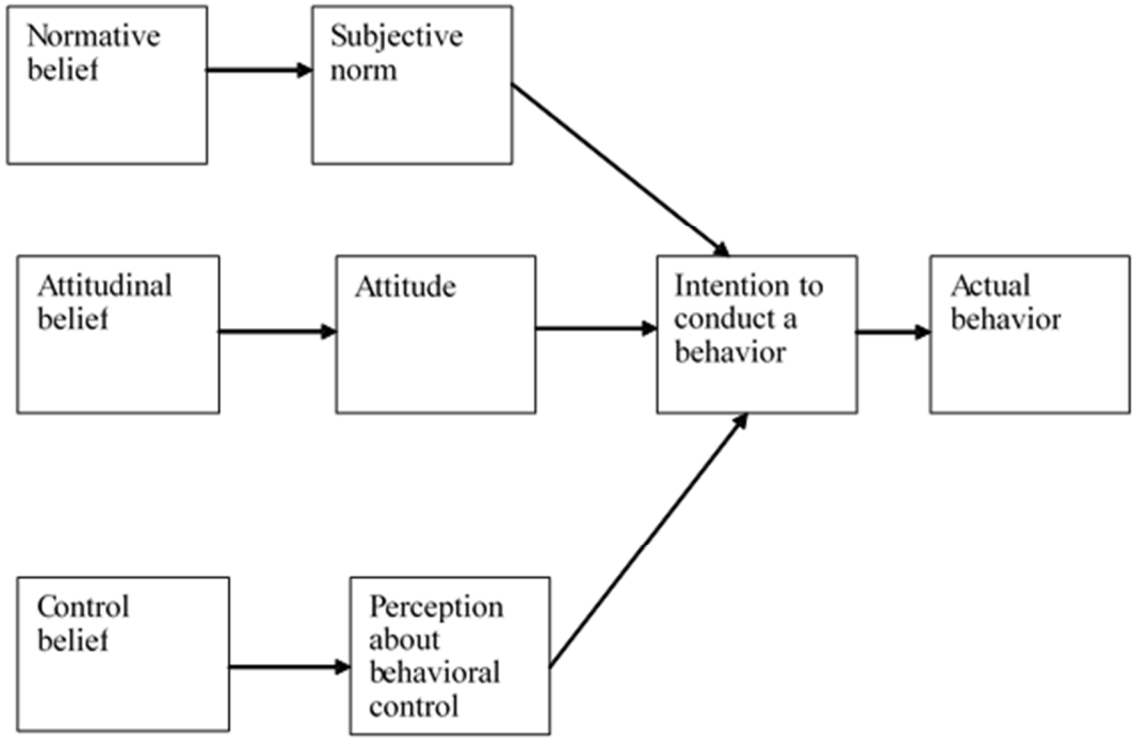

Figure 2. Figure of theory of planned behavior showing three beliefs. Adapted from "Critical Literature Review of Theory of Planned Behavior in the Information Systems Research," by O. Jokonya, 2017 (http://www.dpi-proceedings.com/index.php/dtcse/article/view/12297/11834). Copyright by Sage Publications Limited. Adapted with permission.

Figure 3 does not take account of social and institutional determinants of behavior. To do this, another model called the social ecological model had to be created. I used the TPB to explain the relationship between breastfeeding intention and breastfeeding behavior, as well as to understand why breastfeeding behavior is influenced

by other factors. The TPB can be used to understand beliefs that impact maternal practices and choices including control beliefs, normative beliefs, and behavioral beliefs.

With respect to infant feeding, behavioral beliefs mainly encompass beliefs of convenience of infant feeding methods, health benefits and naturalness, beliefs of effects on infant-mother relationship, public breastfeeding, and economic influences on breastfeeding. Breastfeeding beliefs related to saving money, a healthy infant, and difficulty of leaving an infant can have a strong effect on the maternal intentions to breastfeeding and the eventual breastfeeding behavior (Ismail et al., 2014). Normative beliefs include the perception of the mothers on what method of breastfeeding is acceptable to other people (Jokonya, 2017). Control beliefs involve the beliefs of control that a person has over engaging in a given behavior (Jokonya, 2017). For instance, the belief held by a mother that she can practice breastfeeding successfully.

All the belief categories can have an effect on the practices of mothers and intention to feed an infant as well (Ismail et al., 2014). Breastfeeding beliefs that mothers have, such as normative beliefs, are determinants of intention to breastfeed, and the strength of normative belief varies from one mother to another. Beliefs of advantages of breastfeeding were found to be associated with mothers' breastfeeding intentions; having a belief that bottle-feeding is convenient leads to intention to bottle-feed, and both bottle-feeding and breastfeeding beliefs result in mixed intentions to feed infants (Cabieses et al., 2014). In Reeves and Woods-Giscombé's (2015) study, women reported that beliefs about difficulty and importance of feeding practices, as well as perceptions of support received influenced their decisions and breastfeeding practices.

There are common beliefs held by people on complementary food initiation (Hudson et al, 2015). This may include indicating that the infant is old enough, or the baby is not satisfied by breast milk or giving the baby infant food can be more effective in maintaining a certain infant behavior (e.g., duration of sleep or reducing fussy behavior). Although studies have mentioned how the attitudes and thoughts of the father can influence mothers' infant feeding choices, few studies have been focused on the feeding beliefs of fathers. Chavan et al. (2017) indicated that the parental beliefs of a father can influence the level of the mother's intention to breastfeed and can predict breastfeeding practices without the influence of the mothers' intentions. That is, fathers consider breastfeeding to be something natural just like the mothers and get surprised if the mother faces difficulties in breastfeeding (Sherriff et al., 2014). Thus, the attitudes and beliefs of complementary feeding and breastfeeding can impact actual breastfeeding behavior (Dashti et al., 2014). Additionally, maternal knowledge of breastfeeding and having positive attitudes toward breastfeeding are related, although some studies point out that maternal attitudes predicting feeding behavior and intention differently from knowledge (Karanci & Yenal, 2014). Breastfeeding benefits have been well documented; however, having positive breastfeeding attitudes and knowledge are required for infant feeding to have a successful outcome (Nassar et al., 2014).

A wide range of demographic factors influence attitude and beliefs, perceived control of behavior, and norms (Jones et al., 2015). Breastfeeding initiation rates among adolescents are lower compared to that of older women (Jones et al., 2015). Maternal age has been found to be related significantly to breastfeeding duration (McQueen et al.,

2011). Other studies show that maternal education affects breastfeeding duration and initiation significantly (Acharya & Khanal, 2015). Higher education tends to be associated with recommended infant feeding but other factors also come into play. Several other studies have reported a negative link between breastfeeding duration and maternal employment (Kottwitz et al., 2016; Saaty et al., 2015). Employment is also linked to breastfeeding initiation among women (Textor et al., 2013). Maternal characteristics such as income, education, and age impact breastfeeding continuation and initiation (Bergmann et al., 2014; Nassar et al., 2014). Because beliefs and attitudes are easy to modify, determining the beliefs and attitudes of women regarding breastfeeding practices can lead to policies that improve feeding practices.

Conceptual Framework

The conceptual framework for this study is depicted in Figure 2.The conceptual framework shows the phenomenon of breastfeeding intention and behaviors to be an outcome of various factors, including maternal knowledge, community support, clinician support, and demographic factors; it is a complex process. Breastfeeding intention includes the motivation that a mother has to engage in breastfeeding of her infant, which is developed by women based on their 'maternal instinct' to care for their infant (Chowdhury et al., 2015; Cynthia et al., 2016; McInnes et al., 2013). On the other hand, breastfeeding behavior includes the breastfeeding practices by a mother that involves giving an infant the breast milk whether expressed or directly from a mother's breast (Colen & Ramey, 2014; Crenshaw, 2014; Jones et al., 2015; Mandal et al., 2014) . Breastfeeding behavior considered in this conceptual framework encompasses

breastfeeding initiation, breastfeeding continuance, and exclusive breastfeeding. Breastfeeding initiation refers to feeding an infant with expressed human milk or the actual breastfeeding act (Johnson et al., 2016; McCann et al., 2007). Reeves and Woods-Giscombé (2015) clarified that exclusive breastfeeding includes feeding the infant only on human milk except giving of oral rehydration, vitamins, syrups and medicine. Breastfeeding continuance refers to duration involving any breastfeeding act from initiating exclusive breastfeeding to any period involving complementary feeding (Dunn et al., 2015; Melo et al., 2017; Saaty et al., 2015).

Maternal knowledge refers to the understanding of nourishment, lactation, and benefits of breastfeeding an infant which is based on the established facts about that concept (Fahmida et al., 2015; Spencer et al., 2015). Maternal knowledge could be gained by the mothers from association with others, education received, or experience. Jones et al. (2015) explained that women seek and acquire new skills during the pregnancy stage as they transit into motherhood and develop maternal identity in order to gain more confidence as they face the new challenge of caring for an infant. It is during this time that they weigh out the costs involved in breastfeeding or formula feeding as they adjust physically, socially, and psychologically. Hence, breastfeeding intention and breastfeeding behavior will depend on what they learned from others about breastfeeding, including what their role models did, the skills and knowledge they gained from significant others and even previous experience. These significant others mainly include the healthcare providers they interact with and community members, including peers, and close family members including the infant's father (Aksu et al., 2011; Wood et al., 2016).

Community support refers to the encouragement and help given to the mother by family, infant's father, breastfeeding support groups, and employers or colleagues in workplace with regards to breastfeeding of the infant (Mithani et al., 2015; Rempel et al., 2016). Reis-Reilly and Carr (2016) concluded that the interactions between the mother and the infant's father, friends, family, and society can directly encourage her to breastfeed and provide the necessary information about breastfeeding benefits. It is also true that lack of education, encouragement, and support from the infant's father, friends, family, and society can be a significant barrier to breastfeeding (McInnes et al., 2013). Hence, breastfeeding awareness and education must recognize the environment in which mothers live and the important role of continued guidance and support from these significant others.

Clinician support includes the encouragement and help given to the mother by lactation consultants and healthcare providers (nurse, midwife, or doctor), which supports breastfeeding practices or aims at solving problems and challenges experienced by a mother (Chaput et al., 2015; Nolan et al., 2015). Interventions with a goal to change the attitudes and knowledge of mothers tend to aim at changing the perceptions held by women about infant breastfeeding. Hence, the majority of these interventions perceive breastfeeding behavior as beneficial, desirable and relevant, and therefore, the mothers should initiate breastfeeding. In addition, the interventions tend to be prenatal rather than postnatal. Saldan et al. (2017) discovered that the interventions which empower women to successfully breastfeed by providing practical breastfeeding skills and increasing knowledge, are vital and hence required. Low-income mothers are vulnerable; hence they

can benefit from social support and assistance after being discharged from maternity (Swigart et al., 2017; Thrasher, 2017). The breastfeeding information that women receive before delivery period can play a role in influencing intentions for initiating breastfeeding, leading to longer outcomes such as exclusive breastfeeding. Also, breastfeeding counseling should be effectively conducted in order to have successful breastfeeding outcomes (Bozzette & Posner, 2013).

Past studies have reported that mothers who are not given adequate support by clinicians when facing breastfeeding challenges tend to discontinue breastfeeding in the long run (Ramakrishnan et al., 2014). Breastfeeding support is a significant determinant of breastfeeding, as resources and information on breast milk help mothers to prolong breastfeeding duration and initiate breastfeeding (Flood, 2017). Kornides and Kitsantas (2013) clarified that healthcare providers and pediatricians play an important part in protecting and promoting breastfeeding. Moreover, the experience of a mother in hospital setting while receiving breastfeeding information can result in breastfeeding initiation.

Consequently, the role of maternal knowledge as a mediator variable was also tested based on the fact that community support and clinician support can improve maternal knowledge and thus influence breastfeeding practices. According to Dunn et al. (2015), clinician support involves breastfeeding counseling by trained health providers with the aim of increasing maternal knowledge. Community support is important because even if clinicians encourage breastfeeding and create breastfeeding awareness among the mothers, the impact on breastfeeding intention and breastfeeding behavior can be short term once the mothers are discharged from the maternity to go to their community where

they interact with the father of the infant and other community members. Therefore, adequate support from the father of the infant and other close ones can be a factor that increases or positively impact on the breastfeeding outcomes (Odom et al., 2014).

Demographic factors such as experience, age, gender, income level, socioeconomic status, education level and ethnicity have been correlated positively with breastfeeding initiation (McQueen et al., 2011). For example, increasing maternal age has a positive effect on initiation of breastfeeding, with younger mothers less likely to breastfeed than older mothers. Jones et al. (2015) found that having a prior positive breastfeeding experience or knowing a mother who breastfeeds exclusively can lead to breastfeeding initiation. Similarly, having a prior negative breastfeeding experience is related to early weaning and not breastfeeding at all. Meneses and Rodríguez (2015) indicated that maternal knowledge is developed through experience transformation and following a process of reflecting and experimenting from a given prior experience. Women with higher education level have also been found to have a higher chance of breastfeeding initiation (Bergmann et al., 2014). It is also documented that women from high-income families have higher rates of breastfeeding compared to women of low-income families (Bevan & Brown, 2014).

Literature Review Related to Key Variables and Concepts

When establishing breastfeeding promotion programs and education programs, it is vital to have background information on the knowledge level of pregnant women before they receive any formal education on breastfeeding. In addition, this study contributed to existing literature on breastfeeding among low-income women and point

out where there are deficits in breastfeeding knowledge. The literature includes documentation showing that breastfeeding continuation and initiation are related to several factors. Evidence-based empirical studies show that the main common causes for terminating early breastfeeding included lack of payment during maternal leave, painful breastfeeding because of latch and incorrect position of infants, and perceptions and believe of mothers like limited supply of breast milk (Meedya et al., 2010; Neville et al., 2014; Victora et al., 2016). In addition, evidence in literature proves that availability of insufficient breastfeeding information within the health sector can result in delays to initiate breastfeeding

Though there is a wide range of factors that influence infant feeding patterns, this study focused on the support mothers receive from community and clinical staff, as mediated by mothers' knowledge about breast feeding. Studies related to when and how breastfeeding is practiced among women have been provided in this section to provide more insight into concepts and key variables used in the study.

Maternal Knowledge of Breast Feeding

There exist several reasons why mothers avoid breastfeeding initiation or stop breastfeeding early. Dagher et al. (2016) maintained that issues like breastfeeding knowledge may have positive influence on breastfeeding duration and breastfeeding initiation. Knowledge refers to a belief which is justified and correct based on existing facts and data (Dashti et al., 2014; Mithani et al., 2015). Improving the knowledge level of mothers on the optimal young child and infant feeding practices can have beneficial impact on feeding behavior and breastfeeding intention. A number of studies show that

information given to women prenatally can correlate positively with their confidence in breastfeeding, breastfeeding initiation, and duration of breastfeeding (Kronborg et al., 2015).

Women learn about breastfeeding before pregnancy, during pregnancy or even after delivery, and sometimes they encounter physical challenges and other problems relating to breastfeeding. Therefore, mothers need appropriate breastfeeding information, skills and motivation to enable them to practice breastfeeding and meet breastfeeding recommendations on exclusivity and duration. Johnson et al. (2016) emphasized that women encounter different clinicians at different pregnancy stages such as public health nurses, practice nurses, pediatricians, midwives, doctors and clinical officers. Since different clinicians are involved in postpartum period, childcare and pregnancy, fractured support and messages are due to occur and can be provided for breastfeeding.

In a cross-sectional study by Chavan et al. (2017), breastfeeding knowledge was examined among mothers to determine factors associated with breastfeeding knowledge. They reported that information on respondents' demographics had a significant relationship with their knowledge on breastfeeding. The findings of the survey on breastfeeding knowledge highlighted gaps in respondents' knowledge in terms of increasing lactation, feeding infants, and complementary feeding. Moreover, respondents scored higher in breastfeeding knowledge mainly when they had children, lived with partners, were 25 years old and above, non-smoker, and attained higher vocational training or academic degrees.

Karanci and Yenal (2014) aimed at assessing the maternal knowledge of breastfeeding among pregnant working mothers to explore the variables associated with maternal knowledge. Their sample size was 260 Turkish working, healthy mothers during their final trimester of pregnancy. Data was collected using questionnaires. According to their results, the mean score was 6.03 (2.99) for all knowledge questions. Mothers were found to have high knowledge level in terms of methods of breast milk expression and containers used in storing breast milk. They found that the mothers had low knowledge level with regards to breastfeeding duration and safe conditions for storage of breast milk. These findings suggest that working mothers require more prenatal education in order to practice safe breastfeeding when they resume working. In conclusion, they reported that health workers need to inform working mothers on storage and expression of breast milk through prenatal education.

Developing a breastfeeding culture requires understanding of maternal knowledge level. Haqhiqhi and Varzande (2016) studied the maternal attitude and knowledge about exclusive breastfeeding in Iran. Their study involved cross sectional design involving mothers visiting health centers. According to the results, mothers with low knowledge level were the majority at 69.2% while those with high knowledge were only 19.4%. In terms of attitude level, mothers with low attitude were 11.4%, mothers with moderate attitude were 15.4% while the rest were grouped as having high attitude. Their study showed that maternal knowledge had a significant relationship with infant feeding and maternal education level. In addition, attitude had a significant relationship with maternal knowledge. In conclusion, they indicated that even though the breastfeeding attitude of

mothers was generally good, the maternal breastfeeding knowledge was low forcing the mothers to continue and initiate breastfeeding while having serious challenges. In this regard, their study noted that policy makers need to educate mothers on how they can improve breastfeeding knowledge.

Some studies have reported that postnatal education on breastfeeding can positively increase breastfeeding practices (Hameed et al., 2014). Other studies report no relationship between postnatal education on breastfeeding and breastfeeding practices. Still others have reported that breastfeeding duration and antenatal education on breastfeeding have no relationship (Yu et al., 2015). There have been mixed findings on the association between actual behavior and knowledge with regards to breastfeeding. This can be due to the differences in education methods studied, different societies and cultures, as well as methodological limitations. Moreover, there is no consensus on the recommended form of antenatal education on breastfeeding (Brown et al., 2014). Maternal education tends to be a beneficial factor in complementary feeding initiation and complementary food quality (Fahmida et al., 2015).

Knowledge of nutritional deficiencies. Dagher et al. (2016) reported nutritional problems occur due to inadequate knowledge and education on healthy practices and nutrition behaviors. The study by Ngwu et al. (2014) focused on maternal knowledge of child nutrition. FGDs were used involving 7 mothers in each FGD who were aged between 18 and 35 years. Data analysis involved thematic content analysis. According to the qualitative results, women had low awareness on how the health of infants can be improved. In essence, their study noted that many mothers had poor perception about

breastfeeding exclusively. Consequently, their study concluded that there is need for maternal education in order to improve knowledge on unhealthy beliefs.

Delay in the initiation of breastfeeding, supplementary feeding, colostrum deprivation, and early complementary feeding occur in many communities globally. The study by Chavan et al. (2017) aimed at examining the knowledge about breastfeeding and breastfeeding practices in India. The study was cross sectional and involved 14 locations with 225 mothers being studied. According to the findings, mothers had a mean age of 22.47 years (standard deviation = 3.24) and majority 79.11% had good knowledge on breastfeeding initiation. In addition, they found that 74.22% of mothers, initiated breastfeeding immediately after delivery within 60 minutes.

According to Cynthia et al. (2016), maternal characteristics like knowledge and other demographic factors like age and income level are associated significantly with breastfeeding exclusively and breastfeeding initiation. Evidence demonstrates that maternal breastfeeding attitude and knowledge about breastfeeding benefits to the infant or the mother, prior breastfeeding exposure and breastfeeding self-confidence can impact positively on breastfeeding practices (Tahir & Al-Sadat, 2013).

Knowledge-based interventions and programs. According to Melo et al. (2017), it is important for health practitioners to develop education program for breastfeeding while considering the social context of mothers that can affect their learning so as to ensure that the content delivered, and the design of materials are effective and relevant to the context. That is, the design process should incorporate social components, appropriateness and cultural sensitivity which are relevant so as to minimize

potential detrimental influences. Development of suitable breastfeeding promotion programs will assist in the achievement of the 2020 Healthy People goals of raising the percentages of women breastfeeding their new-born and raising rates of breastfeeding exclusively for 6 months, and breastfeeding continuance to 12 months (Hawkins et al., 2016).

Though the initiation rates reported in the United States have generally increased because of the efforts to promote breastfeeding, the percentage of newborns solely breastfed at 6 months after being delivered has risen at a slower rate unlike that of babies given mixed feedings. While there exist several evidence-based renowned promotional activities on breastfeeding, exclusive rates continue to be lower than that set by Healthy people 2020 (Hawkins et al., 2016). Aksu et al. (2011) explained that the breastfeeding continuation is positively related to professional advice and support on breastfeeding that mothers obtain from healthcare providers. Executing interventions and programs directed towards populations in a given geographic area is important in increasing the breastfeeding prevalence.

The study by Tahir and Al-Sadat (2013) in Malaysia was an RCT involving counseling women on breastfeeding through telephone as intervention group compared with the control group which received the routine postnatal care for women. According to their findings, exclusive breastfeeding appeared to be lower in control group and higher in mothers receiving intervention at 74% and 84% respectively. Nonetheless, the use of telephone as the intervention approach was not a good communication source, since

breastfeeding messages are better given to women face to face along with giving them cards, pamphlets, CD and books.

