The impact of a focused education session on the knowledge, attitude and intended behaviour regarding breastfeeding by Saudi women who are pregnant for the first time

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LIST OF ABBREVIATIONS

ACOG	American College of Obstetricians and Gynaecologists
ANOVA	Analysis of Variance
BFHI	Baby Friendly Hospital Initiative
BFKQ	The Breast Feeding Knowledge Questionnaire
CINAHL	Cumulative Index of Nursing and Allied Health Literature
EMRO	Eastern Mediterranean Regional Office
IIFAS	The Iowa Infant Feeding Attitude Scale
GCC	Gulf Cooperation Council
KSA	Kingdom of Saudi Arabia
MEDLINE	Medical Literature Analysis and Retrieval System Online
MOH	(Saudi) Ministry of Health
MSc	Master of Science
PRISM	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
RCT	Randomised controlled trial
UAE	United Arab Emirate
UK	United Kingdom
UNICEF	United Nations International Children's Emergency Fund
USA	United States of America
WHO	World Health Organization

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ABSTRACT

Background

As one of the richest countries in the world, the Kingdom of Saudi Arabia has transitioned into a rapidly growing nation socio-economically during the last decade. This progress, however, has resulted in nutritional repercussions, specifically in hasty modification in lifestyle, supply of food, and eating patterns. Data for Saudi Arabia correlates such transformation strongly with decline in breastfeeding. The global policy recommendation for infant feeding from the World Health Organization and UNICEF is that infants should be breastfed exclusively for the first six months. Yet, despite the great advances in healthcare services in Saudi Arabia, data reports a downward trend in breastfeeding practice.

Aims

This study was designed to explore the effects of a focused education intervention on the attitudes, knowledge, and intended behaviours regarding breastfeeding by Saudi women who were pregnant for the first time in Hail City.

Study Design

This study utilised a mixed methods design using scored tests (pre-test and post-test) as well as a follow-up test and interview. A pre-test was conducted prior to the introduction of the breastfeeding education intervention, and a post-test was also implemented immediately after the program. At two months after the intervention (postnatally) a follow-up interview was undertaken which included a follow-up test. A sample of 23 Saudi women was selected and assigned to the intervention group, while 10 Saudi women who were also pregnant for the first time were assigned to the comparison group.

Results

A change of breastfeeding practice in KSA can be achieved, but only through a series of small steps. It is vital to start the process of transformation of breastfeeding in KSA by first addressing women's knowledge and attitude. The intervention in this study was affective in increasing the participants' knowledge about breastfeeding, and this increase continued at follow up. The intervention shaped participants core thought on the subject of breastfeeding. Although the measures did not show significant change in attitudes, the women explained in interviews that their attitudes had, indeed, changed, but they still felt unable to act on this due to the constraints of Saudi society and culture. Behaviour changed in the women decided to breastfeed, even though they knew that this could not persist once they had to return to work. Participants stated unequivocally that the breastfeeding educational intervention was

beneficial, providing a safe space for women to converse with others about the benefits of breastfeeding and creating an opportunity for word of mouth messages to spread that are vital to societal and culture changes.

Conclusion

The education session was effective according to the test results on knowledge and attitude regard breastfeeding. Narrative data offered additional insights into the barriers to both initiation and maintenance of exclusive breastfeeding.

CHAPTER 1: INTRODUCTION

BACKGROUND

Being one of the richest countries in the world, the Kingdom of Saudi Arabia has transitioned into a rapidly growing nation socio-economically during the last decade. This progress, however, resulted in nutritional repercussions, specifically in hasty modification in lifestyle, supply of food, and eating patterns. Data for Saudi Arabia strongly correlates such transformation with the decline in breastfeeding (El-Gilany *et al.*, 2011). The global policy recommendation for infant feeding as advocated by the World Health Organization and UNICEF is that infants should be exclusively breastfed for the first six months of life (World Health Assembly, 2003). Yet, despite the great advances in healthcare services in Saudi Arabia, data reports a downward trend in breastfeeding practice (Al-Hreashy *et al.*, 2008).

HISTORY

Comprehensive and reliable historical data about the attitudes of mothers in Saudi Arabia towards breastfeeding is difficult to obtain as there are no national data on breastfeeding in the country (Mohamed and Hables, 2017). Attitudes towards breastfeeding in the Middle Eastern countries, especially in Islamic societies, has a religious basis. Islamic practices recommend that mothers nurse their children for at least two years (Musaiger, 1995). Al-Siba'i and Al-Bar (1993) noted the practice to be prevalent in Turbah, Saudi Arabia in 1967. It was observed that during this era, more than 90 per cent of mothers in the region were breastfeeding their infants and weaned them off breast milk to introduce solid foods only at the age of two years.

However, the excellent trend of breastfeeding changed immensely by the 1980s. Al-Nasser, Bamgboye and Alburno (1991), in a study conducted in 1987-1988, on the practice of breastfeeding in the rural areas of Tihama, Saudi Arabia, it was found that only 50.7% of mothers breastfed their infants. This was despite 98.35% believing in the importance of breastfeeding. This trend was also observed in other healthcare settings. In a military hospital in Riyadh, Lawson (1981) observed that about 40 per cent of infants born and initially breastfed in this hospital were started on bottle-feeding when they reached six months of age, and around 60 per cent of the infants were mixed-fed by breast and bottle at the same time; whilst in healthcare centres throughout the kingdom, around 38 per cent of infants were breastfeeding by the time they reach six months old.

The fall in breastfeeding during the early 1980s was thought to be the effect of several factors. Batterjee (2010) reported that westernisation and the effect of the Western culture; increasing level of education reducing the likelihood of breastfeeding, maternal employment; and the availability of breast milk substitute with convincing advertisements promoting powdered milk all contributed to this downward trend. Additionally, in a symposium undertaken in 1983 at the King Faisal Specialist Hospital in Riyadh, the extensive marketing promotion by the powdered milk companies was thought to have contributed significantly to decrease in breastfeeding practice, not just in the Saudi Arabia, but also in other developing countries (Shurtleff and Aoyagi, 2013). Concerns were also discussed in this meeting about hospital practices such as newborn babies being taken away from their mothers immediately after birth for two days, during which time they were given glucose solution and powdered milk, as well as the practice of powdered milk being provided by milk companies as gifts upon discharge, further encouraging mothers to move away from breastfeeding.

Age, socio-economic standard and level of education of the mothers also had an impact on their attitudes towards breastfeeding. Al-Othaimeen, Villanueva and Devol (1987) studied the weaning and breastfeeding practice of mothers of 767 children in Saudi Arabia. They found that a majority of younger mothers (between ages 21 to 30) tended to start weaning of infants within six months, as opposed their older (between ages 31 and 45) counterparts. Younger mothers were also most likely to not breastfeed their kids at all as compared to older mothers. The education levels of mothers related negatively with the duration they were likely to breastfeed. That is, the more educated the mother, the shorter was the average duration of them breastfeeding their infants. Illiterate mothers were more likely to breastfeed for longer period, with only 29% beginning before six months. On the other hand, more than 50% of mothers with university degree began weaning before six months (Al-Othaimeen, Villanueva and Devol, 1987). Al-Nasser, Bamgboye and Alburno (1991) also confirm this negative impact of education on breastfeeding. As many as 68% of mothers with university level education breastfed for 6 months or less.

The downward trend continued until 1988 when the average duration of breastfeeding for Saudi women was 5.05 months, and bottle-feeding was always started before the age of one years old (Al-Fayh *et al.*, 1988). Only 21 per cent of children were exclusively breastfed, 68 per

cent used mixed feeding, and 10 per cent of children were not breastfed at all (Al-Othaimeen and Villanueva, 1988). Community-based national representative surveys in 1994 showed that 55 per cent of infants one month and below were breastfed, 40 per cent mixed (bottle and breast milk), and 5 per cent of infants were on bottle-feeding only. By six months of age, these rates changed to 33 per cent, 55 per cent, and 12 per cent, respectively (Al-Mazrou *et al.*, 1994).

Data from 1999 until 2000 showed that in primary healthcare centres in Riyadh, 99 per cent of newborn infants were breastfed during the first week of birth, and breastfeeding was continued up until six months of age in 52 per cent of children (Al-Jassir *et al.*, 2004). During this period, the duration of breastfeeding was found to be six and a half months with the mean age of bottle-feeding introduction was one month and weaning to solid food at four and a half months. The high rate of breastfeeding initiation continued in 2004 through 2008 at an average of 95 per cent, that is, the King Abdulaziz Medical City in Riyadh (Ogbeide *et al.*, 2004); however, there is an associated high prevalence of milk formula supplementation in 83 per cent of children during the first six months of life and a very low 1 per cent of exclusive breastfeeding (Al-Hreashy *et al.*, 2008). As a reference, a table of the breastfeeding initiation and continuance to six months globally is provided in Table 1.

Regions	**Breastfeeding Initiation Rate (%)**	**Breastfeeding rate to six months (%)**
Global	41	43
South Asia	39	55
Eastern & Southern Africa	65	54
Middle East & North Africa	35	33
Latin America & the Caribbean	52	33
East Asia & the Pacific	32	30
Western & Central Africa	40	30

Table 1: Rates of breastfeeding initiation and continuance to six months around the World (UNICEF DATA, 2019)

Breastfeeding carries immense benefits in light of contemporary evidence. The benefits for the mother and the baby as evidenced by UNICEF are tabulated as follows in Figures 1 and 2. (https://www.unicef.org.uk/babyfriendly/about/benefits-of-breastfeeding/)

Benefits of Breastfeeding for the Mother	
i.	Breastfeeding provides the benefits of promotion of bonding amongst mother and her child by the secretion of the hormone oxytocin, which has behavioural impact on the mother to enhance bonding with the child.
ii.	Breastfeeding reduces the risk of acquiring cancer of the breast. Scientific evidence shows a reduction of risk of breast cancer in women who breastfeed their children (Printz, 2015)
iii.	Scientific evidence demonstrates the protective effect of breastfeeding on the incidence of post-partum haemorrhage (Abedi et al., 2016).
iv.	Breastfeeding reduces the risk of acquiring cancer of the ovaries (Li et al., 2014).
v.	Breastfeeding is demonstrated to lower the risk of uterine (endometrial) cancer (Wang et al., 2015).
vi.	Breastfeeding has a protective role in osteoporosis.
vii.	Breastfeeding is beneficial for spacing births as it has association with reduction in fertility.

Figure 1: Benefits of breastfeeding for the mother

Benefits of Breastfeeding for the Infant	
i.	Breastfeeding provides protection from acute otitis media in infants due to presence of immunoglobulin in the breast milk.
ii.	Breastfeeding lowers the risk of acquiring gastrointestinal infections by infants.
iii.	Breastfeeding protects against respiratory tract infections including those caused by the respiratory syncytial virus (RSV) (Nishimura et al., 2009).
iv.	Studies demonstrate that there is reduced risk of acquiring asthma in the childhood by infants who are breastfed (Lodge et al., 2015).
v.	There is significant reduction in the risk of development of obesity in adolescence by infants who are breastfed.
vi.	Breastfeeding reduces the risk of developing type 1 diabetes mellitus and some evidence exists, whereby breastfeeding has protective role in development of type II diabetes mellitus in later age (Owen et al., 2006).

Figure 2: Benefits of breastfeeding for the infant

THE CURRENT SITUATION OF BREASTFEEDING IN SAUDI ARABIA

In the past decade, there has been a substantial transformation in the trend of breastfeeding primarily because of shift in the population due to development in the kingdom's socio-economic status (Amin *et al.*, 2011). According to Al-Juaid et al. (2014), exclusive rate could not be accurately determined as rates range from 0.8% to 43.9%. However, partial (mixed) feeding method was common and the category of 'any breastfeeding' has generally high rates. Available data through the years however has indicated an alarming decline in the practice of breastfeeding and its duration, especially in younger women in urban areas, with early initiation of powdered milk as well as early initiation of solid food (El Mouzan *et al.*, 2009).

One current pattern that has been noted in several countries, especially in urban environment such as Saudi Arabia, is affluent mothers having the propensity to favour bottle-feeding early after the delivery period. In countries characterised by the way of living of Western consumerism, these patterns have also been widespread in rural areas (Koosha *et al.*, 2008). The patterns of breastfeeding and its exclusivity in Saudi Arabia was investigated by Amin, Hablas and Al Qaader (2011). Six hundred and forty-one Saudi mothers with single infants visiting six rural and four urban primary care centres were selected for the study. Rural, less-educated, low-income multiparous mothers were more likely to exclusively breastfed their infants. Research from Alzaheb (2017) found that it was less likely for working mothers, Saudi nationals, and for babies born via caesarean delivery or at low birth weights to continue exclusive breastfeeding up to six months. According to Al-Juaid et al. (2014), mean duration of breastfeeding has been steadily declining over time. While the rate was 13.4 months in 1987, it fell to 8.5 months in 2010. Breastfeeding and longer duration was noted among maturity of mothers, low educational levels, rural residence, low income, multiparity and avoiding contraceptives.

In 2014, the EMRO or Eastern Mediterranean Regional Office of the World Health Organization reported greater than 60 per cent early initiation of breastfeeding with an associated 60 per cent of mothers continuing to breastfeed their children up until one year of age amongst countries in the Middle East (Al-Juaid *et al.*, 2014). However, despite this high percentage of early breastfeeding initiation, exclusive breastfeeding has been reported in only 40 per cent or less of infants of less than six months. The Ministry of Health in the Kingdom of Saudi Arabia (2010) has reported the same average of exclusive breastfeeding at four months and an average of 24 per cent in the Middle East region.

The Kingdom of Saudi Arabia has a stable economy and can be classified as a high-income nation. The government's spending on healthcare and medical facilities is as high as 6.5% of the total income of the country. The per-capita expense on healthcare afforded by the government totals USD345. Life expectancy of the country for the same year was estimated at sixty-nine years for males and seventy-five years for the females. However, despite all this financial effort made by the government, data on breastfeeding practices in the country is not sufficient for tracking and monitoring the progress of the nation. Furthermore, there is a lack of statistical evidence necessary for the development of nutritional and developmental

programmes (Al Juaid et al., 2014). A review undertaken by the Ministry of Health, Kingdom of Saudi Arabia demonstrated that the mean duration of breastfeeding has increased by 2.3 months in the last year to a mean of seven and a half months, succeeding a value of 5.3 months since the year 2009 (Ministry of Health, 2019).

The healthcare delivery system in KSA is supervised and overseen by the Ministry of Health (MOH). The healthcare system comprises the public as well as private sectors, with public-sector hospitals being managed by the MOH and, in some instances, other public sector organisations. Government healthcare facilities ensure free of cost provision of medical services for the entire population. As far as mother and child healthcare services are concerned, they are imparted through 2109 primary healthcare centres, which are dispersed across the country, 21 specialist care hospitals, and 192 general-level hospitals. KSA has an escalated birth rate of 23/1000 of the population. As much as 73.6 per cent of the hospital-based births in the year 2011 were classified as spontaneous vaginal deliveries, while 23 per cent of the births were subject to obstetric surgical procedures. One other healthcare indicator at the national level in KSA is the death rate. With respect to maternity and childbearing, the maternal death rate in the year 2009 was found to be 1.4 per 10.0000 live births, and the death rate of the foetus was found to be 16.5 per 1000 live births. Being a traditional Muslim country, as late as just twenty years ago, conventional midwives were engaged for assisting with home deliveries as a widespread practice. However, with the advent of primary healthcare centres, the practice of home births transitioned towards births at health facilities. The government then decided not to support the midwifery system, and therefore the practice was abolished as a service, although it still exists in some rural areas. Instead, obstetric nursing was evolved, which was given paramount importance and recognition compared to midwifery. In secondary care level and above, which includes tertiary care, obstetric and gynaecological care is provided to the mothers by qualified gynaecologists and obstetricians on a 24-hour basis (Ministry of Health, 2019).

Currently, there is not enough official data available on breastfeeding specific to Saudi Arabia in order to monitor progress and introduce promotion programmes (Al-Juaid *et al.*, 2014). A review done by Al-Juaid et al. (2014) presented a review of seventeen cross-sectional studies (n=17), most of which concluded breastfeeding initiation rates to be above 90 per cent. The studies reviewed by Al-Juaid et al. failed to contribute to accurate determination of exclusive-

breastfeeding rate. However, it was observed that the exclusive breastfeeding rate varied from 0.8 per cent to 43.9 per cent. The World Health Organisation does not report any breastfeeding data in the country profile for the reason that there is no concrete data accessible (World Health Organization, 2012), so policy, practice and research can be based on only a few local studies. One review by Al-Jassir *et al.* (2003) on breastfeeding data in Saudi Arabia documented deficit in statistics with partial and conflicting official data as well as the absence of standardisation of research designs on breastfeeding. The study was based on a sample of infants (n=21,507). The rationale for not feeding breast milk was stated to be not having enough milk by the mothers (66.1 per cent).

Furthermore, whilst reviewing the literature on the pattern and practices of breastfeeding in Saudi Arabia, two important challenges could be encountered: one is the lack of data and the other is the lack of uniformity in the parameters or indicators studied. For instance, two studies by Amin *et al.* (2011) and El-Gilany *et al.* (2011) are classic examples of the heterogeneity of studies being conducted on breastfeeding and, in effect, data are diverse and statistical conclusions are limited. Both of these research studies were designed to evaluate the prevalence and predictors of exclusive breastfeeding at six months in Al-Hassa, Saudi Arabia. Amin *et al.* (2011) demonstrated that 12.2 per cent of mothers (n=641) practised exclusive breastfeeding for the first six months of their child's life. On the other hand, El-Gilany *et al.* (2011) demonstrated a frequency of 24.4 per cent. These two studies each investigated several common factors, and many of these were connected to exclusive breastfeeding such as initiation of breastfeeding, employment status, and residence.

However, the findings of the two studies differed significantly on some of other factors such as the age of the mother, educational status, family income, and number of children. As a result, the two studies reported conflicting associations with exclusive breastfeeding. The clear variations in the previous findings with regard to the prevalence and possible predictors of exclusive breastfeeding in Saudi Arabia results in difficulty in collating homogeneous data for synthesis of the evidence. It indicated the lack of a standardised protocol for the investigation of certain aspects of breastfeeding in the country. The little evidence that is available is based on differing criteria, with varied populations, and little or no control of confounding variables. It is clear that a greater understanding of the associated factors is

needed to support and inform the creation of programmes to promote exclusive breastfeeding in Saudi Arabia.

The declining trend of exclusive breastfeeding and the rarity of continuation of breastfeeding for up to two years are alarming phenomena. In addition, the use of mixed feeding has been becoming the most common practice during the first three months of the child's life. These reasons, combined with limited data and statistics on specific areas of breastfeeding, have raised the need for targeted breastfeeding education. Healthcare providers should be at the frontline to continuously educate women on breastfeeding. Returning to work by breastfeeding mothers after the expiry of their maternity leaves has a deep impact on their breastfeeding practices. As of 2018, 16 per cent of the total labour force of the Kingdom of Saudi Arabia was of female workers. There has been a steady increase in the percentage of female labour force members in KSA from 1990 to 2018 (Data.worldbank.org, 2019).

RELEVANCE OF THE STUDY

The introduction of the Baby Friendly Hospital Initiative (BHFI) urged healthcare facilities to change their maternity care practices in order to support breastfeeding based on the ten steps guidelines to successful breastfeeding (Perez-Escamilla et al., 2016). In line with the current trends and patterns of breastfeeding, as well as understanding the reasons for breastfeeding decline throughout the kingdom, a focused education session was implemented in this study targeting the knowledge, attitudes, and intended behaviour of first time mothers about breastfeeding. The results should facilitate targeted interventions, especially in areas with limited resources. The specific education programme implemented in this study, based on the BFHI guidelines, could pave the way for possible revisions in strategies based on new evidence-based information.

Education of first-time mothers prenatally is a powerful tool for increasing the prevalence of breastfeeding. As breastfeeding trends decline and bottle-feeding increases in both urban and rural areas, focused education aimed at knowledge, attitudes, and intended behaviour may be highly effective in improving this alarming pattern. While the rate of breastfeeding initiation is already high in Saudi Arabia, it is hoped that the outcomes of this study will contribute to a corresponding increase in breastfeeding duration and a decrease in early weaning initiation.

Furthermore, Saudi society is influenced heavily by Islamic requirements and a long cultural tradition. It is dominated by males. Gender norms influence not only the power relations of men and women inside the family, but laws, policies, and state institutions, all of which shape healthcare provision for women. There are clear boundaries on the roles of men and women as well as strict codes of behaviour for each. A man would not discuss the topic of breastfeeding unless he were a health care professional. It is the custom in KSA and most of the Gulf region that men leave all issues of childcare to the mother. The Holy Quran says that "mothers shall give suck to their offspring for two whole years" (Surah Al-Baqarah: 233), yet this is not facilitated by society outside the home. The aspiration for this study was to begin a long process of gradual and steady change with respect to the knowledge, attitudes, and behaviours with respect to breastfeeding. This study was not aimed at influencing or changing the current gendered health systems specific to breastfeeding: this was a much longer-term goal beyond the scope of this doctoral study. Rather, the hope was to impart education and knowledge to the women themselves, specifically first time mothers; to change their beliefs and attitudes, and possibly even their breastfeeding practices. A small yet significant first step was planned - to cause women to think positively about breastfeeding, to acknowledge the desirability of its acceptance in Saudi society, to think that it might just be possible, one day. As the findings of the study became clear, an additional hope was engendered: that changing the women's understanding and attitude might also result in a transfer of knowledge and information to their husbands and sons, beginning another process of changing attitudes but in men rather than in women. Other facets of the support of breastfeeding such as the acceptance of breastfeeding in public were recognised, reluctantly, to be some considerable way in the future.

THE RESEARCHER'S ENGAGEMENT WITH THE TOPIC

Being a lecturer in the mother and child health care department in the University of Hail, and a training nurse in the maternity hospital in Hail district, my experiences have prompted my interest and deepened my passion to be thoroughly conversant with all matters related to maternal and child health care. Additionally, during my study in UK to gain an MSc in Nursing Education, I was pregnant with my second child. The difference in the services provided to me as a pregnant woman with regard to aspects of education, practical sessions and midwifery support for different issues for pregnant women and for child health care to the experience

with my first child (born in Saudi Arabia) was astonishing. From these observations I was able to identify the need to increase community awareness through health care education for women in general and pregnant women specifically. I have become passionate about breastfeeding and the importance of its active encouragement for the benefit of babies, mothers, and, indeed, nations.

I was encouraged by my mother to breastfeed my own babies and did so willingly. I have reflected on this important influence, and, indeed, it was reinforced by what many of the women said in the study. It is common knowledge in Saudi Arabia that mothers start to breastfeed their new-born babies but soon introduce bottle feeding. The single most common reason for the early introduction of bottle feeding that I had always heard (informally) was that breast milk alone is insufficient for babies, and therefore there is a tendency by many mothers to practise mixed feedings. Such breastfeeding decisions and practices are influenced by wide range of factors, including lack of knowledge, misinformed attitudes, and traditional behaviours. The intention to commit to breastfeeding is strongly associated with these elements. It was for these reasons, therefore, that I decided to explore ways of imparting information about breastfeeding to Saudi women, specifically to first-time mothers, in the hope that I might achieve a first small step towards countering the poor state of breastfeeding in my country. The study was conducted in Hail City, Saudi Arabia.

THE STRUCTURE OF THE THESIS

Chapter Two presents detailed information on the Baby Friendly Hospital Initiative. Specifically, details on what the initiative is all about, its aims and purpose, how hospitals and birthing facilities are accredited, the current evidence, and the current status of BFHI in Saudi Arabia.

Chapter Three is a presentation of an integrative systematic literature review of the current information and knowledge on breastfeeding and pregnant women, mother's knowledge and perspectives about breastfeeding, and breastfeeding intervention and education. This chapter also explores gaps in knowledge for future directions.

Chapter Four details the design of this study, justifying the decisions that were made and addressing all elements of sampling, instruments, data collection, data analysis, efforts to enhance rigour, and ethical issues.

Chapter Five displays the results of the survey data, including checks for normality and outcomes from pre-test, post-test and follow-up test.

The outcomes of analysis of the narrative data are provided in **Chapter Six**

Chapter Seven is a discussion of key issues arising from the combined findings, placed within the context of Rogers Model of Diffusion of Innovation.

Chapter Eight is a presentation of the key messages from the study with thoughts on further research.

CHAPTER TWO: BABY FRIENDLY HOSPITAL INITIATIVE

INTRODUCTION

Unrestricted breastfeeding has been found to be a beneficial form of promoting successful feeding practice (Brown and Arnott, 2014). The World Health Organization, Association of Women's Health, Obstetric and Neonatal Nurses (2009), the American Academy of Pediatrics (1997), and American College of Obstetricians and Gynecologists (ACOG) (2016) have all endorsed breastfeeding as the preferred method of feeding in the first year of life. Breastfeeding is best both for the mother and for the baby (Dieterich et al., 2013).

In 1991, the United Nations International Children's Fund (UNICEF) and the World Health Organization (WHO) developed the Baby-friendly Hospital Initiative (BFHI) as a component of a global programme. The programme's definitive objective is to guarantee that all babies around the world are breastfed (Wambach and Riordan, 2016). The Baby-friendly Hospital Initiative is a wide-reaching initiative that is being implemented around the world to promote, protect, and support exclusive breastfeeding (Pound and Unger, 2012). It is a comprehensive endeavour jointly sponsored by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF). The initiative focuses on the needs of the baby, and empowers mothers to invest their natural gift in their children's health (Guha et al., 2005). The BFHI identifies and distinguishes organisations and practice environments that effectively put into practice the Ten Steps to Successful Breastfeeding and the International Code of Marketing of Breast-Milk Substitutes (Perez-Escamilla et al., 2016). The breastfeeding initiative supports these organisations in giving information, skills, and required confidence to mothers so that they may begin and maintain breastfeeding their babies successfully or undertake formula-feeding safely. It awards outstanding credit to organisations that have done so.

It is acknowledged that there are some definitions of breastfeeding, and so it was essential to establish which definition would be used in this study. The Baby-friendly Initiative (BFI), also known as Baby-friendly Hospital Initiative, is the WHO and UNICEF's initiative to support and promote breastfeeding. The BFI defines breastfeeding in terms of exclusive breastfeeding, according to which all the infants must be fed exclusively on the mother's breast milk from birth until four to six months of age. The BFI recommends that afterwards, the children still need to be breastfed in addition to the administration of complementary foods until they

reach two years of age (Unicef.org, 2019). The strict BFI definition of breastfeeding could not be used in this study as this would be an impossible achievement in the current circumstances. This is so because exclusive breastfeeding cannot be exercised due to certain societal and cultural conditions of the mother and the baby. It was, therefore, important to separate two aspects of exclusive breastfeeding: the content of the feed and the manner of feeding. This study focused on the content of the feed that only breast milk should be given to the child though not necessarily solely directly from the breast. In this sense, exclusive breastfeeding meant that no formula milk would be included and there would be no regular top-ups with water. It will become clear in subsequent chapters that feeding only from the breast is a significant challenge in Saudi Arabia, with no acceptance or facility for breastfeeding in public places and also with paid maternity leave restricted to two months. In this study, the provision of expressed breast milk by bottle feeding was accepted as being unavoidable some of the time. This decision was made to align as much as possible with the recommended guidelines of sustained breastfeeding in a situation in which feeding from the breast was not viable outside the home.

It was recognised that this was less than ideal as babies learning to suck from a bottle may then reject the nipple, and it increases the temptation and pressure to stop breastfeeding altogether. However, as the intention was to promote babies receiving only breast milk for a prolonged period, this breastfeeding definition would be a step forward and a significant improvement in itself. This would also cause women to think about breastfeeding, understand the benefits of it, to believe that breastfeeding could be done anywhere and anytime in spite of the limitations.

BABY FRIENDLY HOSPITAL INITIATIVE

According to WHO (2015), the BFHI was adopted in line with the Innocent Declaration of 1990 that recommends the promotion of breastfeeding. In 1991, the initiative was launched to foster breastfeeding in settings such as maternity units. It recommends exclusive breastfeeding for a minimum of six months and continuous breastfeeding for at least two years. The BFHI is a joint project of the WHO and UNICEF that begun in Geneva, Switzerland. The initiative includes the Ten Steps to Successful Breastfeeding that every hospital/maternity must fulfil to be deemed ‘baby-friendly’ (Wieczorek et al., 2015). This breastfeeding movement emerged in response to the growing popularity of bottle-feeding using artificial

baby milk (Laverack, 2015). The global initiative is aimed at improving maternity and neonatal services to create an enabling environment where mothers can breastfeed their babies and give them the best start of life. The programme targets all those health facilities that offer maternity and neonatal care to ensure that the pregnant women, the newborn babies, the mothers/parents/relatives, and health professionals are educated about the importance of breastfeeding.

The BFHI programme exists in tandem with the International Code of Marketing of Breast Milk Substitutes (The Baby Friendly Initiative, 2016). Various tools were developed to help in the implementation of BFHI. Examples of these include education programmes for health professionals, including midwives and doctors and use of self-appraisal tools and assessment by UNICEF to monitor and assess the progress of organisations measured against the BFHI standards (WHO, 2015). The BFHI has been adopted and implemented in over 152 countries worldwide since it was launched in 1991. In the countries where the initiative has been started, the measurable impact has been noted with significant increases in babies being exclusively breastfed in the first six months of life. WHO and UNICEF promoted exclusive breastfeeding and continued breastfeeding for as long as mother and baby wish. This encourages the health benefits of breastfeeding. Mahr (2008) writes that babies who breastfeed will be less likely to suffer from medical problems such as eczema and grave respiratory diseases. Mothers who breastfeed also may experience health benefits that include decreased risk of lifestyle diseases such as obesity, ovarian and breast cancer, hypertension, and obesity.

Under the BFHI initiative, expectant mothers who enter a hospital or birthing facility wanting to breastfeed should not encounter practices that make early breastfeeding difficult. They should not, for example, wait hours to nurse their newly born infants or have to be cared for by health professionals who do not understand how to support successful breastfeeding (White, 1999). Mothers should be encouraged to have skin-to-skin contact immediately after birth, and if they choose to breastfeed, they should be supported to do this without formal feed being given to the baby unless medically necessary. On transfer to home, women/parents should have access to ongoing breastfeeding support. However, mothers who deliver in a baby-friendly hospital or birthing facility should be able to choose their method of feeding and be supported in this for bottle, breastfeeding, or mixed feeding (Dalzell et al., 2010). All

mothers, either breastfeeding or bottle feeding, no matter what type of birth, caesarean or vaginal delivery, should be able to room in with their infants. Mothers should not have their infants taken into hospital nurseries, whether during the day or night. Moreover, pacifiers should only be used by breastfeeding mothers who have been advised on how pacifiers may disrupt breastfeeding. However, one study has reported that bottle-fed infants who are put to bed with a pacifier have a twentyfold decreased risk of sudden infant death syndrome (Mitchell, 2007).