Harit (2015) also supported the need-based intervention approach where respondents in the intervention group received education on how breastfeeding can be successfully established and were showed how to deal with unexpected problems that can be encountered by a mother when breastfeeding. Respondents in their study who had sufficient breastfeeding knowledge appeared to improve their breastfeeding practices.

In the opinion of Kornides and Kitsantas (2013), maternal awareness of breastfeeding benefits during antenatal phase is related positively to higher breastfeeding continuation and initiation rates within the first 2 months. Respondents, in the intervention proposed, learned about breastfeeding benefits to mothers and infants, as well as the effect on increased infant to mother bond. Obstacles to breastfeeding initiation were found to include unpreparedness to deliver, pregnancy embarrassment, and need to resume schooling (Kornicles & Kitsantas, 2013). Such issues need to be addressed through maternal education on dealing with pregnancy challenges.

Benefits of Breastfeeding

The benefits of breastfeeding are numerous and have been documented by various studies as well as health organizations globally. Moreover, there is generally an agreement among the various studies that breastfeeding has beneficial health outcomes. According to Kottwitz et al. (2016), increasing the duration and prevalence of breastfeeding is known to be a key goal in public health for different reasons including maternal benefits, social benefits and infant benefits. It has also been noted by O'Sullivan

et al. (2015) that breastfeeding helps in uterine involution among women. In terms of social benefits, businesses also achieve cost saving associated with low turnover rates and decreased absenteeism (Sankar et al., 2015). Exclusive breastfeeding lead to lower demand for plastic bottles, artificial teats and tins for powdered milk which reduce natural resource depletion for their manufacture and result in reduced waste and environmental pollutants. Breastfeeding can reduce overall cost in healthcare since infants who are breastfed have fewer hospitalization, prescriptions and hospital visits (Neville et al., 2014). Increase rate of breastfeeding leads to reduced illness which means saving money which would otherwise be spent on treatment (Crenshaw, 2014). Breastfeeding also lowers chances for developing breast cancer and associated cost of treating such mothers (Hassiotou & Geddes, 2015).

A number of studies have noted a number of infant benefits associated with breastfeeding. For instance, Rossiter et al. (2015) attested the benefits of breastfeeding to infants mainly include nutritional benefits, cognitive and physiological development, and reduced morbidity and mortality, and immunological benefits. On their part, Aune et al. (2014) highlighted the nutritional benefits of breastfeeding by indicating that human milk has low amount of sodium and protein at amounts that an infant's immature kidney can effectively handle. In addition, breast milk has high whey to casein ration that the infant can digest easily (Ballard & Morrow, 2014).

Mothers recognize that the natural infant food is breast milk although they can have inadequate knowledge about breastfeeding benefits for both mothers and infants as well as the health cost to mothers who do not initiate breastfeeding. In addition, poor

knowledge on benefits of breastfeeding and poor knowledge on managing challenges in breastfeeding can lead to early weaning (Mandal et al., 2014; Textor et al., 2013). Moreover, WIC mothers who had higher scores on infant breastfeeding had higher chance of practicing breastfeeding as recommended.

Haqhiqhi & Varzande (2016) asserted that women with positive breastfeeding attitude who appreciate and know the breastfeeding benefits to infants are likely to begin breastfeeding immediately after delivery than women who have no clue about breastfeeding benefits. Having 'confident commitment' to breastfeeding is very important for women to successfully breastfeed. However, delivery can affect initiation of breastfeeding such as in the case of caesarean section which may affect breast milk production or make women to delay breastfeeding initiation.

Reasons behind formula feeding or breastfeeding can be often multi-factorial and complex. McInnes et al. (2013) noted that breastfeeding is not only a physiological process and that emotional and social factors can influence rates of breastfeeding. Generally, breastfeeding women have different maternal factors which can determine whether they will maintain exclusive breastfeeding or not (Bevan & Brown, 2014). Dinour et al. (2015) stressed that women who intend to breastfeed before conceiving or in the first stage of pregnancy are expected to have a higher likelihood of breastfeeding initiation compared to their counterparts who did not have breastfeeding intentions. The social circle of a women can determine whether she will initiate breastfeeding or not and women are likely to practice breastfeeding if they receive additional encouragement and positive support from close family members like the infant's grandmother and father

(Mueffelmann et al., 2015). Hearing the breastfeeding benefits from many different people including close family members, healthcare providers and partners can lead to positive effect on breastfeeding initiation.

Mother's beliefs that breast milk is insufficient for the infant, inadequate knowledge on how to manage challenges related to breastfeeding such as mastitis, incorrect position of infants, leaking milk, engorged breasts, pain and sore nipples and latch can be regarded as breastfeeding barriers that influence both initiation of breastfeeding as well as breastfeeding continuance (Furman et al., 2013). There is also a possibility that the perception of mothers about the insufficient breast milk can be associated with low self confidence in breastfeeding ability. In the study by Reeves and Woods-Giscombé (2015), human ecological theory was employed in assessing the determinants influencing the process of decision making on breastfeeding. According to their findings, individual knowledge and characteristics, social support (microsystem), cultural beliefs (macrosystem) and neighborhood and work (ecosystems) were found to impede breastfeeding decision making among women. They also indicated that mothers can have good knowledge on breastfeeding health benefits but lack knowledge on breastfeeding practices.

Cognitive and physiological development has also been related to breastfeeding in a number of studies. Infant are able to achieve normal development and growth if they are breastfed exclusively for 6 months (Colen & Ramey, 2014). Asiodu et al. (2015) argues that exclusive breastfeeding leads to length gains and increased weight because the infants have faster gastric emptying and slower gastric filling rates. Similarly, it was

attested by Bevan & Brown (2014) that infants who are breastfed tend to gain weight in first 2nd and 3rd months then slower growth in comparison to infants fed on formula. Given that breastfed infants show improved language development implies that human milk contribute to neurodevelopment.

Some studies have advocated for breastfeeding because of the reduced infant mortality and morbidity, and immunological benefits to infants (Diaz et al., 2015). Breast milk contains carbohydrates that enable ability of infants to resist disease causing agents because they are non-lactose in nature (Mosca & Giannì, 2017). Immune function and breastfeeding relationship tend to exist in infants because the higher the amount of breast milk taken in first 6 month, the lower the chances of developing illnesses including ear infections and diarrhea (Chowdhury et al., 2015). Consequently, human milk is known to enhance the immune system of infants. Exclusively breastfed infants have lower gastrointestinal diseases because the protein in human milk is associated with "bifidogenic activity" (Sharp et al., 2014). Melo et al. (2017) argued breastfeeding is the most important means of reducing mortality and morbidity among infants hence it should be given priority over other infant feeding practices given that human milk is by far the safest for infants. Evidence also shows that risk of developing respiratory illness, otitis media, necrotizing enterocolitis, sudden infant death syndrome, and hypertension tend to be higher with reduced rate of exclusive breastfeeding (Kronborg et al., 2015).

Breast milk and maternal physiology. A pregnant woman can lactate from 16 weeks although presence of high progesterone levels suppresses lactating response. During delivery, the placenta is expelled causing an abrupt reduction in estrogen and

progesterone levels in the mother (Mosca & Giannì, 2017). As levels of prolactin rise, mothers produce colostrum through the response of the pituitary gland to the sudden fall in progesterone. Lactogenesis II is initiated by such endocrine process hence the breast milk tends to be synthesized mainly after the baby is delivered, unless there is retention of placental fragments (Sharp et al., 2014). Nonetheless, there are few cases where there is lactation in a woman who was never pregnant and some cases of re-lactation. Less secretion of hormones responsible for lactation such as oxytocin hormone for milk secretion and prolactin hormone for milk production can occur after delivery if the mother prevents the infant from initial suckling of the breast because of negative perception towards practicing breastfeeding. Indeed, early nipple stimulation including expressing and suckling can influence lactating process to convey sufficient breast milk for infants (Andreas et al., 2015).

The plasma prolactin levels tend to return to non-pregnancy levels if there is no breastfeeding initiation within the first few postpartum weeks (Gidrewicz and Fenton, 2016). When an infant suckles whether at first initiation of breastfeeding or subsequent breastfeeding, the sensory nerves in nipples and maternal areola get stimulated, which then trigger the hypothalamus section to stimulate maternal pituitary to generate a rapid rise in oxytocin and prolactin production in the mother (Smilowitz et al., 2014). Consequently, stimulation of nipples is the key factor which determines the production of prolactin. In addition, the level of prolactin released corresponds to the frequency and intensity of contact. Circulation of prolactin within the bloodstream of the mother stimulates the production of milk since lactosesynthetase enzyme is regulated and milk

ejection is associated with oxytocin which has effects on contraction of cells in maternal breasts (Ballard and Morrow, 2013).

According to Colen and Ramey (2014), exclusive breastfeeding can reduce severity and incidences of urinary tract infection, bacterial meningitis, leukemia, lymphoma, asthma, and Hodgkin's disease. Studies reporting relationship between childhood infections and breastfeeding reveal that exclusive breastfeeding protect babies against infection such as infant botulism (Neville et al., 2014). It has also been argued that chronic illnesses such as ulcerative colitis and Crohn's disease can be prevented through breastfeeding (Chaput et al., 2015). Kottwitz et al. (2016) argued some health behaviors, such as breastfeeding, could influence population growth because these would improve wellbeing, health, and life chances. Babies are known to be protected from atopic disease and necrotizing enterocolitis through breastfeeding where there is known family history (Saldan et al., 2017). Those who had been exclusively breastfed are expected to have lower rate of developing adult diseases like cardiovascular and celiac conditions (Bozzette & Posner, 2013).

Clinician support and breastfeeding practices. Healthcare providers' perspectives can enable one to understand why mothers decide to initiate breastfeeding or infant formula and are essential factor to incorporate in strategies for breastfeeding support. Kornides and Kitsantas (2013) suggested that healthcare providers or clinicians include various practitioners ranging from nurses, physicians, lactation consultants to medical assistants. Availability of healthcare systems in the environment is a salient factor that can affect breastfeeding behavior. This is because the healthcare professionals

can provide support which can positively impact on breastfeeding duration and initiation. Practicing exclusive breastfeeding was found to be associated positively with educational support and encouragement from healthcare providers including nurses, particularly among women who face challenges in breastfeeding (Textor et al., 2013).

Professional support provided by healthcare providers like lactation consultants, nurses and doctors mainly within the first weeks after a mother delivers, during establishment of lactation, can increase duration of breastfeeding (Ramakrishnan et al., 2014). Nolan et al. (2015) asserted that this is because the professional support encompasses assisting the infant and the mother with positioning and latch, counseling on lactation problems, counseling on returning to school or work, or advising mothers and close relatives on need of initiating and maintaining breastfeeding. On the other hand, if not education, encouragement or support from healthcare providers is given to the mother, especially those who have concerns and problems with breastfeeding, then exclusive breastfeeding may not be achieved in the long run not unless the mother has good knowledge level on breastfeeding importance (Bozzette & Posner, 2013).

Nursing staff support and breastfeeding practices. Nurses are mostly in the right position to advice and develop interventions that encourage breastfeeding (Saldan et al., 2017). There exist several settings in which nurses come across women that are within the course of making breastfeeding decisions. Expert breastfeeding support could have an enormous impact on breastfeeding attainment. Nurses can play an important role in offering educational assistance to mothers so as to address amendable factors that influence breastfeeding outcomes. Smith et al. (2013) established a shortage in supply of

breast milk was the main reason that made women to stop breastfeeding earlier than the recommended 6-week postnatal duration. It is possible that the reason for the shortage in supply could be due to a myriad of reasons, including but not limited to; high rates of in intervention at birth like caesarian sections, mother/infant exhaustion, anxiety and psychological inadequacy. However, this information suggests areas where individuals providing healthcare services can improve on breastfeeding outcomes by educating mothers on breastfeeding to increase their knowledge and minimize incidences of insufficient breast milk supply. They could also help the mothers increase breastfeeding outcome by offering help that could reduce exhaustion and other associated problems.

Studies support the significance of effective interventions on breastfeeding from nurses interacting with breastfeeding women in the course of deciding between bottle-feeding and breastfeeding (Chaput et al., 2015). Promoting breastfeeding is a means through which nurses influence life quality and morbidity. There ought to be higher concerns when cases of low rates of breastfeeding initiation are pointed out among mothers from marginalized populations. Healthcare service providers mandated to serve pregnant women with low-income status can assist in offering breastfeeding instruction that gives mothers the information to produce a well-informed choice on infant feeding.

Nurses are faced with challenges of meeting breastfeeding educational requirements for first-time mothers within the limited period that the mothers are in the hospital after delivering (Aksu et al., 2011). Increasing breastfeeding duration and breastfeeding initiation rates for low earning mothers proves to be more challenging for educators in healthcare sector. With the differences seen in the rates of breastfeeding

within financially disadvantaged mothers, who more often have had less prenatal care than their wealthier counterparts, live in more stressful and sometimes violent conditions, it's necessary that education on breastfeeding targets mothers within this populace. It's important to examine the barriers that hinder low-earning mothers from getting an adequate breastfeeding education and support. Support in the form of physical help in the homes, paid maternity leave and free lactation support will also be beneficial. Mothers participating in WIC services are mainly low-income individuals and their breastfeeding initiation rate is low as pointed out by various studies. Mothers can profit from breastfeeding information and support provided by nurses who take into consideration the needs of the various populations they offer services to.

According to the study by Melo et al. (2017), mothers who require professional assistance on breastfeeding and mothers experiencing pain were found to have low rates of breastfeeding. On the other hand, the study by Johnson et al. (2016) reported that breastfeeding self-efficacy was improved by nursing interventions among primiparous women. Dunn et al. (2015) found healthcare support received by mothers as unfavorable because of unavailability of staff, clinician time constraints, inadequate counseling, inappropriate practices like conflicting advice and physical intrusion.

Some studies have focused on the impact of duration of postnatal hospital stay on actual breastfeeding behavior. According to the study by Dunn et al. (2015), there was no significant impact of postnasal stay on rate of breastfeeding within the first month. Dunn et al. (2015) concluded postnatal stay does not have any impact on early weaning of infants. Nonetheless, a study by Johnson et al. (2016) showed that care received by

mothers in hospitals during the early days of postnatal was acknowledged by mothers to be an important time when they receive intense clinician support.

Exploratory studies have also been conducted which have revealed that there is inadequate knowledge among nurses, inadequate skills, low personal confidence and ambivalent attitudes in supporting women to exclusively breastfeed (Melo et al., 2017). Furthermore, it has been noted by various studies that healthcare providers fail to provide appropriate, adequate, and consistent education and postnatal support which plays a role in the early breastfeeding cessations among women. Baby Friendly Hospital Initiative (BFHI) was developed by UNICEF and WHO to provide healthcare workers with evidence-based guidelines to enable and encourage mothers to improve breastfeeding rates (UNICEF 2013).

Discrimination and breastfeeding initiation and duration. Smith et al. (2013) examined discrimination faced by women who breastfed their infants in Australia. The study involved 178 childcare services through a cross sectional study between 2011 and 2012. Analysis included legislation awareness and reported discrimination against mothers and explored the association between characteristics of the childcare services, breastfeeding accommodation, and prevalence of breastfeeding. According to the results, majority of the childcare services did not know the relevant laws on discrimination. In addition, some of the childcare services were found to discriminate against mothers who are breastfeeding. Most were found to accommodate breastfeeding by mothers, although the support was found to be highly variable.

The prevalence of breastfeeding in the sampled childcare services appeared to be higher in cases where breastfeeding support was provided. Obstacles to combining employment and breastfeeding include varying degree of support for breastfeeding, including indirect discrimination and direct discrimination by the childcare services. Such situations could unreasonably discourage participation of mothers in labor force and to a point that it impacts on breastfeeding continuation, negatively impacting health and nutrition of infants. They concluded that breastfeeding discrimination in childcare services can have wider impacts on national productivity.

Breastfeeding in baby friendly hospital initiative hospitals. Melo et al. (2017), studied breastfeeding prevalence among hospitals that have embraced BFHI and the factors contributing to cessation of exclusive breastfeeding. This cross-sectional study was conducted in 2014 over a 6-month period and involved 53 female clinicians who delivered their babies while working in the hospitals practicing BFHI. In data collection, their study employed a closed ended questionnaire. According to the analysis, only 2.83% of the healthcare providers studied had practiced exclusive breastfeeding from delivery to 6 months. The results also revealed that factors facilitating breastfeeding included breastfeeding support from clinicians, relatives and friends and room facilities. On the other hand, factors impeding breastfeeding included mastitis, pain, nipple trauma, giving babies water, teas and infant formula. Their study concluded that lactating mothers who worked in a hospital embracing BFHI did not significantly influence exclusive breastfeeding rates.

Women perceive clinicians as playing a significant role in promoting infant feeding besides fathers and grandmothers of the infant (McInnes et al., 2013). In addition, primiparous mothers tend to depend on advice from healthcare providers such as health visitors and midwives on complementary foods while doctors are relied on by mothers during cases of breast infection and poor growth. The perception of mothers about the feeding style preferred by health professionals influences their initiation of breastfeeding. For instance, when mothers have a perception that the health professional mainly prefers infant formula or do not care about what the infants are fed, then the mothers are not likely to initiate breast milk immediately after delivery (Odom et al., 2014) or practiced exclusive breastfeeding only for a few days (Ramakrishnan et al., 2014). In addition, when mothers are unaware of the feeding method that healthcare providers prefer, then they do not initiate breastfeeding at all, which shows that healthcare providers' positive perception of breast milk is very important. Nonetheless, the advice from healthcare professionals can have limited impact on a mothers' breastfeeding decision, if it is not in line with the thoughts and opinion of mothers on breastfeeding (Chaput et al., 2015). Support and advice given to mothers need to be centered on women and respects and understands the views of the mother.

Aksu et al. (2011) also reported that professional support can result in higher rates of breastfeeding continuation to 6 months after infant birth. Breastfeeding counselors with high training standards can provide invaluable support to mothers on breastfeeding, however, they may not fill the void in provision of health service, training and education. The main difference occurs in methods that voluntary supporters used. Breastfeeding

support and information that mothers receive from midwives when delivering in hospitals tend to be provided commonly in authoritative, rushed, prescriptive and routine manner (Chaput et al., 2015). In contrast, it is believed that support provided by voluntary counselors tends to be customized, individualized, and person-centered approach which acknowledges that experiential knowledge of the mother is important.

A midwife can be described as an accountable and responsible professional working collaboratively with mothers to provide the much-needed care, advice and support during postpartum period, labor, and pregnancy (Bozzette & Posner, 2013; Meneses & Rodríguez, 2015; Saldan et al., 2017). Midwives have a very important role in assisting mothers to establish and initiate breastfeeding. It is the statutory responsibility of midwives to offer postnatal care to mothers for at least 10 days or more as considered by the midwife to be necessary. Home visits can also be provided by community midwives. The infant and the mother are discharged from maternity to nursing midwives who are then expected to provide initial visits to the mother at home within first 2 weeks after delivery.

Education of healthcare providers, education of mothers, paternal support, peer counseling and BFHI have been considered in many countries for breastfeeding promotion (Wasser et al., 2013). In the study by Nolan et al. (2015), it was demonstrated that education of nurses on breastfeeding can significantly influence breastfeeding beliefs and BFHI compliance among the group receiving the intervention compared to groups not given the intervention. An increased in EBF rates was also recorded and fewer clinicians offered supplementation mainly after receiving the intervention.

Although intervention programs and breastfeeding promotion mainly advocate for educating employers, family members and mothers on the need to support breastfeeding, there has been less focus on how health professionals can impact on such target groups. Studies that have examined the attitude and knowledge of healthcare providers on breastfeeding show that healthcare providers tend to strongly advise the mothers that the optimum infant feeding method is exclusive breastfeeding (Ramakrishnan et al., 2014).

Inadequate breastfeeding support given to mothers can be determined by various controlling factors such as low capacity of clinician workforce, under resourced and inconsistent models of service delivery for breastfeeding support, as well as defining clinician role profiles which are not compatible with realities in the delivery of healthcare (Kornides & Kitsantas, 2013). One of the basic approaches for promoting personal skills and knowledge is through support and education strategies. In most cases, support and education strategies are interrelated, hence the difference between them can be difficult to tell. In essence, prenatal interventions tend to include information and education, and are offered by clinicians face to face, in writing or in individual sessions. Prenatal information and education are not implemented as stand-alone, single strategy but tend to be part of other comprehensive forms of interventions such as education after delivery or postnatally. At the delivery time, it is easier to make practical, direct education.

Community support and mothers' breastfeeding decisions. Globally, there is a shift in health activity towards the emphasis on use of community-based approaches to enhance child survival. Breastfeeding barriers that have been identified by studies among low-income women include lack of cultural, work or social support and acceptance,

inadequate and conflicting information about breastfeeding, lack of breastfeeding information, lack of guidance from healthcare providers on behaviors which promote wellness and health (Jones et al., 2015). When developing strategies on breastfeeding practices, it is essential to include the community and how factors impeding breastfeeding impact and interact with the community, given that perceptions and specific needs vary from one community to another. A peer support strategy that is well designed must have realistic and clear goals, program support and provide required support for the support workers involved. Moreover, training is very important in peer support hence it should involve the basic management of breastfeeding, infant development and growth, referral criteria, counseling techniques and nutrition (Johnson et al., 2015).