AIM AND OBJECTIVES OF BFHI

This BFHI initiative promotes the creation of an environment that encourages breastfeeding practices by adopting the UNICEF Ten Steps. Successful implementation of the ten steps assessment by UNICEF results in an organisation being designated as achieving Baby Friendly accreditation." The objective of the programme is to eliminate challenges to the initiation of breastfeeding (Phillips, 2003). The ten steps to successful breastfeeding as indicated in the BFHI are:

(1) A hospital or maternity centre should have a well-written breastfeeding policy that should be communicated to all of its healthcare team on routine basis.

(2) The healthcare team should also be trained on how to implement the programme;

(3) All pregnant women should be informed on the benefits of breastfeeding;

(4) The hospital should encourage mothers/parents to start breastfeeding during the first 30 minutes after birth,

5) Advising parents not to feed the babies with other food and drinking materials other than the breast milk, unless medically indicated. Moreover,

(6) They should encourage mothers to stay with their new-born babies for 24 hours;

(7) The hospital staff should also show mothers how to breastfeed and maintain lactation. They should encourage them to maintain lactation even when separated from their baby.

(8) Mothers should be advised to breastfeed their babies on demand

(9) Advise against the use of artificial treats or pacifiers to babies;

(10) The hospital should foster the development and establishment of breastfeeding support groups, and mothers who are discharged from these hospitals should be referred to one of these groups (Perez-Escamilla et al., 2016).

In practical terms, the BFHI helps and encourages mothers to breastfeed their infants in hospital, children's centres and the community, enhancing the understanding of the

important relationship between mothers and baby this being supported by the multidisciplinary team including GPs Health Visitors and other health care professionals involved in the care of mother baby & the family. The programme also encourages other baby friendly activities such as fundamental newborn care, antenatal services, immunisation and suitable management of neonatal diarrhoea and acute respiratory tract infection in this manner, rendering these health facilities as baby friendly plus hospitals. As the BFHI is implemented, it protects the lives and future of millions of infants by making baby friendly breastfeeding a universally supported practice (Broadfoot et al., 2005).

BFHI ACCREDITATION

There is a criterion for accreditation to implement the BFHI as developed by WHO and UNICEF. The full accreditation process consists of a number of steps, beginning with a registered intention to exert efforts toward baby friendly status (Schneider et al., 2007). This is then followed by an action-planning visit from UNICEF to the organsiation. A certificate of commitment is then awarded to signify that the healthcare provider facility has a breastfeeding policy in place, a plan through which to achieve baby friendly accreditation, and the commitment to implement the plan within two years (Wambach and Riordan, 2016). When a service believes that it has met all of the required standards, UNICEF carries out the preliminary accreditation evaluation and often a follow up visit to ensure that any issues identified during the evaluation have been addressed. A reassessment will take place two years (24 months) after the healthcare facility has been accredited as Baby Friendly and at regular intervals thereafter.

Achieving Baby Friendly status is not an easy task. Improvements in breastfeeding policies, practices, and staff education are needed to provide care consistent with the Baby Friendly Hospital Initiative programme.

The ten steps may be deemed a quality assessment and improvement system based upon specific actions in five breastfeeding domains (World Health Organization, United Nations Children's Fund, 1990):

1. Policy: Includes written breastfeeding policies endorsing the ten steps and the 1981 World Health Organization Code, not accepting infant formula for free or at cheap rate and forbidding direct or indirect marketing of baby formula to mothers.

2. Development of human resources: Breastfeeding training of maternity staff in wards hospitals and birthing centres.
3. Promotion and support: Prenatal breastfeeding education, in hospital support that includes early initiation of breastfeeding and promotion of breastfeeding on demand, as well as community support, which include referrals and in house support groups.
4. Protection: No baby formula, avoiding pacifiers and teats
5. Structural changes: Encompassing hospital maternity ward workflow in the form of rooming in throughout the hospital stay.

The ten steps are interconnected, for example if there is separation of mother and baby instantaneously following birth the hospital does not comply with the Step 4 (the initiation of breastfeeding and early skin to skin contact). If the mother and baby are not roomed in together (Step 7), it becomes really challenging to comply with the Step 6'no breast milk supplementation', and (Step 8) responsive breastfeeding. If adequate prenatal education (Step 3) and breastfeeding support in the hospital or maternity facility (Step 5) are not available, it is irrational to be expecting mothers to be able to breastfeed exclusively. If direct or indirect marketing of infant formula is not prevented, it may be particularly complex for mothers to remain motivated to follow the most favourable breastfeeding practices even though various breastfeeding supportive programmes are in place. If there is no support from the community for breastfeeding the moment the mother and baby leave the hospital or birthing facility (Step 10), there is a significant possibility that exclusive breastfeeding will not be continued once both mother and baby are back home and when the mother returns to work. The execution and success of the ten steps, therefore, rely on there being a well-qualified and trained healthcare workforce in place (Step 2) and this is unlikely to happen unless there are clear written policies in place (Step 1) (Brown et al., 2011).

Those hospitals that are BFHI accredited are expected to discourage the use of baby formulas for those women choosing to BF. If formula is required, either by choice or by medical prescription, it is preferable it is offered by spoon or small cup rather than a bottle to minimise the disruption to BF. WHO appreciates that sometimes the mother may not be in a position to breastfeed and also that the baby may not be getting a sufficient supply of milk. In such cases, the baby formula should be administered as a medicine from mother or donor milk may

be an option (WHO, 2015). Premature babies who are receiving breast milk may require additionally enhanced formula milk to maintain their weight, but this should not be considered as an alternative to breast milk.

IMPACT OF BFHI ON BREASTFEEDING – THE EVIDENCE

By 2010, more than twenty-one thousand hospitals and maternity facilities around the world received the Baby-friendly Hospital designation (Labbok, 2012). These baby-friendly hospitals are distributed in 160 countries with an estimated 31 per cent of these in developing countries, with 8.5 per cent in developed countries having ever received the baby-friendly hospital certification.

The evidence demonstrated from numerous studies worldwide points to the positive benefits of the Baby-friendly Hospital Initiative on breastfeeding and child health outcomes. Specifically, observance of the ten steps initiated by the BFHI had encouraging effects on breastfeeding results in the short-term, medium-term and long-term, and these effects are evident across geographies. In a recent systematic review conducted by Perez-Escamilla et al. (2016), 55 out of the 58 studies reviewed supported this relationship, and no study suggested an adverse effect of BFHI initiative. It is important to note, however, that almost all the studies reviewed within the Perez-Escamilla et al. (2016) paper utilised an observational study design reducing the robust nature of the studies. This study design was adopted due to the moral and ethical issues related to randomising babies in a trial to either formula or breastfeeding. This issue demonstrates the challenges of researching infant feeding practices. One crucial element highlighted in the literature regarding successful breastfeeding is the vital role of community support (Step 10) in sustaining increased BF rates in the long-term to ensure the advantages achieved in the short-term can be continued.

The 10th step of the BFHI programme states, 'Fostering the establishment of mother support group and refer mothers to them' is the step focused after hospitalisation and into the community. The mother and baby's family and the community are essential assets in support of continued breastfeeding. Evidence has demonstrated that mother-to-mother support groups, community counsellors, and healthcare workers based in the community are very efficacious in helping the new mother to start breastfeeding and continue for as long as she wishes (Kushwaha et al., 2014). Building the capacity of these support groups is an essential

component of the initiative to improve the baby's feeding. For instance, the PROBIT trial included polyclinics in addition to the usual birthing facilities providing postnatal paediatric care (Skugarevsky et al., 2014).

PROBIT is an abbreviation for Promotion for Breastfeeding Intervention Trial. The background for the trial was that the available scientific evidence that breastfeeding carries benefits for children had its basis solely on observational research. A possible element of bias in observational researches leads to ambiguity regarding the strength of such benefits especially in the context of industrial nations. Therefore, PROBIT was undertaken for assessing the impacts of breastfeeding promotion on exclusive breastfeeding and its duration, and how it affected gastrointestinal as well as respiratory tract infections along with atopic eczema in the newborn and infants. PROBIT, based in Belarus, was a clustered randomised trial, which was undertaken from the months of June 1996 to December of the year 1997 and included follow-up for a year. The participating healthcare facilities in the trial included thirty-one maternity hospitals/polyclinics. A large sample of 17,046 mother and infant pairs with the infants having a weight of at least 2.5 kg were included, of which 16,491 (96.7 per cent) underwent the complete one year of follow-up. The trial resulted in evidence of an increase in the duration and exclusivity of the breastfeeding practice and of the reduced risk of GI infections and atopic-eczema in infancy. The results of the trial furnished sufficient grounds for planning subsequent interventions for the promotion of breastfeeding on a stronger scientific basis (Kramer et al., 2001). A sixteen-year follow-up of PROBIT was undertaken by Yang et al. (2018). They found no beneficial effects of a breastfeeding promotion intervention on general neurocognitive functions in the child. The sole benefit was observed in verbal functioning when the subjects reached the age of sixteen years (Yang et al., 2018).

A randomised controlled trial conducted by Coutinho et al. (2005) in Brazil investigating the effects of training based on the breastfeeding practices demonstrated that satisfactory implementation of Step 10 (fostering the development and establishment of breastfeeding support groups, and defined as home visits by peer counsellors) is required for long-term effects on early and extended breastfeeding. In another Brazilian study, De Oliveira et al. (2003) evaluated the primary health care unit practice in the promotion, protection, and support of breastfeeding. This study demonstrated that higher adherence to the BFHI programme in healthcare units was associated with an improved extended rate of

breastfeeding during the first six months postpartum. Consequently, in the absence of a well implemented 10th step, low breastfeeding rates were observed in the short-term as shown in several observational studies and quasi-experiments (Silva et al., 2008; Coutinho et al., 2005; Lutter et al., 1997). The significance of fostering community support requires increased investment in structured programmes at the level of the local community.

The studies as mentioned above show that improved support groups for mothers, and building this resource is highly effective in extending the duration of exclusive breastfeeding. The feasibility of such programme's implementation outside of a research context has not been tested as an effective intervention and is likely to be setting specific and dependent on available resources. As a result, the extent to which exclusive breastfeeding can be promoted through traditional health services is highly relevant (Koletzko et al., 2006).

BFHI IN SAUDI ARABIA AND THE MIDDLE EAST

The Baby-friendly Hospital Initiative comprises of the set of policies and practices designed for promoting, protecting, and supporting breastfeeding, which are applicable to than 152 nations globally, and these countries have reported higher breastfeeding rates since the implementation of BFHI. KSA claims to support breastfeeding. Even so, there has been a reduction in breastfeeding rates including those of exclusive breastfeeding. The probable cause for this is that BFHI has limited implementation across the kingdom. Furthermore, no research was found regarding the rates of implementation and outcomes of the initiative in the Kingdom (Mosher et al., 2016). This study was the first one in the Saudi context. The research identified formula milk as the main barrier in successfully implementing exclusive breastfeeding, although legislation bans advertisement of formula preparations.

The impact of introducing the ten steps of BFHI in the Saudi hospitals can be assessed from only one reliable source, which is UNICEF data. This provides the information that in the past twenty years, twenty-nine of the 415 hospitals (7 per cent) in eleven of the total twenty-two regions in KSA are labelled as being "baby-friendly." These include twenty-seven public sector and two private sector hospitals. Every year, 1000–9000 of the total 579000 births nationally are attributed to these facilities. In these facilities, most of the medical personnel were supportive of the initiative. Fresh personnel received thirty-minute orientation sessions regarding the initiative. Hands-on training sessions were held, amounting to twenty hours to

all the personnel working in MNCH settings, and assessors observed an explicit correlation amongst training of personnel and breastfeeding rates achieved. Places where training endeavours were successful demonstrated higher breastfeeding rates (Unicef.org, 2019).

Even though the BFHI 10 steps involved in the accreditation of hospitals and birthing facilities as baby friendly are clear and unambiguous, the implementation of the programme needs to be individualised and tailored to the local community, hospitals and facilities so as to achieve best results (Turner-Maffei and Cadwell, 2004). In the Middle East, various socio-economic aspects need to be considered regarding how mothers elect to feed their children with several probable challenges. By the year 2003, breastfeeding prevalence in the Middle East amongst infants in their first year of life ranged from 40 per cent to 90 per cent (Shawky and Abalkhall, 2003; Ogbeide et al., 2004). However, following this period, there was an observed steady and consistent decline in the prevalence of mothers exclusively breastfeeding their babies being 1.7% to 58% (Alwelai et al., 2010; Murshid 2006; Khassawneh et al., 2006) with a predilection towards partial breastfeeding and formula feeding. Additionally, Al-Jassir et al. (2003) had observed specific to Saudi Arabia, there changes in the trends during the past several years as reported in a review of statistics on breastfeeding. The number of Saudi mothers exclusively breastfeeding declined in favour of mixed and formula feeding. The existing cultural custom of introducing mixed feeding routine immediately after delivery were found to be a result of various factors such as; the liberal availability of formula milk in various settings, the manner of delivery, the number of pregnancy, occupational status, and timely initiation of breast feeding (El-Gilany et al., 2008; Al-Hreashy et al., 2008). However, despite these known challenges, only a few hospitals and birthing centres are trying to adopt the Baby Friendly Hospital Initiative.

In Qatar, UNICEF and WHO implemented hospital and birthing centre indicators with the purpose of monitoring the health facility practices that influence breastfeeding and follow the prevalence of practice over time, as well as allowing for inter country comparisons (Al-Kohji et al., 2012). These health facility indicators include;

(1) Breastfeeding rate or the number of infants that were given breast milk in the 24 hours before discharge;
(2) Exclusive breast milk fed rate or the rate at which babies were breastfed exclusively starting from birth until discharge;

(3) Bottle fed rate or babies that were receiving any food or milk from a bottle in the 24 hours before discharging;
(4) Timely first suckling rate or babies that first suckled within 1 hour after delivery;
(5) Rooming in rate or the number of babies that were roomed in 24 hours a day and not separated from their mothers for greater than an hour;
(6) Pacifier use rate or the number of babies that were given pacifiers at any time during admission up until discharge (World Health Organization/United Nations Children's Fund, 2016).

Several factors that affected how Arab women fed their babies included maternal education concerning breastfeeding (Alwelaie et al., 2010), socio-economic status, occupational status, commercial pressures, and availability of breast milk substitutes, as well as support amongst peers and professionally (Benton and Grummer, 2016). Furthermore, these WHO indicators have been revised since 1998 in Qatar requiring the measurement of these indicators and the different determinants of breastfeeding in order to support the establishment of a successful intervention giving the optimal practical support for the mothers.

At present, BFI initiatives in KSA are limited, although evidence exists on the broader benefits of the adoption of breastfeeding best practice and the need for targeted interventions to address the decline in breastfeeding rates in KSA. The implementation of BFI policies in Saudi Arabian hospitals would represent one step towards promoting and sustaining positive attitudes and behaviours associated with breastfeeding in Saudi Arabian. At present, there are no mother-baby education initiatives or policies at Hail City Hospital, so studies such as the current one are needed to strengthen the evidence base and support the adoption of BFI standards in the hospital and community. Moreover, there is no commitment to addressing the knowledge of, or attitudes towards, breastfeeding. Bringing women even to learn about and to consider initiating breastfeeding may seem a small step, but still remains a significant challenge.

AN INFORMED CHOICE

Implementing the Baby-friendly Hospital Initiative has required health professionals to make significant alterations to the way in which they approach discussing baby-feeding choices with pregnant women (White, 1999). A fundamental principle is that all mothers, regardless of

feeding decision they may already have made, are informed of the benefits of breastfeeding and how it can be achieved. Therefore, on the first meeting with the pregnant women, healthcare professionals (nurses and/or midwives) do not ask what the expectant mothers are going to feed their infants. Instead, they say, 'I'd like to tell you about breastfeeding,' conveying the impression that this is the standard way of feeding babies. It would be very rare that expectant mothers will refuse to listen, and many are not aware of the issues when they hear the facts about breastfeeding (Schneider et al., 2007). Many expectant mothers in local areas appear to believe the marketing strategy relating to the benefits of 'scientifically formulated' bottle milk. Nurses and/or midwives are required by the Baby-friendly guidelines to provide information about the chemicals, which are added to formula milk. Expectant mothers are also reminded of the practical and financial benefits of breastfeeding, which include savings of up over £400 in a year (Dritsakou et al., 2016) and there is no need to sterilise feeding bottles. Equally essential is the need for continual breastfeeding education for midwives and nurses. As it is, staff training improves their attitudes, skills, practices, and knowledge on the subject, and also adds to how the mothers perceive the concept of support (Renfrew et al., 2012). Additionally, educating professionals on breastfeeding also contributes significantly to improving breastfeeding outcomes, therefore, aiding in the reduction of the health and financial burden that befalls society regarding the failure to breastfeed (Kramer et al., 2001).

Antenatal preparation

Antenatal preparation of expectant mothers for breastfeeding increases the appreciation of the value of breastfeeding, equips them with useful facts and skills in methods of breastfeeding, and also prepares them for the lurking challenges (Mattar et al., 2007). Such challenges include psychological barriers, family pressures, and time management, especially in the case of working women. Visiting a breastfeeding counsellor allows the expectant mother's access to someone who will continue offering them support and care even during the postnatal period. Although the original decision to begin breastfeeding and ultimately the resolution to stop may be impacted by other aspects including but not limited to work and family, the incorporation of breastfeeding preparation into regular antenatal care is a crucial consideration (Mattar et al., 2007).

Extensive research has revealed the vast array of benefits associated with human milk. It has been shown that breastfeeding results in an improvement in the health of both the infant and the mother in the developing and the industrialised world as well (Anatolitou, 2012). Breastfeeding has some known preventive effects of illnesses, malignant diseases, diabetes, obesity and overweight, and even neurodevelopmental outcomes (Chung et al., 2007). Some of perks of breastfeeding regarding mothers includes reduced bleeding during the postpartum period and increased involution of the uterus due to heightened oxytocin levels. Other benefits include reduced blood loss during menstruation, more spacing between children, lower susceptibility to breast cancer, and reduced vulnerability to ovarian cancer (Chung et al., 2007). Some cohort studies indicate that mothers who fail to breastfeed or wean before six months are more susceptible to postnatal depression (Pope and Mazmanian 2016). The concept of infant feeding should not be perceived as a lifestyle opinion but rather as a fundamental health problem.

CONCLUSION

The Baby Friendly Hospital Initiative's overarching objective is to increase and maintain high level of breastfeeding. The UNICEF 10 steps initially developed and referred to in the Joint Statement on improving maternity services are a set of best practice standards, demonstrating a standard of care by which practices that are detrimental to successful breastfeeding are eliminated. Evidence based practices proven to increase breastfeeding rates as promoted by the World Health Organization and the United Nations Children's Fund in 1990. Demonstrating that a properly implemented Baby Friendly Hospital Initiative is effective in improving breastfeeding rates both in the short and long term, with special attention given to the Step 10, fostering the support for the mother and child in the community, a vital initiative in terms of breastfeeding continuation. Several years after the BFHI was implemented, insights and knowledge have been gained allowing for improvements in the implementation of the initiative.

CHAPTER THREE: INTEGRATIVE LITERATURE REVIEW

INTRODUCTION

With the ever-increasing number of scientific publication, it can be difficult to assess all the available publications for relevant information (Pautasso, 2013); however, a structured literature review is useful for analysing and gaining an overview of a particular topic. The aim of a literature review is to assess published work on a particular topic or questions in the chosen field. Literature reviews aid in describing previous and current knowledge to direct professional practice (Fink, 2014). They help researchers to learn from previous studies on selected topics by highlighting the strengths and gaps in previous published data (Boote & Beile, 2005).

An integrated review was conducted to collate and summarise past research, drawing conclusions from literature on breastfeeding and the effectiveness of educational programmes amongst women in Saudi Arabia. Such a review is a broader endeavour than some other approaches, allowing for simultaneous inclusion of experimental and non-experimental studies to enhance understanding of the phenomenon of concern. Integrative reviews achieve a wide range of review goals that include comprehensive definition of concepts, holistic review of evidence, and analysis of study designs from multiple perspectives (Houser, 2008). They have the potential to play an extraordinarily important role in the development of evidence-based knowledge. Furthermore, an integrative review approach in this case allowed synthesis of empirical, theoretical, and experimental research in order to provide comprehensive understanding of breastfeeding and breastfeeding education programmes in Saudi Arabia.

Integrative reviews have the potential to contribute to existing concepts, to guide practice, and to inform policy initiatives with a solid foundation on what is known about both science and human behaviour (de Souza et al., 2010). However, combining diverse data sources is complex and challenging. A competent integrative review adheres to the guidelines for systematic reviews that ensure control of bias in study selection and evaluation. It requires an expansion of two key areas of a systematic review – the criteria utilised for selecting specific research designs and the standards utilised to judge the quality of the evidence. A

combination of quantitative and qualitative studies was included in the literature review for a complete and comprehensive overview.

The review was first conducted in May 2016, with a major revision in May 2017, and a final updating in July 2018. Additionally, as new evidence was identified throughout the study, it was incorporated into the thesis.

THE SEARCH STRATEGY

A robust and systematic approach was adopted to the literature review beginning with a review question. This then led to the definition of inclusion and exclusion criteria, and then keywords for interrogating selected databases. Keyword searches can retrieve countless results, so filtering results in a systematic way by combining keywords through Boolean operators helped to speed up the identification of relevant publications (Greenhalgh, 2014; Pautasso, 2013). While PICO (population, intervention, comparison and outcome) and PEO (Population/problem, exposure, outcomes) are popular devices for helping to set review and research questions, they are focused primarily on clinical research and evidence-based practice. The former sets searches for intervention studies (therefore only a portion of "quantitative" studies based in traditional science approaches, while the latter is designed for use in qualitative research. A preliminary review of the state of the evidence base showed that there were few interventional studies, and neither of these approaches deals effectively with mixed methods research. These were not used to set the review question in this study, though elements of them can be seen in the review question which was: **What evidence is there of knowledge, attitudes, and behaviour regarding breastfeeding, and of the effectiveness of breastfeeding educational programmes in women in Saudi Arabia?**

DATABASES

An online search was carried out on selected databases: PubMed, CINAHL via EBSCO Host, Cochrane Library, Medline, ProQuest, and Google Scholar. NCBI PubMed was selected as it catalogues over 26 million references from various sources such as MEDLINE, online books, and life sciences journals (PubMed, 2016). With access to such a large amount of literature from varied sources, the possibility of retrieving relevant articles was high. NCBI PubMed has a large number of filters which allows data to be narrowed to those which are relevant; for example, the publication year, article type/design, organism and availability. Furthermore,

NCBI PubMed has a useful feature in that it suggests citations which the database deems to be relevant to the search which may not have been retrieved by the keyword searches.

The Cochrane library was selected as it houses a large number of systematic reviews covering medicine, social sciences and public health. Cochrane reviews are world renowned as high quality systematic reviews and are updated frequently to keep information up to date. Cochrane reviewers use high quality evidence-based clinical trials to compile systematic reviews which enable health policy development and recommendations for practice. Trials are included from multiple databases such as SCOPUS, EMBASE, CINAHL, US bias in MEDLINE and MEDLINE among others (Cochrane Library, 2016). The library can be browsed by topic, and for this review, reviews in childbirth and pregnancy were searched for articles containing breastfeeding in their title.

Online searching was also conducted using CINAHL, a database of citations from journals pertaining to nursing and allied health professions. Publications were searched using EBSCO Host. These were indexed by a controlled vocabulary of subject headings that provide descriptors of the terms listed in the database. CINAHL database includes materials dating from 1982 up to the present and contains more than one million records in addition to bibliographic information for locating references, provides abstracts of most citations as well as supplementary information. Similarly, ProQuest houses journals and provides access to periodical literature in the area of nursing and allied health with over 400 publications in full text format, meeting the needs of researchers at healthcare facilities and students in nursing programmes.

Finally, Google Scholar (2016) was utilised because, like NCBI PubMed, also has access to millions of citations from a wide range of sources and has useful filters which can help to refine searches. For this review, the filter was set to publications from 2005-2016, excluding patents and citations.

Keywords

For the online search, keywords used by previous articles on the same topic were identified and utilised. With the aid of a thesaurus of keywords, the following terms were selected:

breastfeed, breastfeeding, infant feeding, pregnant, attitude, knowledge, initiative, maternity and paediatric setting.

The keywords were utilised in combination utilising "AND" and "OR" Boolean operators together with alternative spellings and phrases. The following combinations were employed: breastfeeding OR infant feeding AND initiatives, breastfeeding OR infant feeding AND education, breastfeeding OR infant feeding AND knowledge, pregnant AND knowledge AND attitude, breastfeeding AND paediatric OR pediatric (see table 1).

Table 1. Boolean operators with keywords

	breastfeeding	Knowledge	Initiative	Educational	Pregnant	Pediatric	Maternity
breastfeeding							
knowledge	**AND**						
initiative	**AND**						
educational	**AND**	**AND**	**AND**				
pregnant	**OR**						
paediatric	**AND**	**AND**	**AND**	**AND**	**AND**	**OR**	**OR**
maternity	**AND**				**OR**	**OR**	
Infant feeding	**OR**	**AND**	**AND**	**AND**		**AND**	**AND**

Inclusion Criteria

Research studies focused on pregnant women and breastfeeding, in maternity or paediatric clinic settings, containing any of the keywords in the title or abstract, and published in English during or after 2005 met the inclusion criteria. This cut-off point was chosen in order to ensure that the latest information and knowledge were gathered, specifically information from the last 10 years. Quantitative, qualitative, and mixed method studies were included to enable the review to capture the wider range of studies rather than only RCTs in order to reflect overall practice (see table 2).

Exclusion Criteria

Opinion pieces, case studies and monographs were all excluded from the review.

Table 3. Inclusion and exclusion criteria for articles

Inclusion Criteria	Exclusion Criteria
• Focused on pregnant women or breastfeeding women, in maternity or paediatric setting • Contain any of the keywords in the abstract or title: breastfeeding, attitude, knowledge, and initiative. • Published in English language • Published between 2005 and 2017 inclusive • Qualitative, quantitative or mixed method research study.	• Opinion pieces, case studies and monographs. • Policies, essays, review articles, clinical reports and assignment papers • Articles describing patient health education by hospital nurses or midwives • Focused on physiology of breastfeeding

OUTCOME OF THE SEARCH

The outcome of the database search before screening and application of exclusion criteria is detailed in tables below.

Table 4. Results of Search strategies in PubMed

PubMed		
Search ID	**Search terms**	**Number of the items found**
#1	Breastfeeding	51074
#2	Knowledge	657909
#3	Attitude	327772
#4	Initiative	127668
#5	Education	1313942
#6	Pregnant	167539
#7	Behaviour	684566
#8	Maternity	29488
#9	Infant feeding	3315
#10	#1 and #3	4327
#11	#1 and #4	10408
#12	#8 and #9	160
#13	#1 or #5	3589
#14	#8 and #11	0
#15	#11 and #4	122
#16	#11 and #14	73
#17	#15 and #7 and #3	26
#18	#11 and #12 and #16	16
#19	#13 and #12 and #10	25

Table 5. Results of Search strategies in The Cochrane Library

The Cochrane Library (Word variations have been searched)		
Search ID	**Search terms**	**Number of the items found**
#1	"Breastfeeding"	419
#2	"Knowledge"	478
#3	"Attitude "	598
#4	"Education"	89910
#5	"Pregnant"	766289
#6	"behaviour"	23334
#7	"Maternity"	567798
#8	"Infant feeding"	1146
#9	#1" and #2 "	42
#10	#1" and #3"	4327
#11	#1" and #4"	10408
#12	#8" and #3" and #10"	144
#13	#11" or #1"	30991
#14	#8" and #11"	42
#15	#13" and #11" and #8"	81
#16	#8" and #14"	43
#17	#18" and #15"	22
#18	#16" and #15" and #13"	6

Table 6. Results of Search strategies in CINAHL

CINAHL		
Search ID	**Search terms**	**Number of the items found**
S1	Breastfeeding	9510
S2	Knowledge	130,910
S3	Attitude	30440
S4	Initiative	78050
S5	Education	78050
S6	Pregnant	22278
S7	Behaviour	95440
S8	Maternity	7785
S9	Infant feeding	2109
S10	S1 and S2	862
S11	S1 and S3	378
S12	S1 and S4	587
S13	S1 or S5	31207
S14	S1 AND S6	572
S15	S1 AND S7	446
S16	S2 AND S5 AND S9	5097
S17	S8 AND S6	48
S18	S1 AND S2 AND S3	6
S19	S16 AND S7	38

S20	S17 AND S19 S7	12
S21	S4 AND S20	15

Table 7. Results of Search strategies in ProQuest

ProQuest		
Search ID	**Search terms**	**Number of the items found**
S1	Breastfeeding	13478
S2	Knowledge	133245
S3	Attitude	87791
S4	Initiative	57331
S5	Education	220079
S6	Pregnant	25146
S7	Behaviour	28101
S8	Maternity	16906
S9	Infant feeding	257
S10	S1 AND S2 AND S3	1074
S11	S10 AND S5	840
S12	S11 AND S6	445
S13	S11 AND S9	233
S14	S13 AND S7	43
S15	S14 AND S4	24
S16	S15 AND S5	22

Table 8. Results of Search strategies in Google Scholar

Google Scholar	
Articles related to breastfeeding, infant feeding, knowledge, attitude, behaviour, initiative and education.	147

Table 9 is a summary of the number of relevant, eligible articles retrieved from each database that was searched. From PubMed, seven relevant articles fulfilled the inclusion and exclusion criteria; three articles came from the Cochrane Library, three relevant articles were identified from CINAHL, and four studies were retrieved from Google Scholar and one study from ProQuest.

Table 9. Summary of the number of relevant articles retrieved specific database

Database	Number of Relevant, Eligible Studies Retrieved
PubMed	4
Cochrane	3
CINAHL	3
ProQuest	1
Google Scholar	3

The PRISMA diagram in Figure 1 shows the process of selecting the relevant articles to include in the review. After an initial search of the databases, a total of 634 articles were identified. A screening process was undertaken by review of titles and abstracts of these articles. This process resulted in the removal of 545 articles.