Peer counselling interventions in breastfeeding duration and initiation. A number of studies have demonstrated that counseling interventions involving peers are effective in increasing breastfeeding duration, initiation, exclusivity as well as health outcomes for infants (Negin et al., 2016; Vincent, 2015). A study involving peer counselors (who are well trained in the management of breastfeeding, working with mothers of similar characteristics, and have prior breastfeeding success) (McInnes et al., 2013; Dashti et al., 2014), showed that they impact positively on breastfeeding duration, initiation, and exclusive breastfeeding. These peer counselors were under the management of lactation consultants, understood the community culture and offered the resources and support required by mothers to breastfeed. Consequently, peer counseling can have a significant effect on mothers (McInnes et al., 2013; Dashti et al., 2014).

Mothers have been found to uninstall pregnancy apps after delivering but continue to visit social media sites such as Facebook to seek information when they have certain concerns. Hence, it is important for peer support or health workers to participate in the Facebook groups of mothers so that they can answer the questions raised by mothers about breastfeeding. This can be an excellent high impact, low effort and low-cost intervention. In addition, peer educators should be members of social network sites that mothers visit to fill the gap on peer support and promote existing strategies which have been found to improve the rates of breastfeeding (Karanci & Yenal, 2014; Furman et al., 2013; Huang & Yang, 2015).

Mothers who feel embarrassed in public places when breastfeeding because of associated breastfeeding disapproval can find it very difficult to integrate exclusive breastfeeding in their community (Spencer et al., 2015). Generally, there are individuals who believe that infants should not be breastfed in the public and this could be due to the fact that breasts are considered as sexy, forcing mothers to conceal breastfeeding.

Reeves and Woods-Giscombé (2015) focused on describing the effectiveness of interventions involving peer support in enhancing breastfeeding among women during postnatal period. Such intervention was examined from different perspectives including continuation and initiation of breastfeeding, confidence of mothers in breastfeeding experience, and exclusive breastfeeding. In addition, this review involved analyzing four literature reviews and 30 studies. Peer supporters were defined in these studies as individuals other than clinicians who offer breastfeeding support, such as a friend, relative or a partner. Although there are peer supporters reported in other studies that

have received training on breastfeeding support, the definition in this research on peer support excluded training of peer supporters. According to the findings of this systemic analysis, different forms of interventions for breastfeeding support are required throughout the postnatal, hospitalization, and prenatal phases in order to generate effective outcomes. Even though the conclusions showed that there was a strong association between peer support and postnatal stage, it included a combination of peer support and professional support from experienced and trained peers' supporters which increased the duration of breastfeeding. Additionally, 13 studies reviewed by the investigators showed a positive relationship between continuation of breastfeeding and peer support. In one of the studies, it was indicated that mothers were likely to exclusively breastfed their infants within a 3-month study period with the help of peer supporters. Moreover, a positive relationship was reported between breastfeeding satisfaction and peer support in 9 studies.

Breastfeeding support around the world. According to Swigart et al. (2017), breastfeeding should be practiced exclusively within the first 6 months of an infant's life and continued for 24 months. However, the global prevalence rates for exclusive breastfeeding and breastfeeding continuance are low, despite the fact that these recommendations are the most cost effective and effective ways for guarding infants against chronic illness and serious infections. Social support can influence breastfeeding rates significantly, although little evidence exists on social norms and how social norms influence actual breastfeeding behavior. The objective of the study by Swigart et al. (2017) was to examine the breastfeeding practices, beliefs, attitudes and intentions,

among poor communities in Mexico. In terms of methods, their study conducted a secondary research based on TBP using a cross sectional data in combination with face to face interviews involving 10 fathers, 8 FGD with 50 mothers, and 8 FGD with 44 female community leaders.

The total number of participants in their study was 104 subjects. In addition, they included a survey of 321 mothers and pregnant women. According to their findings, mothers reported that breast milk was supplemented by teas and water after delivery, and solid food was introduced within months of delivery. In addition, certain social norms were found to improve breastfeeding rates, although not exclusive breastfeeding, or continuance of breastfeeding for more than 1 year. In the opinion of Swigart et al. (2017), this can be explained by the fact that behavioral beliefs held by mothers that breast milk cannot be sufficient for the infant for 6 months after birth, and that giving water in addition to breast milk could be vital in hydrating the child, and the normative beliefs which are associated with breastfeeding appropriateness in the public or as the infant matures. In conclusion, their study recommended that strategies to be developed in the future should aim at impacting social norms to support the practices recommended, and stress on the key reasons for making the recommendations. In addition, they revealed that future interventions should have an approach that is multifaceted involving various influences which are directed at both family members and healthcare providers.

In Hawaii, the rate of breastfeeding initiation is higher than the national average, although the breastfeeding duration rate is below the recommended target. Accessing services on breastfeeding support has become a challenge for many women in rural

villages. Healthcare providers supporting infants and mothers play an important role in supporting and encouraging breastfeeding practices. Flood (2017) focused on having a better insight into the breastfeeding support issues and breastfeeding services among mothers in Hawaiian community. In terms of methods, their study was qualitative in nature and involved ethnography approach to collected data using a small sample of 23 healthcare workers regarding shared or individual experiences about services and support for breastfeeding that can be accessed by mothers. The data obtained was analyzed through categorizing and coding process as well as conceptual abstraction to generate patterns. According to the results, there were three patterns that emerged, including interrupting processes, coexisting messages, and operating within a given constrained environment. In addition, a number of areas of concern were identified by the participants in terms of the services available for breastfeeding including inconsistent communication occurring between community providers and the hospital, and inadequate number of lactation consultants.

Breastfeeding support from friends and family members. Guidance and support from friends and family can significantly impact breastfeeding duration and breastfeeding. Hudson et al. (2015) found that support from partners or the husbands can exert significant effects on the initiation and continuation of breastfeeding. McInnes et al. (2013) reported that support which women get from their friends, the infant's grandmother and other people in her social network was found to be fundamental in breastfeeding continuance. Social support can also increase the confidence of a mother in her breastfeeding abilities if they share information about infant feeding. On the other

hand, mothers who lack encouragement and support from friends and family tend to have a higher chance of breastfeeding cessation.

Within the acquaintances circle, many people can be perceived by mothers as influencing young child and infant feeding practices (Odom et al., 2014). These people can be categorized as 'significant others' and may include the children's father, acquaintances who are neighbors, relatives and friends or other individuals with similar state of life. According to McInnes et al. (2013) mothers can also consider themselves as significant in feeing the infant. In either way, there is need for trustworthy relationship with the mother for the 'significant others' to have any influence on the behavior of the mother (McInnes et al., 2013). The extent to which a mother depends on the views of significant others regarding feeding is based on the self-efficacy and confidence of the mother (McInnes et al., 2013). A number of studies indicate that mothers believe the infant's fathers have the most influence when it comes to feeding behaviors and practices (Mueffelmann et al., 2015). The intention of women to practice breastfeeding tends to be influenced strongly by their partners compared to other individuals. Some studies indicate that mothers have a higher chance of breastfeeding exclusively if they have a perception that the father only prefers such feeding practice (Mueffelmann et al., 2015). The influence of fathers on infant feeding can however be in line with the expectation of the mother about gender and couple roles.

Some mothers report sharing their infant feeding practices with their partner and seeking the opinion of fathers while some mothers make decisions about breastfeeding without consulting the infant's father (Chavan et al., 2017; Mithani et al., 2015; McInnes

et al., 2013). Women tend to report their husbands as having significant influence when they have similar attitudes which implies that women request the father's support on already predetermined decisions (Mueffelmann et al., 2015). Women who are more experienced and older such as infant's grandmother, play a role in communicating behavioral norms thus affecting a mother's feeding practices (McInnes et al., 2013). Hence, they can be the guidance for women and support them to breastfeed (Wasser et al., 2013).

The role of the grandmother is influential in western countries and developing countries. In the United States and the UK, grandmothers were reported to influence infant feeding practices and decisions (McInnes et al., 2013). Some mothers also seek the support of grandmothers, however, if the grandmother has false beliefs and inadequate breastfeeding knowledge then they act as obstacles to exclusive breastfeeding (Wasser et al., 2013; Rempel et al., 2016; Negin et al., 2016; Johnson et al., 2015). The grandmothers can be available for advice and support relating to infant feeding and care, but mothers doubt their experience and expertise as authentic as compared to that of healthcare workers. This shows that support from grandmothers is not often trusted by mothers, moreover, grandmothers may not provide advice and support without being consulted. According to Reis-Reilly and Carr (2016), the advice and support of grandmothers does not affect infant feeding practices positively, as the grandmothers may have poor knowledge and inadequate breastfeeding experience or have negative perceptions about infant feeding.

Maternal Demographic Factors and Infant Feeding Practices

Age of mother. Older mothers tend to have a higher likelihood of breastfeeding continuance and breastfeeding initiation compared to younger mothers (Jones et al., 2015). Other studies also report that some young mothers can practice exclusive breastfeeding than some older mothers in terms of exclusive breastfeeding (Spencer et al., 2015). Breastfeeding initiation rates among adolescents were lower compared to that of older women (Jones et al., 2015). Maternal age has been related significantly to breastfeeding duration (McQueen et al., 2011). In addition, women aged 24 years and below had shorter duration of breastfeeding compared to older women (Jones et al., 2015; Kottwitz et al., 2016). Bueno-Gutierrez and Chantry (2015) found that breastfeeding duration was associated significantly with maternal age but not breastfeeding initiation.

Other studies have also demonstrated that maternal age contributes significantly to quality and appropriate complementary feeding (Cesur et al., 2017; Tang et al., 2015). In some studies, breastfeeding duration has been found to be associated with maternal age (Kottwitz et al., 2016). These studies on the impacts of maternal age on duration of breastfeeding present mixed results; however, higher maternal age tend to contribute to improved young child and infant feeding practices. This may hold even if there is delayed lactogenesis onset, which can lead to early weaning and formula supplementation, tend to be common in older mothers (30+ years) compared to their younger counterparts (McCann et al., 2007). hence, the probable reason may not be physiological but higher maternal education is associated with improved breastfeeding practices.

Socioeconomic class of mother. Fahmida et al. (2015) posited that acceptability

of food and economic access can also influence complementary feeding. Complimentary to this claim, Dunn et al. (2015) involved young women and aimed to examine how breastfeeding knowledge is impacted by socioeconomic class. A higher number of low-class women significantly witnessed breastfeeding in public and at home compared to high-class women. Other studies show that maternal education affects breastfeeding duration and initiation significantly (Acharya & Khanal, 2015). Maternal education tended to be related to feeding practices within first 6 months after delivery, limiting feeding, encouraging feeding, weight concern and weight monitoring (Brown and Lee, 2013). In addition, complementary feeding occurs in mothers who have attained higher education. Mothers with lower educational attainment are likely to practice early weaning, delayed complementary feeding and low complementary food quality (Betoko et al., 2013).

Bueno-Gutierrez and Chantry (2015) linked breastfeeding to a mother's socioeconomic status. The data was gathered from women of low-income to examine the association between maternal demographics and intention to breastfeed, and social support and breastfeeding experience. According to the results a considerable number of mothers had breastfeeding intentions. A significant proportion of mothers with prior experience in breastfeeding were found to have breastfeeding intentions compared to mothers with no prior experience in breastfeeding.

Mandal et al. (2014) found that income class was not significantly related to breastfeeding knowledge. Some of the limitations that their study encountered were relating to sample size and generalization problem. For instance, due to the fact that a

considerable larger proportion of respondents were young women of high to middle income earners and attained higher levels of education implies that the findings can be difficult to generalize to those with low-income and low educational attainment.

Bueno-Gutierrez and Chantry (2015) posited that the breastfeeding plan of mothers can be disrupted at work by many issues. Some of these challenges include lack of facilities for breastfeeding in the workplace, low family support, inadequate maternal knowledge on breastfeeding, and being embarrassed to breastfeed in the workplace (Brown et al., 2014). Maternal awareness and knowledge encourage and motivate women to breastfeed in the workplace (Hameed et al., 2014).

Educational level of mother and breastfeeding duration. Higher education tends to be associated with recommended infant feeding but other factors also come into play. For instance, women who are more educated may also belong to high social standing which is also related to recommended feeding practices (Swigart et al., 2017). On the other hand, it was suggested by Thrasher (2017), that education of women is a factor that can be used to understand and explain infant feeding practices compared to social class, given that education enables women to have knowledge on breastfeeding recommendations hence they tend to be more willing, likely and able to engage in breastfeeding practices which are known to provide optimal growth and development for the infant. A number of demographic factors like maternal education, age, marital status, cultural factors, socioeconomic factors, social support, and number of siblings have been reported to affect breastfeeding decisions made by mothers (Cynthia et al., 2016; Dagher et al., 2016; Mandal et al., 2014). In addition, there are other factors that can explain

breastfeeding like education level, social support, and income as well as the perception of young mothers that they are being judged and watched for delivery at younger age which affects their confidence to exclusively breastfeed (Mandal et al., 2014).

High educational attainment among women has positive effects on infant feeding practices. Bueno-Gutierrez and Chantry (2015) found differences in total and exclusive breastfeeding between low education and high education mothers were found to be high, with a considerable proportion of high education mothers breastfeeding exclusively while low education mothers were found to breastfeed exclusively at lower rates. A number of studies also show similar direction on education level as positively affecting breastfeeding duration and breastfeeding initiation (Smith et al., 2015).

Parity and breastfeeding practices. The findings from studies examining feeding practices and parity have reported mixed findings. Breastfeeding prevalence and breastfeeding duration were found as greater among multiparous mothers (with 2 or more child births) than primiparous mothers with one childbirth (Vincent, 2015).-Compared to multiparous women, primiparous women tend to have early encounters with breastfeeding problems, decreased exclusive breastfeeding likelihood, mixed feeding after discharge from maternity but meeting the recommended duration of partial breastfeeding and introducing complementary feeding in a timely manner (Hackman et al., 2015).

Maternal employment and breastfeeding duration. Several researchers have reported a negative link between breastfeeding duration and maternal employment (Kottwitz et al., 2016; Saaty et al., 2015). This is especially true among working low-

income women; though many employers mandate accommodation with breaks to support expression of breast milk and breastfeeding, such provisions however are seen to be limited or very difficult to monitor or enforce (Kottwitz et al., 2016). A number of studies exist on employment disruptions after delivery and breastfeeding (Wood et al., 2016; Dagher et al., 2016). There is much empirical evidence showing that both the period of breastfeeding and work-leave are related. However, the results of such researches tend to be ambiguous with respect to existence of a causal direction. Meneses & Rodríguez (2015) showed that the period of parental/maternity leave has an impact on the period of breastfeeding, and not the other way around. Research also illustrates that working conditions and hours (full-time vs. part-time) are linked to the period of breastfeeding. Past reports have found that mothers returning to full-time work are likely to stop breastfeeding compared to mothers returning to employment as part-timers (Meneses & Rodriguez, 2015).

Maternal employment is also linked to breastfeeding initiation among women (Textor et al., 2013). However, this relationship only holds for the mother who goes back to work early after delivery or has intentions of doing so. No connection between breastfeeding initiation and maternal employment is found when mothers report back to work from a longer leave duration (Cesur et al., 2017). Neither the intent to resume work within six months of delivery, nor the actual return and intent to do so within one year of the delivery, have been established to affect initiation of breastfeeding.

According to Smith et al. (2013)'s study, multiparous mothers have a low chance of breastfeeding initiation, while Tahir and Al-Sadat (2013) reported decreased

breastfeeding after a second delivery compared to the first. Infant feeding is not a persistent behavior hence it fluctuates and is affected by maternal experiences of breastfeeding (Bai et al., 2015). This could be explained by the fact that higher self-efficacy and confidence occur if mothers have prior successful breastfeeding experiences. Nonetheless, mothers who practiced breastfeeding in older children tend to engage in shorter breastfeeding continuation in youngest child, which means that multiparous women experience other barriers to breastfeeding such as lower motivation and time constraints which impact negatively on infant breastfeeding (Bai et al., 2015).

Other factors in breastfeeding initiation and duration. Regardless of having breastfeeding experience, there was no relationship between clinician's advice and breastfeeding intention found by Ramakrishnan et al. (2014), which suggests that clinicians may not influence mothers' breastfeeding choices effectively. In addition, the mothers obtained breastfeeding information, but this knowledge did not impact significantly on breastfeeding intention. Among inexperienced women in terms of breastfeeding, Huang and Yang (2015) showed that obtaining breastfeeding information on its benefits from multiple sources led to significant effects on breastfeeding intention.

A number of researchers have examined parity and breastfeeding. Nonetheless, results appear to be inconclusive. Some studies show longer breastfeeding duration in multiparous mothers (Diaz et al., 2015) while other studies revealed no relation between breastfeeding duration and increased parity. A number of factors can impact on feeding practices of mothers including income level, food beliefs, food availability, education level, religion, dietary laws, cultural customs and norms, and health (Brown et al., 2014;

Hameed et al., 2014; Kronborg et al., 2015). Additionally, age is a major factor influencing dietary habits. Economic status influences breastfeeding practice. Chavan et al. (2017) examined peer support among low-income women. According to their findings, women reported a number of complexities they face in the society including housing stress, work resumption, helper support as well as poor perception of breast milk storage and expression.

According to the CDC (2014), about 66.1% of women practice breastfeeding after delivery but the figure falls to 32.7% after 6 months. The breastfeeding rates were lower among recipients of Medicaid and WIC. Similar reports were presented by Petry (2013) who indicated that the rate of breastfeeding was lowest in the United States compared to other major economies, and that socioeconomic status had a significant correlation with breastfeeding for all ethnicity and races. Interestingly, Dunn et al. (2017) found that breastfeeding disparities existed even for those enrolled in WIC. Mandal et al. (2014) also added that the rates of breastfeeding initiation was found higher among women from western states compared to southeastern states.

Bevan and Brown (2014) studied women and found majority continued breastfeeding for 4 to 11 months. Breastfeeding continuance was found to be impacted significantly by partner and family support. Additionally, breastfeeding continuance and breastfeeding initiation were related significantly to higher income and higher education. Younger mothers who are single, have low-income level, and have poor breastfeeding attitude were found by Reeves and Woods-Giscombé (2015) to have lower chance of initiation breastfeeding. In the US, it is documented that mothers of high income level

who attained college education appear to engage in higher rates of breastfeeding, on the other hand, younger mothers who have low educational attainment and from low-income backgrounds tend to have lower rates of breastfeeding.

Maternal characteristics like income, education and age were found to impact on breastfeeding continuation and initiation (Bergmann et al., 2014; Nassar et al., 2014). It was also reported by CDC (2014) and Dunn et al. (2015), that the rate of breastfeeding tends to reduce among women of low-income involved in WIC program compared to mothers from high income backgrounds. Maternal characteristics like low maternal education, single status, low-income and younger age were reported by Bevan & Brown (2014) and Dinour et al. (2015) to contribute to lower prevalence of breastfeeding among mothers. The main demographic factors which influence breastfeeding include income level, education level, marital status, and age (Jones et al., 2015; McQueen et al., 2011). Mothers of low-income tend to have lower breastfeeding initiation rate while mothers grouped as high-income earners report higher breastfeeding initiation rates (Kottwitz et al., 2016). Disparities reported in rates of breastfeeding initiation and duration of breastfeeding have been noted in lower education and low-income mothers.

Summary and Conclusions

In Chapter 2, I discussed in detail the factors that contribute to a mother's decision to breastfeed and for how long. In addition, the breastfeeding health benefits for mothers and infants, as well as the general society, have been outlined. Despite the increasing evidence on what hinders or helps breastfeeding, prevalence in the US dramatically drops after first 6 weeks of infant life. Reasons given by women for

terminating breastfeeding are varied. Some women give up breastfeeding because they intended to. Other women also give up due to lack of support from partners, clinicians, and the community as a whole, or the perception that breastfeeding is hard because of the time and effort needed to carry out the practice, or simply failure to lactate adequately.

Though breastfeeding is widely recognized as beneficial, the costs of early cessation and the factors that contribute to this cessation (e.g. lack of post-natal support), need to be recognized, and the literature on this is inadequate. The effect of provision of postnatal support needs further exploration. There have been mixed findings reported on the effect of nursing support on rates of breastfeeding with some studies acknowledging that care received by women during the hospital stay plays a paramount role in supporting exclusive breastfeeding while other studies noted that women continue breastfeeding when they receive positive support from family and workplace rather than nursing support (Chaput et al., 2015; Chavan et al., 2017).

Experience of service users is important and, when being integrated into development of services, has been shown to increase quality of care, hence, comparing and contrasting experience of mothers with regards to support received from clinicians and community members can move us further towards a framework that comprehensively addresses breastfeeding phenomenon in a wider context. Worthy of note is the way infant formula manufactures may go to extraordinary lengths to persuade mothers in hospitals and bribe clinical staff to introduce their products into the hospitals. However, this practice is prohibited by the International Code on Marketing Breastmilk Substitutes

(WHO/UNICEF, 1981), which implements restrictions on any marketing of breastmilk substitutes that may contribute to mothers choosing to limit breastfeeding.

It seems that findings on negative or neutral effects of breastfeeding have not been reported in the past studies and it remains unclear whether such under reporting are simply publication bias, a drive to increase breastfeeding rates or breastfeeding has no negative impacts on infant health. Another area that has been under reported is the combined effect of both clinician support and community support on breastfeeding. From the various studies reviewed, breastfeeding rates can be improved beyond increasing maternal knowledge hence support that women receive is vital in promoting breastfeeding. Therefore, breastfeeding should be interpreted as an outcome of multiple factors.