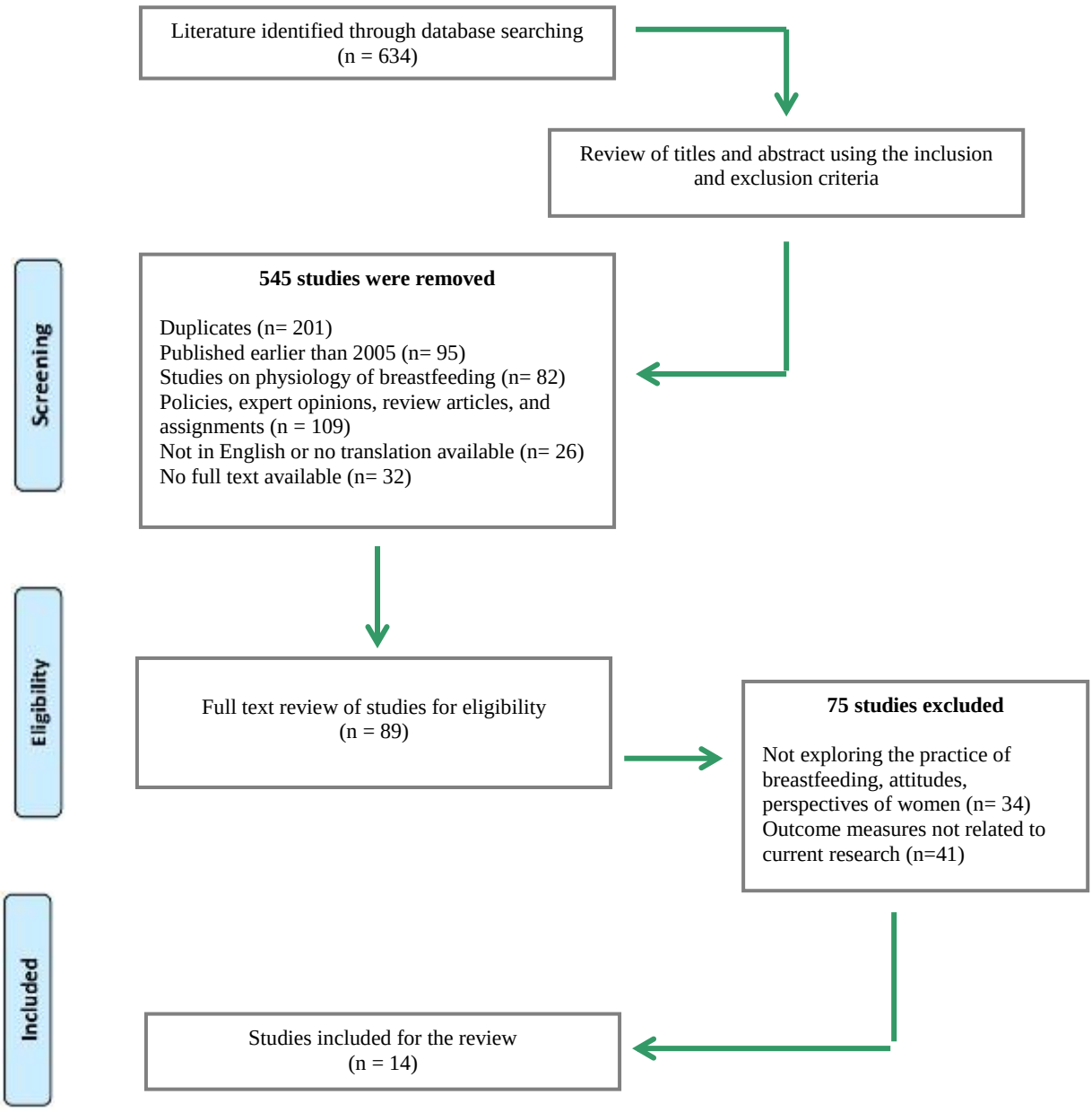

Figure 3. PRISMA Diagram

In this process, 201 studies were removed due to duplication. A further 95 articles were removed after checking the year of publication since these articles were published before the year 2005. Studies that focused on the physiology of breastfeeding or patient health education by hospital nurses and midwives were removed (n=82) since these were not the focus of the current study. The reason for exclusion of an additional 109 papers was that these were policy reviews, expert opinion articles, review articles, clinical papers, or assignment papers. Although they addressed topics related to breastfeeding, they provided only a low level of evidence. There were also articles that had been published in other language (for example, Korean or German) but there was no corresponding English translation, so these, too, were excluded (n=26). Lack of availability of full text copy resulted in the exclusion of another 32 studies.

The remaining 89 items were assessed by review of the full text of the articles. This closer scrutiny revealed that 34 had not investigated the practice of breastfeeding, as well as attitudes and knowledge of women, so these were excluded. Another 41 articles were discarded since the focus was on exploring other variables relating to breastfeeding such as effects of medication intake and psychological aspects (for example, postpartum depression) which were not relevant to this study.

Quality Assessment, Appraisal, and Data Extraction of the Included Studies

A total of 14 quantitative studies were selected for in-depth review. No qualitative studies were identified in the search but their exclusion was not intentional. There was one longitudinal study, nine cross-sectional studies, three randomised controlled trials (RCT) and one prospective cohort study.

All selected articles were assessed using the validated and well-established EPHPP Quality Assessment Tool for Quantitative Studies (National Collaborating Centre for Methods and Tools, 2010) as this review focused on the analysis only of quantitative studies (see Appendix 1). The EPHPP tool was used to check all selected papers for selection bias. Study design was assessed and cohort studies were included as they assess data both retrospectively and prospectively and have reduced error rate due to the collection of data at regular intervals. Only papers with a strong global rating according to the EPHPP tool were included in the literature review.

The template data extraction tool available on the Cochrane Database (CHMG, 2007) was selected for extraction of data from quantitative studies used in this review (see Appendix 2) However, as the template covered broad issues and was not fit for purpose in its original form for this review, it was adapted to fit the requirements of this review. A single form was used for all selected papers, completing the form using the guidelines below. The parameters in the tool were not exhaustive, therefore when required it was adapted during the review process as this is a template.

All studies were well-designed, and all were able to achieve their aims and objective. All of the studies using questionnaires (in all cross-sectional studies) performed pre-tests and pilot studies to check the validity of the questionnaires. All of the studies used appropriate statistical analyses, stating significance values and adopting the conventional $p<0.05$ as the required significance level. The relative strengths and weaknesses of the studies are highlighted in Table 10.

Table 10: Summary of the studies included in the review

Author(s) and date	Method	Sample	Results	Strengths	Limitations
Ayed, (2014). KSA	Cross-sectional	600	Exclusive breastfeeding was low (only 7.3%). Approximately 25% combined feeding at 6/12. Government workers and those with C-section less likely to breastfeed. Work was the main reason for not breastfeeding.	Government workers at high risk of not breastfeeding - allowing comparison against other professions.	Details of the questionnaire were not provided.
Al-Binali, (2012) KSA	Cross-sectional	384	Younger, educated mothers less likely to breastfeed. Initiation very low.	Showed that profession can affect choice to breastfeed	Inclusion started at 19 years and not 18 years
Al-Madani et al., (2010) KSA	Longitudinal 2 phase study	160 pregnant and post-partum women	95% of pregnant women intended to breastfeed exclusively but only 52% actually did. Worse affected were educated, younger working mothers.	Validated Iowa Infant Feeding Attitude Scale used: modified to population needs	No details on ethics approval. Small sample size.
Al-Jassir et al., (2006) KSA	Cross-sectional	4872 women with young children. Data about last child.	Lower education and lower age mothers chose mixed feeding more. More Saudi mothers chose not to exclusively breastfeed than non-Saudi mothers.	Large sample size, ample variables, high volume of data/trends.	No details on ethics approval or consent process

Al-Juaid, (2016) KSA	Prospective cohort study	600 mothers who delivered full-term healthy single babies	Breastfeeding was initiated by 36.1% within one hour of delivery, and the majority of infants 76.5% received breastmilk within the first 24 hours.	Mothers with higher education less likely to initiate breastfeeding.	No details on ethics approval or consent process
Alyousefi et al., (2017) KSA	Cross-sectional	322 mothers	Only 13.7% of all infants were exclusively breastfed at the age of 6 months.	Questionnaire tested on 10 Saudi mothers from the target population.	Participants were enrolled from one hospital
Elmougy et al., (2018) KSA	Cross-sectional	280 mothers (136 working and 144 non-working)	The overall awareness of breastfeeding benefits and duration was 78.1%, with no significant difference between working and non-working mothers.	This study showed that the working mother are less likely to initiate breastfeeding comparing with non-working mother	No details on ethics approval or consent process
Amin et al., (2011) KSA	Cross-sectional	641 mothers with single child (and not twins or more)	Rural location, increased age of mother, multi-parity, and normal delivery were all associated with higher incidence of exclusive breastfeeding.	Declared focus on specific population in one region of KSA	Local study may not represent the national picture.
Alwelaie et al., (2010) KSA	Cross-sectional	848 from 3 hospitals in Riyadh + antenatal classes	Approximately half of the mothers in the study chose to mix-feed. The main reason was poor health following birth.	Arabic questionnaires generated, improved validity in data collection	This was a local study and may not reflect national views
Al-Zowaydi et al., (2014). KSA	RCT	114	Reduction in breastfeeding was not due to lack of knowledge but due to work and post-partum pain. Breastfeeding rate increased in study arm.	Randomisation of participants meant reduction in study bias	Very little detail on the pre-existing questionnaire
Khalil and Mahmoud, (2012). KSA	RCT	114	Inability to breastfeed in public, lack of support, and insufficient milk were barriers to breastfeeding. Significant increase in rate of breastfeeding.	Personalised health education-consultation intervention – first in KSA	No information in structured questionnaire used.
Hanafi et al., (2014) KSA	RCT	360 pregnant women	Educational Intervention in pregnant women significantly increased attitude and practice to breastfeeding. These were linked to mode of birth, work, parity and age.	Randomised allocation of participants meant reduced risk of bias in final data. Validated questionnaires were piloted.	Lacking detail on sample size calculation, and power.

Shommo & Al-Shubrumi (2014) KSA	cross-sectional study	60 mothers	The findings of this survey are limited to factors on breastfeeding in relation to knowledge, attitude and practice.	The earlier survey investigation in Hail region has showed the needed of implementing more study with intervention to increased knowledge and attitude regard the important of breastfeeding	Small sample size.
Orabi (2016) KSA	cross-sectional design	100 Saudi women	(62%) had a good knowledge regarding breastfeeding health benefits; only 10% from the participant have a positive attitude toward breastfeeding.	Used IIFAS and focus on specific population in one region of KSA	A small sample size and number of settings were from the major study limitations that may restrict the generalisation of the study findings.

OVERVIEW OF RESULTS

Most of the papers echoed similar findings: educational intervention and supporting mothers can increase the rate of breastfeeding and exclusivity. More educated and working mothers were less likely to breastfeed due to work-life balance and pressure. Furthermore, younger first-time mothers were less likely to maintain a regime of exclusive breastfeeding than older mothers with multiple children.

EVIDENCE ABOUT ATTITUDES TO BREASTFEEDING AND THE IMPACT OF EDUCATION PROGRAMMES

Breastfeeding is currently regarded as one of the most important elements of child health and development. However, bottle feeding is seen to be replacing traditional breastfeeding in some countries, including Saudi Arabia. This is seen as a symbol of modernism. Al Juaid et al. (2014) describe various reasons like modernism and increasing urban settlement to have association with the reduction in breastfeeding rates (Al Juaid et al., 2014). In addition, in some developing countries bottled formula milk is being advertised as more scientific and therefore better. The breastfeeding duration is now shorter, and the tradition of

breastfeeding for two years is becoming a rare practice, especially in urban areas (Al-Jassir et al., 2006). Although most Saudi women seem to have knowledge about breastfeeding, their behaviours are not in line with the knowledge. Al-Jassir et al. (2006) carried out a large cross-sectional national study to examine the attitude and practices of mothers towards breastfeeding. Approximately 50% of the maternity hospitals in the country were included in the study giving access to a large mixed sample.

Impact of Education Programmes

Study conducted by Al-Jassir et al. (2006) the study included 4872 mothers (mostly Saudi) to study infant feeding patterns. Information was collected about their feeding practices with their youngest child using pre-tested questionnaires. A significant factor in the decision to introduce mixed-feeding was linked to nationality and education level of mothers (Al-Jassir et al., 2006). Saudi mothers were less likely to introduce bottles than non-Saudi or university-educated mothers ($p \leq 0.01$) suggesting that, despite the high level of education, the importance of exclusive breastfeeding was not impacting on educated mothers. The reason for this needs to be understood and targeted to change the trend.

More non-Saudi nationals had received education on breastfeeding than Saudi mothers ($p \leq 0.05$), suggesting that education needs to be focused on Saudi nationals and also older mothers as results from Al-Jassir et al., (2006) found that illiterate women and those over 40 years were less likely to receive education on breastfeeding ($p \leq 0.01$) indicating that these groups needs to be specifically targeted in any educational interventions. Interestingly, despite the lack of education, illiterate mothers were less likely to introduce bottles than university-educated mothers who were most likely to have received education on the benefits of breastfeeding (Al-Jassir et al., 2006).

In a study exploring the knowledge of, attitude to and practice of breastfeeding among women before and after health education in Al-Madinah Al-Munawwarah; KSA, Hanafi et al. (2013) the study involved 360 mothers attending primary health care centres in Al-Madinah Al-Munawwarah were selected randomly and allocated randomly to receive health care session. An antenatal questionnaire was filled in initially by both intervention and control groups and filled again after health education only by the intervention group. Postnatal questionnaire filed in both groups. Found significant differences within the intervention group before and

after the health education session, leading to the conclusion that such an intervention had clear benefits overall. Nevertheless, there is considerable room for improvement and the percentages of women who initiate early breastfeeding, give colostrum and aim to continue breastfeeding and apply feeding on demand, must be raised even more.

Attitude and Knowledge

A cross-sectional study of 600 mothers aged between 18 and 47, with infants aged between 6 and 12 months, showed that knowledge about breastfeeding was adequate among 52.3% of participants, excellent among 30.7% of them and unsatisfactory among 14% (Ayed, 2014). Another study conducted by (Orabi, 2016) 62% had a good knowledge regarding breastfeeding health benefits, only 10% from the participant have a positive attitude toward breastfeeding.

In another a cross-sectional study by Alwelaie et al. (2010), there were mixed results on the attitude of the Saudi women towards breastfeeding. The study was based on investigation of knowledge and attitudes of women in Saudi Arabia about breastfeeding. The study involved 848 women enrolled in post-natal as well as post-caesarean section wards, together with women who were engaged in antenatal clinics. Most of the participants were in the age bracket of 21 to 30 years, and 49.8% of mothers had college or higher education. According to this study, not all women who participated in the study had knowledge about breastfeeding and its benefits. Indeed, only 54.2% of mothers received breastfeeding education when they were in hospital for delivery, while 55.8% of mothers had received breastfeeding education previously. Although most Saudi Arabian women have education on breastfeeding, it is still not widely practised.

The only findings to date on breastfeeding practices and views in the Hail district come from a small cross-sectional study included 60 women (Shommo and Al-Shubrumi, 2014). The education level of the participants was mainly university (39.7%) and secondary (24.1 %) were included in the study. Most of the participants in the study were from middle economic status. Most of the mothers 31.7 % mentioned only two benefits and the other participants were had some misconception. Seventy percent of the mothers initiated breastfeeding while thirty did not. The major reason for ceasing breastfeeding before two years was mothers work 38.6% followed by disease (15.8 %).The findings of this survey are limited to factors on breastfeeding in relation to knowledge, attitude and practice. However, this study will test the impact that

a focused education session exerts on the knowledge, attitude, and intended behaviour regarding breastfeeding of Saudi women who are pregnant for the first time. The lack of large well designed studies for the population of Hail highlights the need for interventional studies in this region where the study reported in this thesis was conducted.

Intentions and Behaviour

As a result of the decline in exclusive breastfeeding in Saudi Arabia due to many socioeconomic reasons, Al-Madani et al. (2010) investigated the attitude of mothers and how this may have affected some of the reported trends. The authors used appropriate statistical tests to show significant results, but the small sample size and high dropout rate post-partum stage indicate the need for caution in interpretation. Of 160 participants in stage one of the research only 73 (47%) participants remained in the study at follow-up testing. This study was a local study in a small area compared to some of the other studies which were national projects (for example, Al-Jassir et al., 2006). Al-Madani et al. showed that most Saudi mothers (95%) in their third trimester of pregnancy intended to breastfeed exclusively for the first 6 months as per WHO recommendations. However, after the birth, only 23% actually breastfed although the intention to breastfeed exclusively was still there. Despite the majority of the participants having positive attitude on breastfeeding and an excellent knowledge on breastfeeding, only 24.7% practised breastfeeding in the first six months (Ayed, 2014). Furthermore, only 7.3% practised exclusive breastfeeding (Ayed, 2014). It is clear that even those who have knowledge and positive attitudes on breastfeeding do not engage in the practice. Parents continue to feed their babies on mixed diets including breast milk and artificial formulae.

Opting for Mixed Feeding

Most mothers in Al-Madani et al (2010) study chose a mixed-feed regime (52%). The reasons were not producing enough milk (43%) and running late for chores and appointments. Only 5% of bottle feeding was due to work commitments, but this could be explained by 87% of participants not being in employment anyway, therefore, skewing the data. The high percentage of mothers believing that they did not have sufficient milk indicates the need for education to help with the low confidence and the low prevalence of breastfeeding nationally (Al Juaid et al., 2016). It is evident that most educated mothers in urban areas in Saudi Arabia have embraced bottle feeding even at the early stages of the post-natal period (Alwelaie et

al., 2010). There is ongoing behavioural change in breastfeeding in Saudi Arabia because mothers have embraced a trend whereby shortly after the initiation of breastfeeding, most mothers also introduce supplementary milk to their babies (Al-Jassir et al., 2006). According to (Alyousefi et al., 2017), 94.4% of the 322 participant were successful in initiating breastfeeding on the first day of delivery, only 13.7% from the infants were exclusively breastfed at the age 6 months and more than half of them had received mixed feeding since birth, 18.3% of them had received exclusively bottle-fed for the first six months of their life.

Alwelaie et al. (2010) found that 48.5% of mothers chose to engage in mixed feeding while 36.8% of mothers preferred exclusive breastfeeding. Al-Binali (2012) performed a cross-sectional study with professional women which included 384 teachers from Abha district in South West Saudi Arabia. Younger and more educated females tend to resort to mixed feeding earlier than older illiterate women (Al Juaid, 2016). Employment type, culture, and religious background can impact on breastfeeding practice. The study by Al-Binali (2012) shows that only 31% of mothers initiated breastfeeding immediately (within one hour of delivery) and only 8.3% maintained exclusive breastfeeding for 6 months. As seen previously, the main reason for mixed-feeding was insufficient milk (44%) and work-related problems (38.5%).

According to (Al-Jassir et al., 2006), found that a high proportion of mothers (78%) had received education on breastfeeding though midwives, nurses and medical staff, but despite this, 76% of mothers had switched to mixed feeding by 3 months. Most mothers gave colostrum (92%). The main reason for introducing bottle feeding was similar to that found by Al-Madani et al., (2010) 48% of mothers said that they felt that they had insufficient milk. The Iowa Infant Feeding Attitude Scale (IIFAS) survey showed that whilst most mothers agreed that mixed feed was not necessarily the best option for modern mothers and babies (43%), most also thought that formula was just as good as breast milk. Breast milk is clearly the best option for babies as it has many health benefits, for example, reduced wheezing and incidence of asthma in children and something that clearly needs to be included in educational programmes. Mothers were split almost equally on whether bottle or breastfeeding was the best choice for working mothers. Furthermore, results showed that mothers agreed that formula was a better choice for mothers wanting to return to work (Al-Madani et al., 2010).

Work Commitments and Religion as Barriers to Breastfeeding

Aside from insufficient milk, the other two main reasons for introducing formula were lack of time due to work or poor education (Al-Jassir et al., 2006). This is in contrast to the finding of Al-Madani et al., (2010) whose local study found that most mothers were unemployed but still introduced bottle-feeding. On a national level, uptake of breastfeeding was often affected by work commitments and educational level, there was inconsistency in how these effects were seen. While there may seem to be a contradiction regarding the impact of education on breastfeeding uptake in that rurally, women with little education more commonly tend to breastfeed while more affluent women in cities have a greater likelihood to adopt bottle-feeding, there is an explanation. The former group of women have little option but to breastfeed since they are unable to afford or to access formula milk. Their relative poverty and lack of opportunity to choose formula feeding are the predominant factors, though culturally it may be more acceptable, too, to breastfeed in rural settings. More affluent women have more ready access to formula feeding as a choice, and have different cultural pressures, with breastfeeding seen to be a low-status activity. Greater education in this group might lead to the choice to breastfeed, particularly since such women are more likely not to need to work, or to work in professional occupations with more flexible working patterns.

The study by Al-Binali (2012) confirmed that one of the reasons for giving up an exclusive breastfeeding regime by mothers in employment was their work commitment. The study showed that few mothers had attended study sessions on breastfeeding but a high proportion were willing to attend if the classes were convenient (Al-Binali, 2012). Therefore, this supports the need for an accessible educational programme on breastfeeding for women in employment to help increase breastfeeding rates. The female workforce has increased globally, not just in Saudi Arabia, meaning that the impact on breastfeeding mothers has also increased. This is a key area of policy development and intervention. Currently there is a shortfall in this area with limited studies and policies aimed at improving breastfeeding in the workplace. Due to the gap in policies offering support to breastfeeding mothers in the workplace, Saudi Arabia has the opportunity to lead in this field in the region.

A new study conducted by (Elmougy et al., 2018) included 280 mothers (136 working and 144 non-working). The overall awareness of breastfeeding benefits and duration was 78.1%, with no significant difference between working and non-working mothers. This study showed that

working mothers were less likely to initiate breastfeeding comparing with non-working mothers.

One of the main reasons given by teachers for initiating breastfeeding and wanting to keep up the practice was religion: most followed Islam and wanted to follow the teachings of the Quran which states the mothers should breastfeed for up to two years. In contrast, over 51% of healthcare workers in KSA were non-Muslim, and their reasons for wanting to breastfeed was different (Al-Binali, 2012), supporting targeted educational needs.

The Need for Support as Well as Education

An educational intervention trial was used by Al-Zowaydi et al. (2014) to improve breastfeeding practices among women in Al-Qassim, Buraidah in Saudi Arabia. In this study, 114 mothers aged between 18 and 45 were randomly allocated to two groups (control and intervention); 24% were in their first pregnancy while 76% were in later pregnancies. The educational intervention chosen by the investigators consisted of a one to one session during the monthly check-up highlighting the health benefits of breastfeeding and how to manage some of the issues that hinder breastfeeding such as post-partum pain and work-life balance. The post-intervention results showed an increase in the mothers' intention to breastfeed from 22% to 48%. At the same time, the perceptions about breastfeeding also improved as the mean score for mothers who perceived formula milk to be less healthy than breastfeeding was 4.84 after the intervention from 4.62 before the intervention (Al-Zowaydi et al., 2014). The authors conclude that the intervention was effective not for its informational value, but because it offered ways and suggestions to help mothers to overcome environmental barriers to breastfeeding, including absence of child care facilities at the workplace and the baby becoming sick. This strengthens and supports the need for targeted appropriate educational interventions.

The Need to Address Practical Barriers

In a study that included 114 mothers randomly allocated to two groups (control and intervention), Khalil and Mahmoud (2012) also showed a high prevalence of a positive attitude towards breastfeeding, in the group that had received an educational intervention. Participants were aged between 18 and 45 years old therefore covering a range of younger and older mothers to reduce age-specific bias. There was no significant difference in the

sample allocation providing confidence that the final result was not due to a skew in allocation of delivery type or mothers' age. Reasons for decreased breastfeeding in this study included pain during breastfeeding and a lack of support from the partner or the wider care team. Intervention helped to tackle some of these issues. Among the women who were administered the intervention the rate of exclusive breastfeeding increased from 26.3% to 45.61%, which reflects the success of the intervention (Khalil and Mahmoud, 2012).

The intervention mainly consisted of face-to-face discussions with the participants about breastfeeding. The discussions included information obtained from WHO and UNICEF guidelines regarding the importance and benefits of breastfeeding. In addition, the participants were offered counselling to address any problems or apprehensions they experienced during breastfeeding. There was a significant difference between intervention and control group at p=0.034. The intervention was largely successful because it offered solutions to improve women's ability to overcome physical pain associated with breastfeeding, lack of support from the father, and absence of healthcare support.

The Impact of Age and Education Level

Amin et al., (2011) explained that mothers in the Saudi Arabian region of Al Hassa were more likely to initiate early breastfeeding and maintain exclusive breastfeeding if they were older and less educated (echoing results from Al-Jassir et al., 2006), had more than one child, and had normal vaginal delivery. This data also suggests that first-time mothers needed assistance with breastfeeding. On the whole, however, 77.8% of mothers initiated breastfeeding within the first day of childbirth; but the rate dropped dramatically to 12.2% before the child was 6 months old. Educated as well as less educated women in Al Hassa were liable to hold misconceptions about breastfeeding. Amin et al., (2011) found that approximately 22% of mothers who started breastfeeding late or never breastfed did so for physical reasons, that is, low milk flow, sedation or ill health associated with caesarean-section rather than attitude. More support such as better pain management after caesarean-section was recommended to overcome some of these problems.

Increasing Motivation to Initiate Breastfeeding

In a study conducted by Hanafi et al. (2014), a total of 360 women were allocated to two equal groups, one of them receiving an intervention and the other group participating in routine

health education during antenatal visits. The group intervention involved three health education sessions: the first one at the start of the study, the second after two weeks, and the last session four weeks after the study commenced. The investigators found that the educational intervention delivered to gravid participants in Al-Madinah Al-Munawarrah (Saudi Arabia) led to significant increases in the motivation of the participants to breastfeed. It was found with this particular sample that awareness about breastfeeding was low, especially when it came to exclusive breastfeeding. The study identified significant differences between the two groups with regard to the early initiation of breastfeeding ($p = 0.000$), giving colostrum ($p = 0.014$), rooming in ($p = 0.002$), feeding on demand ($p = 0.021$), day/night feeding pattern ($p = 0.002$) and the intention to continue breastfeeding ($p = 0.000$). Hanafi et al. (2014) concluded that the success of the intervention was due to the fact that it increased the motivational levels of the participants especially when that support came from healthcare workers, relatives, and other mothers. It was recommended by Hanafi et al. (2014) that follow up studies on the promotion of breastfeeding should be undertaken. Initiation of breastfeeding is an important aspect in continuation with the regime and can be the vital variable to identifying factors that can be included in educational programs to increase breastfeeding rates.

CONCLUSION

The rate of breastfeeding is similarly low in Saudi Arabia and other GCC countries as they stay around the low to mid-30%. However, some educational interventions have been successful in increasing breastfeeding rate and duration in these countries. The main components contributing to the success of these interventions include their ability to educate mothers about the importance of breastfeeding. More important than education seems the ability of these interventions to empower and motivate mothers to overcome the social, relational, and environmental barriers to breastfeeding. The research shows that the law can also play an effective role in supporting an increase in breastfeeding practice.

Research to date, largely in the form of cross-sectional surveys, has demonstrated that, despite an overall positive attitude towards breastfeeding among Saudi Arabian mothers, there are considerable gaps in women's knowledge of the health benefits of breastfeeding, which, coupled with social, relational and environmental barriers, diminish mothers' willingness to continue breastfeeding for the recommended two years period. Review shows

the misconception that many mothers felt they had insufficient milk for their child which was one of the top reasons for giving up exclusively breastfeeding; a false impression that needs to be addressed (Alyousefi et al., 2017). There needs to be more effort into increasing confidence of first time mothers as well as mothers of multiple children who lack confidence in their ability to breastfeed. Interventions at antenatal stage and post-partum have been shown to work well by increasing breastfeeding initiation and continuation.

These are all areas of unmet need and, while the limited number of educational interventions carried out so far have shown an impact, more needs to be done to address these needs. Intervention programmes have to be designed and implemented for both mothers and healthcare professionals, and increased public awareness of the benefits and best practice of breastfeeding is needed to support its adoption across the society. The present work aims to bridge some of the knowledge gaps on this topic and help inform and guide health policy making to promote breastfeeding in the Hail community and nationally.

In terms of recommendation for practice, from the above explanation of the sampling strategies employed, the positive influence of the involvement of the patients (service users) during the planning of a workshop/training courses is apparent. More specifically, interaction and discussion between groups can enhance the processes of the training or workshop, and help to achieve its aims.

The review shows that the current level of knowledge on the benefits of exclusive breastfeeding is high but despite this, in practice exclusive breastfeeding is low due to many socioeconomic factors across many districts in KSA. The review also shows that there are still misconceptions with regard the benefit of exclusive breastfeeding.

There is a major gap in the support given to working mothers and also in supporting breasting practice in public, for example, women feel embarrassed to breastfeed in public and there needs to be more facilities to encourage this. The review highlights the decline in trend of exclusive breastfeeding among Saudi nationals who are less likely to maintain long-term breastfeeding regime compared with non-Saudi nationals. Policies need to cover increased education, better pain management for mothers especially after caesarean section and also

increase in baby-friendly environments, such as restaurants, shopping malls, and doctors' surgery among others.

CHAPTER FOUR: STUDY DESIGN

INTRODUCTION

Evidence gathered in the integrative review conducted from the previous chapter demonstrated the potential impact of educational intervention on breastfeeding in relation to the views and perception of Saudi women towards breastfeeding. As gaps in knowledge were uncovered, particularly in breastfeeding knowledge, behaviour, and attitudes, focused educational intervention programmes tailored towards these areas may be carried out in order to enhance and promote efficiency of breastfeeding in health organisations and in healthcare as a whole in the region. However, the investigative review also presented the reality that only a small number of research studies had explored these concepts in the Middle East. Accordingly, this study was conducted to explore relationships between these variables using a mixed methods research design. This chapter presents in detail the research paradigm, study aims, research questions, study design, sample, intervention, data collection process, data analysis strategy, and response to ethical issues for this study.