In this regard, the literature review included various factors that have been associated with early cessation of breastfeeding. Contemporary studies have shown that breastfeeding phenomenon is a psychological, sociocultural, and biomedical phenomenon. There is much focus on the phenomenon of breastfeeding in terms of being a public health issue, however, the place of breastfeeding in the wider community picture is neglected which explains the few studies that have mentioned community support as a breastfeeding determinant. The same is also true with clinician support because of the few studies appreciating the role of clinician support. Although it can be acknowledged that few studies have made mentioned of nursing support or community support as contributing to breastfeeding intention, it is important to point out that gaps still exist, with regards to the mediating role of maternal knowledge in the positive effect of

clinician support and community support on breastfeeding intention and breastfeeding behavior especially among low-income women such as those receiving WIC services.

Chapter 3: Research Method

Introduction

Research methodology includes the processes, techniques, and approaches that were applied to meet the objectives to address the research questions. This includes the research approach, research strategy, and philosophies deemed appropriate for the study. In addition, the research methodology explains the methodological choices considered in a study and the related procedures regarding collection and type of data. In this study, the purpose was to develop and test a structural model that includes clinician support and community support for examining breastfeeding practices. In addition, the role of maternal knowledge in mediating the positive effect of community support and clinician support on breastfeeding behavior and breastfeeding intention was estimated with inclusion of control variables.

In this chapter, I present the methods and approaches used in the study. Data collection is also described along with a description of the secondary data gathered. In terms of data analysis, quantitative methods were employed. Ethical considerations have also been detailed in this chapter based on the notion that human subjects were being studied. Details regarding the methodology are provided and justified in the sections that follow.

Research Design and Rationale

Quantitative approaches were employed in the study where quantitative data will be gathered by the study. On the other hand, qualitative approaches involving qualitative data were not used in the study. Justification for considering quantitative methods is that

the research questions aim at estimating the effects of independent variables on the dependent variables, which cannot be performed by qualitative approaches. Furthermore, findings from quantitative approaches allow for generalization of findings because they involve large populations that are representative of target populations. Because the study involved a quantitative approach, the research philosophy adopted was the positivism philosophy, which attests that objectivity must be used in a study to arrive at conclusions that are valid and based on scientific and statistical measures.

In this study, various types of variables including two dependent variables, three independent variables, one mediator variable, and four control variables were used to help in addressing the study purpose. In the first place, the dependent variables examined in the study included the mothers' breastfeeding intention and breastfeeding behavior. Control variables included age, experience, education, and income level. The independent variables include maternal knowledge, community support, and clinician support. The effect of these independent variables on the dependent variables was determined directly while controlling for demographic variables such as age, experience, education, and income level. In addition, the role of maternal knowledge as a mediator variable was tested to determine how it mediates the positive effect of clinician support and community support on breastfeeding intention and breastfeeding behavior. Additionally, the effect of breastfeeding intention on breastfeeding behavior was tested while controlling for age, experience, education, and income level.

The study design was descriptive and nonexperimental. As such, there was no manipulation of the study subjects (Creswell, 2014). In particular, the study design

involved a cross-sectional design that was retrospective to determine the breastfeeding knowledge, clinician support, and community support, and how they influence breastfeeding intention and breastfeeding behavior among women enrolled in WIC program. The purpose of conducting a descriptive study design was to determine breastfeeding intention and breastfeeding behavior by describing the nature, including the measurable attributes, size and incidence, and examine the independent variables or factors that affect the phenomena. Investigators using descriptive study design document, observe, and describe a phenomenon and its aspects as in a natural way without any intervention or manipulation of variables or treatment (researcher). Cross-sectional design was important because the secondary data considered were obtained through cross-sectional surveys. The chosen study design was justified because it fit well and in line with the objectives and research questions addressed in this study, which focused on describing the intention of mothers to breastfeed and their breastfeeding behaviors, as well as the factors that affect such practices. Consequently, the use of this study design was the most appropriate in achieving the study purpose.

The study was cross-sectional in nature because the data sought represents the events that occurred within a defined place and at specific time (Ritchie et al., 2014). There are a number of advantages of cross-sectional studies including less resources constraints and less time constraint. Cross sectional studies are also the most successful design for gathering data from large number of samples. Moreover, the amount of data sought by the study involved a number of measurement items for breastfeeding behaviors and breastfeeding intention. Many researchers who have examined the phenomena under

investigation have also incorporated cross-sectional designs. It was also advantageous to the study because it was used to compare different classes within the sample, like those who initiated breastfeeding and those who do not practice breastfeeding. The design was also appropriate for the research since the results suggest specific interventions for specific groups, such as those with low breastfeeding rates, and can act as the foundation for future research. However, the descriptive cross-sectional design can also have certain limitations, including increased probability of making an error, the fact that change cannot be measured over time, and the investigator cannot establish any cause-effect relationship. In addition, there were no control groups to measure level of changes.

Methodology

The population targeted by the study as well as the sampling procedures are described and justified in this section.

Population

The target population for the study included mothers who were from low-income families in Texas and were enrolled in a WIC program. WIC surveys collect data on a number of variables and factors influencing development and health of infants and children in order to provide the local and state agencies with data on their clients. This information is useful and assists the agencies to develop and plan WIC services and assess the level of satisfaction with the program. The target population included mothers who took part in the WIC program survey of 2016, which included a large sample of participants. However, not all those who took part in this WIC survey were eligible for

the current study; hence, the sample size was estimated based on a given formula after identifying the eligible sample frame based on the developed inclusion criteria.

Sampling and Sampling Procedures

The sampling strategy for this study included various techniques and a multistage sampling approach (Yin, 2014). The multistage sampling involved purposive sampling and simple random sampling strategies. First, the sample only included mothers enrolled in WIC and receiving WIC services in Texas. Thus, purposive sampling was applied to find these mothers based on specific criteria. For a mother to participate in the study, she had to be18 years or older, receive WIC services, and visit the WIC clinic. In addition, the mother must have been living in the state of Texas and biologically delivered a baby while living in the United States, and the baby must have been between 1-30 months and not of multiple births. Women were not included in this study if they never met the criteria for inclusion such as if the mothers were aged 12 to 17 years, had twins, or had multiple births because such infants have a higher tendency of being weaned early due to time and effort required caring for them. In addition, they tend not to be breastfed exclusively in comparison to single infants. Mothers were also excluded from the study if they had a baby aged 1-30 months who could not breastfeed because they were in an intensive care unit or had other illness.

All eligible mothers who met the inclusion criteria formed the sample frame for the simple random sampling from which the final sample size was chosen. The list of all eligible mothers based on the purposive sampling were assigned a random number or identification for each mother in order to perform the random sampling using computer

generated software and attain the final sample size. The sample size was calculated as shown in Equation 1 (see Vishwakarma, 2017) because it included categorical data:

$$n = \frac{Z^2_{\left(1-\frac{\propto}{2}\right)} p(1-p)}{d^2} \quad (1)$$

Where;

n = sample size required for the study

$Z^2_{(1-\frac{\propto}{2})}$ = 1.96 at 95% significance level $(1 - \frac{\propto}{2})$

p = 57% which is the expected proportion of women receiving WIC and Medicaid services who initiated breastfeeding immediately after delivery within 60 minutes according to CDC (2014)

d = 0.05 which is absolute precision

Substituting these figures into the formula gives the following equation

$$n = \frac{(1.96)^2 0.57(1-0.57)}{0.01^2}$$

$$n = \frac{3.8416x0.57x0.43}{0.0025}$$

$$n = \frac{0.941576}{0.0025}$$

$$n = 376.6305$$

$$n = 377 \text{ Women}$$

The dependent variables included categorical data where proportions can be generated. A proportion refers to the outcome of variables that are binary where a sampled individual is assigned a value alternatively x and y. For instance, mothers who

breastfeed (x) or mothers who ceased breastfeeding (y), or test (x) is positive or (y) negative. Proportion (p) of mothers breastfeeding can be calculated by dividing number of mothers breastfeeding by total mothers sampled. This formula works based on the fact that an outcome variable is binary (x/y, yes/no) hence if p represents likelihood of success in every study then likelihood of failure is $(1 - p)$ and sampling distribution is estimated to be normal. Alpha (α) refers to the likelihood of committing type I error (Vishwakarma, 2017). Significance level (alpha, α) is normally assumed by the investigator which has implications on results after analysis. In this study, a significance level of 5% was considered when calculating the sample size hence the results will be interpreted based on a confidence level of 95%. Since the significance level was fixed at 5%, it implies that the investigator will take into account the Type I error which suggests that there may be a 5% likelihood of rejecting the stated null hypothesis while it should not be neglected (it is true; Vishwakarma, 2017).

Data Collection and Source

This study involved the collection of secondary data from the TDSHS on WIC Infant and Toddler Feeding Practices. The 2018 WIC Infant and Toddler Feeding Practices Study (WIFPSSR) was used to obtain the data for the various study variables. The report is normally developed from a cross sectional survey where data is gathered using a questionnaire with various questions on breastfeeding practices, attitudes, and beliefs among mothers enrolled in WIC program in Texas. The surveys were allotted to various clinics involving the WIC agencies. The WIFPSSR aims at providing accurate information to local agencies involved in WIC program to assist them in activity

development and planning. It was noted by TDSHS that WIFPSSR has data which can contribute to valuable information for policy makers, public health practitioners, and coalitions who are interested in breastfeeding support. Consequently, the data available in WIFPSSR was vital for this study to examine breastfeeding rates and the associated antecedents.

According to the WIC, the directors distributed the same number of questionnaires in Spanish and English proportionally to WIC clinics in terms of client load, administrative instructions, survey assignments, as well as informed consent. The supervisors of WIC clinic were given instructions on providing the survey questionnaire to every eligible participant visiting the WIC clinic to receive professional services at the time and to obtained consent from participants before administering the survey. Participants were determined eligible based on information they provided on the survey. The eligible participants completed the booklet containing the questionnaire only when they agreed to participate voluntarily. In addition, a supplemental survey tool was completed by the participants in either Spanish or English, depending on their choice of language. Surveys were conducted in the preferred language for each participant until the end of the survey period. The survey was ethical because the Institutional Review Board (IRB) approved the survey for use in this study and it had also obtained written consent. In this study, permission was sought from TDSHS to gain access to all the raw data used in WIFPSSR. I contacted the WIC coordinator in charge to ask for permission to use their raw data for this study. A written permission letter is provided in the appendix.

Operationalization

The different variables used in this study were operationalized as explained in the following sections.

Breastfeeding Intention

Breastfeeding intention was operationalized as the information given by a mother during her pregnancy stage with regards to whether the mother would consider breastfeeding the infant within the first few weeks or days of life. That is, breastfeeding intention included the prenatal plans that the mother had for feeding the infant. Breastfeeding intention was measured as a categorical variable with one measurement item having two possible responses.

Those who answered "unsure" or "formula feed" to the question about plans for infant feeding during the few weeks after delivery were categorized in one group, "no breastfeeding intention" and coded as 1. Mothers who answered "breastfeeding only" or "both formula and breast feed" were categorized in one group, "breastfeeding intention" and coded as 2. Consequently, the breastfeeding intention group had a score of 2, while the no breastfeeding intention group had a score of 1.

Table 1

Measurement Item for Breastfeeding Intention

Measurement item	Responses	Score
Plans for infant feeding	Unsure	0
	Formula feeding	0
	Both formula and breast feed	1
	Breastfeeding only	2

Maternal Knowledge

Breastfeeding knowledge was operationalized as the details given by a mother on breastfeeding or its value to the infant as they evaluated the use of breast milk and infant formula. Maternal knowledge was measured as a categorical variable with six measurement items having three possible responses.

Table 2

Measurement Item for Maternal Knowledge

Measurement item	Responses	Score
Breastfed infants have low chance of dying from SIDS	True	1
	False	0
	Unsure	0
Infants benefit from breastfeeding even after nursing is stopped (better health; higher IQ)	True	1
	False	0
	Unsure	0
Breastfeeding women have less chance of developing ovarian or breast cancer	True	1
	False	0
	Unsure	0
Texas has a law that allows women to breastfeed infants in public	True	1
	False	0
	Unsure	0
Employers are required by law to provide enough time, private place and clean place to employees breastfeeding so that they can pump breast milk in a workday	True	1
	False	0
	Unsure	0

Note. SIDS = sudden infant death syndrome

Breastfeeding Behavior

Breastfeeding behavior was operationalized as the information given by a mother (after delivery) with regard to the methods adopted for feeding the infant including breastfeeding initiation after delivery and breastfeeding practices such as exclusive breastfeeding of an infant until 6 months, and breastfeeding continuance as recommended by WHO.

Table 3

Measurement Item for Breastfeeding Behavior

Measurement item	Responses	Score
Breastfeeding initiation	Yes	1
	No	0
Breastfeeding continuance	0 to 3 months	1
	3 to 6 months	2
	6 to 12 months	3
Exclusive breastfeeding	0 to 3 months	1
	3 to 6 months	2

Clinician Support

Clinician support was operationalized as the information given by a mother regarding encouragement they received from the clinicians (including nurses, doctors, midwives, and other healthcare professionals) with regard to breastfeeding.

Table 4

Measurement Item for Clinician Support

Measurement item	Responses	Score
Received breastfeeding encouragement from WIC staff	Yes	1
	No	0
	unsure	0
Given information about breastfeeding benefits by WIC staff	Yes	1
	No	0
	unsure	0
Encouraged to exclusively breastfeed while staying in hospital	Yes	1
	No	0
	unsure	0
Told to breastfeed on demand while staying in hospital	Yes	1
	No	0
	unsure	0
Given help on how to breastfeed while staying in hospital	Yes	1
	No	0
	unsure	0
Told how to limit breastfeeding length while staying in hospital	Yes	1
	No	0
	unsure	0
Shown how to express breast milk while staying in hospital	Yes	1
	No	0
	unsure	0
Given telephone number while staying in hospital to consult on breastfeeding	Yes	1
	No	0
	unsure	0
Given information about services and support groups for breastfeeding while staying in hospital	Yes	1
	No	0
	unsure	0
Told how to know if baby is hungry while staying in hospital	Yes	1
	No	0
	unsure	0
Given information by clinician on how breast milk is different from formula	Yes	1
	No	0
	unsure	0
Received help from clinicians after leaving hospital	Yes	1
	No	0
	unsure	0

Community Support

Community support was operationalized as the information given by a mother regarding encouragement and help that they received from the community members (including community members and workplace) with regard to breastfeeding.

Table 5

Measurement Item for Community Support or Lack of Support

Measurement item	Responses	Score
Grandmother of my infant did not want breastfeeding	Yes	0
	No	1
I was told by people that breastfeeding is hard	Yes	0
	No	1
Father of my infant did not want breastfeeding	Yes	0
	No	1
Breastfeeding support from community	Unsure	0
	Very unsupportive	0
	Neutral	0
	Very supportive	1
Working after delivery of infant	Yes	0
	No	1
Support at workplace after delivery of infant	Very unsupportive	0
	Neutral	0
	Very supportive	1
Availability of private place for pumping milk	Unsure	0
	Yes	1
	No	0
Written policy on breastfeeding and working at workplace	Unsure	0
	Yes	1
	No	0
Allowed to work from home	Unsure	0
	Yes	1
	No	0

Maternal Age

Maternal age was operationalized as the age of the mother measured in years.

Table 6

Measurement Item for Maternal Age

Measurement item	Responses	Score
Age	18-24 years	1
	25-29 years	2
	30-34 years	3
	35 years and older	4

Education Level

Education level was operationalized as the highest level of education attained by a mother.

Table 7

Measurement Item for Education Level

Measurement item	Responses	Score
Education level	Below high school	1
	GED or high school	2
	College but not degree	3
	Degree (postgraduate, bachelor, associate degree)	4

Maternal Experience

Maternal experience was operationalized as the information given by a mother regarding her breastfeeding experience.

Table 8

Measurement Item for Maternal Experience

Measurement item	Responses	Score
Infant had problems latching on or sucking	Yes	0
	No	1
The infant appeared to nurse often	Yes	1
	No	0
Baby uninterested in nursing	Yes	0
	No	1
Infant never waking to nurse	Yes	0
	No	1
Insufficient milk	Yes	0
	No	1
Sore nipples, bleeding nipples	Yes	0
	No	1
Milk could not start flowing	Yes	0
	No	1
Milk took longer coming in	Yes	0
	No	1
No problems experienced	Yes	1
	No	0
Breasts often overfull	Yes	1
	No	0
Infected breasts	Yes	0
	No	1
Too much breast leaking	Yes	0
	No	1
Experienced other health problems	Yes	0
	No	1

Income Level

Income level was operationalized as the information given by a mother about her earning.

Data Analysis Plan

The quantitative secondary data obtained was analyzed using quantitative methods involving SPSS v25 and AMOS v25 program. Data screening and cleaning was first performed before the analysis. After the secondary data file was received, Excel was used for cleaning the secondary data by identifying the errors in the data including non-numeric errors. Before carrying out the analysis, the data was checked to identify outlier values in the data. Any missing values in the data will lead to exclusion of the data for the participant involved. The data was transferred from Excel format into the SPSS after coding the data and used in the AMOS program to run various analyses. Descriptive analysis involved generating percentages, frequencies, means, standard deviations and other descriptive statistics as deemed necessary to describe the distribution of the variables among target population and display important trends in the data. In this regards, other outputs that were generated include histogram, pie charts and bar charts.

Inferential analysis involving standardized regression analysis through Structural Equation Modeling will be conducted to address all the research questions and test the hypotheses. These control variables have been demonstrated previously to influence breastfeeding intention and behavior.

The research question, "What is the effect of maternal breastfeeding intention on breastfeeding behavior?," was addressed by estimating the effect of maternal breastfeeding intention on breastfeeding behavior while controlling for variables such as maternal age, experience, educational level, and income as depicted in Table 9.

Table 9

Key Standardized Regression Weight Parameters Estimated by Structural Equation Modeling

Relationship			Standardized regression weights estimate	SE	CR	*p*-value
BREASTF_B	<---	BREASTF_I				
BREASTF_B	<---	AGE				
BREASTF_B	<---	EXPERI				
BREASTF_B	<---	EDUCAT_L				
BREASTF_B	<---	INCOME_L				

Note. NB: BREASTF_I = maternal breastfeeding intention; BREASTF_B = breastfeeding behavior.

The *p*-value was compared to significance level of 0.05 and if the *p*-value was below 0.05 then the effect of breastfeeding intention on breastfeeding behavior was considered significant and the Null Hypothesis that breastfeeding intention does not have a direct positive effect on breastfeeding behavior was rejected while Alternate Hypothesis that breastfeeding intention has a direct positive effect on breastfeeding behavior was accepted.

The research question, "Does maternal knowledge on breastfeeding influence her breastfeeding intention and actual breastfeeding behavior?," was addressed by estimating the effect of maternal knowledge on breastfeeding intention and breastfeeding behavior while controlling for variables such maternal age, experience, educational level and income as depicted in Table 10.

Table 10

Key Standardized Regression Weight Parameters Estimated by Structural Equation Modeling

Relationship			Standardized regression weights estimate	SE	CR	*p*-value	Interpretation
BREASTF_B	<---	KNOWLE_B					
BREASTF_B	<---	AGE					
BREASTF_B	<---	EXPERI					
BREASTF_B	<---	EDUCAT_L					
BREASTF_B	<---	INCOME_L					
BREASTF_I	<---	KNOWLE_B					
BREASTF_I	<---	AGE					
BREASTF_I	<---	EXPERI					
BREASTF_I	<---	EDUCAT_L					
BREASTF_I	<---	INCOME_L					

Note. NB: BREASTF_I = breastfeeding intention; BREASTF_B = breastfeeding behavior; KNOWLE_B = knowledge about breastfeeding.

The *p*-value was compared to significance level of 0.05 and if the p-value was below 0.05 then the effect of maternal knowledge on breastfeeding intention and breastfeeding behavior was considered significant and the Null Hypothesis that Maternal knowledge does not have a direct positive effect on breastfeeding intention and breastfeeding behavior was rejected while Alternate Hypothesis that Maternal knowledge has a direct positive effect on breastfeeding intention and breastfeeding behavior was accepted.

The research question, ‘Does maternal knowledge mediate the effect of community support and clinician support on a mother’s breastfeeding intention?’ was addressed by estimating the direct effect of community support and clinician support on a mother’s breastfeeding intention with mediator variable (maternal knowledge) while

controlling for variables such as maternal age, experience, educational level and income and the resulting *p*-value interpreted.

Table 11

Key Standardized Regression Weight Parameters Estimated by Structural Equation Modeling with Mediator Variable

Relationship			Standardized regression weights estimate	SE	CR	*p*-value	Interpretation
BREASTF_I<---KNOWLE_B	<---	COMM_SP					
BREASTF_I<---KNOWLE_B	<---	CLINIC_SP					
BREASTF_I	<---	AGE					
BREASTF_I	<---	EXPERI					
BREASTF_I	<---	EDUCAT_L					
BREASTF_I	<---	INCOME_L					

If *p*-value was less than 0.05 significance level then the Null Hypothesis that Maternal knowledge does not mediate the positive effect of community support and clinician support on breastfeeding behavior was rejected while the Alternate Hypothesis that Maternal knowledge mediates the positive effect of community support and clinician support on breastfeeding behavior was accepted.

The research question, 'Does maternal knowledge mediate the effect of community support and clinician support on a mother's breastfeeding behavior?' was addressed by estimating the effect of community support and clinician support on a mother's breastfeeding behavior with inclusion of the mediator variable (maternal knowledge) while controlling for variables such as maternal age, experience, educational level and income and the resulting *p*-value interpreted.