RESEARCH PARADIGM

Collectively, research methods are schemes utilised by researchers in managing a study in order to pool together and assess information pertinent to the research question. Incorporated in these systems is the establishment of a philosophical paradigm. A paradigm is a broad view or perspective of something. It is recognised as a worldview that sets the value of research (Lederman and Abell, 2014), a comprehensive approach to a particular area of interest. A research paradigm, therefore, is a point of view from the research community about a study that is founded and based on collective theory, principles, models, and practices (Johnson and Christensen, 2012; Taylor *et al.*, 2006).

Several approaches in conducting research may be classified paradigmatically. For instance, researchers may refer to quantitative or qualitative research, or they may refer to certain paradigms across all the possible kinds of knowledge that can be generated through research. Consequently, the research paradigm guides the researcher throughout the empirical research process, from setting the research purpose to selecting data collection methods to analysing the data and reporting the findings. A paradigmatic view, for these reasons, provides overall, overarching categories in which certain kinds of research and ways of knowledge generation and verification may be placed.

In the paradigm debate, different types of methods can be described as either quantitative or qualitative (Zhiyong, 2007). Correspondingly, the positivist paradigm underlies quantitative methods and the constructivist or interpretivist paradigm underlies qualitative methods. The paradigm of positivism, ontologically, asserts that a reality exists outside of human minds and is controlled by unalterable mechanisms and natural laws. In contrast, the paradigm of interpretivism or constructivism contends that reality is socially constructed contextually, and knowledge is a human construction (Trainor and Graue, 2013).

Epistemologically, in the paradigm of positivism, it is possible and important for the researcher to explore and know the reality that exists. In the process of exploration, the researcher and the researched are independent, and objectivity is emphasised. The researcher's values and other biases are excluded. On the other hand, the paradigm of constructivism or interpretivism chooses the stance of subjectivity (Munhall, 2007). The researcher is value-bound and has to employ approaches of subjective interaction and communication to gain access to the participant's thoughts and the reality existing in the participant's mind. The researcher and the participant are inseparable. Driven by these ontological and epistemological perspectives, the positivist and constructivist paradigms have their respective preferences in study design. Positivism insists on empirical experimentation, characterised by quantitative methods, whilst constructivism or interpretivism is inclined toward dialectic methods, typical of qualitative methods.

Furthermore, quantitative and qualitative studies are differentiated by diverse outlook of personal behaviour (Creswell and Clark, 2011). In quantitative studies, it is understood that cognition and behaviour are predictable and explicable. Conventionally, the hypothesis of determinism (that events are decided by a single or more causes) is established in quantitative research (Salmon, 2007). For instance, the method by which a child learns to read is established by one or more reasons. Qualitative researchers, alternatively, generally look at human behaviour as dynamic and changing over time and place, and typically are not concerned with generalising beyond the specific individuals who are studied (Creswell, 2007).

The choice of pragmatism in research philosophy is therefore also echoed in the collective application of various research designs. Pragmatism is a practical approach in solving the problems and has a strong association with mixed research methods (Baran and Jones, 2016).

STUDY DESIGN

Employing the most appropriate research design to address a clinical enquiry is vital in producing the best evidence. The choice of study design is based on consideration of the kind of research question being posed and the type of evidence needed. This study employed a mixed methods design, taking advantage of the benefits of both quantitative and qualitative methods. It is an emergent area of methodological preference for various academics and researchers from across a range of discipline. Mixed research study designs see the positive value in both quantitative and qualitative views of human behaviour (Creswell and Clark, 2011). This study design presents an alternative to the quantitative and qualitative traditions by advocating the utilisation of whatever tools are required to address the research questions under investigation (Teddlie and Tashakkori, 2009).

Mixed methods have been defined as a type of research design in which qualitative and quantitative approaches are utilised in types of questions, research methods, data collection, and analysis procedures (Creswell, 1994). Studies with this approach view the utilisation of either quantitative or qualitative research alone as being incomplete and limiting for many research problems. Mixed research studies, as a result, utilises a mixture of qualitative and quantitative approaches to appreciate the situations fully. Both inductive and deductive reasoning were applied to this study. For instance, it utilised inductive reasoning when exploring for patterns in qualitative data, and deductive reasoning in the use of questionnaires and a research intervention.

Quantitative information delivered in a hard data format is amenable to statistical analysis and standardised tests of validity and reliability. Qualitative data add an in depth understanding of research results and enable the researcher to explore anomalies or subgroups within the data. Working with both methods gives the study a cross check of research results. Qualitative data highlights the importance of statistical findings by supplementing a narrative perceptive to quantitative data. Qualitative methods can also assist the researcher who wants to test the validity of the study questionnaires by sequentially utilising mixed methods (Hesse-Biber, 2010).

AIM AND RESEARCH QUESTIONS

Study Aim

This study explored the effects of a focused education intervention on the attitudes, knowledge, and intended behaviours about breastfeeding by Saudi women who were pregnant for the first time.

Personal Reflection

I knew from the start (in my heart, but reluctantly) that widespread change in breastfeeding practice would not result from the study. I hoped that knowledge and attitude might be affected positively, but even a small change in behaviour – or intended behaviour if not actually followed through – would represent an important first step. Indeed, even causing women to accept the possibility of breastfeeding by changes in knowledge and attitude would be accepted as a positive outcome. This desire that seemed doomed to failure caused me many periods of self-doubt and even indecision. These were addressed through supervision with an experienced researcher in child and family health and with midwives who understood the frustration of encountering resistance to an obviously beneficial public health measure.

Research Questions

The current study posed the following questions.

- How does a focused educational intervention affect the knowledge of first-time expectant Saudi women towards breastfeeding?
- How does a focused educational programme impact on the attitudes of first-time expectant Saudi women towards breastfeeding?
- What are the consequences of a structured educational programme on the intended behaviour of first-time pregnant Saudi women towards breastfeeding?

OVERALL APPROACH

Basis of the study

A theoretical framework relates to the structuring of a study according to a particular theoretical perspective selected by choice, by affiliation to an organisation, by existing

literature and many other routes. Effectively, the chosen theory guides the sort of questions that are asked and the sort of answers that are to be accepted. In some fields this is important - for example in psychology, where researchers will support one or other theorist's model of psychology and apply this (exclusively) to their research.

The main weakness of this is that a decision is made at the start that a particular perspective on a topic is correct, and other explanations are excluded. For example, the UK has an improving but still high rate of teenage pregnancy. Teenage pregnancy might be held in one theoretical framework held to be a matter of social class, or deprivation, or psychological sub-type. Only the selected explanation is tested. Others would say that the causes of teenage pregnancy are not so clear cut and are linked to many different factors.

In practical research to find a solution to a complex problem (such as the failure to breastfeed exclusively for 6 months), it is recognised that many internal and external factors are at play: beliefs, learned behaviour, cultural limitations, religious guidance, marital relationships, employment law, and so on. When little research has been conducted in the specific cultural context, it is unwise to set out with a presumption of the causes. An exploratory study accepts all perspectives, making sense of these and devising a solution that encompasses many factors, remaining practical and realistic about the amount of change that might be expected (sometimes in a long time-frame) and often incorporating a series of small steps to address factors sequentially.

Exploratory research

In order to measure changes due to the focused education intervention, an exploratory method was utilised, assessing progress on breastfeeding across several domains: knowledge, attitudes, and behaviours. It utilised a mixed methods design using scored tests (pre-test and post-test) as well as a follow-up interview. A pre-test was conducted prior to the introduction of the breastfeeding education intervention, and a post-test was also implemented immediately after the programme. At two months after the intervention (postnatally), a follow-up interview was undertaken which included a follow-up test.

Study participants were assigned to an intervention group or to a comparison group. The current study implemented a quasi-experimental design. Studies with quasi-experimental designs entail an intervention but fail either to include a control group or to allocate through

randomisation. Randomisation is the signature of true experimental design studies; that is, randomised controlled trials (Berger and Kuckertz, 2016). The non-equivalent control group before and after design, the most universally employed quasi experimental design, entails two or more groups of study participants that are assessed before and after carrying out an intervention programme (Polit and Beck, 2010). This design is comparable to the true experimental design with the only difference being that study participants are not randomly assigned to a group. Despite the absence of randomisation, which helps to ensure equivalent intervention and control groups at the start of the study, quasi experiments are equally valid and reliable in the sense that the gathering of pre-intervention data permits the researcher to establish whether study participants have similar features and characteristics prior to the implementation of the intervention. If the intervention and comparison groups are similar at the outset, it can be deduced reasonably that any difference observed in the post-test is the result of the intervention that was implemented.

Furthermore, quasi-experimental studies offer the researcher a number of advantages. For instance, it is a more practical study design when compared to true experimental design in an applied setting. Further, true experiments may not be feasible as it may not be viable to implement an intervention to a few individuals in a group and not to others. Moreover, withholding an essential treatment from one group would be unethical. Quasi-experimental studies establish a level of control that diminishes the effects of extraneous variables (Polit and Beck, 2010). In addition, the generalisability of the findings of quasi-experimental studies is deemed to be superior compared to non-experimental and observational designs as well as being resource- and time-efficient compared with true experimental designs (Glasper and Rees, 2017).

The utilisation of quasi-experimental design was deemed effective in this case as significant challenges would have prevented carrying out a true experiment. In theory, the participants could have been allocated to experimental and control groups since there would be no ethical issue with some women not receiving an intervention that was new and not normally available, but these would have been particularly small groups. Recruitment was expected to be a limiting factor given the cultural issues associated with the topic. The greatest effort was needed to assemble a reasonable intervention group, while a smaller group could be expected to be recruited to form what was termed a comparison group (rather than a control group).

This study implemented a focused breastfeeding education session designed for a particular group of individuals, Saudi mother that were breastfeeding for the first time.

The study involved three data collection times. The first one was at baseline as a pre-test (T1), the second was undertaken immediately after the intervention as a post-test (T2), and the last one was at two months after the intervention (postnatal) as a follow-up test (T3). This is shown in Table 11. Below.

Table 11: Testing points for each group

Groups	Data Collection Times		
	Pre-Education Intervention	Post Education Intervention	Two months after intervention
Intervention	T1	T2	T3
Comparison	T1	--	T3

Study participants in the intervention group were exposed to an interactive educational programme about breastfeeding at 36 weeks of pregnancy with the objective of exploring the impact of this intervention on the attitudes, knowledge, and breastfeeding behaviour of the Saudi women in the intervention group Those in the comparison group did not take the post-test (since there was no intervention). The difference between the pre-test and post-test measurements reflected the effect of the intervention. If the mean difference in scores between the groups were found to be statistically significant this would constitute evidence that the intervention had an effect. The difference between the post-test and the follow-up test would be an indication of the longevity of the change in attitude and knowledge as well as facilitating comparison of intended behaviour with actual breastfeeding practice,

The effects resulting from the educational intervention were measured and then compared to the comparison group, which was not exposed to the intervention. This was done through fully validated questionnaires to obtain the quantitative data. Additionally, a follow-up telephone interview was conducted at this two-month postnatal follow-up point to gather qualitative data on perspectives, changes in attitudes, knowledge, and behaviour towards breastfeeding. Figure 2. below demonstrates the schematic plan for the current study.

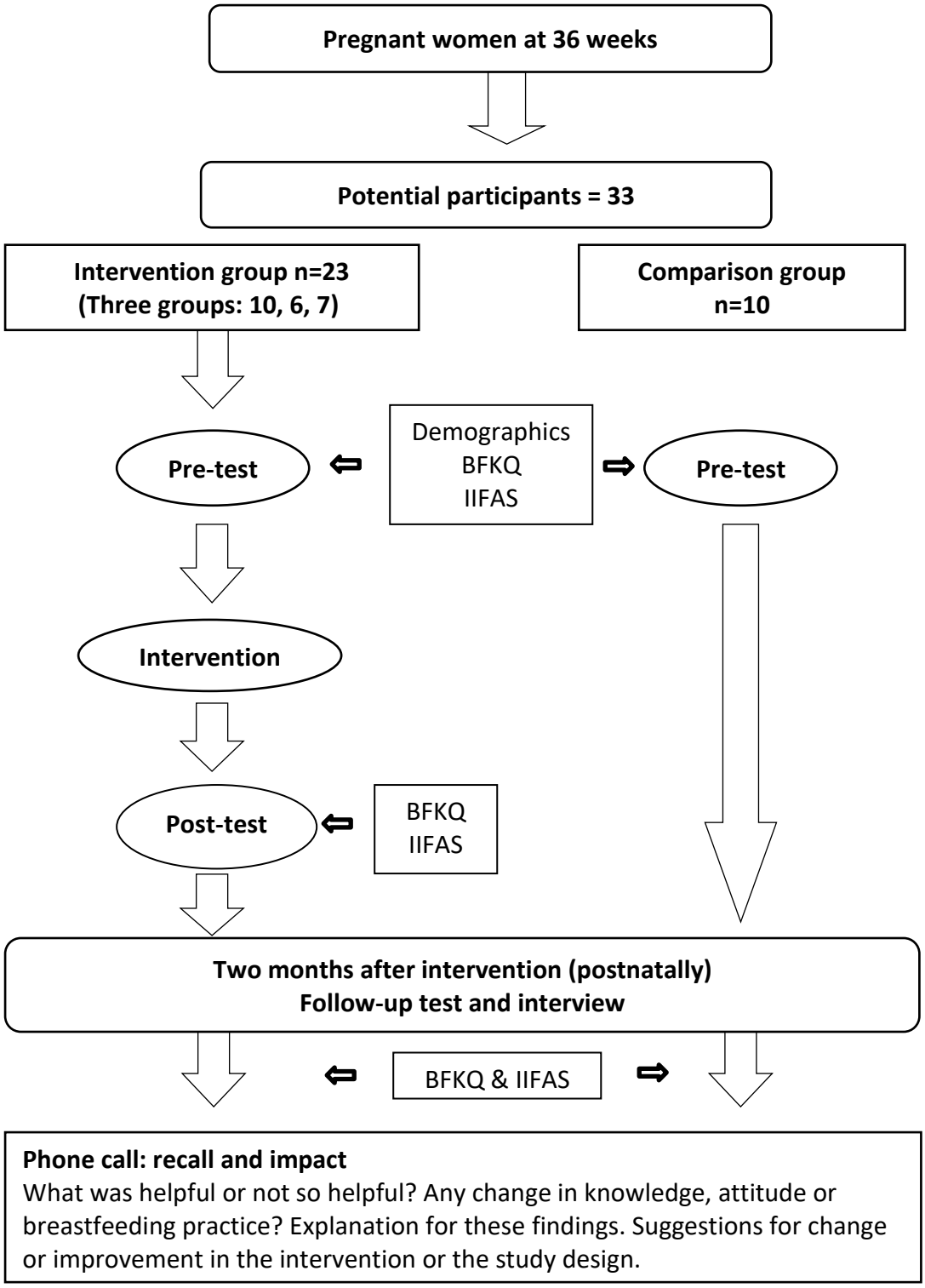

Figure 4: The Study Plan

PARTICIPANTS AND SAMPLING

Sampling

Sampling is widely used in research as a means of gathering useful information about a population (Lim and Ting, 2012). It is a procedure that utilises a reduced number of elements of a given population as a basis for drawing conclusions about the entire population. Because of cost and time constraints in conducting a survey of the total population (a census), sampling is often the only efficient method available to obtain information from the population (Neelankavil, 2007). If taken with care and accuracy, samples can provide useful information for decision-makers.

Choosing a sampling scheme is seldom uncomplicated. Decision about samples, both size and strategies, depends on prior assessment with regard to questions asked, instruments and methods chosen, and the resources available (Newell and Burnard, 2011). Once a decision is made with regard to the type of sampling method that will be utilised, the ability to make inferences (internal validity) and the degree of external validity (reliability)of the findings can be determined. In effect, the sampling method sets an upper boundary on the internal validity and external validity of the research study.

Sample size concerns in mixed method research are determined by specific prerequisites for each study element. It is therefore important that quality standards, that is, reliability, validity for the quantitative method, trustworthiness for qualitative the method are not compromised due to the fact that the mixed method study comprises both quantitative and qualitative data collections.

Purposive Sampling

A purposive sample involves individuals from a pre-specified group being sought out purposely for inclusion in a study in the light of their shared experience or other characteristics (Teddlie and Tashakkori, 2009). According to Bryman (2012), the intention of purposive sampling was not to try to find sample participants on a random basis, but to sample participants in a strategic manner, so that the participants sampled (Saudi women pregnant for the first time) will have a variety of knowledge, attitudes, beliefs and behaviours relevant to the research question being investigated. This method is also called judgemental method as it is derived on the principle that the researchers' information about the population can be utilised to hand

pick sample members (Polit and Beck, 2010). Researchers may choose purposely to pick participants who are deemed distinctive of the population or principally educated on the topic at hand. Sampling in this subjective manner, however, provides no external, objective method for assessing the extent to which the selected subjects are typical of the population. However, this technique can be utilised to benefit certain circumstances.

A drawback to this type of sampling method was the likelihood of prematurely concentrating on the collection of data on one particular characteristic and missed out on the broader range of data that may come from a convenience sample; yet a convenience sample is more likely to be biased than a purposive one (Crowther *et al.*, 2013).

Purposive Sampling in this Study

In this study, purposive sampling was utilised to recruit Saudi women from Hail city who were pregnant for the first time into the study. Purposive sampling that was conducted allowed the selection of participants with a range of attributes that might be expected to affect attitudes, knowledge, experiences, behaviours and perceptions of breastfeeding for instance, in this case, purposive sampling may be utilised to select pregnant women since the topic at hand is the effectiveness of an interactive breastfeeding education programme. A benefit of using purposive sampling in this study was that it gave way for an enrichment of the data by choosing the study participants (pregnant Saudi women) comprising of unique beliefs, understanding, characteristic, and distinct perspectives to share.

Study Participants

Study participants were recruited based on the predetermined inclusion and exclusion criteria. These criteria are a set of straightforward parameters that describe the features of the individuals to be included or excluded in the study (Card, 2012; Jesson *et al.*, 2011). The inclusion and exclusion parameters constantly direct the researcher in choosing participants that are specific and distinct for the objectives of the study. The inclusion and exclusion parameters, are vital in the concept of transparency (Card, 2012), which is a significant general characteristic in presenting the results.

Inclusion Criteria

Saudi women who were pregnant with their first baby, at any age, in the third trimester of pregnancy, and of any socioeconomic status (working mothers, housewife, professionals, et cetera) met the inclusion criteria.

Exclusion Criterion

Women who had with previous experience of any breastfeeding initiative programme.

Recruitment

Contact with the women was initiated with the aid of several obstetricians. These were the gatekeepers of this study as participants would come from the clinics of these practitioners as their patients. The researcher personally asked for the doctors' assistance and provided a formal letter detailing the sampling requirements of the study. The aims, objectives, and research questions were explained in detail to the obstetricians. The inclusion and exclusion criteria were also emphasised. The obstetricians then began to refer appropriate women to the researcher for potential inclusion in the study. The researcher made sure that the obstetricians were all females because the participants would not discuss such a sensitive topic with a male obstetrician, particularly mothers who were pregnant for the first time (Al-Jassir et al., 2006). Discussions were held with the doctors about the need to allow women to self-select (within the inclusion and exclusion criteria) rather than for the doctors to screen them for perceived suitability. The doctors were keen to support the study and agreed without reservation to refrain from selective referral.

Once possible recruits had been identified, the researcher approached each of these and screened them once again using the inclusion and exclusion criteria. Once deemed eligible, the women were provided with an overview of the study and asked individually if they were willing to participate in the study. The printed information sheet was provided. Forty-five women were approached to participate in the intervention group for this study, and 23 agreed to participate. Of the 13 women who were approached to join the comparison group, 10 of whom agreed. The researcher emphasised the valuable information that these women could share and the potential benefits for them and their baby from participating in the study. Women who expressed willingness to participate in the study at this time were given a

detailed information sheet and a consent form. Once consent was obtained from each study participant, a detailed discussion commenced detailing the specifics of the study, what participation would entail, how the interactive breastfeeding education programme would be conducted, and the date and time at which the intervention would be offered.

The Sample in the Study

Overall, 23 Saudi women were selected and assigned to the intervention group whilst 10 Saudi women who were also pregnant for the first time were assigned to the comparison group. The sample size was limited by the resource of the researcher because the interventions were run by the researcher personally, and the follow-up interviews would have been too difficult with more women. A limited amount of time was allowed by the Saudi Ministry of Education for the student to stay in KSA undertaking data collection. Moreover, as this research was the first of its kind in Saudi Arabia to use this design and the intervention was novel, it was a challenge and an achievement to recruit this number to such a sensitive study. As a preliminary study to explore feasibility of the design, the intervention and the data collection plan, this number was adequate.

The average age of study participants was 21.8 years for the intervention group and 22.3 years for the comparison group. In terms of educational attainment, 95.6% of women finished high school education in the intervention group whilst all women in the comparison group attained higher education. 91.3% of women were employed in the intervention group and 90% in the comparison group.

Table 12 summarises the demographic characteristics of women included in the study.

Table 12: Characteristics of women included in the study

Characteristics	Intervention Group (n=23)	Comparison Group (n=10)
Mother's mean age in years	21.8	22.3
Educational Attainment (more than high school education %)	95.6	100
Working/Employed (%)	91.3	90

Pen portraits of the participant

Overall, 18 of the participant gave information about themselves in more detail, but 5 of them did preferred not to do so.

Case number 1:

Dlal was 26 years old, and married to a resident of an affluent community in Hail city. She did not work, but she had just completed a Bachelor's degree in Community Services. She volunteered readily, mostly out of interest but also because she wished to help with the research. She was quietly spoken and a little hesitant to become involved with the practical activities in the intervention. Midwives would not give the baby to her after delivery because they wanted to get their job done. Her mother supported her to breastfeed her baby for the first month. She had been to Dubai where she saw a different perspective on breastfeeding outside the home. Her mother insisted on the baby's need for water supplements rather than exclusive breastfeeding. She trusted her mother. This was clearly a strong cultural issue.

Case number 2:

Sumia was 24 years old and a student at Hail University in the Islamic Studies department. She became pregnant immediately after her marriage and she was not ready to have a baby. This was the reason for volunteering to join the study - to gain information quickly. At the beginning she was a little bit shy about holding the conversation with me, but subsequently, when I asked her about her baby and how the birth experience was, she was so excited to tell me what happened with her. There was support from her mother though not for exclusive breastfeeding (insisting on supplemental water feeds), and she trusted her mother completely because of her greater experience.

Case number 3:

Nasren was 28 years old and a mathematics teacher in a primary school. She had been married for more than six years. She had tried to become pregnant for five years, and finally did, and this made her all the more determined to know everything about what was best for her baby. She was always positive when she spoke. She breastfed for the first two weeks after birth, and her husband was supportive of this since he, too, was excited as he had been waiting for this moment for more than five years. She had to go back to work after only two months, and she adopted mixed feeding.

Case number 4:

Fatmah was 27 years old, with a Bachelor degree, and was in employment. Even though she knew that breastfeeding was impossible, she came to the session. She thought that it was a hopeless situation if a mother wanted to breastfeed her baby. Eventually she became one of the most outspoken of the participants about the government needing to act to improve the situation.

Case number 5:

Nagla was 25 years old, and she was not working. She was a housewife. She had not completed her education, leaving school after she married as her husband's monthly income was very good and she had no need for a job. She took her sister as a role mode whose children were in good health despite not being breastfed.

Case number 6:

Sama was 30 years old and a bank employee. As a bank employee, only two months of maternity leave was allowed. She looked like a model and I thought when she attended the session that she could not possibly be pregnant because she was so slim. She cared about her body and wanted to look good during the pregnancy. She expected to lose weight and return to her pre-pregnancy weight. This was an important factor in her thinking about the choice of infant feeding.

Case number 7:

Ahlam was 28 years old and a student in Hail University. Her husband worked in another city and because of that she stayed with her family. Ahlam was the eldest daughter in her family and her daughter would be the first granddaughter in her family. The midwife would not give the baby to her after delivery, insisting that she take a rest while they fed the baby.

Case number 8:

Maha was 29 years old. She wanted to look her best in front of her husband two months after delivery, and because of that she did not intend to breastfed her baby. Her cousin was bottle-

feeding her baby with formula milk, and the baby was in good health. She rejected the notion of breastfeeding in public as being out of keeping with Saudi culture and society.

Case number 9:

Hajar was 28 year old, held a Master's degrees in physics, and worked in Hail University. She received support from her mother and her husband to breastfeed, but she knew that there was no place at her work to breastfeed. She was critical of the short duration of maternity leave: She also commented on the need for education in hospitals before and after delivery.

Case number 10:

Amal was a 23 year old student. She was lives with her husband in Hail, far away from her mother as their family lives in another city. She came to the session as she need to prepare herself to motherhood journey, the only support that she received was from her husband for breastfeed their baby. She was keen to make sure that her weight would return to her pre-pregnancy state.

Case number 11:

Nada was 24 years old, unemployed, and educated to intermediate level. She lived in a village close to Hail city, and so was unable to continue her studies. She had married at a young age, and was a little shy at the beginning of the study. There was no support from the midwife after the delivery and there was no education for the women.

Case number 12:

Sarah was 29 years old and in employment as a teacher in the Arabic subject. She attended the session out of curiosity, partly to see how it would be conducted. She started with the perspective that breastfeeding public would have a damaging impact on her self-esteem. She had been told many times that there was no difference between breastmilk and artificial milk.

Case number 13:

Asma was 23 years old and was a student in her third year at Hail University in the geography department. She planned to return to the university after seven months, but regardless of that she decided to breastfeed her baby for as long as she could.

Case number 14:

Nadia was 26 years and employed. She had married one year previously, and became pregnant soon after the marriage. She was afraid from the start that she was not fully prepared for child care and feeding. Since she had to return to work after two months, she planned to leave her baby with her mother during the day.

Case number 15:

Haifa, who had a bachelor's degree in management, was 28 years old. She worked in the student union at Hail University. As with many of the working participants, she was allowed only two months for maternity leave. Her previous experience was of all members of her family feeding their children with artificial milk. She thought from the start that the community was not ready for breastfeeding in public and that there was no place to do so anyway. She had a supportive mother and sister but she knew that her mother would expect her to give water to her baby to prevent dehydration.

Case number 16:

Lain, 26 years old, had finished university two years ago after getting a bachelor's degree in Arabic studies. She married a business man whose work required him to travel a lot, and he wanted her to be with him on most of his trips. Her husband therefore expected her not to breastfeed their baby. She planned to leave the baby with her mother for approximately three weeks after the birth.

Case number 17:

Sara, who was 25 years old, was employed in education administration in Hail city. As she was a working mother she knew that it would be too difficult for her to continue to breastfeed her baby. She wished that the maternity leave would be longer that two months. The interview was very brief and there was insufficient time to ask more about her.

Case number 18:

Amna was a 27 year-old independent woman. She had her own business: a cake shop opened six months previously, and this has been very successful. She held from the beginning that the responsibility of running her business would prevent any attempt at breastfeeding. There was

support from her mother to breastfeed her baby at every opportunity, but Amna preferred to use artificial milk in order that she could return to her business as soon as possible.

Pen portraits of the participant in comparison group

As was the case with women in the intervention group, the 10 participants in the comparison group offered differing amount of personal detail on which to base the pen portrait.

Case number 1:

Afaf was a 26 year-old and in employment as a teacher in computer science. She had married one year ago. She wished to be part of the intervention group and to be able to see what the education session about, but she was not able to attend as she lived in a village which was a far away from Hail and she could come to hospital only once every month for her antenatal check up. During the interview she explained about her experience and the support from her mother to breastfeed her baby. She breastfed her baby only for two days and after that she preferred to introduce bottle-feeding. She believed that there was no difference between breastfeeding and artificial feeding.

Case number 2:

Nahad, 25 years old, was a primary school teacher in Hail city. She was shy at the beginning of the interview. She decided for several reasons that she did not have to breastfeed her baby. The most persuasive of these was that her sister had experienced her children remaining in a good health though they had received only artificial milk.

Case number 3:

Jamila was 26 years old and worked in a bank. As a bank employee, only two months of maternity leave was allowed. She was convinced that formula milk did not differ significantly from breast milk, and it was because of this that she preferred to introduce formula milk to her baby. She added that even if she had decided to breastfeed her baby she would not have been able to do so in public places.

Case number 4:

Mohra, who had a bachelor's degree in science, was 24 years old. She explained that her baby was born by caesarean section and that it was difficult for her to breastfeed her baby. She

reported that the (formula) milk that her baby had received in hospital for the first three days was good for him because she believed that the hospital would provide only the best for her baby.

Case number 5:

Shakah was 27 years old. She decided not to breastfeed her baby because she knew that she would have to return to work after two months. The midwives introduced formula milk to her baby 30 minutes after the birth. She was not offered the choice of breastfeeding.

Case number 6:

Salmah was 24 years old. She was a student in Hail University. Salmah explained that she had not been able to breastfeed her baby as she had not received any support from the midwives to do so at any time after the birth. She felt that there was no alternative.

Case number 7:

Nahlah, 29 years old, was a working mother. She was clear that she would not be able to breastfeed her baby because she knew that she would have to return to work after only six weeks. She cited the case of the children of her sister who were fed entirely on formula milk and had always remained in good health. Her sister encouraged her to do the same.

Case number 8:

Majdah was 32 years old, and she was in employment. She stated her preference not to breastfeed her baby. Although apologetic about curtailing the interview, she was reluctant to talk about the reasons for her choice at all. Other than that she could not be persuaded to change her mind, she declined to offer any further information about her choice of infant feeding method.

Case number 9:

Jamila was 31 years old. She is not in work and so had no concerns about the short period of maternity leave. She reported that she breastfed her baby only during the first week and only a few times during that week. After that she introduced bottle feeding for her baby. The main reason that she cited was that she would not be able to continue with breastfeeding outside

the house and that it was just a matter of fact that it would not be acceptable to breastfeed her baby in public.

Case number 10:

Nadina, at 29 years old, was completing her study while working at same time. She said during the interview that because of the pressure of combining these endeavours she would not be able to breastfeed her baby. She engaged in breastfeeding her baby only on the first day after delivery - just to live the moment, and then she found it so difficult that she could not continue.

STUDY INTERVENTION

The intervention for this study was an interactive educational programme for breastfeeding delivered within a one-day session for expectant mothers. It was designed specifically for this study using both existing materials and new ones for the content, and based on delivering content in a culturally acceptable, interactive and facilitative manner. It was deliberately intended to be a woman-to-woman encounter, explicitly led by a young Saudi woman who was committed to breastfeeding and sought to understand the barriers that others perceived to initiating and maintaining breastfeeding, and then to counter these as much as possible. The interactive breastfeeding education intervention was based on the WHO and UNICEF breastfeeding advocacy strategy and the BFI seeking to re-establish breastfeeding as the cultural norm (Breastfeeding Advocacy Initiative, 2016). The interactive education intervention was presented at selected maternity health clinics in the region. The details of the interactive breastfeeding education intervention are presented in the succeeding sections. Similar to most short educational programmes, the intervention in this study was densely packed with essential content material. Furthermore, the researcher wanted to generate a relaxed environment in which the core variables linked to expectant mothers and intentions to breastfeed could be measured in a non-threatening setting. The intervention was scheduled during the time the study participants were already at 36 weeks of gestation through a special 'clinic' appointment. The intervention experience was designed to be as relaxed and engaging as possible; the researcher addressing knowledge of breastfeeding without being domineering or condescending.

All 23 potential study participants approached by the researcher during the recruitment period attended the special clinic at the scheduled time of intervention. As demonstrated by Edwards (2011), for a group to be effective in various group activities, the maximum number of participants should be about 20, ideally about 15 participants for each group. Yet, according to Edwards (2011), for groups whose main objective is education and support rather than more intensive therapy, the number could be as high as 25 to 30 participants. Therefore, 23 participants were manageable for the interactive intervention group, given the interest shown by the study participants and the setting in the antenatal clinic area.

The original study design was to divide the participants in the intervention group into two groups for the intervention with a view to managing the groups more efficiently. However, due to the heterogeneity of the study participants, the researcher adjusted and conducted three education interventions instead of the original two. Seven women attended the first education session, ten attended the second, and six attended the third. Upon completion of the third phase of data collection, the programme was offered to the mothers in the comparison group in order to ensure that they were not disadvantaged. No additional testing was undertaken.

A specific interactive breastfeeding educational programme was developed based on existing breastfeeding initiatives and strategies implemented by various government and non-government agencies internationally, as well as being guided by the international evidence base.

In detail, the interactive education programme was divided into two parts, the theoretical portion and the practical session portion. A PowerPoint presentation was used to deliver factual information about important aspects of breastfeeding, how important breastfeeding is to both mother and child, how the body produces the breast milk, and the composition of breast milk. The researcher invited discussion throughout, avoiding the impression that is the intervention was simply a lecture. During the theoretical portion, the environment encouraged the expectant mothers to ask questions, discuss, share, and even debunk common misconceptions that women have about breastfeeding.

Personal Reflection

As I designed the intervention, and during long discussion with my supervisors, it became clear to me that my own approach, the way in which I conducted myself, indeed, simply being who I was - a young Saudi woman, a health professional, a mother, a researcher - would all play a significant part in the success or failure of the intervention.

It was vital that this was seen firstly as an encounter between women to discuss issues of importance to women, held within the cultural norms of gendered behaviour, and providing essential safety in the form of protection from loss of face before others. I combined a professional demeanour with the provision of enjoyable activities in which women could be jocular, trying out the manikins without being tested or having to appear to take the activity too seriously. I emphasised the importance of women addressing women's issues, of discussing matters of which women could rightly claim knowledge and control, and the discussion remaining private.

As individual women began to engage with others, I added snippets of information, appearing to add to, rather than correct their knowledge. Throughout, I was intensely aware of my own position within the group, partly as the leader and organiser, and partly as a participant. I came to realise that this was not an act. It was who I really was. I was being myself: sharing my passion for the topic, being a young Saudi woman like them, being genuinely interested in their thoughts, responding in culturally acceptable ways, yet still daring to suggest a change in societal behaviour and norms.

It was exhilarating to hear the women expressing feelings of learning, of the value of the intervention, and to see them enjoying what they were learning. Finding them expressing strong thoughts about the need for more information and intervention, and coming to accept that perhaps some aspects of received behaviour ought to change. It was stunning that this was actually happening, that the study was real, and that there was the possibility, however tentative, that a positive outcome might result: that the first small step might be taken towards achieving the ultimate aim of the project.

Specifically, the first section of the education intervention covered the following topics:

1. The pre-test (baseline) assessment knowledge, attitudes, and behaviours of expectant mothers.
2. Introduction about the study its objectives, and the important of the study.
3. Background on breastfeeding
4. The importance of breastfeeding, the potential benefits to mother and child, and breastfeeding on-demand
5. Information on breast milk, its composition and function
6. Breastfeeding techniques and positions

After the pre-test activity, the theoretical aspect of breastfeeding was conducted. This comprised of a PowerPoint presentation about breastfeeding (outlined previously), including coloured slides and videos. The researcher kept a non-didactic, informal environment during the theoretical aspect. Expectant mothers listened and watched videos on concepts regarding breastfeeding and its technical aspect. Ongoing discussions and clarifications were encouraged. This part of the intervention commenced for the next 30 to 45 minutes. In keeping with the non-didactic, informal environment, the educational session utilised a variety of teaching media during the second portion as a practical session. This part took much longer to implement. Full colour descriptive PowerPoint were also utilised in order to demonstrate the researcher's points (Hatamleh 2012).

The second section (practical session) covered the following:

1. Demonstration of proper breastfeeding positioning and techniques.
2. Latching On simulation.
3. Skin to skin contact.
4. Self-regulated breastfeeding and interpretation of baby's cues.
5. Sufficient milk and interaction with baby.
6. Post-test (immediate assessment post intervention),
7. A timetable for the final data collection episode.

Following the first theoretical section of the intervention, the activity proceeded immediately to the second section, the practical sessions. It is in this time that the researcher utilised five baby manikins and proceeded with the role-play activity portion. Mothers were taught skills and techniques for proper breastfeeding, again encouraging interaction between researcher and between co-participants. This process took around 45 minutes to an hour. Ongoing discussion during the video and slides presentation was encouraged. The highlight of the second portion of the intervention was the use of five high-quality baby manikins (see Appendix 10). These dolls facilitated a role-playing environment between the expectant mothers and their child. They assisted in introducing core information that was designed to educate the participants about breast milk as the best nutritional choice for their child, the proper techniques to successful breastfeeding, as well as the importance of skin-to-skin contact between the mother and the baby. The use of the manikins also developed the skills

necessary for the mother's breastfeed confidently. This was supported by guided feedback provided by the researcher.

Reflection about the mothers' impressions
It was possible that the women had criticisms of the intervention and did not voice them. However, they seemed to be so actively involved and enthusiastic, and they gave voice to many frustrations. I was left with the impression that they felt able to say what they thought, but I will never know for sure. The atmosphere of Saudi women talking together is a phenomenon that Western non-Muslims might not understand. It is charged with protection of one's own self-esteem, yet also a time of freedom from male interruption and, perhaps for some, from control. Since I had to keep reminding them of the need to move on (when they were obviously enjoying the interactive components or seeking more and more knowledge) might also be an indicator that, at least overall, they were positive about the intervention."

THE RESEARCH INSTRUMENT

Data was collected by using three set of questionnaires: Socio-demographic Data Questionnaire, Iowa Infant Feeding Attitude Scale (IIFAS) and Breast Feeding Knowledge Questionnaire.

Socio-demographic Data Questionnaire

This self-designed instrument was used to collect the personal information of participant age, educational level and employment status.

The Breast Feeding Knowledge (BFKQ) Questionnaire

WHO and UNICEF completed research that provided very specific recommendations related to best practices when it came to breastfeeding (Khalil & Mahmoud, 2012). Saied (2013) developed a questionnaire with 15 specific items related to the benefits of infant breastfeeding based on off of the research conducted by WHO and UNICEF and this is now called The Breast Feeding Knowledge Questionnaire from these recommendations. This questionnaire only looked at either a correct or incorrect answer, seeing the best practice as correct, and a score out of 15 determined how knowledgeable the participants were, the higher the score, the higher knowledge.

The Iowa Infant Feeding Attitude Scale (IIFAS) questionnaire

The Iowa Infant Feeding Attitude Scale (IIFAS) questionnaire created by de la Mora *et al.* (1999). This is a straightforward instrument generated to determine infant feeding attitudes quantitatively (De la Mora *et al.*, 1999) which has been employed in studies of English-speaking women in the United States (Marrone *et al.*, 2008), Scotland (Dungy *et al.*, 2008), Romania (Wallis *et al.*, 2008), and Australia (Giglia *et al.*, 2007). This study incorporated a translated Arabic version established by Al-Madani *et al.* (2010). It can also be applied to quantify attitudes of a woman's partner and social support network in terms of infant feeding, but this was not a concern in this study.

The IIFAS comprises 17 questions with a five-point Likert scale ranging from 5 - strongly agree to 1 - strongly disagree. It covers a variety of domains including nutrition (i.e., Breast milk is the ideal food for babies); health (i.e., Babies fed breast milk are healthier than babies who are formula fed); costs in infant feeding (i.e., Formula feeding is more expensive than breastfeeding); and infant bonding (i.e., Breastfeeding increase mother infant bonding). More or less, 50% of the questions are worded in favour of breastfeeding and the other half in favour formula feeding. Items that favour formula feeding are reverse-scored (i.e., 1 = 5, 2 = 4, 4 = 2, and 5 = 1), and a total score is calculated through an equally weighted sum of responses to each item. Total scores could range from 17 to 85, with higher scores reflecting more positive attitude toward breastfeeding. Total scores are grouped into the following three categories: geared towards breastfeeding (70–85), neutral (49–69), and geared towards formula feeding (17–48). (See appendix 6).

The studies presented above from various countries showed that the IIFAS has good internal consistency, with Cronbach's alpha ranging between 0.79 and 0.86 in most of the studies. Internal consistency reliability of the translated questionnaire was (Cronbach's Alpha coefficients = 0 .83).

There have been suggestions for the creation of measurement tools to perform epidemiological and socio-behavioural analysis of infant feeding practices (Liamputtong, 2011). The IIFAS has been found to be an applicable predictor of breastfeeding outcome in several countries. Women with higher IIFAS scores have a higher likelihood to plan breastfeeding, start breastfeeding, and breastfeed for long periods of time compared to

women with lower scores. In fact, Scott *et al.* (2004), in a study amongst Scottish women, reported that the IIFAS was the strongest self-sufficient predictor of breastfeeding commencement. When calculating for a ten-point difference in scores, a woman with an IIFAS score of 65, for example, is more than four times more likely to breastfeed than a woman with a score of 55.

The advantages of using the IIFAS instrument included ease of administration and scoring, making it a low cost and effective means of gathering information. It can be administered as a needs-assessment tool to understand general attitudes or to pinpoint specific attitudes or gaps in knowledge through item analysis, thus allowing researchers to shape breastfeeding promotion programmes that specifically target relevant issues (Wallis *et al.*, 2008). Once a programme is implemented, it can be utilised as a pre-test and post-test or with comparison or control groups to measure programme effectiveness (Liamputtong, 2011).

PREPARING FOR THE STUDY

A pilot study is a smaller version of a proposed study that is accomplished to improve the design for a much larger research (Fitzpatrick and Wallace, 2012). A pilot study uses participants, settings, data collection, and data analyses comparable to the intended main research. It is, therefore, suggested that researchers have either pilot or other preliminary work as substantiation of study viability and to demonstrate the competency of any novice researcher with an area of study. The initial work in the structure of a pilot study offers the opportunity to recognise any problems with several facets of the study design. Occasionally, this kind of study is undertaken to demonstrate the potential value of a selected factor to a research problem. In other instances, it is used to demonstrate validity and reliability of selected measures in a unique circumstance or case (Thomas *et al.*, 2015). Given that advancement of knowledge concerning a specific concept and filling a gap in knowledge is a development that takes time and usually needs several studies, pilot studies can play an essential first step in putting together a research programme that provides helpful assessment about the content, design, and importance of items, and viability of adding or removing questions (McBurney and White, 2010).

The outcomes of the pilot study are expected to be important for the actual study. If the pilot study is of adequate size, approximations about the links between variables and of effect sizes

can be made (Yin, 2016). This is important not only for statistical power analysis but for better understanding of the phenomenon under study. It may also be emphasised that research is not a single-step process. When a pilot study has been completed, followed by the main research study, perhaps replicated, the credibility of the finding is increased tremendously over a single study that was not preceded by pilot work.

In line with this, preparatory work in the form of a partial pilot study was conducted in order to refine several aspects of the research project. In particular, the effectiveness of the overall design, specific fieldwork procedures and their feasibility, data collection instruments, and the physical environment in which the study was to be undertaken were all under review. The work was conducted in a maternity hospital in the Hail region with a sample of six pregnant women prior to the initiation of the empirical research itself. The participants in this partial pilot study were informed of the purpose of their participation. This is an important matter as participants in pilot work might desire feedback regarding a pressing issue of theirs (Yin, 2016). The participants might even ask for a brief written report after their participation has ended. Agreeing to do these tasks can make it easier to arrange such preparatory work for a study (Yin, 2016).

These endeavours offered the researcher the chance to try out specific aspects of the study and was important because of a number of outcomes. It informed about logistical matters of the research, particularly in terms of the specific procedures and the field time needed to cover certain aspects of the study. It enlightened the researcher that the second part of the intervention, the interactive exercises, required precise, hands-on attention from the researcher, therefore needing more time than the first part (theoretical aspects of breastfeeding). The pilot exercise made clear the amount of time involved in individual support to guide and teach each participant.

Feasibility of identifying potential recruits from women attending the clinic was established, and the time required for recruitment processes and activities was explored. The preparatory work provided the opportunity to test the recruitment process with this population of first time expectant mothers and to refine the sampling method to evaluate the representativeness of the sample.

Furthermore, it allowed refinement of the data collection instruments (the BFKQ and IIFAS questionnaire). The application and performance of the questionnaire was tested with the particular study sample under specific conditions. In this regard, the validity and reliability of the data collection instruments were tested as well as the ease of application and administration of questionnaires. Specifically, the researcher was able to evaluate the research instrument in terms of clarity of instructions, the wording of the questions in Arabic, and the time required for completion. Additionally, it was possible to observe the participants whilst they were answering the questionnaires and then to interview them about their reactions. Participants were observed for their non-verbal responses such as frowns and fidgeting. Erasures or crossing out which could indicate item ambiguity, resistance to the content, or discomfort with the circumstances of administration were sought for particularly. Moreover, for the qualitative data gathering, the researcher was able to conduct mini interviews after the pilot exercises, although not through telephone as in the actual research study, so as to gain understanding in addressing the study materials and focus with the women in preparation for the final phase of data collection.

Finally, the work served as a practice session and preparation for the researcher at a personal level. The responses of the participants were assessed to establish whether the answers were comprehensible and appropriate. More importantly, the feedback offered by the participants was valuable and especially helpful. For instance, one comment was that the researcher was talking very quickly, so this prompted review of this habit and of the timing of the session. Participants also suggested that including more video presentations would be effective as these attracted their attention more, and they appreciated and understood the content more clearly in this mode. The use of the Arabic language in the educational intervention made the concepts clearer and allowed interaction between researcher and the participants.

Overall, the setup of the partial pilot study was similar to the setup on the actual study. Ample care was taken in collecting data as this was deemed important. The work did not cover only data collection but also the subsequent steps and procedures of the entire intervention. The participants were critical, and valuable feedback was received. As a whole, the preparatory work identified potential problems that could have affected the quality of the study. These resulted in changes that allowed an effective and efficient empirical research study. Yet, the small number of participants and the relative artificiality of the situation caused the

researcher to remain aware that not all potential problems had been anticipated or encountered.

DATA COLLECTION METHOD

The fundamental principle behind the utilisation of mixed methods design is that it gives the researcher the opportunity to collect data that will answer the research question most effectively (Andrew and Halcomb, 2009). To this end, the quantitative and qualitative data collection must somehow offer an inclusive overview of the research problem that would have been achievable through the collection of either type of data alone. Implicit in mixed methods research is the concept that both quantitative and qualitative data will be collected. In selecting data collection methods, there is a prospect for the researcher to be innovative in the approach and mixture of detailed methods. According to Axinn and Pearce (2006), universal ways of collecting quantitative data include self-reports, standardised surveys, or rating scales; whilst qualitative data may be collected through interviews, open-ended written questions, focus groups, and observation. Increasingly, technology has been encouraging creativity from traditional methods of data collection with increasing number of studies collecting via internet blogs, emails, and other means of electronic communication (Drummond *et al.*, 2007). For instance, Constantino *et al.* (2007) explored the practicability of email-mediated contact amongst survivors of abuse by using email for data collection and found that email interaction is a realistic and satisfactory means of giving information and support to survivors of abuse.

In several occasions, the collection of mixed data can only be accomplished via the use of two or more complementary methodologies that independently collects quantitative from qualitative data either sequentially or concurrently; that is, validated instruments and interviews, focus groups and survey tools (Courtney and McCutcheon, 2010). Furthermore, several means of data collection may be utilised to produce numerous data sets. Such data collection has clear inferences for resources, project duration, and the need for dual sampling.

This study gathered quantitative data first through the use of a fully validated research instrument followed by qualitative data gathering through telephone interviews in a sequential manner. The details of the process are presented below.

Data Collection Procedure

The primary study outcome was the impact of an interactive breastfeeding education intervention programme defined by improvements in post-test scores in attitudes, knowledge, and behaviours towards breastfeeding. During the intervention period, study participants were gathered in a quiet, well-lighted room. The interactive educational programme was initiated with a casual conversation on non-related topics so as to build rapport and develop a conversational rhythm. The researcher introduced herself and provided a brief background about the study, the purpose of the interactive education intervention, and the schedule. The location, time, and environment of the interactive session were all noted and documented. After this, the first part of the intervention was commenced.

This started with the pre-intervention test. The pre-test resembled a quiz in a classroom so as to maintain a friendly, informal atmosphere. The researcher explained the purpose of the pre-test and introduced the research instrument to be utilised. A brief introduction was given about the questionnaire and the women were given instructions on how to complete it. The mothers were given details such as encircling the number that corresponded most closely to their opinion regarding the topic of breastfeeding. The researcher emphasised to the expectant mothers that this test was to explore their initial attitude, knowledge, and behaviours towards breastfeeding, and that there were no right or wrong answers. The researcher asked the mothers to be candid and straightforward. Each questionnaire had a corresponding code for the respective participant for future reference in the case of unclear answers or missing data, and to allow comparison between pre-test and post-tests. A period of 20 to 25 minutes was allotted for this activity. During this time, the researcher observed the participants as they completed the questionnaire, approaching any participant who appeared to be in need of further guidance or explanation. At the end of this activity, the researcher briefly checked each questionnaire, looking for unclear answers or items not accomplished properly. This was the end of the T1 data collection process.

Following the interactive part of the intervention, and when the participants were content with no further questions, the post-test (T2) was conducted utilising the same IIFAS questionnaire. The same process was implemented as the pre-test done earlier in the day. On completion, collection and checking of the questionnaires, briefing and instructions were provided for the follow-up telephone interview to be arranged for two months after the

breastfeeding education intervention. Study participant contact information was re-checked and confirmed for accuracy.

Comparison Group

At a different clinic and at a different time, the ten women recruited to the comparison group were also informed and supported to complete baseline pre-intervention assessment of their attitude, knowledge, and intended behaviour regarding breastfeeding using the same IIFAS instrument. The same process was observed as for the pre-test evaluation in the intervention group.

Telephone Interview

A follow-up telephone interview was conducted two months after the implementation of the interactive education intervention with the women in both groups, intervention and comparison. This included the qualitative aspect of the study. First, the research questionnaire was repeated for the second time (T3), with the researcher reminding the participant of the questions and recording their response. This was then followed with an interview to capture the remaining data.

Leon *et al.* (2003) suggest that a telephone interview is comparable to a personal interview in design except that some of the exchange is written for the interviewer and there is usually better interview process management than in the in-person interviews. However, this probably relates more to market survey research than to a clinically oriented topic such as this one. Clearly, a face-to-face interview allows the researcher to gauge the participant's non-verbal language in responses and facilitates turn taking and the use of the researcher's own non-verbal communication (nodding, gestures and so on) more readily. However, the widespread location of participants at this point in the study, together with the need to be more flexible to the convenience of the new mothers caring for their babies, meant that face-to-face interviews were neither feasible nor desirable.

The telephone interview was characterised by open-ended questions by which the researcher was able to elicit participants' experience of being in the study, their thoughts about the intervention, and their infant-feeding behaviour since the birth. The choice of the telephone interview for data collection was warranted by being nondirective, allowing for additional

issues to be raised by participants which were not initiated by the researcher It was suitable in the sense that at this point of the study the researcher wanted to explore each study participant's attitudes, and knowledge about breastfeeding, and their initiation and maintenance of breastfeeding or otherwise. Each telephone conversation was unique, not standardised, and could not be replicated. The conversation from each participant was distinct, with the participants describing their experiences, knowledge, attitudes, and behaviour in their own way. This individuality was essential for this study.

The telephone conversation gave the study participants the opportunity to offer their own interpretation of the breastfeeding educational programme. It also provided the researcher with the chance to talk, investigate, and explore the topic at hand more deeply with the participants. Yet, the researcher acknowledged that the process of the telephone interview varied from mother to mother and subsequent interviews may have been influenced by the answers of earlier study participants. This iteration is almost unavoidable in such open human interaction and is in keeping with the interpretive approach.

In conducting the telephone interview, the researcher prepared a list of questions in advance and suggested probes for following up on important aspects and concepts. These questions served as guide questions incorporating areas of interest on the topic of breastfeeding, particularly with regard to respondents' attitudes, knowledge, and behaviour. It also offered the chance to learn about the subject matter in unforeseen ways. According to Patton (2002), an interview guide has its benefit in that it assists the researcher in chasing up essential lines of enquiry with each participant being interviewed and handling the conversation in a more inclusive and careful method. In this study, guide questions were used and these questions were derived from the Baby Friendly Initiative as well as the author's existing knowledge in the area of breastfeeding. By engaging the mothers in an in-depth telephone conversation, the exchange of ideas between the researcher and the mothers moved back and forward between areas that were relevant to the study but not all of which had been foreseen.

The telephone interview was appropriate as a data collecting technique in talking to the participants especially when dealing with sensitive issues in Saudi culture. For instance, the intervention covered topics about the human body and breast by which Saudi women were not comfortable talking in person and in public. Lack of social support, embarrassment,

commercial pressures, insufficient maternal leave, breast milk quality, or concerns about infant weight are amongst the issues that prevent Saudi women from exclusively breastfeeding. Gender roles, social support, and attitudes of relatives and friends about breastfeeding have also been shown to influence a mother's own attitude and knowledge for breastfeeding (Dorea, 2001). The telephone interview provided an avenue by which the participants were able to be candid in private and not worry about these sensitive issues. These cultural beliefs and norms have impacted significantly on the women's attitudes and practices about breastfeeding, and understanding these cultural sensitivities assisted in talking about these concepts openly.

DATA ANALYSIS

Quantitative Data

Data was coded and entered using IBM SPSS version 23. Categorical data was presented using descriptive statistics in the form of frequencies and percentages. Prior to statistical analyses, the data was assessed for normality using Shapiro Wilk test and histograms. The results of normality testing are presented in statistics, *p* values and figures. Since the data deviated from normal distribution, non-parametric tests were conducted. The non-parametric Friedman test was conducted to assess if there were any statistically significant differences in participants' knowledge and attitude (Iowa) score within the intervention group at each of the three-time points. The Friedman test was applied to the original data collected from the intervention and comparison group. The data satisfied four assumptions that must be met for a Friedman test to be applied. The assumptions satisfied were that measurements were taken at three points, the groups used were a random sample from the population, and the samples used were not necessarily normally distributed and that the dependent variables measured were ordinal. The Friedman test was applied because the data was not normally distributed and it is a test used to compare differences between groups (Zimmerman & Zumbo, 2003).

Qualitative Data

Thematic analysis is a methodical synthesis of data used in qualitative data. It shares some characteristics of both narrative reviews and content analysis (Athanasiou and Darzi, 2011), but thematic analysis is a more comprehensive approach to understanding and presenting qualitative data as compared to content analysis. Instead of focusing on classifying information by the type of content, thematic analysis deals more with the meaning held within

the data as a whole, summing up data by way of interpretation of larger themes (Maltby *et al.*, 2013). Thematic analysis is a general heading and includes framework analysis in qualitative studies (Lacey and Luff, 2007). Framework analysis (Ritchie and Lewis, 2003) allows organised and discernible phases to the analysis process so as there is precision about the steps by which the results have been attained from the data. It has been used in nursing and in multidisciplinary health research (Gale et al, 2013). In some ways, framework analysis may be a more honest approach than occasions when themes that are declared to have emerged from the data appear to relate precisely with pre-existing issues which prompted the investigation. A satirical yet well-argued article by Thorne and Darbyshire (2005) lampoons the outrageous claims by many writers to the declared outcomes of thematic analysis. Given that the focus in this study was on the variables being measured (attitudes, knowledge, and behaviour), answers from the qualitative data were sought in these specific fields. This meant that framework analysis was an appropriate choice.

Helpful guides to framework analysis are provided by Smith and Firth (2011) and Srivastava and Thomson (2009), while Ward et al. (2013) provide a convenient worked example in nursing, and these was followed in undertaking the qualitative analysis in this study. This study adopted the framework as described by Ward et al. (2013). Briefly, in stage 1- familiarisation, the transcripts were reviewed in order to acquaint oneself with the details of the transcripts and get a sense of the whole interviews. During the second stage, a theoretical framework was developed through the process of identifying important themes including recurrent themes. During the third stage- indexing and pilot charting, the framework that had been developed in stage 2 was applied to the transcripts and emerging themes noted from each section. During the fourth stage, the data was summarised within the analytical framework. The fifth stage was data synthesis through mapping and interpretation. During this stage, the themes and sub themes were checked against the field notes, original transcripts, and audio recordings to ensure that the context is appropriate.

Using the five-step framework described above, thematic analysis was applied to the data and the interviews evaluated. Major themes were identified based on the meanings derived from the mother's primary responses, the experiences that best represented their attitudes and behaviours towards breastfeeding. During the application of the five-step framework in thematic analysis the main focus of the data analysis process were the main variables

knowledge, attitude and behaviours towards breastfeeding such that their perspectives were identified and summarised as themes.

EFFORTS TO ENHANCE RIGOUR

Validity and reliability are dissimilar but related concepts in research. There has been much debate about whether or not these traditional scientific terms can be used with qualitative research (Noble and Smith, 2015). For a prolonged period, alternative terms proposed by Guba (1981) have been adopted by many qualitative researchers as being more appropriate for this sort of research. Guba (1981) proposed four principles so as to have a trustworthy research study. These principles include credibility (in reference to internal validity), transferability (in reference to external validity), dependability (in reference to reliability), and confirmability (in reference to objectivity).

However, Long and Johnson (2000) reject this as being untenable; the new "concepts" actually being little more than different terms for the same concepts. Others support this view that the traditional terms should be applied thoughtfully to all research (Morse et al., 2002). Whatever approach is adopted, the key issue is to make strenuous efforts to enhance the rigour of the study and to report in detail how this was done.

In this mixed methods study, it was concluded that the proposed alternative terms for use in qualitative research were both unnecessary and unhelpful. The original terms were retained, though with the acceptance that while validity might be claimed to be stronger in the qualitative element, no claims to reliability should be made from this. If others conclude that these findings relate well to their own field, then they are at liberty to learn from them and to apply this learning. However, the purpose of this study was to take a first tentative step towards promoting prolonged, exclusive breastfeeding in Saudi Arabia, and causing women to consider this possibility or to believe that it is a realistic (if long-term) aspiration was a substantial undertaking. Expecting to be able to generalise the findings to other countries was not reasonable.

In the first part of the study (questionnaires and intervention), both validity and reliability were important. In the part relating solely to the interviews, enhancing validity was prioritised as little claim could be made to reliability.

Validity

Validity refers to confidence that an instrument or technique has measured what it purports to measure so that claims to knowledge can be accepted to have arisen from the data. There are three types of validity namely internal validity, construct validity, and external validity (Creswell and Miller, 2000). External validity refers to the applicability or generalisability of the findings of a study to a general population. Construct validity, on the other hand, refers to the extent to which accurate inferences can be derived from the operationalisation of the measures of a study (Creswell and Miller, 2000). Internal validity refers to the ability of the study to draw a causal relationship between two variables. Internal validity is achieved when it is possible to demonstrate that the observed effects were due to the manipulation of the independent variable and nothing else. In this study, construct validity was achieved by a detailed account of the research design and its implementation, including the operational aspect of data gathering by describing comprehensively what was undertaken in the field and a reflective assessment of the study by reviewing the efficiency of the procedure of enquiry made

Questionnaires

In this study, several steps were taken to ensure validity. Firstly, the instrument used to quantitatively measure variables such as attitudes and knowledge were instruments utilised and fully validated by several authors and researchers of various fields. The interactive education programme was modelled from the widely accepted baby friendly initiative and breastfeeding strategies by the UNICEF and WHO.

Interviews

During the interviews, several measures have been proposed to aid with ensuring validity during interviews. One of the measures is the development of an early rapport between the researcher and the mothers prior to the initial data collection process. Petty *et al.* (2012) recommended prolonged engagement between the interviewer (researcher) and the participants (mother) to accomplish ample understanding to build relationship of trust between the parties. In this study, the researcher engaged with the study participants in order to build a rapport.

Reliability

Reliability points to the consistency of the results and how replicability of the study may be attained. According to Woodrow (2014), for a study to be reliable similar results should be obtained if the study were to be done repeatedly in a similar manner. It is, however, vital to point out that reliability is not always the innate characteristic of the research instrument, but it is sometimes to be understood to relate to the data obtained from meticulous administration of the instrument. Reliability has been suggested to be a compulsory but not adequate pre-condition for all forms of validity (Alston and Bowles, 2003), though this must relate specifically to traditional scientific designs rather than to qualitative methods. Strategies made to address reliability in this, an efficient organisation system for collected information, as well as the institution of a comprehensible sequence of evidence to specify and document the data collection process.

Questionnaires

Internal consistency reliability was achieved by use of standardised tools. The instrument used to quantitatively measure variables such as attitudes, knowledge, and behaviour were instruments utilised and fully validated by several authors and researchers of various fields. The interactive education programme was modelled from the widely accepted baby-friendly initiative and breastfeeding strategies by the UNICEF and WHO.