Table 12

Key Standardized Regression Weight Parameters Estimated by Structural Equation Modeling With Mediator Variable

Relationship			Standardized regression weights estimate	SE.	CR	*p*-value	Interpretation
BREASTF_B<--- KNOWLE_B	<---	COMM_SP					
BREASTF_B<--- KNOWLE_B	<---	CLINIC_SP					
BREASTF_B	<---	AGE					
BREASTF_B	<---	EXPERI					
BREASTF_B	<---	EDUCAT_L					
BREASTF_B	<---	INCOME_L					

If *p*-value was less than 0.05 significance level then the Null Hypothesis that Maternal knowledge does not mediate the positive effect of community support and clinician support on breastfeeding behavior was rejected while the Alternate Hypothesis that Maternal knowledge mediates the positive effect of community support and clinician support on breastfeeding behavior was accepted. The mediation effect was estimated in structural equation model using AMOS.

The research question, 'Does encouragement by clinicians have an effect on breastfeeding intention and breastfeeding behavior of mothers?' was addressed by estimating the effect of clinician support on breastfeeding intention and breastfeeding behavior while controlling for variables such as maternal age, experience, educational level and income.

Table 13

Key Standardized Regression Weight Parameters Estimated by Structural Equation Modeling

Relationship			Standardized regression weights estimate	SE	CR	*p*-value	Interpretation
BREASTF_I	<---	CLINIC_SP					
BREASTF_I	<---	AGE					
BREASTF_I	<---	EXPERI					
BREASTF_I	<---	EDUCAT_L					
BREASTF_I	<---	INCOME_L					
BREASTF_B	<---	CLINIC_SP					
BREASTF_B	<---	AGE					
BREASTF_B	<---	EXPERI					
BREASTF_B	<---	EDUCAT_L					
BREASTF_B	<---	INCOME_L					

Note. NB: CLINIC_SP = clinician support.

The *p*-value was compared to significance level of 0.05 and if the *p*-value was below 0.05 then the effect of clinician support on breastfeeding intention and breastfeeding behavior was considered significant and the Null Hypothesis that Clinician support does not have a direct positive effect on breastfeeding intention and breastfeeding behavior was rejected while Alternate Hypothesis that Clinician support has a direct positive effect on breastfeeding intention and breastfeeding behavior was accepted.

The research question, 'Does encouragement by the community have an effect on breastfeeding intention and breastfeeding behavior of mothers?' was addressed by estimating the effect of community support on breastfeeding intention and breastfeeding behavior while controlling for variables such as maternal age, experience, educational level and income.

Table 14

Key Standardized Regression Weight Parameters Estimated by Structural Equation Modeling

Relationship			Standardized regression weights estimate	SE	CR	*p*-value	Interpretation
BREASTF_I	<---	COMM_SP					
BREASTF_I	<---	AGE					
BREASTF_I	<---	EXPERI					
BREASTF_I	<---	EDUCAT_L					
BREASTF_I	<---	INCOME_L					
BREASTF_B	<---	COMM_SP					
BREASTF_B	<---	AGE					
BREASTF_B	<---	EXPERI					
BREASTF_B	<---	EDUCAT_L					
BREASTF_B	<---	INCOME_L					

Note. NB: CLINIC_SP = clinician support.

The *p*-value was compared to significance level of 0.05 and if the *p*-value was below 0.05 then the effect of community support on breastfeeding intention and breastfeeding behavior was considered significant and the Null Hypothesis that Maternal breastfeeding intention does not have a direct positive effect on maternal breastfeeding behavior was rejected while the Alternate Hypothesis that Maternal breastfeeding intention has a direct positive effect on maternal breastfeeding behavior.

Threats to Validity

In this study, a number of measures were taken to address threats to validity which may affect the study findings. Validity is generally categorized into external validity and internal validity (Creswell, 2014). Internal validity refers to the degree to which methods and study design adopted in the study are valid in addressing the research questions. In this study, information bias and selection bias were identified to be the main threats to internal validity. Selection bias in cross-sectional surveys occurs when target

population is not represented in the study population. To minimize selection bias, the study employed random selection to give equal chance to targeted participants. In addition, information bias in the study was addressed during collection of secondary data by involving only the investigator in the process of gathering secondary data without involving any research assistant. External validity encompasses the generalization of the study findings beyond study sample. The findings of the study will be relevant to entire target population because equal chance was given to mothers to participate in the study through simple random sampling. Reliability of the study was also tested by calculating the Cronbach's alpha to establish internal consistency of the measurement scales in the secondary data obtained (Ritchie et al., 2014).

Ethical Procedures

Ethical measures included seeking permission from TDSHS in order to obtain the raw secondary data used in developing the WIFPSSR. This proposal was also be approved and reviewed by TDSHS IRB in order to gain access to dataset for WIFPSSR. The secondary dataset obtained from TDSHS is protected by a password to prevent the public from accessing the data and kept in safety in a room under lock and key. Any information relating to names or personal details of the study participants was not revealed in the report so that anonymity is established in the study.

Summary

The study involved a descriptive and non-experimental study design, hence there was no manipulation of the study subjects. Target population for the study included mothers who are from low-income families in the state of Texas and enrolled in a WIC

program and Medicaid. A total of 4,578 eligible participants were sampled. In addition, this study involved the collection of secondary data provided by TDSHS. The quantitative secondary data obtained was analyzed using quantitative methods involving SPSS v25 and AMOS v25 program to conduct SEM analysis and test the relationships between variables.

Chapter 4: Results

Introduction

The purpose of this study was to assess the influence of maternal knowledge, clinician support, and community support on breastfeeding initiation and breastfeeding behavior. Secondary data were used and analyzed. The results of the data analysis are presented in this chapter. The chapter is organized as follows: data collection, results, and summary.

Data Collection

The DSHS collects data on the breastfeeding experiences of women who are enrolled in WIC program during their pregnancy and during their infant's first year. Women filled out the Texas WIC Infant Feeding Survey questionnaire. The responses to the survey questions for the last available year (2016) were used for this analysis—with permission from the primary investigator (DSHS)—to answer the research questions for this study.

Descriptive Statistics

In this section, I outline the results from the descriptive statistical analysis of 4,578 mothers (> 18 years old) of low socioeconomic status in the Texas WIC program. This includes the demographic and educational characteristics of study participants included in the study. The first table shown displays results for mothers' intention to breastfeed infant during pregnancy, initiation of breastfeeding after child delivery, and duration during first breastfeeding after delivery. Lastly, this section provides responses

to questions on perceived maternal knowledge, maternal experience, and clinician support and community support among breastfeeding mothers on the WIC program.

Sociodemographic characteristics. In this section, I discuss sociodemographic characteristics of study participants and includes the baby's age, mother's age, ethnicity, educational level, breastfeeding intention, initiation, and duration during first breastfeeding. In this sample, all demographic characteristics are presented as categorical variables using frequencies and percentages.

Table 15 summarizes the demographic statistics of the study participants. Out of 4,578 breastfeeding mothers, 42.0% were between 25-29 years old, whereas 30.8% were between 30-34 years old and were 27.0% > 34 years old. The majority (65.9%) were of the Hispanic/Latina ethnicity whereas only a few proportions were either White (18.2%) or Black (13.2%) and 14% each Asian/Pacific Islander and Native American. Of the sample, 61.9% had finished secondary/high school education and 29.0% below high school education and only 0.6% had post graduate education and 8.5% postsecondary/bachelor's degree. At the time of survey, most of the breastfeeding mothers had infants (76.7%) followed by toddlers (17.6%), whereas only 5.7% had newborns. Although 5.8% of breastfeeding mothers were unsure about methods of feeding their babies after delivery, 42.5% intended to feed their babies with breast milk and formula, and 39.8% intended to feed their babies with only breast milk and 11.9% formula. After delivery, 86.2% initiated breastfeeding for their babies and 63.3% initiated first breastfeeding for 0-2 hours, whereas < 40% breastfed their babies longer than 2 hours.

Table 15

Summary of Demographic Data

Variables	Freq (*N*)	Percent (%)	Valid percent (%)
Age of Baby (Months)			
New Born (≤ 2)	260	5.7	5.7
Infant (3-12)	3,511	76.7	76.7
Toddler (≥13)	807	17.6	17.6
Age of Mother (Years)			
18-24	0	0.0	0.0
25-29	1,872	40.9	42.0
30-34	1,376	30.1	30.8
≥34	1,213	25.5	27.2
Missing	117	2.6	
Ethnicity			
White	823	18.0	18.2
Black	596	13.0	13.2
Hispanic/Latina	2,976	65.0	65.9
Asian/Pacific Islander	63	14	1.4
Native/Alaskan American	16	0.3	0.4
Others	43	09	1.0
Missing	60	1.3	
Highest Educational Level			
Below High School	1,315	28.7	29.0
Secondary/High School	2,808	61.3	61.9
Postsecondary/Bachelors	384	8.4	8.5
Postgraduate	26	0.6	0.6
Missing	45	1.0	
Breastfeeding Intention			
Don't Know/ Not Sure	262	5.7	5.8
Breast Milk	1,804	39.4	39.8
Formula	539	11.8	11.9
Breast Milk/Formula	1,927	42.1	42.5
Missing	46	1.0	
Breastfeeding Initiation			
Yes	3,823	83.5	86.2
No	612	13.4	13.8
Missing	143	3.1	
Duration First Breastfeeding			
0-2 hours	2,517	55.0	63.3
3-24 hours	553	12.1	13.9
25-48 hours	183	4.0	4.6
≥48 hours	725	15.8	18.2
Missing	600	13.1	

Note. $N = 4{,}578$

Maternal knowledge. This section provides results of responses to questions to assess maternal knowledge among WIC breastfeeding mothers. Five questions were utilized to assess maternal knowledge among study participants. Questions were later scaled into poor and good maternal knowledge for analytic statistics.

Table 16 summarizes the responses to questions assessing maternal knowledge about breastfeeding among breastfeeding mothers enrolled in the WIC Program. Most of breastfeeding mothers had a good knowledge of breastfeeding; > 50% of the study participants believed that infants benefit from breastfeeding even after nursing is stopped (78.5%), breastfeeding mothers have lesser chances of developing ovarian or breast cancer (66.0%), and Texas has a law that allows women to breastfeed infants in public (68.6%). However, < 50% knew that breastfed infants had lower chances of dying from SIDS (49.15%) and that there is law that employers provide enough time, and a private and clean place for breastfeeding employees to pump breast milk during workdays (48.9%).

Table 16

Summary of Perceived Maternal Knowledge

Variable	Freq (*N*)	Percent (%)	Valid percent (%)
Breastfed infants have low chance of dying from SIDS			
True	2142	46.8	49.1
False/Unsure	2220	48.5	51.9
Missing	216	5.7	
Infants benefit from breastfeeding even after nursing is stopped (better health; higher IQ)			
True	3417	74.6	78.5
False/Unsure	938	20.5	21.5
Missing	223	4.9	
Breastfeeding women have less chance of developing ovarian or breast cancer			
True	2863	62.5	66.0
False/Unsure	1475	32.2	34.0
Missing	240	5.2	
Texas has a law that allows women to breastfeed infants in public			
True	2971	64.9	68.6
False/Unsure	1360	29.7	31.4
Missing	247	6.3	
Employers are required by law to provide enough time, private place and clean place to employees breastfeeding so that they can pump breast milk in a workday			
True	2097	45.8	48.9
False/Unsure	2194	47.9	51.1
Missing	287	6.3	

Note. $N = 4{,}578$

Clinician support. The results in this section provide responses to questions assessing perceived clinician support of participants in the study. Eleven questions were used to assess clinician support and were further scaled into poor and good support.

Table 17 summarizes descriptive statistics of responses to questions assessing clinician support for breastfeeding mothers in Texas during pregnancy. Based on the responses, most indicated that adequate support was provided from the clinicians. Greater than 70% of the breastfeeding mothers provided positive responses to questions assessing clinicians support of which participants indicate that 93.3% indicated that WIC staff told them the benefit of food packaging for breastfeeding mothers, 92.3% stated that WIC staff encouraged them breastfeed, 89.5% stated that WIC staff showed them how to know

when the baby is hungry and 85.0% said they received help with breastfeeding by showing them how or talking to you about breastfeeding. Similarly, most indicated that WIC staff told them to breastfeed their babies whenever they wanted (77.7%), encouraged them to breastfeed their babies with only breast milk (75.5%), provided contact number to call for help with breastfeeding once they left the hospital (74.2%), and gave them information about any breastfeeding support groups or services for help with breastfeeding once they left the hospital (73.3%). In addition, slightly above 50% of the participants indicated that WIC staff told them to limit time length for breastfeeding to 10-15 mins per breast (59.0%), received help from clinicians (65.8%), and they were shown how to hand express (66.8%).

Table 17

Summary of Clinician Support

Variable	Freq (*N*)	Percent (%)	Valid percent (%)
WIC staff encouraged me to breastfeed			
Yes	4,124	90.1	92.3
No	343	7.5	7.7
Missing	111	2.4	
WIC staff told me the benefit of food packaging for breastfeeding mothers			
Yes	4,137	90.4	93.3
No	297	6.5	6.7
Missing	144	3.1	
Encouraged you to give your baby only breast milk			
Yes	3,091	67.5	75.5
No	1,001	21.9	24.5
Missing	486	10.6	
Tell you to breastfeed your baby whenever your baby wanted			
Yes	3,166	69.2	77.7
No	910	19.9	22.3
Missing	502	11.0	
Help you with breastfeeding by showing you how or talking to you about breastfeeding			
Yes	3,451	75.4	85.0
No	607	13.3	15.0
Missing	520	11.4	
Tell you to limit time length for breastfeeding (10/15 mins per breast)			
Yes	2,397	52.4	59.0
No	1,667	36.4	41.0
Missing	514	11.2	
Show you how to hand express			
Yes	2,709	59.2	66.8
No	1,346	29.4	33.2
Missing	523	11.4	
Give you contact number to call for help with breastfeeding once you left the hospital			
Yes	3,014	65.8	74.2
No	1,049	22.9	25.8
Missing	515	11.2	
Give you info about any breastfeeding support groups or services for help with breastfeeding once you left the hospital			
Yes	2,970	64.9	73.3
No	1,081	23.6	26.7
Missing	527	11.5	
Tell you how to know when your baby is hungry			
Yes	3,612	78.9	89.5
No	422	9.2	10.5
Missing	544	11.9	
Received help from clinicians			
Yes	2,233	48.8	65.8
No	1,162	25.4	34.2
Missing	1,183	25.8	

Note. $N = 4{,}578$

Community support. This section provides responses to questions assessing community support in study participants. The nine responses were used to assess community support, which was further scaled into good community support and bad community support.

Table 18 summarizes responses to survey questions to evaluate community support of breastfeeding among breastfeeding mothers in Texas. For all negative questions, most indicated positive answer of which 96.6% said the baby's grandmother had no problem with breastfeeding, 95.8% indicated that the baby's father had no problem with breastfeeding, 89.2% were not told that breastfeeding was hard, and 87.3% were allowed to work from home. Similarly, 33.0% of breastfeeding mothers started work after delivery and 64.3% said they had private place at work for pumping milk. However, only 14.4% stated that there was a written policy on breastfeeding and working at workplace. Although most questions for breastfeeding mother indicated positive responses, 55% indicated nonsupport for breastfeeding in their communities, and 89.6% stated that breastfeeding was not supported in their workplaces, whereas 85% said that there were no written policies on breastfeeding and working at the workplace.

Table 18

Summary of Community Support

Variable	Freq (*N*)	Percent (%)	Valid percent (%)
Grandmother did not want breastfeeding			
Yes	89	1.9	3.4
No	2,515	54.9	96.6
Missing	1,974	43.1	
I was told that breastfeeding is hard			
Yes	283	6.2	10.8
No	2,344	51.2	89.2
Missing	1,951	42.6	
Father did not want breastfeeding			
Yes	110	2.4	4.2
No	2,516	55.0	95.8
Missing	1,952	42.6	
Breastfeeding support from community			
Supportive	1,974	43.1	45.0
Unsupportive	2,413	52.7	55.0
Missing	191	4.2	
Working after delivery of infant			
Yes	1,303	28.5	30.1
No	3,023	66.0	69.9
Missing	252	5.5	
Support at workplace after delivery			
Supportive	477	10.4	25.4
Unsupportive	1,401	30.6	89.6
Missing	2,700	59.0	
Private place for pumping milk available			
Yes	630	13.8	64.3
No	1,137	24.8	35.7
Missing	2,811	614	
Written policy on breastfeeding and working at workplace			
Yes	247	5.4	14.4
No	1,469	32.1	85.6
Missing	2,862	62.5	
Allowed to work from home			
Yes	217	4.7	87.3
No	1,492	32.6	12.7
Missing	2,869	62.7	

Note. $N = 4{,}578$

Maternal experience. This section summarizes responses to questions assessing maternal experiences among study participants. Thirteen questions were used to assess maternal experience during breastfeeding and responses were presented in frequencies and percentages.

Table 19 summarizes participant's experiences while breastfeeding their babies. While a few proportion (< 10%) of participants indicated infected breast (1.8%), they experienced other health problems (5.8%), , too much breast leaking (9.7%), infant appeared to nurse often (9.6%), baby uninterested in nursing (9.3%), infant never waking up to nurse (8.8%), about 33.4% of the participants stated that infant had problem latching on or sucking, 24.7% had sore/bleeding nipples, and 19.8% said milk could not start flowing. Similarly, 18.9% stated that milk took longer to come in and 15.0% said breast was often over full. Only 20.3% participants indicated that they never experienced any problem.

Table 19

Summary of Maternal Experience

Variables	Freq (*N*)	Percent (%)
Infant had problems latching on or sucking		
Yes	1529	33.4
No	3049	66.6
The infant appeared to nurse often		
Yes	439	9.6
No	4139	90.4
Baby uninterested in nursing		
Yes	427	9.3
No	4151	90.7
Infant never waking to nurse		
Yes	405	8.8
No	4173	91.2
Insufficient milk		
Yes	1183	25.8
No	3395	74.2
Sore nipples, bleeding nipples		
Yes	1133	24.7
No	3445	75.3
Milk could not start flowing		
Yes	906	19.8
No	3672	80.2
Milk took longer coming in		
Yes	863	18.9
No	3715	81.1
No problems experienced		
Yes	931	20.3
No	3647	79.7
Breasts often overfull		
Yes	685	15.0
No	3893	85.0
Infected breasts		
Yes	82	1.8
No	4496	98.2
Too much breast leaking		
Yes	444	9.7
No	4134	90.3
Experienced other health problems		
Yes	265	5.8
No	4313	94.2

Note. $N = 4{,}578$

Analytic Statistics

This section provides results of inferential statistics addressing the three research questions. Chi-squared, binomial and multinomial logistic regression analyses were utilized to assess relationship between maternal knowledge and breastfeeding initiation. The same analytic procedure was performed to assess relationship between clinician and breastfeeding intention. Finally, the same statistical analysis was used to assess association between community support and breastfeeding intention. Results from this analysis are presented based on the research questions and objectives of the study.

Factors associated with breastfeeding intention and initiation. The null hypothesis for Research Question 1 states that there is no statistically significant relationship between maternal knowledge and breastfeeding initiation. Also, Null Hypothesis 2 states that there is no statistically significant relationship between clinician support and breastfeeding intention. Lastly, Null Hypothesis 3 states that there is no statistically significant relationship between community support and breastfeeding intention. Descriptive statistics, Chi-squared values and *P-values* were presented for the chi-squared analysis while odds ratio, confidence interval and *P-values* were presented in the binomial and multinomial logistic regression analysis. Each null hypothesis will be rejected if *P-value* is <0.005 and the alternate hypothesis will be accepted.

Table 20

Chi-Squared Analysis of Research Question 1 Breastfeeding Intention

Variable	Yes (%)	No (%)	Total (%)	*Phi*	$X^2(df)$	*P-Value*
Maternal Knowledge				0.06	4.24(1)	0.039
Poor	367(91.5)	34(8.5)	401(29.0)			
Good	928(94.5)	54(5.5)	982(71.0)			

Note. X^2 = Chi-Squared value.

Table 21

Chi-Squared Analysis of Research Question 2 Breastfeeding Intention

Variable	Uns/F (%)	BF/F (%)	BF Only (%)	Total (%)	*Phi*	$X^2(df)$	*P-Value*
Clinician Support					0.13	55.29(2)	0.000
Poor	249(14.5)	790(46.1)	675(39.4)	1714(55.5)			
Good	99(7.2)	596(43.3)	680(49.5)	1375(44.5)			

Note. Uns = Unsure, F = Formula, BF = Breastfeed, X^2 = Chi-Squared value.

Table 22

Chi-Squared Analysis of Research Question 3 Breastfeeding Intention

Variable	Uns/F (%)	BF/F (%)	BF Only (%)	Total (%)	*Phi*	$X^2(df)$	*P-Value*
Community Support					0.11	11.70(2)	0.003
Poor	236(24.0)	390(39.7)	357(36.3)	983(93.0)			
Good	5(6.8)	35(47.3)	34(45.9)	74(7.0)			

Note. Uns = Unsure, F = Formula, BF = Breastfeed, X^2 = Chi-Squared value.

Tables 20 to 22 represent a Chi-squared analysis to determine relationship between independent and dependent variables. With an effect size between 0.055-0.134 indicated a weak effect size, there was a statistically significant relationship between mother's knowledge about breastfeeding and initiation of breastfeeding among breastfeeding mothers, $x^2(1) = 4.24$, $p<0.05$. Similarly, total clinician support and community support scores were significantly associated with the intention to breastfeed

among breastfeeding mothers during pregnancy, $x^2(2) = 55.29$, $p < 0.05$, $x^2 (2) = 11.70$, $p < 0.05$.

Table 23

Chi-Squared Analysis of Maternal Knowledge and Breastfeeding Initiation

Variable	Yes (%)	No (%)	Total (%)	O.R(C.I)	$X^2(df)$
Maternal Knowledge					
Breastfed infants have low chance of dying from SIDS				2.55(2.11-3.08)	98.75(1)*
True	1914(91.6)	176(8.4)	2090(49.2)		
False/Unsure	1759(81.0)	410(19.0)	2160(50.8)		
Infants benefit from breastfeeding even after nursing is stopped				3.52(2.93-4.23)	192.76(1)*
True	3009(90.1)	329(9.9)	3338(78.6)		
False/Unsure	658(72.2)	253(27.8)	911(21.4)		
Breastfeeding women have less chance of developing ovarian or breast cancer				3.27(2.73-3.91)	178.21(1)*
True	2554(91.4)	241(8.6)	2795(66.0)		
False/Unsure	1099(76.4)	339(23.6)	1438(34.0)		
Texas has a law that allows women to breastfeed infants in public				1.82(1.52-2.18)	43.15(1)*
True	2571(88.7)	329(11.3)	2900(68.7)		
False/Unsure	1073(81.1)	250(18.9)	1323(31.3)		
				2.10(1.75-2.53)	63.93(1)*
The law requires employers to give breastfeeding employees break time and clean private place to pump milk during work					
True	1858(90.6)	193(9.4)	2051(49.0)		
False/Unsure	1754(82.1)	383(17.9)	2137(51.0)		

Note. Uns = Unsure, F = Formula, BF = Breastfeed, X^2 = Chi-Squared value, *= Significance.

Table 23 summarizes a chi squared analysis of relationship between responses to questions on maternal knowledge and breastfeeding initiation after delivery. With odds ratio between (O.R.=1.82-3.52), results show that all responses on maternal knowledge were statistically associated with initiation of breastfeeding after delivery ($p < 005$).

Table 24

Chi-Squared Analysis of Clinician Support and Breastfeeding Intention

Variable	Uns/F (%)	BF/F (%)	BF (%)	Total (%)	$X^2(df)$
Clinician Support					
Received breastfeeding encouragement from WIC staff					80.38(2)*
Yes	669(16.4)	1729(42.3)	4087(92.3)	4087(92.3)	
No	117(34.2)	143(41.8)	82(24.0)	342(7.7)	
Given information about breastfeeding benefits by WIC staff					24.82(2)*
Yes	692(16.9)	1749(42.6)	1661(40.5)	4102(93.3)	
No	82(27.8)	121(41.0)	92(31.2)	295(6.7)	
Encouraged to exclusively breastfeed while in hospital					56.62(2)*
Yes	294(9.6)	1383(45.2)	1386(45.2)	3063(75.6)	
No	177(17.9)	449(45.4)	364(36.8)	990(24.4)	
Told to breastfeed on demand while staying in hospital					104.21(2)*
Yes	277(8.8)	1449(46.2)	1411(45.0)	3137(77.7)	
No	190(21.1)	376(41.8)	334(37.1)	900(22.3)	
Given help on how to breastfeed while staying in hospital					127.43(2)*
Yes	313(9.1)	1572(45.9)	1537(44.9)	3422(85.1)	
No	149(24.8)	252(42.0)	199(33.2)	600(14.9)	
Told how to limit breastfeeding while staying in hospital					37.13(2)*
Yes	220(9.3)	1142(48.1)	1012(42.6)	2374(59.0)	
No	245(14.8)	679(41.1)	728(44.1)	1652(41.0)	
Shown how to express breast milk while staying in hospital					66.23(2)*
Yes	229(8.5)	1255(46.7)	1202(44.8)	2686(66.8)	
No	229(17.2)	562(42.2)	541(40.6)	1332(33.2)	
Given telephone number while staying in hospital to consult on breastfeeding					70.03(2)*
Yes	273(9.1)	1352(45.2)	1363(45.6)	2988(74.2)	
No	189(18.2)	469(45.2)	379(36.5)	1037(25.8)	
Given information about services and support groups for breastfeeding while staying in hospital					38.68(2)*
Yes	285(9.7)	1342(45.5)	1323(44.8)	2950(73.5)	
No	175(16.4)	479(45.0)	410(38.5)	1064(26.5)	
Told how to know if baby is hungry while staying in hospital					11.99(2)*
Yes	388(10.8)	1639(45.7)	1556(43.4)	3583(89.5)	
No	69(16.5)	175(41.8)	175(418)	419(10.5)	
Received help from clinicians after leaving hospital					88.69(2)*
Yes	189(8.5)	973(43.9)	1054(47.6)	2216(65.9)	
No	206(18.0)	544(47.4)	397(34.6)	1147(34.1)	

Note. Uns = Unsure, F = Formula, BF = Breastfeed, X^2 = Chi-Squared value, *= Significance.

Table 24 summarizes a chi squared analysis of relationship between responses to questions on clinician support and breastfeeding intentions after delivery. With chi-squared values between (X^2 = 11.99 - 127.43), all responses were statistically associated with intention to breastfeed during pregnancy (p < 005).

Table 25

Chi-Squared Analysis of Community Support and Breastfeeding Intention

Variable	Uns/F (%)	BF/F (%)	BF (%)	Total (%)	$X^2(df)$
Community Support					
Grandmother of my infant did not want breastfeeding					3.34(2)
Yes	19(21.6)	45(51.1)	24(27.3)	88(3.4)	
No	574(23.0)	1042(41.8)	876(35.2)	2492(96.6)	
I was told by people that breastfeeding is hard					27.56(2)*
Yes	98(34.9)	113(40.2)	70(24.9)	281(10.8)	
No	505(21.7)	985(42.4)	832(35.8)	2322(89.2)	
Father of my infant did not want breastfeeding					18.34(2)*
Yes	39(35.8)	51(46.8)	19(17.4)	109(4.2)	
No	560(22.5)	1048(42.1)	883(35.4)	2491(95.8)	
Breastfeeding support from community					89.33(2)*
Yes	226(11.6)	895(45.9)	829(42.5)	1950(44.8)	
No	541(22.6)	946(39.4)	912(38.0)	2399(55.2)	
Working after delivery of infant					3.57(2)
Yes	240(18.6)	514(39.8)	536(41.6)	1290(30.1)	
No	518(17.3)	1287(42.9)	1195(39.8)	3000(69.9)	
Support at workplace after delivery of infant					25.55(2)*
Yes	55(11.7)	197(41.7)	220(46.6)	472(25.4)	
No	300(21.6)	566(40.8)	522(37.6)	1388(74.6)	
Availability of private place for pumping milk					40.09(2)*
Yes	78(12.5)	244(39.1)	302(48.4)	624(35.7)	
No	259(23.0)	466(41.4)	400(35.6)	1125(64.3)	
Written policy on breastfeeding and working at workplace					21.38(2)*
Yes	23(9.3)	99(40.2)	124(50.4)	246(14.5)	
No	305(21.0)	579(39.9)	568(39.1)	1452(85.5)	
Allowed to work from home					26.87(2)*
Yes	17(7.9)	82(38.1)	116(54.0)	215(12.7)	
No	304(20.6)	600(40.7)	572(38.8)	1476(87.3)	

Note. Uns = Unsure, F = Formula, BF = Breastfeed, X^2 = Chi-Squared value, *= Significance.

Table 25 represents a Chi-squared analysis to determine relationship between responses assessing community support and intention to breastfeed during pregnancy. Except for working after delivery ($x^2 = 3.57$, $p > 0.05$), there was a statistically

significant relationship between responses to question assessing community support and the intention to breastfeed during pregnancy, $x^2(2)$: 3.34 - 89.33, $p < 0.05$.

Table 26

Logistic Regression Analysis for Research Question 1 Breastfeeding Initiation

Variable		Exp	95% C.I.	*df*	*P-Value*
Maternal Knowledge					
	Good knowledge	1.59	1.02-2.49	1	0.041
	Poor Knowledge	Ref	Ref	Ref	Ref

Note. Exp = odds ratio, C.I. = confidence interval, *df* = degree of freedom.

Table 27

Logistic Regression Analysis for Research Question 2 Breastfeeding Initiation

Variable		Exp	95% C.I.	*df*	*P-Value*
Clinician Support					
Unsure/Formula	Good Support	0.53	0.41-0.68	1	0.00
	Poor Support	Ref	Ref	Ref	Ref
Breastfeeding	Good Support	1.34	1.15-1.55	1	0.00
	Poor Support	Ref	Ref	Ref	Ref

Note. Exp = odds ratio, C.I. = confidence interval, *df* = degree of freedom.

Table 28

Logistic Regression Analysis for Research Question 3 Breastfeeding Initiation

Variable		Exp	95% C.I.	*df*	*P-Value*
Community Support					
Unsure/Formula	Good Support	0.24	0.09-0.61	1	0.81
	Poor Support	Ref	Ref	Ref	Ref
Breastfeeding	Good Support	1.06	0.65-1.74	1	0.00
	Poor Support	Ref	Ref	Ref	Ref

Note. Exp = odds ratio, C.I. = confidence interval, *df* = degree of freedom.

Tables 26 to 28 summarizes the logistic regression analysis for selected independent variables and intention to/initiation of breastfeeding. Compared to the Chi-squared analysis, similar significance was identified between maternal knowledge and initiation of breastfeeding among breastfeeding mothers with breastfeeding mothers who had good knowledge about breastfeeding having 1.59 odds of initiating breastfeeding

than those with poor knowledge, O.R = 1.59 (95% CI: 1.02-2.49), p = .04. A statistically significant relationship was identified with breastfeeding mothers who had good clinician support being 47% less likely to feed their babies with formula than with breast milk/formula compared to breastfeeding mothers with poor clinician support, O.R. = 0.53 (95% CI: 0.41-0.68), p = 0.00, and 1.34 times more likely to only breastfeed their babies than with breast milk/formula, O.R. = 1.34 (95% CI: 1.15-1.55), p = 0.00. Although not statistically significant, breastfeeding mothers who enjoyed support from their communities were 76% less likely to feed their babies with formula than breast milk/formula compared to breast feeding mother with poor community support, O.R. = 0.24 (95% CI: 0.09-0.61), p = 0.81. However, a statistically significant relationship was found with breastfeeding mothers who enjoyed community support. They were 1.06 times more likely to only breastfeed their babies than a combination of breast milk and formula compared to breastfeeding mothers with poor community support, O.R. = 1.06 (95% CI: 0.65-1.74), p = 0.00.

Table 29

Multivariate Logistic Regression Analysis for Research Question 1 Breastfeeding Initiation

Variable		Exp	95% C.I.	*df*	*P*-Value
Maternal knowledge					
	Good knowledge	1.68	1.06-2.65	1	0.027
	Poor Knowledge	Ref	Ref	Ref	Ref
Age group		0.83	0.64-1.08	1	0.17
Educational level		1.17	0.82-1.66	1	0.39
Ethnicity		1.04	0.81-1.34	1	0.74

Note. Exp = odds ratio, C.I. = confidence interval, df = degree of freedom.

Table 30

Multivariate Logistic Regression Analysis for Research Question 2 Breastfeeding Initiation

Variable		Exp	95% C.I.	*df*	*P-value*
Clinician support					
Unsure/formula	Good support	0.54	0.42-0.70	1	0.00
	Poor support	Ref	Ref	Ref	Ref
Age group		0.99	0.85-1.14	1	0.84
Educational level		0.84	0.69-1.04	1	0.11
Ethnicity		0.76	0.66-0.88	1	0.00
Breastfeeding	Good support	1.34	1.15-1.55	1	0.00
	Poor support	Ref	Ref	Ref	Ref
Age group		0.99	0.89-1.09	1	0.79
Educational level		1.70	1.49-1.94	1	0.00
Ethnicity		0.74	0.67-0.81	1	0.00

Note. Exp = odds ratio, C.I. = confidence interval, df = degree of freedom.

Table 31

Multivariate Logistic Regression Analysis for Research Question 3 Breastfeeding Initiation

Variable		Exp	95% C.I.	*df*	*P-Value*
Community Support					
Unsure/Formula	Good Support	0.25	0.09-0.64	1	0.00
	Poor Support	Ref	Ref	Ref	Ref
Age Group		0.99	0.81-1.21	1	0.91
Educational Level		1.02	0.76-1.37	1	0.91
Ethnicity		0.72	0.59-0.87	1	0.00
Breastfeeding	Good Support	0.99	0.59-1.66	1	0.98
	Poor Support	Ref	Ref	Ref	Ref
Age Group		0.91	0.77-1.08	1	0.29
Educational Level		1.40	1.08-1.81	1	0.01
Ethnicity		0.76	0.65-0.89	1	0.00

Note. Exp = odds ratio, C.I. = confidence interval, df = degree of freedom.

Tables 29 to 31 summarizes a multivariate logistic regression analysis assessing the relationship between independent variables and dependents variables while putting the effect of covariates into consideration. After controlling for sociodemographic variables, there was a statistically significant relationship between maternal knowledge and breastfeeding initiation of which breastfeeding mothers with good knowledge were 1.68 times more likely than those with poor knowledge to initiate breastfeeding, (C.I:

1.06-2.65), *p*: 0.00. Additionally, breastfeeding mothers with good support from clinicians were 46% less likely than mothers with poor clinician support to intend to feed their babies with formula alone compared to breast milk and formula. However, breastfeeding mothers with good clinician support were 1.34 times more likely than mothers with poor clinician support to intend to feed their babies exclusively with breast milk compared to breast milk and formula, (C.I: 0.42-0.70), *p*: 0.00. Finally, breastfeeding mothers who reported good community support were 75% less likely than mothers who reported poor community support to intend to feed their babies with formula compared to breast milk and formula, (C.I:1. 0.09-0.64), *p*: 0.00. However statistically insignificant, breastfeeding mothers who reported good community support were 0.99 times less likely than mothers with poor community support to intend to feed their babies with only breast milk compared to breast milk and formula, (C.I:1. 0.59-1.66), *p*: 0.98.

Table 32

Multicollinearity Assumption

	Eigenvalue	Condition Index	Tolerance	VIF
Community support	2.913	1.000	0.994	1.006
Clinician support	2.860	1.00	0.989	1.011
Maternal knowledge	2.912	1.00	0.985	1.015

For multicollinearity, VIF value above 5 indicates that there is a multicollinearity problem. If tolerance is <0.1, multicollinearity is a problem.

Summary

Based on findings from this analysis, most participants were >24 years old with few variations among age groups, and majority (61.3%) had secondary or high school education. Also, majority of the participants (65.0%) were of Hispanic/Latina decent. Majority intended to feed their babies with breast milk (39.4%) or both breast milk/formula (42.1%), and of these 83.5% initiated breastfeeding after child delivery.

Results from the chi-squared analysis shows that maternal knowledge is significantly associated with breastfeeding initiation. Also, clinician support and community support were statistically significantly associated with breastfeeding intention. The results for all research questions were statistically significant except for relationship between community support and breastfeeding intention when unsure/formula was compared with breastfeeding/formula, (C.I:1.0.59-1.66),*p:* 0.98. However, after controlling for confounding variables, multivariate analysis reveals that answers to all research questions were also statistically significant except for the relationship between community support and breastfeeding intention when breastfeeding is compared with breastfeeding/formula.

Chapter 5: Discussion

Introduction

Results showed that maternal knowledge was significantly associated with breastfeeding initiation, and clinician support and community support were statistically significantly associated with breastfeeding intention. Community support was found to be of particular significance. However, even with a high rate of breastfeeding intention and support, there were mothers who could not sustain breastfeeding due to having to go back to work or school. Additionally, after controlling for confounding variables, multivariate analysis revealed that results for all research questions were statistically significant except for the relationship between community support and breastfeeding intention when breastfeeding is compared with breastfeeding/formula. These findings are discussed further in this chapter. The chapter is divided into four sections: Interpretation of Findings, Limitations of the Study, Recommendations, and Implications.

Interpretation of Findings

Most respondents in the survey were Hispanic, or Latina, were from low-income households, were 18-24 years of age, and their highest level of education was a high school diploma or GED. Race, socioeconomic status, mother's age, and education levels are some of the demographic factors that were found to influence breastfeeding behavior. Logistic regression analysis showed age was a significant predictor of breastfeeding behavior as younger mothers were more likely to breastfeed compared to older ones.

The findings on race are comparable to those reported in the literature. According to a study by McKinney and colleagues (2016), Spanish-speaking Hispanic mothers had

the highest breastfeeding initiation, intention, and duration rates than English-speaking Hispanic mothers and White mothers in that order. Black mothers had the lowest breastfeeding initiation, intention, and duration rates (McKinney et al., 2016).

Other demographic factors such as poverty, marriage, and family history, have predicted breastfeeding initiation and intention rates between White and Black mothers. However, for Spanish-speaking Hispanic women, family history of breastfeeding fully mediated the high breastfeeding initiation rates (McKinney et al., 2016). Household socioeconomic status determined the duration of breastfeeding and exclusive breastfeeding (Ajami, Abdollahi, Salehi, Theron, & Naeini, 2018). Low socioeconomic status has been associated with higher cases of unemployment as well as low maternal education, which may influence breastfeeding behavior (Ajami et al., 2018). A higher level of maternal education and younger maternal ages are associated with breastfeeding behavior as compared to lower maternal education and higher maternal ages, respectively. According to Colombo et al. (2018), younger mothers are more likely to breastfeed, although they are also at an increased risk of early cessation. In addition, higher levels of maternal education positively influence breastfeeding behavior (Colombo et al., 2018). Education not only provides the knowledge and skills required to support breastfeeding but also the ability to seek additional knowledge and support from other sources as well as increased likelihood of higher socioeconomic status, which positively influences breastfeeding behavior.

Most mothers had intentions of feeding their children, both breast milk and formula. A lower percentage of mothers had planned on exclusive breastfeeding,

implying that formula was considered a viable complement, supplement, or alternative to breastfeeding by more respondents. However, more than half of the mothers had also taken a breastfeeding class during pregnancy, which is a strong indicator of intent to breastfeed. Research has shown that breastfeeding intent, particularly the decision to breastfeed made during early pregnancy, is highly correlated with breastfeeding initiation after birth (Persad & Mensinger, 2007). The rate of breastfeeding was high as most mothers in the survey breastfed their child at least once, and only 13% exclusively fed their child formula. However, data on the duration or frequency of formula feeding, whether exclusive or together with breastmilk, were not collected.

Almost all mothers said they had been encouraged to breastfeed exclusively by WIC staff. More than half of the mothers in the survey also said that they had been taught about breastfeeding such as breastfeeding whenever the baby wanted, were shown how to hand express, and given a telephone number and information on breastfeeding support they could seek once they left the hospital/birth center. Less than half of the mothers asked for help from WIC or healthcare professionals or sought lactation support or breastfeeding support. The presence of a personal or professional support system is one of the most important predictors of a mother's decision to breastfeed, having a greater influence than even socioeconomic status (Brand, Kothari, & Stark, 2011). Professional support systems including nurses, doctors, pediatricians, and lactation consultants assist the mother to initiate breastfeeding particularly through individualized and interactional learning techniques and may also influence the duration of breastfeeding through continued education and problem solving (Brand et al., 2011). Being available to help

support mothers during breastfeeding and address any challenges they have with breastfeeding may help lengthen the duration of breastfeeding.

In this study, some of the most commonly reported challenges or difficulties experienced during breastfeeding were the baby having trouble sucking or latching on, trouble getting the milk flow to start, milk taking too long for milk to come in, baby nursing too often, baby not interested in nursing, not thinking that she had enough milk, sore, cracked or bleeding nipples engorged breasts, and leaking breasts. The most common reason for not breastfeeding was mothers believing that they did not have enough milk or that that they had to go back to school/work. Other reasons were the belief that formula is as good as breastfeeding or that formula is better, and if breastfeeding did not work out with a previous child. Mothers who thought that they might not like breastfeeding were also less likely to breastfeed. Other reasons included people saying it was hard to breastfeed, thinking that the baby would not be able to breastfeed, not knowing they could get help with breastfeeding, and having too many other things to do.

Formula was given by 79.6% of the mothers to their babies, although the duration was not specified. In addition, this percentage does not refer to exclusive formula feeding, as some mothers gave both breastmilk and formula, but the extent was not specified during data collection. The mothers in the survey said that the reasons for giving formula included the mothers' belief that they did not have enough milk, breast milk alone not being able to satisfy their children, and the baby losing interest in nursing. Additional reasons were not being able to tell how much the baby ate, breastfeeding

being too painful, going back to work or school outside the home, pumping being too painful, pumping being too hard or inconvenient, not wanting to breastfeed in public, not being able to make enough milk after going back to work, and trouble latching on or sucking.

Further, about 28% of the mothers in the survey had to work for pay after their baby was born. Most mothers did not know if their workplaces were supportive, but more mothers thought that their places of work were supportive than who thought their workplaces were unsupportive. The most supportive workplaces allowed break time to pump breast milk, had a private place to pump breast milk, and allowed flexible scheduling so that breaks are taken when needed. However, few workplaces had a written employee policy about working and breastfeeding or allowing employees to work from home or bring their babies to work. In the following sections, I discuss the results of the study in relation to the research questions.