Several methods, theories, and sources can be employed by the researcher so as to provide data that will strengthen the study. This technique presents a range of approaches in looking at similar incidence and adds reliability and integrity in the conclusions made from the research. To accomplish this, the researcher compared the responses of several mothers' attitudes, knowledge, and behaviours towards breastfeeding, exploring the similarities and differences in opinions and experiences and giving reasonable explanation of the phenomenon; therefore, considerably increasing credibility to the findings.

In other words, it is a manifestation that the results are reflective to a wider population. However, since this is the qualitative portion of the study and is specific to a small number of individuals, it may be difficult to apply the findings and conclusions to the whole populations or other situations. In order to address this challenge, information was provided in detail throughout the study such as the data collection method utilised, the number of mother

participants included in the study and their characteristics, the number and lengths of data collection activities, as well as the time period over which the data was collected.

In this study, steps were taken to guarantee that the findings were the result of mothers' ideas, attitudes, knowledge, and experiences and not the preferences and characteristics of the researcher. This was done through emphasis on triangulation and the reflective comment.

Interviews

Provisions to ascertain honesty amongst participants were carried out. Specifically, at the onset of recruitment, expectant mothers who were referred by the obstetrician were given the chance to decline participation in the study to guarantee that the data collection activities involve only mothers who were authentically keen to take part and offer information freely. The participants were encouraged to be candid at the beginning of the telephone interview, with the researcher instituting rapport and emphasising that there are no right or wrong responses to the questions. In addition to the aforementioned provisions, the researcher assessed the research as it developed through a reflective commentary, which was primarily dedicated to the efficiency of the techniques that have been implemented. This played a significant role in what Lincoln and Guba termed as progressive subjectivity or the monitoring of a researcher's own developing constructions, which the researcher considered critical in establishing credibility.

Researcher's reflections on different experience between KSA and UK and the need for caution in interviewing

As a mother off two children I had different experiences in pregnancy. The first child was born in KSA where there was a lack of services for me during pregnancy and for my child and me after the birth. I did not distinguish these shortcomings until after my second experience of midwifery care and childbirth in the UK. It was remarkable how the systems differed so completely between the two countries. This experience threw a spotlight on the importance of such programmes to encourage women at least to know the right information and to expand their knowledge. It was a startling revelation of how things should be and, perhaps, could be in my own country; at least one day.

Through supervision and review of how I would approach the interviews, I came to understand the need to control my own enthusiasm and commitment (which had been vital during the intervention) in order to allow participants to express their own thoughts, doubts, beliefs and concerns without being unduly influenced by my own thoughts.

`RESEARCH ETHICS

A risk-analysis approach was adopted for addressing ethical issues in the study (Long and Johnson, 2007). This involves identifying the actual or potential risks to participants and then working to eliminate or minimise the risk, or to be ready to cope with the situation if the risk is realised.

The Risk of Perceived Coercion

In any study that has the support of the government or other public bodies (or even just of local senior figures) there is risk that potential participants will perceive a duty to comply. The voluntary consent of study participants was essential since there was no obligation to take part. Each had the right to be informed and to be provided with all relevant information in relation to the study. Printed information sheets and oral explanation were used to ensure that the purpose of the study and the role that would be played by participants were understood. There was plenty of time to ask questions, to seek clarification, and to think first before deciding to participate. The study was recommended by the participants' trusted physician as a means of verifying the approved nature of the study rather than requiring participation. Signed consent forms were used, though the researcher was always present and ready to read the information sheet to the participant and to record oral consent if a participant were unable to read or write. This eventuality did not arise during the study. The information sheet emphasised the voluntary nature of participation and the right to withdraw at any time without needing to provide an explanation.

Risk of Cultural Conflict

In was acknowledged that the participants wold have some degree of apprehension regarding the topic of breastfeeding due to cultural practice and norms. Undertaking the intervention and interview may have caused cultural conflict. To minimise this, the researcher emphasised to the participants that anonymity would be maintained. The participants were all female, and all study procedures were undertaken by the researcher who is also female. Presenting the intervention at the clinic legitimised dealing with such matters, while follow-up contact at T3 was by telephone call between two women who had already been introduced in a formal, professional setting. The use of the baby manikins introduced some fun into the experience, again making the discussion of some otherwise sensitive matters possible.

The Risk of Breach of Confidentiality

The risk of breach of confidentiality was mostly theoretical, but needing to retain personal contact details for the T3 data collection posed a risk, as did storage of data. The study was conducted with a high level of confidentiality, and the mothers involved were assured that their identity would be protected for the entirety of the study. No information gathered would be linked directly to any of the participants. Steps were taken to preserve confidentiality of information from the questionnaires and interview through the use of study number assignment rather than labelling data with personal details, and information was aggregated for reporting to ensure that information could not be correlated to the specific participant. No personally identifying data was used in reports or in publications.

Such personal data as was essential was stored separate from the study data. Hard copies of all personal and study data were stored in a secure, locked filing cabinet in a room that was locked when not in use. Electronic data were stored on a university password–protected computer. All data was backed up on a monthly basis, and the supervisor stored a copy of all study data files on a secure server in dedicated personal space in accordance with the university Data Management Policy. Access to all forms of data was restricted to the researcher and the supervisor.

Formal Approval

Formal approval was secured from the University of Salford Research Ethics Committee and from the Ministry of Health in Saudi Arabia (Appendix 6 &7). The latter covered approval to operate in the clinic.

CHAPTER FIVE: QUANTITATIVE RESULTS

INTRODUCTION

This chapter contains the results of quantitative statistical analysis. The main aim of the research is to assess the impact that a focused education session exerts on the knowledge, attitude, and intended behaviour regarding breastfeeding of Saudi women who are pregnant for the first time. In this chapter, the demographic characteristics of the participants have been reported in tables using frequencies and percentages. Prior to statistical analyses, the data was assessed for normality using Shapiro Wilk test and histograms. The results of normality testing are presented in statistics, *p* values and figures. Due to the fact that the data deviated from normal distribution, non-parametric tests were conducted. For instance, the non-parametric Friedman test was conducted to assess if there were any statistically significant differences in participants' knowledge and attitude (Iowa) score within the intervention group at each of the three time points. Prior to conducting this test, the assumptions of independent observations were met. In instances where Friedman test indicated that there were statistically significant differences, the non-parametric post-hoc Wilcoxon rank test was conducted using the Bonferroni adjustment confidence interval (CI) to control for type 1 error.

In addition, a mixed between-within subject's analysis of variance (ANOVA) was conducted to assess whether participants' age, education level and employment status affected the effectiveness of the intervention across the three time periods ((pre-intervention (test 1), post-intervention (test 2), 2-month follow up (test 3). For this particular statistical test, assumptions of homogeneity of inter-correlations and the assumptions of sphericity were met. Finally, the non-parametric Mann-Whitney U Test was conducted to compare the knowledge and attitude (Iowa) scores at test 1 and test 3 between the intervention and the comparison group. For the purposes of this research, *p* value was set at 0.05.

The results are presented in two parts. First, the changes in key variables identified in the intervention group are detailed. Then, a comparison of results between intervention and comparison groups is presented to demonstrate that the observed changes can be attributed validly to the intervention.

DEMOGRAPHIC DATA OF THE PARTICIPANTS

Intervention group

In all, 33 pregnant women participated in the study. 23 (69.7%) were allocated to the intervention group whereas 10 (30.3%) were in the comparison group. 13 (56.5%) of the participants in the intervention group were between 28-38 years old, whereas 10 (43.5%) were aged 17-27 years old. In addition, 14 (60.9%) of the participants in the intervention group were unemployed, whereas 9 (39.1%) were employed. The level of education of the participants in the intervention group are presented in table 13.

Table 13. The level of education of the participants in the intervention group

Education level	Frequency of participants	Percent (%)
Primary	3	13.0
Intermediate	2	8.7
High School	6	26.1
Bachelor	11	47.8
Post Graduate	1	4.3
Total	23	100.0

Comparison group

Six (60.0%) of the participants in the comparison group were between 17-27 years old, whereas 4 (40.0%) were aged 28-38 years old. The vast majority, 8 (80.0%) of the participants in the comparison group were employed, whereas 2 (20.0%) were unemployed. Finally, most of the participants, 7 (70.0%) had bachelor education, 2 (20.0%) had high school education, and 1 (10.0%) had post graduate education.

ASSUMPTION OF NORMALITY

Prior to statistical analysis, the assumption of normality was tested using histograms and Shapiro Wilk test (Field, 2013). Shapiro Wilk tests were conducted on all the total knowledge and attitude (Iowa) scores at all the time points except total knowledge at test 2 because this value was constant. Normality testing is an essential statistical procedure because it helps to determine if parametric or non-parametric statistics should be used (Field, 2013; Pallant, 2010). The results from Shapiro Wilk tests are presented in table 14.

Table 14: Results of tests of normality using Shapiro Wilk tests

Outcome measures	Shapiro-Wilk tests		
	Statistic	**Df**	**Sig. (*p*)**
TOTAL T1 BFKQ	0.87	33	0.001
TOTAL T1 Iowa	0.88	33	0.002
TOTAL T2 Iowa	0.91	23	0.038
TOTAL T3 BFKQ	0.61	33	0.001
TOTAL T3 Iowa	0.87	33	0.001

The histogram distribution of the data at the three time points are presented in table 14. To accurately determine the assumption of normality, the objective Shapiro Wilk test must be assessed in conjunction with the graphical distribution (histogram) of the data (Field, 2013; Pallant, 2010). The results of normality tests presented in tables 13 and 14 indicated that the data deviated from normality, hence non-parametric inferential statistics was conducted on the data.

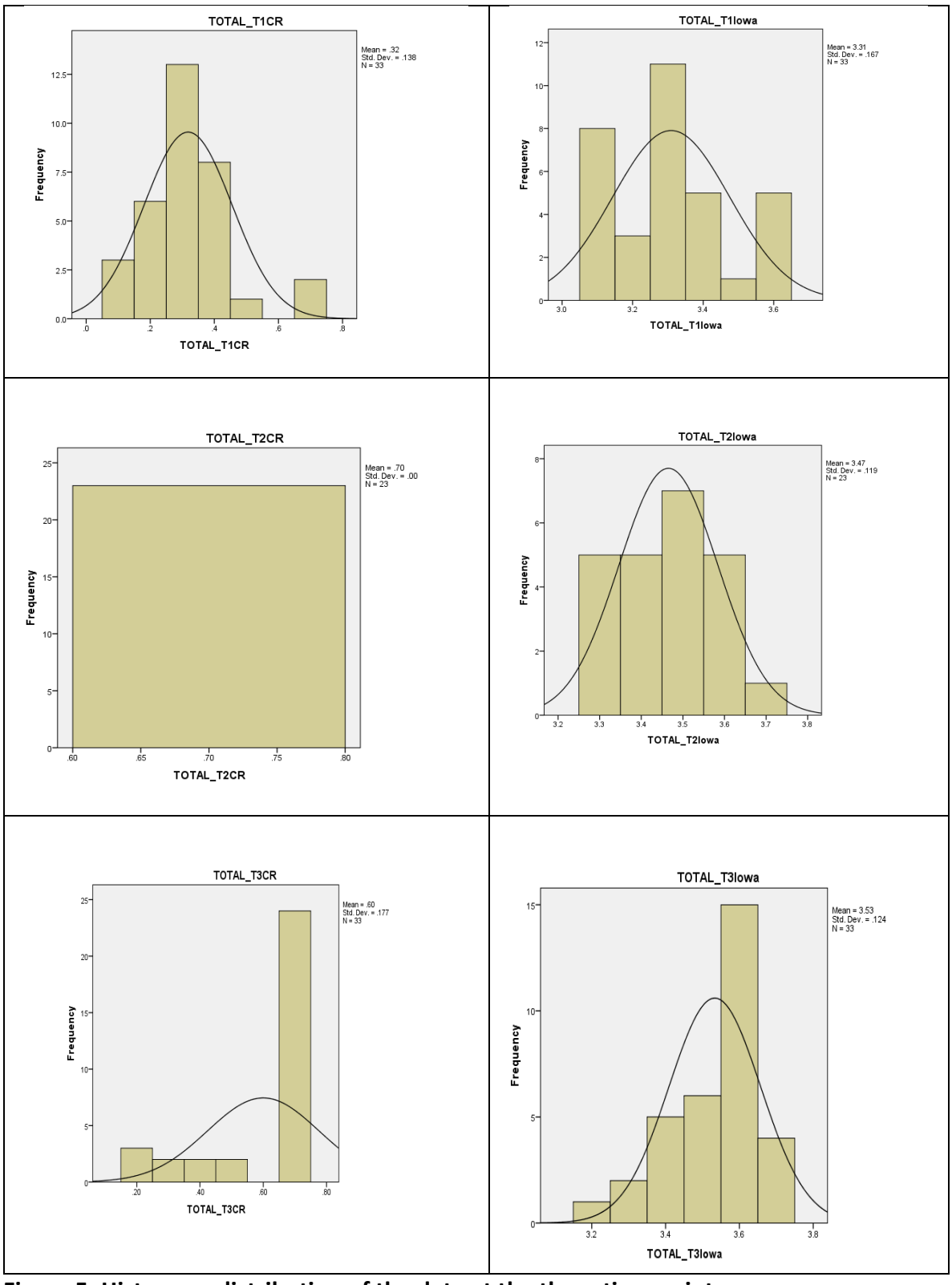

Figure 5: Histogram distribution of the data at the three time points:

KNOWLEDGE

Impact of intervention on knowledge score

The Friedman test was conducted to assess the impact of a focused education session on the knowledge, attitude, and intended behaviour regarding breastfeeding at the three time points. The results indicated that there was a statistically significant difference in the total scores across the three-time points (pre-intervention (test 1), just after intervention (test 2), and 2 month follow up (test 3)), X^2 (2, n = 23) = 44.0, p≤0.001. Inspection of the median values indicated an increase in total scores from pre-intervention (Median = 0.3) to just after intervention (Median = 0.7) and two-month post-intervention (Median = 0.7). Post-hoc Wilcoxon Signed Rank test using the Bonferroni adjustment confidence interval (CI) was conducted to investigate which of the total score at the three-time points was statistically different from one another. The results indicated that there was a statistically significant increase in score following the intervention (test 1 versus test 2), z = -4.14, p≤0.001, with a large effect size (r = 0.61). The median score for score increased from pre-intervention (Median = 0.3) to just after intervention (Median = 0.7). The knowledge of the participant showed increasing immediately after the intervention and this increase continued at follow up.

Effectiveness of the intervention on knowledge scores among pregnant women of different age groups

A mixed between-within subjects analysis of variance (ANOVA) was conducted to assess whether the intervention had different impact on the knowledge score across the three time periods (test 1, test 2 and test 3) of the pregnant women aged 17-27 compared to those aged 28-38 years. There was no statistically significant interaction between knowledge (BFKQ score) and age, Wilks Lambda = 0.84, F (1,21) = 4.15, p=0.05, partial eta squared = 0.17. There was a statistically significant difference in knowledge (BFKQ score) over time, Wilks Lambda = 0.09, F(1,21) = 207.4, p≤0.001, partial eta squared = 0.91. The results indicated an increase in knowledge (BFKQ score) for the pregnant women aged 17-27 and 28-38 over time (table 14 and figure 3). The main effect comparing knowledge (BFKQ score) for the two different age groups over the three time periods was not statistically significant, F (1,21) = 4.2, p=0.05, partial eta squared = 0.17, suggesting no difference in the effectiveness of the intervention on (BFKQ score) among 17-27 and 28-38 year olds. The result indicates that there were no differences in age groups in regard to knowledge after the intervention.

Table 14: Descriptive statistics of knowledge (BFKQ score) for the two different age groups across the three time periods

	Age groups in years			
	17-27		28-38	
Time period	**Mean**	**SD**	**Mean**	**SD**
Pre-intervention (test 1)	0.25	0.13	0.36	0.13
Just after intervention (test 2)	0.7	0	0.7	0
2-month post-intervention (test 3)	0.7	0	0.7	0

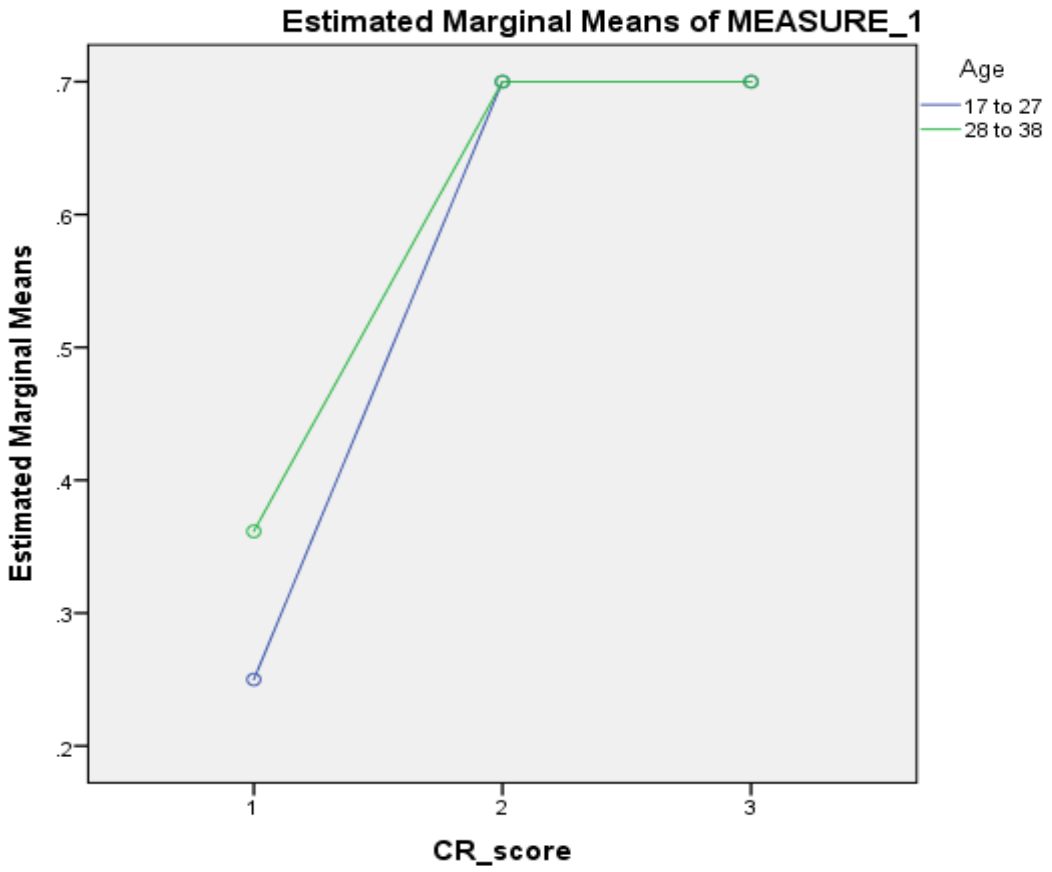

Figure 6: Profile plots of knowledge (BFKQ score) for the two different age groups across the three time periods

Effectiveness of the intervention on knowledge among pregnant women of different educational levels

A mixed between-within subjects analysis of variance (ANOVA) was conducted to assess whether the intervention had different impact on the knowledge across the three time periods (test 1, test 2 and test 3) among the pregnant women with different educational levels. There was a statistically significant interaction between knowledge (BFKQ score) and educational levels, Wilks Lambda = 0.24, F(4,18) = 14.33, p≤0.001, partial eta squared = 0.76. There was a statistically significant difference in knowledge (BFKQ score) over time, Wilks Lambda = 0.07, F (1,18) = 242.61, p≤0.001, partial eta squared = 0.93. The main effect comparing knowledge (BFKQ score) for the pregnant women of different education levels over the three time periods was statistically significant, F (4,18) = 14.33, p≤0.001, partial eta squared = 0.76, suggesting differences in the effectiveness of the intervention on knowledge (BFKQ score) among the pregnant women of different education levels (table 15). There was a positive effect on the educational level at test 2 and test 3 on the knowledge i.e. high school followed by primary educational level.

Table 15: Descriptive statistics of knowledge (BFKQ score) among the pregnant women of different education levels across the three time periods

	Education Level	**Mean**	**SD**
Test 1	Primary	0.27	0.1
	Intermediate	0.30	0
	High School	0.17	0.1
	Bachelor	0.37	0.1
	Post Graduate	0.70	0
Test 2	Primary	0.70	0
	Intermediate	0.70	0
	High School	0.70	0
	Bachelor	0.70	0
	Post Graduate	0.70	0
Test 3	Primary	0.70	0
	Intermediate	0.70	0
	High School	0.70	0
	Bachelor	0.70	0
	Post Graduate	0.70	0

Effectiveness of the intervention on knowledge (BFKQ score) scores among employed and unemployed pregnant women

A mixed between-within subjects analysis of variance (ANOVA) was conducted to assess whether the intervention had different impact on the knowledge (BFKQ score) scores across the three time periods (test 1, test 2 and test 3) among employed and unemployed pregnant women. There was a statistically significant interaction between knowledge (BFKQ score) scores and employment status, Wilks Lambda = 0.80, F(1,21) = 5.24, p=0.03, partial eta squared = 0.2. Similarly, there was a statistically significant difference in knowledge (BFKQ score) scores over time, Wilks Lambda = 0.10, F (1,21) = 188.15, p≤0.001, partial eta squared = 0.90. The results indicated an increase in knowledge (BFKQ score) scores for both employed and unemployed pregnant women over time (table 16 and figure 4). The main effect comparing knowledge (BFKQ score) scores for the employed and unemployed pregnant women over the three time periods was statistically significant, F (1,21) = 5.24, p=0.03, partial eta squared = 0.20, suggesting a difference in the effectiveness of the intervention on knowledge (BFKQ score) scores among employed and unemployed pregnant women.

Table 16: Descriptive statistics of knowledge (BFKQ score) scores for employed and unemployed pregnant women across the three time periods

	Employment status			
	Employed		**Unemployed**	
Time period	**Mean**	**SD**	**Mean**	**SD**
Pre-intervention (test 1)	0.39	0.13	0.26	0.13
Just after intervention (test 2)	0.70	0	0.70	0
2-month post-intervention (test 3)	0.70	0	0.70	0

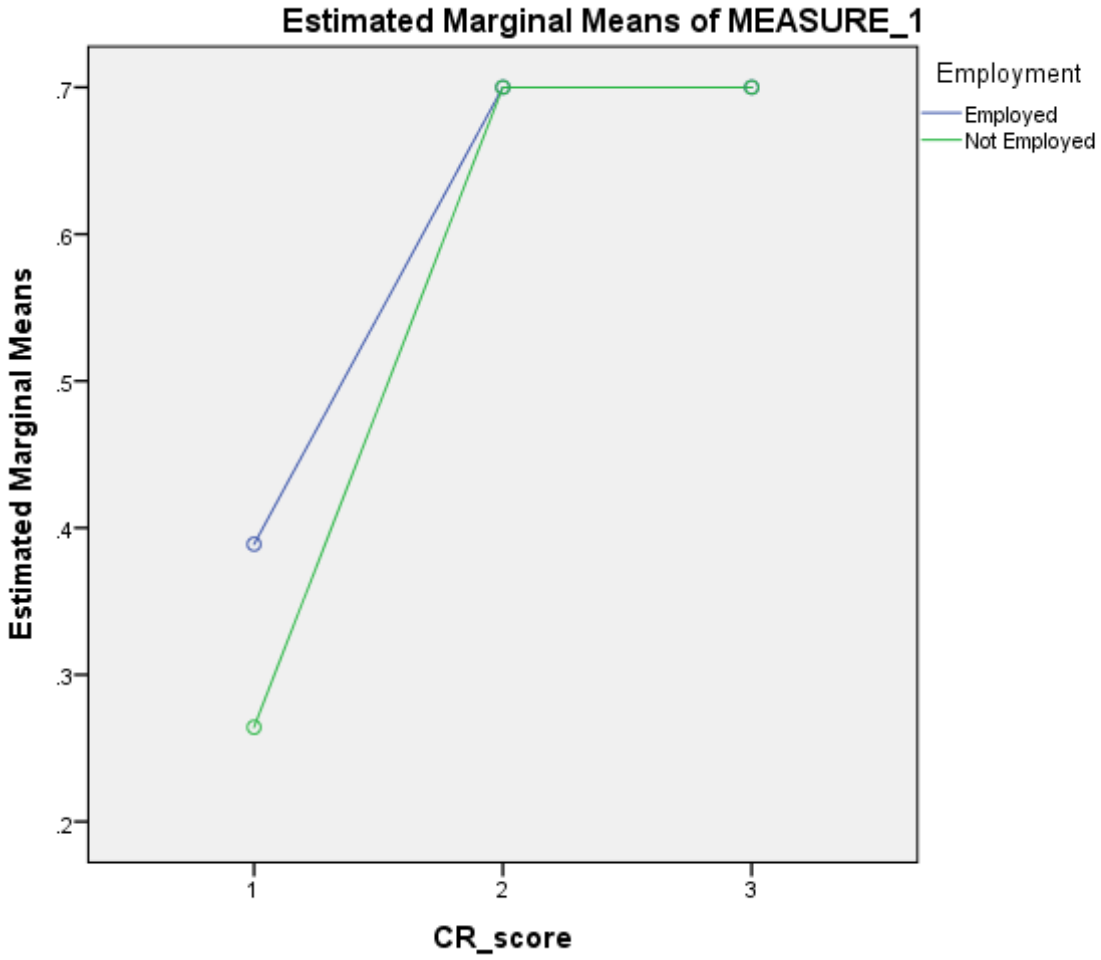

Figure 7: Profile plots of knowledge (BFKQ score) scores for employed and unemployed pregnant women across the three time periods

ATTITUDE

Impact of intervention on Iowa score

The results of Friedman test indicated that there was a statistically significant difference in the total Iowa scores across the three time points (pre-intervention (test 1), just after intervention (test 2), and 2 month follow up (test 3)), X^2 (2, n = 23) = 21.77, p≤0.001. Inspection of the median Iowa scores indicated an increase in total Iowa scores from pre-intervention (Median = 3.3) to just after intervention (Median = 3.5) and further increased slightly at 2-month post-intervention (Median = 3.6). The results of post-hoc Wilcoxon Signed Rank test using the Bonferroni adjustment CI indicated that there was a statistically significant increase in Iowa score following the intervention (test 1 versus test 3), z = -4.09, p≤0.001, with a large effect size (r = 0.60). The participant attitude showed increased in the score immediately after the intervention, which means the intervention has a positive impact on the participant.

Effectiveness of the intervention on Iowa scores among pregnant women of different age groups

A mixed between-within subjects analysis of variance (ANOVA) was conducted to assess whether the intervention had different impact on the Iowa scores across the three time periods (test 1, test 2 and test 3) of the pregnant women aged 17-27 compared to those aged 28-38 years. There was no statistically significant interaction between Iowa scores and age, Wilks Lambda = 0.82, F(2,20) = 2.22, p=0.14, partial eta squared = 0.18. There was a statistically significant difference in Iowa scores over time, Wilks Lambda = 0.23, F(2,20) = 28.91, p≤0.001, partial eta squared = 0.74. The results indicated an increase in Iowa scores for the pregnant women aged 17-27 and 28-38 over time (table 17 and figure 5). The main effect comparing Iowa scores for the two different age groups over the three time periods was not statistically significant, F(1,21) = 2.7, p=0.11, partial eta squared = 0.12, suggesting no difference in the effectiveness of the intervention on Iowa scores among the two different age groups.

Table 17: Descriptive statistics of Iowa scores for the two different age groups across the three time periods

	Age groups in years			
	17-27		28-38	
Time period	Mean	SD	Mean	SD
Pre-intervention (test 1)	3.24	0.18	3.39	0.17
Just after intervention (test 2)	3.45	0.12	3.48	0.12
2-month post-intervention (test 3)	3.6	0.07	3.58	0.08

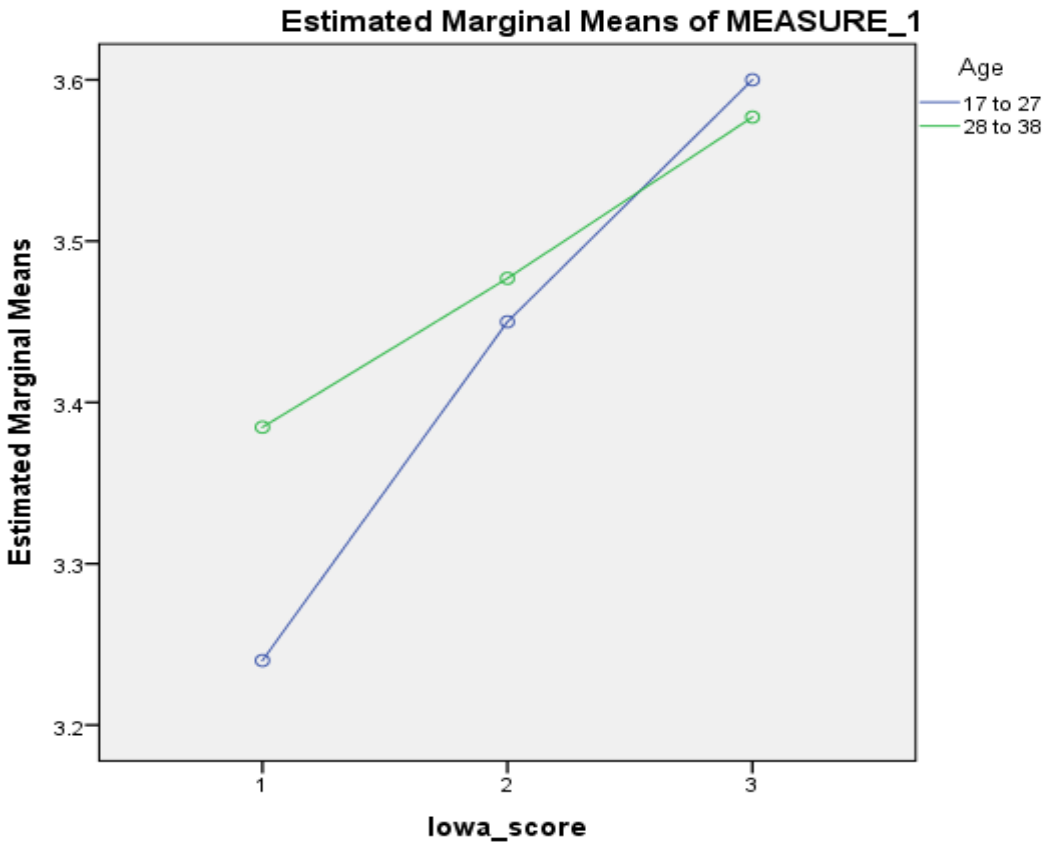

Figure 8: Profile plots of Iowa scores for the two different age groups across the three time periods.