Research Question 1

Research Question 1 was "Is there a relationship between a mother's knowledge about breastfeeding and her decision to breastfeed?" Several questions were used in the survey to assess a mother's knowledge about breastfeeding. The first question was whether she had taken a breastfeeding class during pregnancy. As reported, more than half of the mothers in the survey had taken the class, which may imply strong intentions to want to breastfeed their child. The association between taking a breastfeeding class and other variables that described breastfeeding behavior was analyzed using chi-square analysis. For example, there was a weak but positive significant association between

taking a breastfeeding class during pregnancy and thinking that the baby would not be able to breastfeed. This implies that those who took a breastfeeding class were also likely to give their baby formula or not breastfeed due to a belief that their baby would not be able to breastfeed. It is not clear what may have led the mothers to think that their babies would not be able to breastfeed, but concern for the infant's health may be one of the reasons that mothers decide against breastfeeding (Brodribb, Fallon, Hegney, & O'Brien, 2007).

Additionally, Chi-square analysis indicated a weak, negative, but significant association between the variables taking a class during pregnancy and not breastfeeding out of the assumption of not liking it. This implies that the mothers who took the breastfeeding class during pregnancy were not likely to assume that they would not like breastfeeding very much. The literature supports these findings that a breastfeeding class positively influences breastfeeding behavior. According to Cohen et al. (2018), attending a prenatal breastfeeding class, peer counselling or lactation consultation significantly increases the likelihood of breastfeeding initiation and continuation. Prenatal lactation classes provide women with strategies to cope with the problems or difficulties that may be associated with the first few weeks of breastfeeding (Cohen et al., 2018). However, no associations were found between taking a breastfeeding class during pregnancy and not breastfeeding because of inadequate milk. Some mothers may hold deep-seated assumptions and biases against breastfeeding from their sociocultural condition that may not be easy to eradicate without addressing the root cause of the problem. However, further research is required before such a conclusion can be reached.

A survey question used to assess maternal knowledge was Q47, where mothers were provided with a list of statements and asked to respond with *true* or *false*. Slightly less than half of the mothers in the survey answered correctly to the statement that breastfed babies were less likely to die from SIDS. More than 70% of the mothers also answered correctly to the statement that the breastfeeding benefits children even after they stop nursing. Sixty-two percent of the mothers answered correctly to the statement that mothers who breastfeed are less likely to get breast or ovarian cancer. Sixty-four percent of the mothers also answered correctly to the statement that in Texas, there is a law that gives women the right to breastfeed their babies in public. Forty-five percent of the mothers in the survey answered 'true' to the statement that there is a law that requires employers to give their breastfeeding employees enough break time and a clean, private place to pump milk during the workday. An almost similar number did not know. Given that almost half of all the mothers in the survey answered these statements correctly, it is safe to assume that most are quite knowledgeable on the importance and necessity of breastfeeding to the child, benefits to the mother and the existence of laws to support breastfeeding at the workplace and in public.

Logistic regression showed that maternal knowledge of breastfeeding, especially the benefits of breastfeeding, were significant predictors of breastfeeding behavior. Mothers were more likely to consider exclusive breastfeeding when they knew, for instance, that benefits of breastfeeding to the child go beyond the nursing years and that breastfeeding is associated with a reduced likelihood of ovarian and breast cancer. Also, maternal experiences such as engorged breasts, leaking milk, baby nursing too often,

sore, cracked or bleeding nipples, and trouble sucking or latching influenced breastfeeding behavior. Lastly, attending a breastfeeding class during pregnancy was a significant predictor of breastfeeding behavior.

Based on the analysis, breastfeeding initiation rates were high, but there was no data that showed continuation rates or exclusive breastfeeding rates and duration. However, if initiation rates are low, it is likely that there are factors to blame and not low maternal knowledge. There could be other factors in the socio-cultural contexts experienced by the mothers that greatly influenced exclusive breastfeeding behavior and continuation.

Results indicated a relationship between a mother's knowledge of breastfeeding and her decision to breastfeeding. Knowledge, regardless of the source, enhances a mother's self-efficacy and influences their attitudes, perceptions, and subjective norms, which may contribute to shaping their behavior to promote breastfeeding intention and behavior.

Research Question 2

Research Question 2 was "Does encouragement by the clinic staff on breastfeeding have an effect on a mothers' intention to breastfeed or the initiation and duration of breastfeeding? Several questions in the questionnaire were used to assess clinic staff encouragement and support toward the mothers and their effect on mothers' intention, initiation, and duration of breastfeeding. The questions were clinic staff at the hospital/deliver encouraging/supporting/teaching the mothers (Q17), talking with nurse/doctor about formula prior to feeding formula (Q35) and asking for help from WIC,

a healthcare professional or breastfeeding support group (Q19 and Q20). The chi-square analysis showed that the relationship between breastfeeding only if once, and encouragement by staff to breastfeed exclusively was significant, weak, but positive. This implies that the clinic staff taking steps to encourage the mothers to breastfeed exclusively increased the number of women who breastfed, even only if once.

Chi-square analysis did not reveal a significant association between talking with a nurse/doctor about formula prior to feeding formula and belief that one had breastfed enough for the baby to get the benefits of breastfeeding, thinking that breast milk alone did not satisfy the baby, or thinking that formula was as good as breastfeeding or that formula was better. This implies that mothers who thought the formula was as good as or better than breast milk were not influenced by talking with a nurse/doctor about formula prior to feeding formula. Thus, it is likely that talking with a nurse/doctor about formula did not change their beliefs about the formula. It is also likely that even after talking to a nurse/doctor about formula prior to feeding formula did not mitigate the external circumstances that led to feeding formula. Without the data on the length of time exclusive breastfeeding occurred, it was not possible to examine the external circumstances that may have led to the introduction of formula earlier than recommended. Most of the reasons for not breastfeeding or for giving formula could be resolved by clinician support or education or talking with a lactation consultant, a doctor or nurse or any other healthcare professional as well as breastfeeding support groups.

Logistic regression showed that clinician support influenced breastfeeding behavior. Showing the mothers how to breastfeed, being told to breastfeed whenever the

baby wanted, and being given a telephone number to call for assistance influenced breastfeeding behavior and were associated with a higher likelihood of breastfeeding. This indicates that the involvement of healthcare professionals or clinicians in any other capacity in breastfeeding can boost exclusive breastfeeding for longer as well as reinforce positive breastfeeding behavior.

Results indicated that encouragement by the clinic staff on breastfeeding affects a mother's intention to breastfeed or the initiation and duration of breastfeeding. Clinician support provides education, reinforces self-efficacy and self-belief, provides the necessary skills, and helps address any untruthful statements about breastfeeding that the mothers may pick from the society or environment around them. Because clinicians' medical and personal opinions are valued, their roles in influencing breastfeeding intentions, initiation, and duration are undeniable.

Research Question 3

Research Question 3 was "Does support by the community on breastfeeding have an effect on a mother's intention to breastfeed or the initiation and duration of breastfeeding?" Several questions in the questionnaire assessed the community support the mothers received as well as the extent of support they received at the workplace. These questions were: how supportive of breastfeeding people in the community were (Q40), working for pay after the baby was born (Q41), the extent of breastfeeding support at the workplace (Q45) and how the workplace was supportive of breastfeeding (Q46). Most mothers in the survey found their communities very supportive of breastfeeding. Chi-square analysis revealed a weak but positive significant association between the

extent of breastfeeding support and the decision not to breastfeed to go back to work or school. This implies that an increased extent of breastfeeding support was associated with a tendency to stop breastfeeding to go back to work or school. In addition, there was evidence of a weak but positive significant association between the extent of breastfeeding support and giving formula due to not being able to produce milk after going back to work. This implies that increased breastfeeding support was associated with a tendency of not being able to produce milk after going back to work, and hence, feeding the baby formula. However, there were no significant associations between the extent of breastfeeding support and the decision to breastfeed or having a private place (not a bathroom) to pump breast milk and pumping milk being too hard or inconvenient. Additionally, there was no significant association between having breaks to pump breast milk and pumping breast milk being too hard or inconvenient or having a written employee policy about working and breastfeeding at a workplace and pumping milk being too hard or inconvenient. Lastly, there were no significant associations between allowing flexible scheduling so that breaks could be taken when needed and pumping breast milk being too hard or inconvenient or allowing employees to work from home or bring their babies to work and pumping breast milk being too hard or inconvenient.

Logistic regression analysis showed that the extent of community support predicted breastfeeding behavior. This implies that mothers who thought that their communities were “very supportive” were more likely to breastfeed. In addition, familial relationships are important in prediction breastfeeding behavior, and intentions as the analysis showed that the baby’s father refusing the baby to be breastfed influenced

breastfeeding behavior. Having to work for pay also predicted breastfeeding behavior. Those who had to work for pay were significantly less likely to breastfeed.

It is not clear how milk pumps helped support working mothers or lengthen the period of exclusive breastfeeding. Data on the usage of milk pumps was not provided. Thus, it is not clear how many mothers actually expressed milk while at work/school or elsewhere outside the home. In addition, the type of jobs that the respondents held given their education levels may be largely informal and unstructured, which may influence factors such as breastfeeding support at the workplace. Another concern is what to do with the baby if the mother has to work away from home. In some cases, a babysitter may not be affordable, and family members may have to step in to take care of the child when the mother is away, which too may influence breastfeeding duration.

Irrespective of these conditions and circumstances the answer to the research question whether community support has an effect on a mother's intention to breastfeed or the initiation and duration of breastfeeding is yes. The community provides the much needed moral support, reinforces self-efficacy, and is the immediate environment where the mother spends most of her time. These findings are similar to those reported in the literature. For example, Rayfield, Oakley, and Quigley (2015) explored the relationship between breastfeeding support and rates of breastfeeding among mothers with term and late preterm babies. Mothers who said that they got contact details for support groups were more likely to breastfeed late preterm and term infants than those said that they did not get the contact details. The researchers concluded that getting support with breastfeeding while in hospital and getting contact details for breastfeeding support

groups were significantly associated with breastfeeding (Rayfield et al., 2015). Forster and colleagues (2019) explored the association between a mother to mother breastfeeding support group that used telephones to communicate and the proportion of breastfeeding infants at six months of age. They reported that the mothers in the support group had a longer duration of breastfeeding and for first-time mothers, their infants were more likely to be receiving any breast milk compared to the mothers assigned to usual care (Forster et al., 2019).

Strengths and Limitations

The most significant limitation of this study was that it utilized secondary data. The completeness, accuracy, and availability of secondary data are usually outside the control of the researcher and is heavily dependent on the original owners or collectors of the data. Another important limitation to consider is the social desirability bias. Here the mothers, in trying to answer the research questions might have answered them in a way that would show them in a favorable light, hence affecting the study result and could lead to over estimation of desired behavior. It is also difficult to establish causation in a cross-sectional study.

In this study, not all pertinent data was availed by the original researcher, which may have influenced the fit of the data to answer the research questions. For example, data on the availability and usage of breast pumps were not availed, although it might have shed light into breastfeeding behavior particularly for mothers who said they had to go back to school or work. In addition, some data fields had question marks instead of values because the data entry team were not able to discern what the respondent had

marked on the questionnaire. The researcher treated these as missing data, and since there was no way to tell whether the data was missing randomly or dependent on the questionnaire or respondent, the missing data were ignored during analysis. If it were primary data, the researcher would have been at a better position to determine how to deal with the missing data. Additionally, other mediating factors that were identified as of interest in the study such as income level and experience were not captured in the data set and hence, their roles in determining breastfeeding intention, and breastfeeding behavior were not assessed. The respondents were from low-income families, but their income levels were not defined or obtained during the survey. Lastly, the duration of breastfeeding continuance and exclusive breastfeeding were to be used to operationalize the variable breastfeeding behavior. However, this information was not provided in the data. On the other hand, the use of secondary data provided a convenient, timely, and cost-efficient access to a large dataset that could be used to answer the research questions.

Recommendations

Maternal and child-care are one of the most important facets of a public healthcare program. Much time, money and resources are spent on educating mothers and communities on the benefits of breastmilk as well as breastfeeding and how to do it right. The data analysis results of this study show that more is required. Reasons given for not breastfeeding such as thinking they would not have enough milk, belief that formula is as good as or better than breast milk, breastfeeding not working out with a previous child, listening to other people's opinions that breastfeeding is hard and thinking they would not

be able to breastfeed can be addressed best by more education. Perhaps current practice should consider examining more innovative ways of delivering education, knowledge and skills on breastfeeding not only to mothers but also communities as they also play a role in determining duration, intention, and decision to breastfeed as the findings found that baby's grandmother or father refusing the baby to be breastfed influences breastfeeding intention and behavior. As mentioned above, there is a possibility of deep-seated notions and wrong assumptions about breastfeeding acquired from self, culture, or society that healthcare professionals may not have the capacity to address. Thus, cultural-sensitive education and policies may be appropriate not only for mothers but for the community as a whole.

Based on the findings of the present study, there are several areas of interest that warrant further research. First, data on milk pumps usage, length of exclusive breastfeeding, when formula was introduced, when solids/other liquids were introduced and amount of time spent at work were not provided. Thus, it is not possible to tell how many mothers exclusively breastfed for the recommended duration and at what stages during the first six months were solids or formula started. In addition, more research is required to find out how baby care happens when the mother has to go to work, affordability, and availability of babysitters, usage of day care centers and support from immediate family members to care for the child when the mother is away.

Qualitative research is recommended for further research to gain insight into the socio-cultural factors that may influence breastfeeding behavior and intention as well as maternal knowledge and community support. Qualitative research methods such as

interviews and focus groups may collect additional insight through probing the respondent, seeking for clarification and group discussions to collect contextual factors that influence breastfeeding, and which may not be obtained using quantitative means.

Brand et al. (2011) explained that the intention to initiate breastfeeding does not imply that the mother will practice exclusive breastfeeding for the recommended six months. Some mothers tend to supplement breastmilk with formula as early as the first week or second week. In this study, factors such as going back to work or school, thinking that the baby required additional food, social and cultural norms, and lack of support may influence early breastfeeding cessation. However, data on how many mothers ceased exclusive breastfeeding or breastfeeding altogether was not available. Further research is required to obtain this data and interpret it in the context of the reasons mothers ceased breastfeeding or began breast milk supplementation. This will help chart factors that hinder breastfeeding at different times during an infant's early stages of growth and develop measures to mitigate.

Implications

The results of this study imply that more can be done to boost breastfeeding as a practice and perhaps, exclusive breastfeeding for the recommended duration. The findings showed that factors related to support in the community and the immediate environment are critical in breastfeeding behavior. In addition, clinician support plays an important role in helping mothers address challenges they experience when breastfeeding and offer education. This shows there is room for improvement, and it is necessary to

examine external factors, in the environment, family, community, and workplace to promote breastfeeding.

Support from the community and healthcare professionals/breastfeeding support groups/lactation consultants, as well as knowledge of breastfeeding by the mother influence breastfeeding intentions and breastfeeding behavior (initiation and duration). The importance of exclusive breastfeeding for the first six months of an infant's life is undeniable. Different maternal and infant healthcare programs such as WIC advocate for and support breastfeeding. However, it would be naïve to ignore the socio-cultural, economic, physical, and environmental contexts in which feeding of an infant occurs, and which may influence breastfeeding behavior, initiation, duration, and perspectives. Thus, stakeholders involved in these programs should examine the different contexts that may influence mothers' intention, decision, and duration of breastfeeding.

Additionally, there is a need to normalize breastfeeding, provide facilities and rooms for mothers to pump milk, factor in breaks and look into ways that mothers can stay with their babies for longer through flexible scheduling at the workplace. Besides being a legal requirement, true inclusion of mothers in the workplace should involve actions that support breastfeeding, pumping milk, and flexible scheduling.

Conclusion

The purpose of this study was to assess the relationship between maternal knowledge, community support, and clinician support on breastfeeding. The findings are that maternal knowledge, community, and clinical support all influence the decision of the mother to breastfeed. Factors such as being aware of the benefits of breastfeeding,

getting access to breastfeeding support, and a supportive community influence breastfeeding behavior. Knowledge, regardless of the source, enhances a mother's self-efficacy and influences their attitudes, perceptions, and subjective norms, which may contribute to shaping their behavior to promote breastfeeding intention and behavior. Support, from community or clinicians or at the workplace could help increase the rates of breastfeeding. However, further research is required. These findings are supported in the literature. However, there is a need to explore the roles of the immediate community and clinicians or healthcare professionals in supporting breastfeeding further.

References

Alsaweed, M., Lai, C. T., & Hartmann, P. E. (2016). Human milk cells and lipids conserve numerous known and novel miRNAs, some of which are differentially expressed during Lactation. *PLoS One*, *11*, 152-610.

Ajami, M., Abdollahi, M., Salehi, F., Oldewage-Theron, W., & Jamshidi-Naeini, Y. (2018). The association between household socioeconomic status, breastfeeding, and infants' anthropometric indices. *International Journal of Preventive Medicine*, *9*, 89. doi:10.4103/ijpvm.IJPVM_52_17

Andreas, N. J., Kampmann, B., & Mehring Le-Doare, K. (2015). Human breast milk: A review on its composition and bioactivity. *Early Human Development*, *91*, 629-635.

Asiodu, I. V., Waters, C. M., Dailey, D. E., Lee, K. A., & Lyndon, A. (2015). Breastfeeding and social media among first-time African American mothers. *Journal of Obstetric, Gynecologic, and Neonatal Nursing JOGNN/NAACOG*, *44*(2), 268-278.

Aune, D., Norat, T., Romundstad, P., & Vatten, L. (2014). Breastfeeding and the maternal risk of type 2 diabetes: A systematic review and dose–response meta-analysis of cohort studies. *Nutrition, Metabolism and Cardiovascular Diseases*, *24*(2), 107-115.

Ballard, O., & Morrow, A. (2014). Human milk composition: Nutrients and bioactive factors. *Pediatric Clinicians North America*, *60*(1), 49-74.

Bergmann, R. L., Bergmann, K. E., von Weizsäcker, K., Berns, M., Henrich, W., & Dudenhausen, J. W. (2014). Breastfeeding is natural but not always easy: Intervention for common medical problems of breastfeeding mothers - A review of the scientific evidence. *Journal of Perinatal Medicine*, *42*(1), 9-18.

Bevan, G., & Brown, M. (2014). Interventions in exclusive breastfeeding: A systematic review. *British Journal of Nursing*.

Bozzette, M., & Posner, T. (2013). Increasing student nurses' knowledge of breastfeeding in baccalaureate education. *Nurse Education in Practice, 13*(3), 228-33.

Brand, E., Kothari, C., & Stark, M. A. (2011). Factors related to breastfeeding discontinuation between hospital discharge and 2 weeks postpartum. *The Journal of Perinatal Education*, *20*(1), 36-44. doi:10.1891/1058-1243.20.1.36

Brodribb, W., Fallon, A. B., Hegney, D., & O'brien, M. (2007). Identifying predictors of the reasons women give for choosing to breastfeed. *Journal of Human Lactation*, *23*(4), 338-344.

Bueno-Gutierrez, D., & Chantry, C. (2015). Life does not make it easy to breast-feed': Using the socio-ecological framework to determine social breast-feeding obstacles in a low-income population in Tijuana, Mexico. *Public Health Nutrition*, *18*(18), 3371-3385.

Bueno-Gutierrez, D., & Chantry, C. (2015). Using the socio-ecological framework to determine breastfeeding obstacles in a low-income population in Tijuana, Mexico: Healthcare Services. *Journal of Breastfeeding Medicine*, *10*, 124-131.

Catherine, B. R. L. (2014). Factors influencing the reasons why mothers stop breastfeeding. *Canadian Journal of Public Health*, *105*(3), 179-185.

CDC. (2014). Breastfeeding trends and updated national health objectives for exclusive breastfeeding. Retrieved from http://www.cdc.gov/

CDC. (2016). *Breastfeeding rates continue to rise*. Retrieved from https://www.cdc.gov/media/releases/2016/p0822-breastfeeding-rates.html

Cesur, R., Sabia, J. J., Kelly, I. R., & Yang, M. (2017). The effect of breastfeeding on young adult wages: New evidence from the add health. *Review of Economics in the Household*, *15*, 25-51.

Chaput, K. H., Adair, C. E., Nettel-Aguirre, A., Musto, R., & Tough, S. C. (2015). The experience of nursing women with breastfeeding support: A qualitative inquiry. *CMAJ*, *3*, 305-309.

Chavan, S., Jadhao, A., Narlwar, U., Ughade, S., & Adikane, H. (2017). Cross sectional study of knowledge and practices regarding breast feeding amongst mothers belonging to tribal community in Melghat area, Amravati, Maharashtra, India. *International Journal of Research in Medical Sciences*

Chowdhury, R., Sinha, B., Sankar, M. J., Taneja, S., Bhandari, N., Rollins, N., & Martines, J. (2015). Breastfeeding and maternal health outcomes: a systematic review and meta□analysis. *Acta Paediatrica*, *104*(467), 96-113.

Christopher, N., Christian, A. N., & Iyiani, E.A. (2014). Knowledge of infant nutrition among mothers in Enugu State, South Eastern Nigeria: Implications for social work practice. *International Journal of Academic Research in Progressive*

Education and Development, *3*(1), 3.

Cohen, S. S., Alexander, D. D., Krebs, N. F., Young, B. E., Cabana, M. D., Erdmann, P., ... Saavedra, J. M. (2018). Factors associated with breastfeeding initiation and continuation: a meta-analysis. *The Journal of pediatrics*, *203*, 190-196.

Colen, C. G., & Ramey, D. M. (2014). Is breast truly best? Estimating the effects of breastfeeding on long-term child health and wellbeing in the United States using sibling comparisons. *Social Science & Medicine*, *109*, 55-65. doi:10.1016/j.socscimed.2014.01.027

Colombo, L., Crippa, B. L., Consonni, D., Bettinelli, M. E., Agosti, V., Mangino, G., … Mosca, F. (2018). Breastfeeding determinants in healthy term newborns. *Nutrients*, *10*(1), 48. doi:10.3390/nu10010048

Crenshaw, J.T. (2014). Healthy birth practice 6: Keep mother and baby together—It's best for mother, baby, and breastfeeding. *The Journal of Perinatal Education*, *23*(4), 211-217.

Creswell, J. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). London: SAGA Publications.

Cynthia, F., Cong, X. and Chung, K.S. (2016). Labor Epidural Analgesia and Breastfeeding: A Systematic Review. *Journal of Human Lactation*, *32*(3), 507 – 520.

Dagher, R.K., McGovern, P.M., Schold, J.D. & Randall, X.J. (2016). Determinants of breastfeeding initiation and cessation among employed mothers: A prospective cohort study. *BMC Pregnancy and Childbirth, 16*, 194-205.

Dashti, M., Scott, J. A., Edwards, C.A. & Al-Sughayer, M. (2014). Predictors of breastfeeding duration among women in Kuwait: Results of a prospective cohort study. *Nutrients*, 6(2), 711-728.

DeLuca, A., Hankard, R. & Alexandre-Gouabau, M.C. (2016). Higher concentrations of branched-chain amino acids in breast milk of obese mothers. *Nutrition*, *32*, 1295-8.

Dinour, L. M., Gina, A. P., & Yeon, K. (2015). Breast milk pumping beliefs, supports, and barriers on a University campus. *Journal of Human Lactation, 31*(1), 156–165.

Dunn, R., Kalich, K., Fedrizzi, R. & Phillips, S. (2015). Barriers and contributors to breastfeeding in WIC mothers: A social ecological perspective. *Breastfeeding Medicine*, *10*(10), 493-501.

Dunn, R., Kalich, K., Henning, M., & Fedrizzi, R. (2015). Engaging field-based professionals in a qualitative assessment of barriers and positive contributors to breastfeeding using the social ecological model. *Maternal and Child Health Journal*, *19*(1), 6-16.

Fahmida, U., Kolopaking, R., Santika, O., Sriani, S., Umar, J., Htet, M.K. and Ferguson, E. (2015). Effectiveness in improving knowledge, practices, and intakes of "key problem nutrients" of a complementary feeding intervention developed by using linear programming: Experience in Lombok, Indonesia. *American Journal of Clinical Nutrition*, *101*, 455-61.

Forster, D. A., McLardie-Hore, F. E., McLachlan, H. L., Davey, M. A., Grimes, H. A., Dennis, C. L., ... & Shafiei, T. (2019). Proactive peer (mother-to-mother) breastfeeding support by telephone (ringing up about breastfeeding early [ruby]): A multicentre, unblinded, randomised controlled trial. *European Clinical Medicine*.

Furman, L. M., Banks, E. C., & North, A. B. (2013). Breastfeeding among high-risk inner-city African-American mothers: A risky choice? *Breastfeeding Medicine*, *8*(1), 58-67.

Gidrewicz, D.A. & Fenton, T.R. (2014). A systematic review and meta-analysis of the nutrient content of preterm and term breast milk. *BMC Pediatrics*, *14*, 216.

Greiner, T. (2014). Exclusive breastfeeding: measurement and indicators, *International Breastfeeding Journal, 9*, 18.

Grote, V., Verduci, E., & Scaglioni, S. (2016). Breast milk composition and infant nutrient intakes during the first 12 months of life. *European Journal of Clinical Nutrition*, *70*, 250-6.

Hameed, N. J., Tatari, H.A.l., Shibli, A.A.l., and Narchi, H. (2014). Maternal factors hindering successful breastfeeding in Al-Ain City, United Arab Emirates. *Journal of Women's Health Care*, *4*(220), 2167-0420.

Haqhiqhi, M., Varzande, R. (2016). Maternal knowledge and attitude toward exclusive breastfeeding in six months after birth in Shiraz, Iran. *International Journal of Pediatrics*, *4*(11), 45.

Haschke, F., Haiden, N., Thakkar, S.K. (2016). Nutritive and bioactive proteins in breastmilk. *Annals of Nutrition and Metabolism, 69*(2), 17-26.

Hassiotou, F. & Geddes, D. T. (2015). Immune cell-mediated protection of the mammary gland and the infant during breastfeeding. *Advances in Nutrition, an International Review Journal*, *6*(3), 267–275.

Hawkins, S.S., Dow-Fleisner, S. & Noble, A. (2016). Breastfeeding and the Affordable Care Act. *Pediatric Clinicians North America*, *62*(5),1071–1091.

Huang, R., & Yang, M. (2015). Paid maternity leave and breastfeeding practice before and after California's implementation of the nation's first paid family leave program. *Economics & Human Biology*, *16*, 45–59.

Hudson, I. J., Rutledge, G., & Ayers, D. R. (2015). A case study of Michigan's breastfeeding initiative: The role of coalitions in community-based breastfeeding support. *Journal of Human Lactation, 31*(4), 611–613.

Ismail, T.A.T., Muda, W.A.M. and Bakar, M.I. (2016). The extended Theory of Planned Behavior in explaining exclusive breastfeeding intention and behavior among women in Kelantan, Malaysia. *Nutrition Practices*, *10*(1), 49–55.

Johnson, A. M., Kirk, R. & Muzik, M. (2015). Overcoming workplace barriers: A focus group study exploring African American mothers' needs for workplace breastfeeding support. *Journal of Human Lactation*, *31*(3), 425–433.

Johnson, A.M., Kirk, R., Rooks, A.J., & Muzik, M. (2016). Enhancing breastfeeding through healthcare support: Results from a focus group study of African American Mothers. *Maternal Child Health Journal, 20*(1), 92-102.

Jokonya, O. (2017). Critical literature review of theory of planned behavior in the information systems research. In *2017 2nd international conference on advances in management engineering and information technology* (pp. 177-181). doi:10.12783/dtcse/ameit2017/12297

Jokonya, T. (2015). *Validating Technology Acceptance Model (TAM) during IT adoption in organizations*. 7th IEEE Conference Cloud Computing Technology and Science.

Jones, K. M., Power, M. L., Queenan, J. T., & Schulkin, J. (2015). Racial and ethnic disparities in breastfeeding. *Breastfeeding Medicine, 10*(4), 186–196.

Karanci, G & Yenal, K. (2014). Breastfeeding knowledge among working pregnant women in Turkey. *Workplace Health & Safety*, 62(4)

Kornides, M. & Kitsantas, P. (2013). Evaluation of breastfeeding promotion, support, and knowledge of benefits on breastfeeding outcomes. *Journal of Child Health Care, 17*(3), 264-273.

Kottwitz, A., Oppermann, A. & Spiess, K. (2016). Parental leave benefits and breastfeeding in Germany: Effects of the 2007 reform. *Rev Econ Household*, *14*, 859–890.

Kronborg, H., Foverskov, E. and Vaeth, M. (2015). Breastfeeding and introduction of complementary food in Danish infants. *Scandanavian Journal of Public Health*, *43*, 138-45.

Kuijper, B. & Johnstone, R.A. (2018). Maternal effects and parent-offspring conflict. *International Journal of Organic Evolution*, *72*(2), 220-233.

Mandal, B., Roe, B. E. & Fein, S. B. (2014). Work and breastfeeding decisions are jointly determined for higher socioeconomic status US mothers. *Review of Economics of the Household*, *12*(2), 237–257.

McInnes, R.J., Hoddinott, P., Britten, J., Darwent, K. and Craig, L.C. (2013). Significant others, situations and infant feeding behaviour change processes: A serial qualitative interview study. *BMC Pregnancy Childbirth*, *13*, 114.

McKinney, C. O., Hahn-Holbrook, J., Chase-Lansdale, P. L., Ramey, S. L., Krohn, J., Reed-Vance, M., … Community Child Health Research Network (2016). Racial and ethnic differences in breastfeeding. *Pediatrics*, *138*(2), e20152388. doi:10.1542/peds.2015-2388

Melo, R.S., Costa, A.C.P., Santos, L.H., Saldan, P.C., Neto, M.S., Santos, F.S. (2017). Exclusive breastfeeding practices among health professionals of a baby friendly accredited hospital, *Cogitare Enferm*. *4*(22), 50523.

Meneses, G.D. & Rodríguez, I.L. (2015). Comparing short- and long-term breastfeeding models. *Journal of Social Marketing*, 5(4), 338-356.

Mithani, Y., Premani, Z.S., Kurji, Z. & Rashid, S. (2015). Exploring fathers' role in breastfeeding practices in the urban and semiurban settings of Karachi, Pakistan. *The Journal of Perinatal Education*, *24*.

Mosca, F. & Giannì, M.L. (2017). Human milk: Composition and health benefits. *La Pediatria Medica e Chirurgica*, *39*, 155.

Mueffelmann, R.E., Racine, E.F., Warren-Findlow, J. and Coffman, M.J. (2015). Perceived infant feeding preferences of significant family members and mothers'

intentions to exclusively breastfeed. *Journal of Human Lactation, 31*, 479-489.

Nassar, M., Abdel-Kader, A., Al-Refaee, F., Mohammad, Y., Al Dhafiri, S., Gabr, S., & Al-Qattan, S. (2014). Breastfeeding practice in Kuwait: Determinants of success and reasons for failure. *Eastern Mediterranean Health Journal, 20*(7).

Negin, J., Coffman, J., Vizintin, P. & Raynes-Greenow, C. (2016). The influence of grandmothers on breastfeeding rates: A systematic review. *BMC Pregnancy and Childbirth*

Neville, C., McKinley, M., Holmes, V., Spence, D., & Woodside, J. (2014). The relationship between breastfeeding and postpartum weight change—a systematic review and critical evaluation. *International Journal of Obesity*, *38*(4), 577-590.

Nolan, A., Kennedy, S., O'Malley, A., Kirwan, M., Hughes, A., Barry, A., . . . Nugent, L. (2015). Mothers' voices: Results of a survey of public health nurse-led breastfeeding support groups. *Primary Health Care*, *25*(7), 26.

Odom, E.C., Li, R., Scanlon, K.S., Perrine, C.G. and Grummer-Strawn, L. (2014). Association of family and health care provider opinion on infant feeding with mother's breastfeeding decision. *Journal of the Academy of Nutrition and Diet, 114*, 1203-7.

O'Sullivan, A., Aifric, O. S., Marie, F., & Jennifer, T. S. (2015). The influence of early infant-feeding practices on the intestinal microbiome and body composition in infants. *Nutrition and Metabolic Insights*, *3*, 7.

Persad, M. D., & Mensinger, J. L. (2008). Maternal breastfeeding attitudes: association with breastfeeding intent and socio-demographics among urban

primiparas. *Journal of Community Health*, *33*(2), 53-60.

Ramakrishnan, R., Oberg, C.N. and Kirby, R.S. (2014). The association between maternal perception of obstetric and pediatric care providers' attitudes and exclusive breastfeeding outcomes. *Journal of Human Lactation, 30*, 80-7.

Rayfield, S., Oakley, L., & Quigley, M. A. (2015). Association between breastfeeding support and breastfeeding rates in the UK: A comparison of late preterm and term infants. *BMJ Open*, *5*(11), e009144.

Reeves, E. A. & Woods-Giscombé, C. L. (2015). Infant-feeding practices among African American women: Social-ecological analysis and implications for practice. *Journal of Transcultural Nursing,* 26(3), 219-226.

Reis-Reilly, H. & Carr, M. (2016). Improving community-based breastfeeding support: The role of local health departments. *journal of Public Health Management & Practice*, *22*(4), 427-429.

Rempel, L.A., Rempel, J.K. & Moore, K.C.J. (2016). Relationships between types of father breastfeeding support and breastfeeding outcomes. *Maternal & Child Nutrition*

Ritchie, J., Lewis, J., Elam, G., Tennant, R. & Rahim, N. (2014). Designing and selecting samples. In J. Ritchie, J. Lewis, C. M. Nicholls & R. Ormston (Eds.), *Qualitative research practice* (2nd ed.) (pp. 111-146). London: Sage Publications Ltd.

Rossiter, M. D., Cynthia, K. C., Khan, M. K. A, Jessie-Lee, D., Patricia, L. W., & Sara, F. L. et al. (2015). Breast, formula and combination feeding in relation to childhood obesity in Nova Scotia, Canada. *Maternal and Child Health Journal*,

19(9), 2048–2056.

Saaty, A. H., Cowdery, J., & Karshin, C. (2015). Practices of breastfeeding among Arab mothers living in the United States. *World Journal of Medical Sciences*, *12*(2), 183-188.

Saldan, M.S., Neto, F.S., Santos, F. (2017). Exclusive breastfeeding practices among health professionals of a baby friendly accredited hospital. *Cogitare Enferm*, *4*(22), 50523.

Sankar, M.J., Sinha, B., Chowdhury, R., Bhandari, N., Taneja, S., Martines, J., & Bahl, R. (2015). Optimal breastfeeding practices and infant and child mortality: A systematic review and meta-analysis. *Acta Paediatrica*, *104*, 3-13.

Sharp, J.A., Modepalli, V., Enjapoori, A.K. (2014). Bioactive functions of milk proteins: A comparative genomics approach. *Journal of Mammary Gland Biological Neoplasia*, 19, 289-302.

Smilowitz, J.T., Lebrilla, C.B., Mills, D.A. (2014). Breast milk oligosaccharides: Structure-function relationships in the neonate. *Annual Review of Nutrition*, *34*, 143-69.

Smith, J.P., Javanparast, S. and McIntyre, E., Craig, L., Mortensen, K & Koh, C. (2013). Discrimination against breastfeeding mothers in childcare. *Australian Journal of Labour Economics*, *16*(1), 65–90

Spencer, B., Wambach, K, & Domain, E. W. (2015). African American women's breastfeeding experiences: Cultural, personal, and political voices. *Qualitative Health Research*, *25*(7), 974-987.

Swigart, T.M., Bonvecchio, A., TheÂodore, F.L., Zamudio-Haas, S., Villanueva-Borbolla, M.A. & Thrasher, J.F. (2017). Breastfeeding practices, beliefs, and social norms in low-resource communities in Mexico: Insights for how to improve future promotion strategies. *PLoS ONE, 12*(7), 180-185.

Tahir, N.M., & Al-Sadat, N. (2013). Does telephone lactation counselling improve breastfeeding practices? A randomized controlled trial. *International Journal of Nursing Studies, 50*(1),16-25.

Textor, L., Tiedje, K. & Yawn, B. (2013). Mexican and Somali immigrant breastfeeding initiation and counseling. *Minnesota Medicine.*

Tully, K.P. and Ball, H.L. (2014). Trade-offs underlying maternal breastfeeding decisions: A conceptual model. *Maternal Child Nutrition., 9*(1), 90–98.

U.S. Department of Health and Human Services. (2016). *Healthy people 2020 topics and objectives A to Z.* Retrieved from www.healthypeople.gov/2020/topicsobjectives2020/default.asp.

UNICEF (2013). The evidence and rationale for the UNICEF UK Baby Friendly Initiative Standards [online]. Retrieved from <http://www.unicef.org.uk/Documents/Baby_Friendly/Research/baby_friendly_evidence_rationale.pdf> April 12,2018.

Victora CG, Bahl R, Barros AJD, FrancËa GVA, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: Epidemiology, mechanisms, and lifelong effect. *The Lancet, 387*(10017), 475±90.

Vincent, A. (2015). *The effect of breastfeeding self-efficacy on breastfeeding initiation, exclusivity, and duration.* Retrieved from <http://ezp.waldenulibrary.org/login?url=https://search-proquest-

Vishwakarma, G. (2017). *Sample Size and Power Calculation*. Rajiv Gandhi Cancer Institute.

Wasser, H.M., Thompson, A.L., Siega-Riz, A.M., Adair, L.S., Hodges, E.A. and Bentley, M.E. (2013). Who's feeding baby? Non-maternal involvement in feeding and its association with dietary intakes among infants and toddlers. *Appetite, 71*, 7-15.

Wood, N. K., Woods, N. F., Blackburn, S. T., & Sanders, E. A. (2016). Interventions that enhance breastfeeding initiation, duration, and exclusivity: A systematic review. *MCN American Journal of Maternal Child Nursing*, *41*(5), 299-307.

Yin, R. (2014). *Case study research, Design and methods* (5th ed.). London: Sage Publications Ltd.

Yu, E.A., Thomas, J.S., Owais, A., Tirmizi, N., Faruque, A., Das, S.K., Rahman, S., …Stein, A.D. (2015). Maternal prenatal attitudes and postnatal breast-feeding behaviours in rural Bangladesh. *Public Health Nutrition*, *18*, 679-85.

Appendix: Letters of Request

Raw Data Set for the 2016 Texas WIC Infant Feeding Practices Survey State Report

(DSHS) Mon, May 27, 2019 at 3:10 PM

To: ubong usua

Ubong,

The requested data set and accompanying information (this note, your prospectus, and the previously provided survey tool) is now posted for your download and use on a project management and file sharing platform used by our Unit. You should receive an invitation in your email with instructions for signing into the site. The file is password protected and locked for editing. The password will be texted to you. You may copy and paste from the provided file into another file for manipulation of the data fields for the purpose of analysis.

Please read the data notes on Sheet 2 of the workbook as well as the statement that provides limited permission for use.

The data from the original full data set have been cleaned to limit the sample as described in the data notes to derive the Study Data Set, provided to you here. Additional data cleaning will be required by you to code for valid and invalid skip patterns.

Some additional notes about the data and format:

Columns B, C, and I are calculations as described in the header row.

Each column is a question, each row is a respondent's selected responses for each question, and each cell represents the respondent's chosen response. The response data are coded as numbers, with each number corresponding to the chosen response option. For example, for Q4, a cell coded as "1" represents the 1st potential answer response for Q4, or "1st to 6th grade "; a code of "2" represents the 2nd potential answer response for Q4, or "7th to 9th grade"; and so on.

Cells coded as “?” mean that the respondent answered the question but the coders (first the Scantron machine and then the human code checkers) could not determine/discern the respondent’s intended response (e.g. more than one/ conflicting response option selected)

A cell that is not coded, that is the cell is <Blank>, means that no data were provided for this response. This may be blank due to a valid skip (following the logic of a skip pattern) or may be blank because no response was provided (missing).

It is important to check and account for invalid skip patterns, which may include instances for which a previous response indicated that the respondent should have skipped a question but they, instead, provided a response for that question and the response may or may not logically conflict with the response they provided on the previous question that should have generated a skip response.

Please reach out to me--as the steward and state subject matter expert for these data--with any questions as you work on your analysis and interpretation. Also, please keep me posted in your progress and please share your final report once complete.

Thank you,

Texas Department of State Health Services

--Mothers and babies form an inseparable biological and social unit, and... the health and nutrition of one cannot be divorced from the health and nutrition of the other. Global Strategy for Infant and Young Child Feeding

From: ubong usua

Sent: Friday, May 24, 2019 8:49 PM

To: (DSHS)

Subject: Re: Raw Data Set for the 2016 Texas WIC Infant Feeding Practices Survey State Report

Hi,

Thanks for responding to my request. I am really grateful. For my research I am looking at the following variables;

Dependent Variables - Breastfeeding intention and Breastfeeding Behavior.

Control Variables- Age and Education Level

Independent Variables - Maternal BF Knowledge, Community Support and Healthcare worker Support.

Based on my variables I believe the responses to the following questions should help with my analysis;

4-8, 12-21, 24, 26, 27, 35, 39, 40, and 45-47.

Thank you so much for your help and I just want to emphasis that the dissertation will only be published on ProQuest as part of the school requirements and I have to intention of any additional publication. Have a lovely Memorial Day weekend.

Ubong Usua

On Fri, May 24, 2019 at 8:38 PM ubong usua wrote:
Hi,

Thank you so much for response.

On Fri, May 24, 2019 at 5:18 PM wrote:
Hello Ubong! It was nice to speak with you just now. Per our conversation, please use the attached survey tool to identify the questions that correspond with your variables of

interest for your study. Then, please email me back with a list of the questions and response options that correspond with your variable of interest to identify the data that you will need to receive in order complete the analysis that you propose to study in your attached prospectus.

Please feel to email, call, or text me on my cell with any questions.

Thank you,

From: ubong usua

Sent: Thursday, May 9, 2019 11:31 AM

To: (DSHS)

Subject: Raw Data Set for the 2016 Texas WIC Infant Feeding Practices Survey State Report

Hi,

I hope this mail finds you well. My name is Ubong Usua, a PhD Public Health Student at Walden University. I am currently writing my dissertation on WIC participants breastfeeding practices. I had based my entire methodology on the Data Set above and come time for the analysis, I discovered I need the raw data set to be able to run my analysis.

I had been emailing back and forth with Leona, who asked me to write to ask permission from the Open records team. I did that twice and have not gotten any response. I am also not getting any feedback from Loena anymore. Could you please direct me on what to do to have access to the data set?. Thanks for your anticipated help.

I have attached a copy of my Dissertation Prospectus for your reference.

Thanks

Ubogn Usua

\