Effectiveness of the intervention on Iowa scores among pregnant women of different educational levels

A mixed between-within subjects analysis of variance (ANOVA) was conducted to assess whether the intervention had different impact on the Iowa score across the three time periods (test 1, test 2 and test 3) among the pregnant women with different educational levels. There was no statistically significant interaction between Iowa scores and educational levels, Wilks Lambda = 0.62, F(8,34) = 1.17, p=0.35, partial eta squared = 0.22. There was a statistically significant difference in Iowa scores over time, Wilks Lambda = 0.47, F(2,17) = 9.71, p=0.002, partial eta squared = 0.53. The main effect comparing Iowa scores for the pregnant women of different education levels over the three time periods was not statistically significant, F(4,18) = 1.02, p=0.42, partial eta squared = 0.19, suggesting no differences in the effectiveness of the intervention on Iowa scores among the pregnant women of different education levels (table 18). There was no change in the attitude among participant on the level education.

Table 18: Descriptive statistics of Iowa scores among the pregnant women of different education levels across the three time periods

	Education Level	**Mean**	**SD**
Test 1 Iowa Score	Primary	3.23	0.1
	Intermediate	3.10	0.0
	High School	3.32	0.2
	Bachelor	3.36	0.2
	Post Graduate	3.60	0.0
Test 2 Iowa score	Primary	3.43	0.2
	Intermediate	3.50	0.0
	High School	3.48	0.1
	Bachelor	3.47	0.1
	Post Graduate	3.30	0.0
Test 3 Iowa score	Primary	3.60	0.1
	Intermediate	3.56	0.1
	High School	3.58	0.1
	Bachelor	3.61	0.1
	Post Graduate	3.40	0.0

Effectiveness of the intervention on Iowa scores among employed and unemployed pregnant women

A mixed between-within subjects analysis of variance (ANOVA) was conducted to assess whether the intervention had different impact on the Iowa scores across the three time periods (test 1, test 2 and test 3) among employed and unemployed pregnant women. There was a statistically significant interaction between Iowa scores and employment status, Wilks Lambda = 0.62, F(2,20) = 6.21, p=0.008, partial eta squared = 0.38. Similarly, there was a statistically significant difference in Iowa scores over time, Wilks Lambda = 0.26, F(2,20) = 28.78, p≤0.001, partial eta squared = 0.74. The results indicated an increase in Iowa scores for both employed and unemployed pregnant women over time (table 19 and figure 6). The main effect comparing Iowa scores for the employed and unemployed pregnant women over the three time periods was not statistically significant, F(1,21) = 3.70, p=0.07, partial eta squared = 0.15. There was no difference in the effectiveness of the intervention on Iowa scores among employed and unemployed pregnant women.

Table 19: Descriptive statistics of Iowa scores for employed and unemployed pregnant women across the three time periods

	Employment status			
	Employed		**Unemployed**	
Time period	**Mean**	**SD**	**Mean**	**SD**
Pre-intervention (test 1)	3.42	0.22	3.26	0.12
Just after intervention (test 2)	3.50	0.12	3.44	0.12
2-month post-intervention (test 3)	3.56	0.07	3.61	0.08

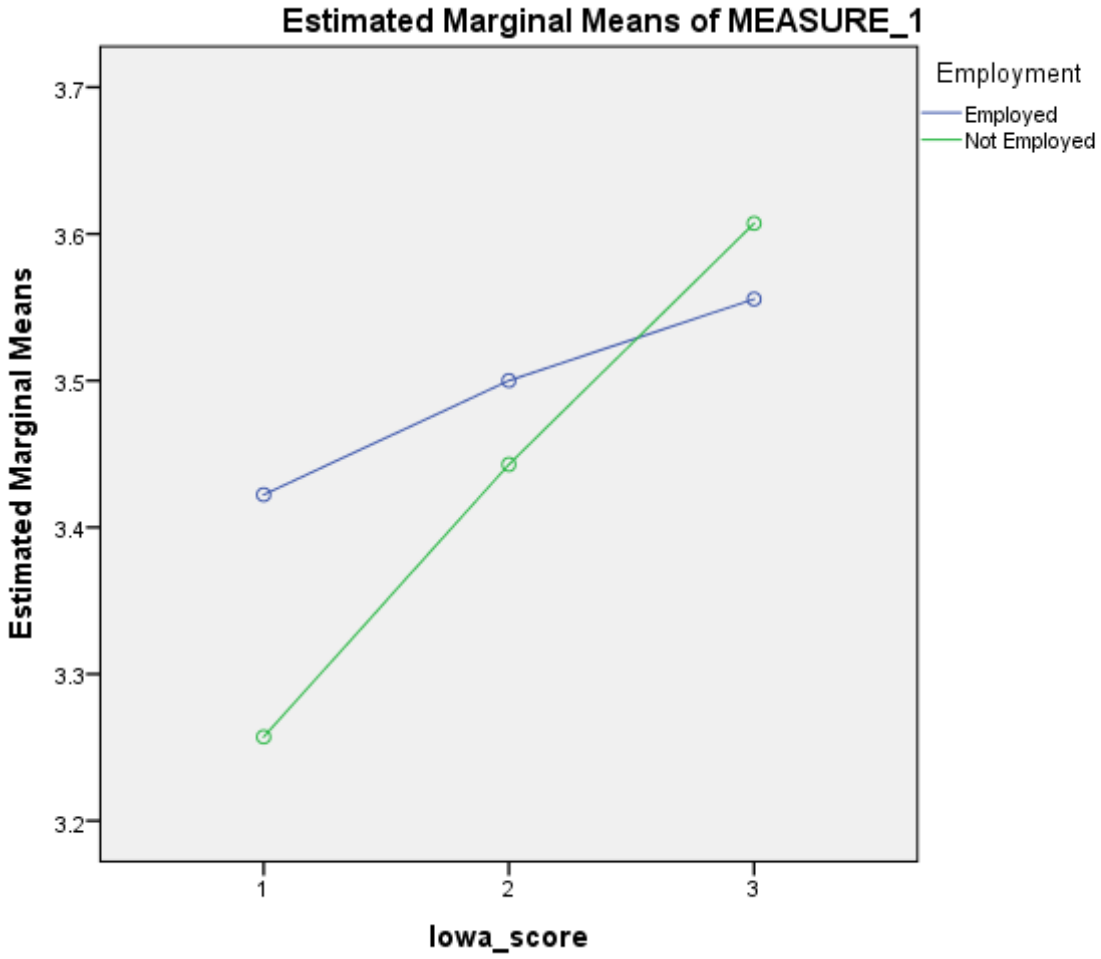

Figure 9: Profile plots of Iowa scores for employed and unemployed pregnant women across the three time periods

DIFFERENCES BETWEEN INTERVENTION AND COMPARISON GROUPS

Comparing knowledge (BFKQ score) at test 1

Mann-Whitney U Test was conducted to investigate if there was a statistically significant difference between the knowledge (BFKQ score) at test 1 between the participants in the intervention and comparison group. The results indicated that there was no statistically significant difference in knowledge (BFKQ score) at test 1 between the intervention group (Median = 0.3, n =23) and comparison group (Median = 0.3, n = 10), U = 113.0, z= -0.08, p = 0.94, r= 0.01. Compering between intervention and comparison at test 1 showed there was no change on the knowledge score among the participants.

Comparing Iowa scores at test 1

Mann-Whitney U Test was conducted to investigate if there was a statistically significant difference between the Iowa scores at test 1 between the participants in the intervention and comparison group. The results indicated that there was no statistically significant difference in Iowa scores at test 1 between the intervention group (Median = 3.3, n =23) and comparison group (Median = 3.3, n = 10), U = 102.0, z= -0.53, p = 0.60, r= 0.09.

Comparing knowledge (BFKQ score) at test 3

Mann-Whitney U Test was conducted to investigate if there was a statistically significant difference between the knowledge (BFKQ score) at test 3 between the participants in the intervention and comparison group. The results indicated that there was a statistically significant difference in knowledge (BFKQ score) at test 3 between the intervention group (Median = 0.70, n =23) and comparison group (Median = 0.35, n = 10), U = 11.5, z= -5.17, p≤0.001, r= 0.9, which means that there was a positive impact on the knowledge after the education intervention.

Comparing Iowa scores at test 3

Mann-Whitney U Test was conducted to investigate if there was a statistically significant difference between the Iowa scores at test 3 between the participants in the intervention and comparison group. The results indicated that there was a statistically significant difference in Iowa scores at test 3 between the intervention group (Median = 3.6, n =23) and comparison group (Median = 3.4, n = 10), U = 30.50, z= -3.5, p≤0.001, r= 0.6. The intervention was effect in a positive way on the attitude among participant comparing with the comparison group.

Conclusion

For the Saudi women in this study, a focused education session on breastfeeding had an immediate impact on knowledge of and attitude toward breastfeeding, but while the heightened level of knowledge remained constant over the two months following the intervention, the Iowa scores indicating the attitudes of participants toward breastfeeding further increased between the second and third tests.

CHAPTER SIX: QUALITATIVE FINDINGS

INTRODUCTION

The qualitative results presented in this chapter convey a complex and varied picture of the factors affecting participants' attitudes toward and behaviours relating to breastfeeding, but they help to explain the results from the questionnaires. While most participants either discontinued breastfeeding shortly after the birth of their children or transitioned into mixed feeding, this was often due to intrapersonal and extrapersonal obstacles, rather than to participants' attitudes toward breastfeeding. These related specifically to factors within the woman, external factors close to the mother (and family), and wider societal factors such as work and public attitudes. Participants who had discontinued breastfeeding altogether or switched to mixed feeding continued to express support for women who breastfed, and this support was all the more emphatic because participants had first-hand experience of the obstacles that mothers had to overcome in order to breastfeed their newborns.

INTRAPERSONAL FACTORS

All participants reported that the focused education session had affected them in some or all of the intrapersonal areas of knowledge, attitudes, and behaviour. Almost all participants reported that their knowledge and attitudes had been changed by the focused education session. However, only two participants had continued the behaviour of exclusive breastfeeding, and 10 participants reported that at the time of the interview they were not breastfeeding at all. This section on intrapersonal factors includes a presentation of the results associated with changes to knowledge and attitude, and of changes to behaviour when behavioural changes were due to intrapersonal factors. Most participants reported that their feeding behaviour had been determined at least in part by close extrapersonal or wider extrapersonal factors. Responses related to extrapersonal factors are discussed in separate sections below.

Table 20: Demographic characteristics of participants in the qualitative phase of the study

Case number and giving names	Age	Level of education	Employment status	Feeding behaviour at time of interview
1- Dlal	26	Bachelor's	Unemployed	Mixed feeding
2- Sumia	24	Currently a student	Student	Mixed feeding
3- Nasren	28	Currently a student	Student	Mixed feeding
4- Fatmah	27	Bachelor's	Employed	Bottle feeding
5- Nagla	25	Intermediate	Unemployed	Bottle feeding
6- Sama	30	Bachelor's	Employed	Bottle feeding
7- Ahlam	28	Currently a student	Student	Bottle feeding
8- Maha	29	Bachelor's	Unemployed	Bottle feeding
9- Hajar	28	Master's	Employed	Breastfeeding
10- Amal	23	Currently a student	Student	Mixed feeding
11- Nada	24	Intermediate	Unemployed	Bottle feeding
12- Sarah	29	Bachelor's	Employed	Bottle feeding
13- Asma	23	Currently a student	Student	Breastfeeding
14- Nadia	26	Bachelor's	Employed	Mixed feeding
15- Haifa	28	Bachelor's	Employed	Mixed feeding
16- Lain	26	Bachelor's	Unemployed	Bottle feeding
17- Sara	25	Bachelor's	Employed	Bottle feeding
18- Amna	27	Intermediate	Self-employed	Bottle feeding

Knowledge

Fourteen participants reported that they had gained knowledge of the benefits of exclusive breastfeeding from the focused education session the intervention). For Ahlam, the intervention had increased her general knowledge of the benefits of exclusive breastfeeding.

> *"I didn't think breast milk had all these advantages. I knew before that breast milk was the best choice for a baby, but I had no idea about all of this."* (Ahlam)

Lain used similar language in describing her new knowledge of the benefits of exclusive breastfeeding.

> *"I knew before that breast milk was the best choice for the baby, but I had no idea about all these benefits until I attended the session."* (Lain)

Nagla described some of the new knowledge she had gained from the intervention, including knowledge of different breastfeeding positions, and indicated that she had found this knowledge useful.

> *"I would like to apply what I learned from the session. First: I remember that there are different positions for breastfeeding and I chose what was suitable for me, as I had a Caesarean birth. That was a great experience for me and corrected some concepts in my knowledge."* (Nagla)

In the study conducted by Amin et al. (2014), it was apparent that the female students in the university viewed breastfeeding positively regardless of being less knowledgeable and holding misconceptions. Alwelaie et al. (2010) observed that the rate of breastfeeding for six months was not optimal. Again, despite mothers' high education level, exclusive breastfeeding was still uncommon, and the predominant mode of feeding was mixed feeding. Both these studies strongly suggest the need for breastfeeding education programmes. Curriculums also need to be adjusted to amend the ingrained fallacies and to promote breastfeeding among Saudi women. It is only through targeted education that future generations can be knowledgeable about the benefits of breastfeeding for the child and hold positive attitudes towards this.

Seven participants spoke specifically of their surprise at learning that exclusive breastfeeding benefitted the mother as well as the baby, suggesting that this information was particularly

significant to them. Nadia described the following change in her knowledge after the intervention.

> *"I didn't think that breastfeeding had all these benefits, not only for the baby but also for the mother, and that was a real surprise for me."* (Nadia)

Maha likewise reported her surprise at learning that exclusive breastfeeding benefitted the mother as well as the baby.

> *"It was a great experience for me. I didn't think that breast milk had all of these benefits. That was new information for me, [including that the] benefit of breastfeeding is not only for the baby but also for the mother."* (Maha)

Dlal also spoke of learning for the first time that breastfeeding benefitted the mother.

> [The intervention] *"was a great experience for me. This was the first time that I had ever attended such a session, and I thought before the session that the benefits of breastfeeding were only for the baby. But after that I found that there were many benefits for the mother as well."* (Dlal)

Nagla was passionate as she described her new knowledge of the benefits of breastfeeding for mother and baby.

> [Breastfeeding] *"will help my health because breastfeeding will help my uterus return to its normal size more quickly at about six weeks postpartum compared with 10 weeks if you don't breastfeed, as well as having benefits for the baby. Helping to protect him from disease as breast milk contains antibodies that help the baby to fight viruses and bacteria."* (Nagla)

When Haifa discussed her new knowledge of the benefits of breastfeeding to both baby and mother, she recommended that this knowledge be taught in schools.

> *"I was actually surprised when I heard in the session about the benefits of breastfeeding. I previously thought that the benefits were only for the baby, but that is not true, and we should be made aware of such information in school."* (Haifa)

Breastfeeding exclusively for six months allows a child to grow without suffering many of the complications experienced during the early months of life by formula-fed babies (Turck et al.,

2005). Breast milk contains many biological properties, some of which are known to improve cognitive development. Exclusive breastfeeding for three months reduces the seriousness of respiratory infection, diarrhoea, and otitis media. When maintained for four months, it also reduces the incidence of developing allergies (asthma or atopy) in at-risk infants for the first two to three years of their life. Another advantage of breastfeeding is lowering the risk of obesity before adolescence, and reducing cholesterolaemia and low blood pressure during adulthood. Breastfeeding is also beneficial to the mother in several ways: it reduces the risk of ovarian cancer before the menopause and also lessens the risk of contracting osteoporosis after the menopause (Turck et al., 2005).

Sumia mentioned other benefits associated with exclusive breastfeeding, including the benefits to mother and baby of skin-to-skin contact.

> *"I didn't know about the meaning of exclusive breastfeeding, and also, I thought before I attended the session that the benefit of breastfeeding was only for the baby, but after the session, I learned a lot of new concepts and that was interesting. For example, the skin to skin contact and how that is important for the first 30 minutes from birth, and the different positions for breastfeeding – that was really helpful.* (Sumia)

Hajar also discussed her new knowledge about skin-to-skin contact and about the benefits of exclusive breastfeeding for both mother and baby as important acquisitions that she had made through the intervention.

> *"I thought before I attended the session that the benefits were only for the baby, but now I know that breastfeeding would be the best choice for my health as well as that of my baby.* [I learned about] *the importance of skin to skin contact for the first 30 minutes."* (Hajar)

Like Sumia and Hajar, Sara spoke of the knowledge that she had gained about skin-to-skin contact. She also joined Nagla in referring to the knowledge she had gained about different positions for breastfeeding.

> *"The experience was great, and this was the first time that I had attended such a session. The session also corrected some concepts in my knowledge. I never thought that breast milk had all these benefits. I didn't know about the different positions for*

breastfeeding and the importance of skin to skin contact, and I had never heard of exclusive breastfeeding and what it meant." (Sara)

Breastfeeding is a natural process that should begin spontaneously and end in a like manner. However, several barriers may interfere with this natural process including, but not limited to, work and moral standing (Al-Jassir et al., 2006). If an infant is left to feed for as long and as often as they want, the mother will have adequate milk flow and production for exclusive breastfeeding for at least six months (Kent et al., 2006).

For Fatmah, the most significant information she had gained from the intervention was that exclusive breastfeeding (as opposed to mixed feeding) was the most beneficial feeding method.

"The session corrected some of the assumptions I had about breastfeeding. I learned the meaning of exclusive breastfeeding and that the baby should be fed only breast milk, and not even water. That was a surprise for me." (Fatmah)

This intervention made it apparent that the women in KSA needed more targeted education regarding the benefits of exclusive breastfeeding. An education programmes can go a long way to debunk the misconceptions that these women have regardless of their level of education. Again, it was evident that most of the women were not conversant with the crucial role played by breastfeeding in the bio-psycho-social life of both the infant and mother.

Attitude

Participants reported that a combination of the intervention and their own experiences had changed their attitude in one of three ways: it had caused them to have a more favourable attitude toward the exclusive breastfeeding of their own children (reported by four cases); it had increased their respect for other mothers who were breastfeeding (reported by three cases); and it had helped them to feel more prepared for motherhood (reported by two cases).

Nada was disappointed when she spoke during the interview because she wanted to feed her baby breast milk.

"At least I would like to give my baby some breast milk for the first 6 months of his life."

She also explained that she had felt that "I will keep trying to breastfeed my baby."

Asma was enthusiastic about breastfeeding because she had learned from the intervention that exclusive breastfeeding was good for her baby.

> *"I am still continuing breastfeeding my baby. I will go back to my university after seven months, and I would like to spend the time with my baby and give him what is good for his health."*

Asma referred with obvious happiness to the contact between mother and child that breastfeeding required, and stated

> *"When I breastfeed my baby I feel this is the simplest thing that I can do for my baby and I can give him what is good for his health."*

Nagla spoke with particular enthusiasm about her eagerness to apply the knowledge she had gained from the intervention, and of her favourable attitude toward exclusive breastfeeding:

> *"I was so excited when I took my child in my arms, and I would like to apply what I learned from the session. First, I remembered that there are different positions for breastfeeding and I chose what was suitable for me, as I had a Caesarean birth."*

Nasren had tried to become pregnant for five years before she finally succeeded. She declared that she wanted to know everything about what was best for her baby. She was very positive when she spoke.

> *"I was waiting for this moment for more than five years, and absolutely I will give my baby what is best for her."*

It is imperative that nurses understand the variety of attitudes towards breastfeeding. In this way, they are in a better position to offer customised breastfeeding information to new mothers. Skin-to-skin contact is the practice of holding the infant naked against the mother's skin (Newman, 2009). Again, it is also crucial that skin-to-skin contact and breastfeeding are supported as they lay the foundation on which nursing mothers may build their ongoing infant care practices.

Three participants reported that as a result of the intervention and of their own experiences they felt increased respect for other mothers who were breastfeeding. Referring to the women who breastfed their children, Amna said

"I really appreciate the women who breastfeed their children. It is an achievement and we have to support them."

Similarly, Fatmah found that as a result of the intervention and her own experiences,

"I have become more appreciative of and have a newfound respect for mothers who are breastfeeding their babies, especially working mothers."

Maha, too, stated,

"I really appreciated those mothers who were patient enough to breastfeed their baby for a long time, for more than six months."

Mothers who are aware of the benefits linked with breastfeeding are more inclined to breastfeed (McCann, Baydar & Wlliams, 2007). In this research, they discovered that most mothers believed that breastfeeding was beneficial for the baby. However, most of them did not know the actual benefits associated with breast milk. Without this knowledge, mothers are unable to evaluate the pros and cons of breastfeeding against formula feeding. New mothers may also be worried that they may not have enough milk to satiate the baby or that breastfeeding may be painful. This is why women should be encouraged to discuss their plans and desires to breastfeed with others including family, friends, childcare providers, clinicians or even employers.

Two participants reported that they had become pregnant earlier than they had expected, that they had not felt prepared to care for a baby, and that they had participated in the intervention in the hope of learning how to care for their babies. These two participants (Sumia and Nadia) reported that the intervention had helped them to feel more prepared for motherhood. The intervention had changed their attitude toward themselves and their own maternal competence. Sumia became pregnant immediately after her marriage and she was not ready to have a baby. She explained the reason for her attending the session.

"I attended this session because I wasn't expecting to get pregnant immediately and I needed to know more information that could help me to be prepared to start motherhood."

Sumia said that the session was a new experience for her and added to her knowledge. This increase in her knowledge was associated with increased confidence.

> *"After the session, I learned a lot of new concepts and that was interesting. It was really helpful."*

Nadia had been married one year ago and became pregnant immediately after the marriage. She was afraid from this stage because she did not feel fully prepared for being a mother. The knowledge that she gained from the intervention helped her to feel more competent.

> *"When I attended the session I really needed to know anything that could help me to prepare myself, and the session was really helpful as there was information I had never heard about."*

Breastfeeding education is crucial. Therefore, it is advisable that healthcare professionals take every opportunity whether postpartum, prenatal or during medical care for the infant to shed more light on the subject. It is instinctive for mothers to do what is best for their child, and leveraging on this encounter to advocate for breastfeeding can significantly affect a mother's breastfeeding tendencies. Again, nurses should seize such opportunities since once new mothers are discharged from the hospital they may lack the means to identify or obtain the necessary skilled assistance to address their trepidations regarding breastfeeding and lactation.

Behaviour

As depicted in Table 15 above, 10 participants reported that at time of interview they were feeding their babies by bottle only, six participants reported that they were feeding their babies both breast milk and artificial milk (mixed feeding), and two participants reported that they were breastfeeding exclusively. The influence of close and wider extrapersonal factors on breastfeeding behaviour is discussed in separate sections, below. This section includes intrapersonal factors that contributed to participants' decisions about how to feed their babies. Table 22 below provides detail of the women from both group who breastfed and for what period of time.

Table 21: Women in intervention and comparison groups who engaged in breastfeeding, with the period of time

Participant	**Group**	**Period of breastfeeding**
1- Dlal	Intervention group	4 weeks
2- Sumia	Intervention group	2 weeks
3- Nasren	Intervention group	2 weeks
4- Hajar	Intervention group	First three days
5- Amal	Intervention group	One week
6- Asma	Intervention group	Full 3 weeks
7- Nadia	Intervention group	Only first day after delivery
8- Haifa	Intervention group	One week
9- Afaf	Comparison group	3 days
10- Jamila	Comparison group	One week

Three participants reported that they had chosen not to breastfeed exclusively in part because they believed that breastfeeding would be detrimental to their appearance.

> *"To be honest with you Nojoud, to maintain the shape of my body I decided to adopt artificial feeding for my baby, as many of my cousins did this, and their children are in good health."* (Sama)

Maha admitted that she wanted to look the best for her husband two months after delivery, and because of that she had not breastfed her baby.

> *"I think that will change the shape of my chest and my body weight as well."*

Amal aimed to regain normal weight after giving birth, and she thought that breastfeeding would increase her weight.

> *"I would like to make sure that my weight will return to what it was before pregnancy. I became hungry all the time."*

During the research, several myths surrounding the effects of breastfeeding arose. For instance, a common myth suggests that breastfeeding makes the breasts sag. This may not be entirely true since it is the pregnancy and not the actual breastfeeding that alters the breast's size and shape. However, it is also accurate that after the lactation period has elapsed, the

cells in the breasts undergo significant modification to return the breasts to their initial state before the pregnancy (Kramarae & Spender, 2004). Another myth implies that instant formula is similar to breast milk. While scientists have tried a great deal to adjust the formula to resemble breast milk, it is no substitute. It lacks the antibodies and hormones that safeguard a child from infection. These and other myths have no scientific basis, and observing them may only end up depriving the child of the vital elements for their growth and development. Yet such myths are propagated from one generation to the next: a cycle of cultural belief that is difficult to break.

Six participants reported that they had chosen not to breastfeed exclusively in part because they had found breastfeeding painful or because the baby had appeared to reject breastfeeding. Nada had chosen not to breastfeed because of her perceptions that breastfeeding was difficult and that her baby had refused it. Initially, she wanted to feed her baby both breast and bottled milk. *"I wish I could give my baby my breast milk from time to time."* Breastmilk was not enough, however, and the baby continued crying. Because of that, she fed her baby using a mixed feeding regime. Over time, *"the baby refused breast milk and preferred artificial milk."* She explained how the baby's preference for bottled milk had started.

> *"The breastfeeding procedure needs to be done fully conscious and in the correct position, and this was so difficult in first week. Because of that I bottle fed my baby during the night, and that led to the baby refusing breast milk during the day."* (Nada)

There is a widespread misconception that some women produce milk easily while others do not produce enough. This is just a fallacy. Almost all women who give birth are capable of breastfeeding. It does not necessarily come easily to every mother and it often requires experimentation and practice before it becomes natural. This process can happen faster for some women. The breastfeeding mother's diet contributes significantly to the production of milk. According to Graham-Harrison (2014), it is now illegal in the UAE for a mother not to breastfeed her child for two years. This declaration alone speaks volumes against the notion that infants would go hungry because of insufficient milk. If such a law were to be passed and implemented in the KSA, it would play a crucial role in ensuring that infants in the land are nourished from breast milk and enjoy its lasting benefits. Such action may be a great many years in the future given the present state of practice and societal norms.

Sarah stated that breastfeeding was painful and time-consuming.

> *"The breastfeeding experience was painful. It was painful, and I thought that I needed enough time to make sure that my baby was full."*

The first breastfeeding experience for Amna was on the first day after delivery: *"I [breast] fed my baby from the first day and it was so painful."* After approximately an hour breastfeeding her baby, Nagla gave up because it was painful and the baby was still crying. *"I couldn't do it as it was so painful and my baby was still hungry, so I gave up and opted for bottle feeding."* Sama said about her experience after delivery: *"well I tried* [breastfeeding] *the first two days but the pain was indescribable."*

The responses of these mothers suggested an opportunity for future interventions to encourage mothers who experience pain during early breastfeeding to persevere, rather than switching immediately to exclusive bottle-feeding or mixed feeding (with the common result that the baby will begin to prefer artificial milk and refuse breast milk altogether).

Haifa offered an example of a woman who persevered in breastfeeding with good results, such that she was able to say of the breastfeeding experience *"It was painful at the beginning but after that it was OK."* Nadia reported an experience similar to that of Haifa. She breastfed her baby for the first week, and her experience was painful at the beginning, but after that it improved: *"at the beginning it was painful, but after that it was fine."*

Breastfeeding can be painful especially during the first few days. While this may be a common occurrence, it can always be addressed through appropriate support and should not be a reason to stop breastfeeding. Incorrect positioning of the baby on the breast can cause nipple soreness and also cause the nipple to crack. When new mothers receive support on the correct ways to position themselves and learn how to latch the infant onto the breast, they will find breastfeeding more comfortable. The breastfeeding intervention in this study was not meant as an attempt to cause women to breastfeed, but instead, to change their attitudes and perceptions on breastfeeding, so encouraging positive choices which make breastfeeding more feasible.

CLOSE EXTRAPERSONAL

Close extrapersonal relationships that had an effect on participants' breastfeeding attitudes, behaviours, and knowledge included relationships with maternal grandmothers (of the baby), husbands, midwives, sisters, cousins, and friends. While most maternal grandmothers were supportive of exclusive breastfeeding or mixed feeding, participants reported that midwives were not supportive of breastfeeding, and that sisters, cousins, and friends served as examples of mothers who fed their babies artificial milk with acceptable results.

Maternal Grandmothers

Three participants reported that their mothers (their babies' maternal grandmothers) were supportive of breastfeeding, but not of exclusive breastfeeding. These maternal grandmothers instead encouraged the mothers to feed the baby breast milk and water. Five other participants reported that their mothers were supportive of exclusive breastfeeding.

Dlal's mother insisted on the baby's need for water supplements rather than exclusive breastfeeding, and Dlal trusted her mother. This was clearly a strong cultural issue, so achieving exclusive breastfeeding in Saudi Arabia probably requires the inclusion of grandmothers in study interventions so that they will be supportive of their daughters. Dlal's mother supported her in breastfeeding her baby for the first month.

> *"My mother spoke to me about her experience of breastfeeding and how hard it had been at the beginning. But she knew its worth for the baby's health, and she had encouraged me to breastfeed my baby all the time."*

Similarly, there was support from Sumia's mother, but not for exclusive breastfeeding.

> *"My mother insisted on the need for water because that would prevent dehydration. I honestly trusted her because she had more experience than me."*

Regarding family support, Haifa remarked that *"my mother and my sister supported me to breastfeed my baby, but not exclusively."* Her mother asked her to give water to her baby, because that would prevent dehydration.

Nagla said that she received no support from the midwives in breastfeeding after delivery, but

"my mother was supporting me." Maha also stated that *"my mother supported me in breastfeeding my baby for the first week, but it was too painful."*

Hajar also received support from her mother.

> *"My mother and my husband helped me and encouraged me to breastfeed my baby for the first week. My mother kept telling me that it would be difficult at the beginning, but that it would be worth it for me and my baby."*

Sarah said that *"after delivery my mother was supporting me for the first hour from delivery and I fed my baby."* Similarly, Amna reported that she had strong support from her mother: *"my mother always told me to breastfeed my baby at any opportunity."*

Support from family members is critical for breastfeeding mothers. The husband, maternal grandmother and sisters play a significant support role; providing suggestions on how to feed the baby and advocating for breastfeeding after the baby's birth (Arora et al., 2000). The survey in this doctoral study revealed that maternal grandmothers and husbands were ready to offer support during breastfeeding, but sometimes the advice was against exclusive breastfeeding. Maternal grandmothers are a crucial consideration regarding how the baby will be breastfed since in Saudi society they are deemed to have more experience. There is also a cultural inclination to comply with the sentiments of the maternal grandmother. Therefore, it became evident that achieving exclusive breastfeeding in KSA required that grandmothers take part in the intervention so that their own knowledge and attitude may be affected and then they could be more correctly supportive of their daughters.

Midwives

Five participants reported that midwives had not been supportive of breastfeeding. No participants reported that midwives had been actively supportive. In four cases, midwives had interfered with breastfeeding by refusing to give the baby to the mother immediately after delivery and insisting that the mother rest instead of feeding the child. For example, midwives would not give the baby to Dlal after delivery because they wanted to get their job done.

> *"I actually asked the midwives to give me my baby ten minutes after the delivery, but there was no encouragement for me to breastfeed my baby."* (Dlal)

Nagla also reported that *"I haven't received any help from the midwife after delivery, only from my mother."* Ahlam had an experience similar to Dlal, with the midwives withholding the baby immediately after delivery.

> *"I asked the midwives to help me breastfeed immediately after the birth but they refused, stating that they had other jobs to do and they advised me to take a rest."* (Ahlam)

Ahlam added that the midwives' interference had influenced her choice not to breastfeed, and that she might have opted for exclusive breastfeeding if the midwives had supported her.

> *"If the midwives gave me my baby in this time and at least help me and encourage me to breastfeed my baby, that would make a difference."*

When asked what she meant by making a difference and she said *"Well maybe that would make me opt for exclusive breastfeeding for six months."*

Nada also experienced having her baby withheld after delivery by busy midwives.

> *"The midwife after the delivery didn't even speak with me. I asked them twice to bring my baby to me, but they ignored me because they wanted to complete their work."*

When Asma started the interview, she was excited to tell about her breastfeeding experience. She tried to breastfeed her baby immediately after delivery, but the midwives were uncooperative.

> *"I just asked the midwives to give me my baby to breastfeed him and tried to do that, but unfortunately there was no support from them, and I was struggling to feed my baby at the beginning. After that, though, everything was fine."* (Asma)

It became clear that breastfeeding support and promotion would be most useful when incorporated into the care systems such as training nurses, midwives, and other members of staff. Midwives should be taught that healthy, full-term infants are better off left in skin-to-skin contact with their mother than being placed on a warmer (Finigan, 2012). As the study suggested, midwives play a crucial role in whether mothers will adopt breastfeeding or not. As the first person to have contact with the baby and with the power of the professional over the patient, it is understandable why they would command such a substantial influence. However, there are workforce issues to be considered if there are to be enough staff to ensure that nurses spend ample time teaching new mothers about breastfeeding and its importance.

Sisters, Cousins, and Friends

Although sisters, cousins, and friends did not actively interfere with participants' exclusive breastfeeding, these close extrapersonal influences sometimes provided examples of mothers who had bottle-fed their babies with acceptable results. These examples helped six participants to reach the decision not to breastfeed exclusively. Nagla, for example, reported that she took her sister as a role model, because her sister did not breastfeed her children.

> *"My sister has three children and all of them received artificial feeding, and they are in good health."*

Nagla's sister told her about the best artificial milk for her baby: *"at this time my sister offered me the best milk that she used for her children."*

Sama reported that she had taken her cousins as examples.

> *"I decided to adopt artificial feeding for my baby, as many of my cousins did this, and their children are in good health."*

Maha, too, referred to her cousin's baby, who *"received bottle feeding and is in good health."* Haifa also reported this effect on her choice to use mixed feeding. *"All the members of my family fed their children using artificial milk."*

Sarah reported that she had been influenced by friends. Her friends suggested some brands of artificial milk that they used for their own children.

> *"Some of my friends suggested names of powdered milk for my baby, and they said there is no difference between artificial and breast milk."*

There was also a more passive form of family influence. Ahlam attributed her decision not to breastfeed to the embarrassment that she had felt about nursing her child in front of friends and family: *"I can't do that in front of my family and visitors as it's really embarrassing."*
This is another instance of belief in the misconception that breast milk is similar to infant formula. Breast milk is a living product which contains antibodies, hormones, and living cells as compared to formula which is a synthesis of proteins, animal milk and vegetable oil.

Consequently, it breast milk has numerous health benefits for the infant including lessened wheezing and the probability of asthma (Turck et al., 2005).

Husbands

Three participants reported that their husbands had been supportive of breastfeeding, and one participant reported that her husband had told her not to breastfeed. Lain's husband told her not to breastfeed their baby because…

> *"My husband and I plan to travel after the delivery and I will leave my child with my mother for approximately three weeks. It will be so difficult if I breastfeed him and leave him after that. I know my husband would prefer to feed our baby artificial milk."*

Nasren recounted her experience of breastfeeding in the first two weeks after birth and how her husband was entirely supportive of her: *"it was so difficult at the beginning, but with my husband's support it became easier."* Asked if her husband knew something about breastfeeding, she replied:

> *"After I attended the session, I explained to my husband the content of the session, and he was so excited as he had been waiting for this moment for more than five years."*

Sama also spoke about her husband's support: *"my husband and I exchanged roles at night and that gave me time to sleep and take a rest."* Hajar also received support from her mother and her husband: *"My mother and my husband helped me and encouraged me to breastfeed my baby for the first week."*

Husbands have tremendous potential in facilitating or undermining the breastfeeding process. One of the husband's crucial roles includes setting the family perception towards breastfeeding. If the baby's father views breastfeeding as a positive practice, it will go a long way to achieving breastfeeding success. Husbands can also seize the opportunity to offer practical help, and to take the time to bond with their child.

WIDER EXTRAPERSONAL

Participants reported that they were influenced in their breastfeeding behaviour, but not in their attitudes or knowledge, by society, culture, and work. No participant reported that she had been influenced by religion.

Society

Twelve participants indicated that a lack of societal support for breastfeeding, and especially for public breastfeeding, had influenced their decision to use artificial milk. Nine of these participants stated that there was no public place in Saudi Arabia where breastfeeding was acceptable, such that feeding the baby outside of the home was not feasible. With regard to breastfeeding in public, Haifa mentioned that the community was not ready for that, and there was no place to do so: *"There is no place to do that in public."* Sumia thought that if there were a private place to breastfeed in public, maybe that would increase the period of exclusive breastfeeding. Nasren complained that it was difficult when she went out, as there was nowhere in public to breastfeed her daughter. Sama said of breastfeeding, *"I can't do this in a public place."* In terms of support in the community, Hajar said, *"there is no place in our community in public for breastfeeding."* Lain stated that the society was not yet ready: *"It would be so difficult in our society to breastfeed my baby in a public place."* Amna mentioned several reasons for her inability to breastfeed including that *"society is not ready to accept this behaviour in public."* Maha, herself, did not accept this behaviour in public, as she thought that it was *"inappropriate in our society."* Dlal contrasted her experiences in Saudi Arabia with the provisions for public breastfeeding she had encountered while traveling in Dubai.

> *"I went with my baby to Dubai when he was two weeks old. I was surprised when I found a private room for breastfeeding, and that helped me to breastfeed my baby. I wish that it were like this in every mall in Saudi Arabia. If it were like this it would increase the length of time for which mothers would breastfeed.* (Dlal)

Two participants indicated that they would have been more likely to breastfeed if they had seen examples of breastfeeding women. Hajar lamented that there was no example of breastfeeding mothers in the community.

> *"I need to see an example of mothers breastfeeding their babies in public, as that would definitely encourage me and other women who want to breastfeed their babies."*

Referring to breastfeeding the baby in a public place, Asma reported that she, too, needed to see examples of women who breastfeed in public, as *"that will encourage me as well as other women."*

Ahlam indicated that she would have benefitted from postpartum education that supported breastfeeding: *"at least I needed someone to remind me about the breastfeeding after birth."*

Hajar spoke in similar terms, commenting on the need for education in hospitals before and after delivery: *"I haven't received education after the delivery; I just want someone to support me and remind me about the breastfeeding benefits after delivery."*

Religion

No participants indicated that they were influenced by religion. Asma suggested why this might be the case when she told me about the Islamic recommendations not being sufficient, because *"many practices in KSA are based on culture, not religion".*

It was evident from this and other aspects of the study that the issue of not breastfeeding in public was not a religious concern, but a cultural one. The culture in the KSA is very stringent on women concealing their bodies. It is only understandable that they perceive breastfeeding in public to be inappropriate. As Dlal pointed out, the provision of breastfeeding places in public buildings could increase the number of women who embrace the practice. Through such breastfeeding interventions, the KSA might be convinced to set up breastfeeding areas in public as a show of support to breastfeeding mothers.

Culture

The societal condition that private rooms were not provided for breastfeeding in public areas was significant because of the cultural condition that public breastfeeding was unacceptable and even shameful, according to eight participants. In remarking on the lack of public areas set aside for breastfeeding, Amal commented on the cultural condition that made such amenities desirable.

> *"there is no special place in public to breastfeed my baby and you know that it would be an embarrassment in our community [as] breastfeeding is not acceptable in public places."* (Amal)

Sumia spoke about self-image and stated that it would not be acceptable to breastfeed in her community. She referred to "prestige" and explained, *"I can't do that in public, because of what the people would think of me."* Part of Saudi culture involves a person's own self-image and what other people think of them.

> *"How can I feed my baby? There is no private place to do that. Even if I cover myself very well to breastfeed my baby, the people will not accept this behaviour in a public place, so we need private rooms."* (Dlal)

Regarding breastfeeding her baby in front of people or in a public place, Sarah said this would affect her self-esteem: *"it is not good to do this in front of people in our community, as they will not accept it and it will also affect my prestige."* This woman was the second to use the term "prestige" to explain the importance of what other people think about her.

Nadia talked about the community and stated that it would be embarrassing to breastfeed her baby in front of people, because people would not accept this behaviour.

> *"Even if I plan to breastfeed my baby for six months, it would be so difficult because there is no place to do that in public."*

Haifa also noted that the community was not ready for breastfeeding in public. Sama spoke of a lack of community acceptance of public breastfeeding: *"I can't do this in a public place. If I think about breastfeeding my baby, our community would not be ready to accept this behaviour."* Despite knowing all the benefits of breastfeeding, Sara preferred not to breastfeed her baby for several reasons, including that she *"couldn't do that in front of people, it's really embarrassing."*

The culture in Saudi Arabia deems breastfeeding in public to be a shameful deed, and, clearly, most mothers are not willing to risk their prestige in the process. However, through the BFI and public education, there may come a time when the practice is viewed as normal. The provision of private rooms would be a major improvement.

Work

Nine participants spoke of being influenced against exclusive breastfeeding by workplaces that were not supportive of the practice. Nasren, for example, said that she adopted mixed feeding as she had to go back to work after only two months. She commented that if there had been the possibility of breastfeeding in the workplace or of being excused to go and breastfeed her baby, this would have helped her to follow the recommendation of six months of exclusive breastfeeding.

Fatmah also referred to her job as a reason for choosing not to breastfeed.

> *"It's difficult for me as I am a working mother, and to breastfeed my baby for six months is almost impossible. Also, the maternity leave is only two months after which I have to go back to my work."* (Fatmah)

Sama explained that, as a bank employee, *"my maternity leave is only for two months and it would be so difficult for my baby to leave him after two months*" [if she breastfed him]. As for there being no place at her work to breastfeed, Hajar declared that *"if there was an opportunity at my workplace for breastfeeding my baby, I would be able to complete the exclusive breastfeeding for six months as recommended."* Hajar also mentioned the short duration of maternity leave: *"as you know the maternity leave is only for 2 months."* Sara said of breastfeeding, *"it would be difficult as I am a working mother."*

Amna, who ran her own business, reported that the obligations of work prevented her from breastfeeding exclusively:

> *"There is no time for breastfeeding my baby because I need to go back to my business as soon as possible. There is no time to take care of my baby in my workplace, and it would be so difficult for me. I don't want my child getting used to breastfeeding because it will be hard to get back to my job."* (Amna)

Sumia and Amal reported that their obligations as students prevented them from breastfeeding.

> *"As I am a university student, there is no time to breastfeed my baby because of the commitments of the study that require a lot of focus."* (Sumia)
>
> *"I have to be with my baby all the time* [to breastfeed exclusively] *and that would be so difficult, as I am a student."* (Amal)

The duration of breastfeeding is longer for women with extended maternity leave and those who work part-time and have support programmes for breastfeeding in the workplace (Guendelman et al., 2009). A similar inference can be made for students. It would be appropriate if action were taken to provide breastfeeding support facilities in institutions of higher learning and the workplace.

Thoughts from women in comparison group

Most of the women in this group report that inability to breastfeed for several factor. As they don't receive any education programs during pregnancy, most of the participants believed that there is no different between the breast milk and the artificial milk

Afaf and Jamila report that:

"I believe that there is no different between the breast milk and bottle feeding" (Afaf)

"I haven't received any information about the breastfeeding during pregnancy, after the birth the midwifes introduce the bottle feeding for my baby immediately after the birth and from that I believe that the bottle feeding is good to my baby and I continue to do that until now" (Jamila)

Shakah referred to her job as a reason for choosing not to breastfeed.

"It's difficult for me as I am a working mother, and to breastfeed my baby is almost impossible, the maternity leave is only two months." (Shakah)

Mohra reported that her mother were supportive of breastfeeding at the first week after birth but she had a difficult to continue that.

"My mother keep told me to breastfeed my baby but that was too painful" (Mohra)

On the other hand, Nahad was take her sister as examples helped to reach the decision not to breastfeed exclusively at all.

"I remember the first day after a few hours from birth, my sister suggested some brand from the (formula milk) and she told me look to my children they are in a good heath, and she is right actually about that" (Nahad)

Some of the participant refers to inability not breastfeed because of the society and the culture.

*"I had never watched mothers breastfeeding their babies in public, as that would definitely make me and other women think about that and maybe that will be a sign for the important of this behaviour." (*Nadina)

"There is no special place in public to breastfeed my baby and you know that it would be an embarrassment in our community." (Majdah)

Participants' Recommendations

Participants recommended ways in which wider extrapersonal conditions could be altered in order to allow and encourage more women to breastfeed exclusively. Six participants recommended making focused education sessions like the intervention more widely available. Nadia hoped there would be a ses/sion similar to the intervention in the future not only for pregnant women, but for all wom/en who wished to educate themselves.

> *"I hope this kind of session is available for any women who wish to educate themselves."*

Haifa noted that

> *"I previously thought that the benefits were only for the baby, but that is not true, and we should be made aware of such information in school."*

Nasren spoke in similar terms.

> *"I would like to see such sessions* [as the intervention] *in our education curriculum in schools to increase the awareness of the importance of breastfeeding in the next generation."*

When I asked Nagla about having education similar to the intervention in Saudi schools she replied,

> *"That will help to change society's perception, and there will be wide acceptance for any women who wish to breastfeed their babies at any time and in any place. Even in the hospital, there must be sessions like this available for any woman who wishes to educate herself. I haven't received any help from the midwife after delivery, only from my mother."* (Nagla)

Sama asked me if there would be such a session in the future, because she would like to recommend her friend to attend.

> *"Using the doll was so much fun and that was an unforgettable experience. If there is anything like this in the future I would recommend my friend to attend."*

Ahlam also supported intervening in schools to prepare the next generation.

"I would like to recommend teaching this information and everything related to women's and children's health in our schools."

Fatmah offered a recommendation with broad societal implications, saying,

"If the working mother wants to breastfeed her baby, we need to give to her the permission to go at least for one hour during working hours to breastfeed her baby. Unfortunately, in my workplace, they will refuse that, and because of this, I haven't even thought about breastfeeding my baby. There must be cooperation between the Minister of Health and all areas of women's work." (Fatmah)

Fatmah understood the need for breastfeeding, but she thought that it was a hopeless situation. However, there was something in her that made her open up and say that the *"Ministry needs to act"* to make it possible. Maha also recommended a societal change, saying, *"we need to support those women in our community to increase the rate of breastfeeding."*

It was encouraging to see how much the women who participated in the intervention embraced the key message. Since it was possible to influence their attitudes towards breastfeeding into a more positive outlook, the possibility of moving on one small step at a time towards acceptance and support of breastfeeding more widely could be seen to be more feasible.

SUMMARY

Participants reported a positive attitude toward breastfeeding, with some of the women accounting for the ongoing rise in their positive view of the practice by saying that their own experiences of the obstacles breastfeeding women confront had greatly increased their admiration for the mothers who persevered in feeding their babies breastmilk. Participants reported that their positive attitude toward breastfeeding had been affected in part by the intervention, and that their favourable attitude was associated with the knowledge they had gained from the intervention. A number of participants recounted their surprise at learning that exclusive breastfeeding was beneficial not only for the baby, but for the mother as well. Other knowledge gained from the intervention included an understanding of different breastfeeding positions, an understanding of the benefits of breastfeeding and skin-to-skin

contact for both mother and baby, and the information that exclusive breastfeeding was better for the baby than mixed feeding.

Despite changes in attitude and knowledge that were prompted at least in part by the intervention, most participants used mixed feeding or exclusive bottle feeding for their babies. Participants described a variety of intrapersonal, close extrapersonal, and wider extrapersonal influences that had caused them to choose not to breastfeed exclusively. Intrapersonal reasons for choosing not to breastfeed exclusively included perceptions that breastfeeding would alter the mother's appearance in a negative way and that the baby preferred artificial milk.

Close extrapersonal influences such as the participants' mothers, husbands, midwives, sisters, cousins, and friends had a mixed effect on participants' breastfeeding choices. Participants' mothers were supportive of exclusive or mixed breastfeeding, and most of the participants who mentioned their husbands indicated that their husbands were also supportive of breastfeeding. Midwives, however, were described as uniformly unsupportive of breastfeeding, with midwives often refusing to give the baby to the mother for skin-to-skin contact and feeding immediately after delivery, citing their own obligations and the new mothers' need to rest. Sisters, cousins, and friends did not interfere directly with breastfeeding, but they served for many participants as examples of mothers who had fed their babies artificial milk with acceptable results. These examples influenced many participants to discontinue breastfeeding by reassuring them that their babies would remain healthy when given artificial milk.

Wider extrapersonal influences such as society, culture, and work were described by participants as obstacles to breastfeeding. A societal factor that many participants cited as being significant was the lack of any publicly accessible, private spaces in Saudi Arabia where mothers could take their babies for breastfeeding when they were out of the home. This societal factor was significant because of the cultural condition that public breastfeeding is considered shameful in Saudi culture, as participants attested. Participants referred to the humiliation and loss of prestige they expected to experience if they attempted to breastfeed their babies in front of strangers, friends, or even family members. Work obligations also

raised obstacles to breastfeeding, because women could not be excused from work to breastfeed and maternity leave lasted for only two months.

Participants were emphatic in recommending that focused education sessions designed to teach women about the benefits of exclusive breastfeeding should be made widely available. A few participants mentioned that they would have been more inclined to breastfeed if private spaces had been set aside for breastfeeding in public areas, if workplaces had offered accommodations for breastfeeding, and if they had seen more examples of other women breastfeeding.

CHAPTER SEVEN: DISCUSION

INTRODUCTION

Once the results from the study were known I turned to the task of positioning these in the context of current knowledge and also in a conceptual context. Importantly, this was not meant to be a theoretical framework that would drive the design of the study from the beginning and dictate the sort of answers that should be discovered. It was a search for a means to explain what had been found and to theorise about the way forward.

Many models of change have been developed such as Michie et al 2011 COM-b model, Lewin's Change Management Model and Change Model but these were not ideal for various reasons. Although seen to work sometimes in the UK NHS, the different situation of varied healthcare organisations in KSA, together with the markedly different national culture that also pervades these institutions lends itself less well to widespread organisational change. Moreover, these models seek to achieve too much too quickly, and that would not work in the conservative Saudi context.

One model in particular seemed to capture the key issues that relate to the potential for change in acceptance of breastfeeding in the resistant culture of KSA. This was a model that addressed the means of initiating change in a large, change-resistant organisation. It focussed on starting by addressing individuals' attitudes and knowledge in a longer-term plan to stimulate change from a low power base but among a large group of individuals. This was the Diffusion of Innovations Model.

ROGERS' MODEL OF DIFFUSION OF INNOVATIONS

Basics of the Model

Rogers' (1983) Diffusion of Innovations model was adopted as a particularly helpful means to situate the study findings in a conceptual context. Innovations, whether they be practical or theoretical, are not always readily accepted, limiting their wider application. New advancements and concepts often face a difficult road before they are integrated within an organization or society. Circulating and disseminating new ideas and advancements often

occurs over time, thereby limiting their applicability and efficacy. Rogers attempted to analyse and interpret this discrepancy through the concept of the Diffusion of Innovations model.

To appreciate Diffusion of Innovations accurately, the theory should be examined through the exploration of dual concepts: innovations and diffusion. Rogers (1983) asserted that diffusion is the procedure that communicates the innovation to the appropriate gatekeepers so that it may be disseminated and implemented in an organization or society. Communication in this model is defined as the method of distributing the information between individuals to help to create mutual understanding. Through this communication the individuals can either advance the idea or disagree upon its purpose and implementation. Communication must be considered as a two-way process. No single individual can dictate or impose the innovation onto other persons. Communication methods, such as persuasion, influence how and when diffusion occurs.

However, communication is only one aspect of diffusion. It is essential to understand the conditions in which the innovation was created and applied in the context of the environment, society, and time. Diffusion occurs when introducing a new notion or advancement. It is the novelty of the presented concept that differentiates diffusion from other types of communication. Uncertainty is another aspect of diffusion, which should be accounted for (Rogers, 1983).

Innovation, Communication through channels, Time, and Social Systems

There are four main elements within Diffusion of Innovations: innovations, communication through channels, time, and social systems.

Innovation

Innovation may be described as a concept, procedure, or item that is considered novel before its implementation (Rogers, 1983). Innovation is not limited by time, rather the individual's perception of the originality of the innovation is central instead of its actual age. To be an innovation it must have a relative advantage over a previous practice or concept, be compatible with preceding knowledge, be relatively easy to understand, be accessible for implementation through a hands-on approach, and should be clearly observable for individuals to see its positive and negative characteristics (Rogers, 1983).

Innovation development

Before any diffusion can occur, an innovation needs to have been generated. The innovation development process involves the formation, happenings, undertakings, and choices during the creation of an innovation (Rogers, 1983). Innovation development occurs after a problem has been defined thereby creating a need for further research and development. Rogers identified a role for applied research which examines the problem and attempts to provide a practical solution. Innovation development places the research results into action to develop solutions for the parties involved while commercialization is the creation, promotion, and circulation of that innovation. A prime method to diffuse the innovation is through smaller clinical trials in where reactions to the innovation can be better appreciated.

Diffusion

Diffusion research emanated from a succession of scientific topics. It has since transformed into a comprehensive unified theory of notions and overviews formed over a multitude of studies and disciplines. There have been nine different research traditions in which diffusion has grown: anthropology, early sociology, rural sociology, education, medical sociology, communication, marketing, geography, and general sociology (Rogers, 1983). From these nine diffusion traditions, eight categories of diffusion research have been identified: timing of innovations, adoption of innovations in a social system, innovativeness, opinion leadership, participants within the diffusion network, rate of incorporation in different social systems, communication channel practice, and results of innovation (Rogers, 1983). Diffusion supports the Veblen's (1933) concept of trained incapacity by acknowledging that recognizing innovativeness, opinion leadership, and other characteristics can limit how other dynamics are interpreted.

Drawbacks to diffusion research remain. The first aligns with Veblen's concept by agreeing that there could be a pro-innovation bias where the proposed innovation needs to be immediately and universally employed. The individual blame bias asks that individuals must be responsible for their own construal of the innovation, rather than the organization or society itself. Recall problems detail that participants often have difficulties in remembering when an innovation was introduced to them (Rogers, 1983). Finally, the issue of equality details that demographics or socioeconomic differences can alter the diffusion of innovation.

Communication Channels

While communication has been defined already, it is important to expand upon the subject of communication channels. Diffusion relates to the manner in which the new data is communicated between individuals (Rogers, 1983). This communication must be composed of an innovation, a participant who has intimate knowledge of that innovation, an individual who remains unaware of the innovation, and a channel that permits discussion between the two individuals (Rogers, 1983). One example of a communication channel is mass media, where the media can disseminate a new concept or invention to a population that is widely unaware of the concept. Mass media communication is juxtaposed by interpersonal channels where an individual seeks to augment another's understanding through one-to-one communication (Rogers, 1983). In current time, there would be a major role for social media.

Time

Time as a trait in the diffusion model can augment the decision-making process, the novelty of the innovation, and the degree to which it is applied. There are five aspects of the decision-making process: knowledge, persuasion, decision, implementation and confirmation (Rogers, 1983). Decision-making begins with obtaining new knowledge. Persuasion is the force that influences an individual to make a decision. The innovation is then interpreted before application. Lastly, the individual confirms their perception of the innovation's validity (Rogers, 1983). The result of the decision-making process informs the individual to either adopt or reject the innovation.

Social Systems

Social systems also determine an innovation's interpretation. A social system contains a series of interconnected pieces that join to solve a problem or reach an objective (Rogers, 1983). Structure must be deduced before any innovation can be implemented. Structure creates an understanding and agreement about the innovation's purpose and results (Rogers, 1983). Therefore, norms should be established for standard measurements among participants within that social system. Norms are largely established by opinion leaders, who could informally alter the opinions or actions of participants (Rogers, 1983).

There are three types of innovation decision-making processes. The first is the optional innovation decision, in which the acceptance or rejection of an innovation is left up to the

individual (Rogers, 1983). Collective innovation decision-making leaves the choice up to a majority of individuals within the social system. Lastly, authority innovation decision-making is the adoption of the innovation by those in power (Rogers, 1983). Thus, it is important to reflect on how a social system affects the alterations to the existing paradigm.

The decision-making process of whether to adopt and accept an innovation can be broken down into five categories. The first aspect is the relative advantage of the innovation. Relative advantage asks the individual to assess whether the innovation improves upon previous practice. Compatibility is how the innovation relates to the individual's values, background, and demand for that innovation. Complexity refers to how the innovation can be interpreted and applied within a social system. Observability is whether the benefits of the innovation is visible to others in the social system. Lastly, the rate of adoption details how fast an innovation is diffused an employed within the social system (Rogers, 1983).

The decision-making process can be influenced by the nature of the innovation and how the communication channels depict the innovation. Additionally, the nature of the social system can derail or encourage the adoption of the innovation and how much change the innovation brings (Rogers, 1983). Results can also be influenced by the diffusion effect. The diffusion effect assesses how an innovation will be adopted. Traditionally, if awareness in a social system is ranked at around 20% to 30%, there is minimal adoption, however, the diffusion effect can be increased when a social system is more unified and above 30% (Rogers, 1983).

Those who decide upon utilizing an innovation can be broken down into five categories, innovators, early adopters, early majority, late majority, and laggards. These groups are formed by understanding the mean and standard deviation among adopters. Innovators tend to be enterprising, early adopters are apt to be respectable, early majority forms measured decisions, late majority tend to be incredulous of the innovation, and laggards tend to rely on traditional methods, before innovation adoption (Rogers, 1983). To classify these groups, one must rely on a series of generalizations that involve communication channels, personality traits, socioeconomic status, personality and demographics.

Innovation often requires a change agent. Change agents are individuals who can influence stakeholders' opinions to guide the preferred change (Rogers, 1983). However, these change

agents face complications depending on their social position and the degree of information saturation which tend to inundate adopters with too much information causing disinterest (Rogers, 1983). Therefore, the change agent must impart the need for the conversion, adequately express the innovation's benefits through easy to understand information, detail what the problem is, form a base to support any change, translate the change into an actual innovation, help alleviate any difficulties within that change, and to improve the relationship with actors involved (Rogers, 1983).

The Organizational Context

Organizations tend to be the environment in which many innovations are created and incorporated. An organization is defined as a group of individuals who aim to reach joint objectives and have an internal hierarchy with a distribution of tasks and labour (Rogers, 1983). Organizations must have predetermined goals, prescribed roles, an authority structure, rules and regulations, and have informal patterns. The innovation process is divided between steps where all the data is gathered, interpreted, and the innovation is fomented (Rogers, 1983). The results of the previous steps are collected and implemented. Before accomplishing implementation, attitudes first need to change for acceptance and diffusion to occur.

However, as framed in this study, Diffusion of Innovation can be applied not just to an organization, but also to society through a system's social structure. Due to the changing nature of social structures, change cannot always be implemented immediately and often requires a long period of time before society accepts any changes (Rogers, 1983). The influence of social structures is especially true in the KSA where socioeconomic conditions and religion can alter the speed of diffusion depending on what the innovation is. The limitations of diffusion can be compounded by family structure in the KSA. As women and men have defined gender roles in raising a child, often fathers remove themselves from the parenting process, and instead defer to the mother on child-rearing decisions. Yet, by having only half of the family structure involved in parenting, innovation diffusion and attitude change may be slowed down in society when compared to smaller organizations.

APPLICATION TO THIS STUDY

The Diffusion of Innovation model was applied to the findings of this study. The organization for this study was the KSA society as a whole. Citizens of the KSA have had numerous shifts in thinking about breastfeeding, indicating that change can, indeed, occur on this subject. Beginning in 1967, 90% of KSA mothers were breastfeeding (Al-Siba'I and Al-Bar, 1993). Yet in the 1980s, after an ideological shift, researchers observed that only 50.7% of mothers in the rural area of Timhah were breastfeeding (Al-Nasser, Bamgboye, and Alburno (1991). By 2000, the number of mother's breastfeeding increased, but only for the duration of the first few months of motherhood (Al-Mazrou et al. 1994). Westernization and changing socioeconomic conditions have largely accounted for these shifts rather than a specific agent of change. The one innovation that could partially explain these shifts was an increase in the availability of powdered milk in 1983 (Shurtleff and Aoyagi, 2013). However, recent studies remain partial, incomplete, and conflicting (Amin et al., 2011; El-Gilany et al., 2011).

Many of these studies explored differing variables such as age, socioeconomic conditions, education, and geographic location. However, these studies did not introduce an innovation to determine how or whether the innovation would be accepted or bring about change. There is no guarantee that the mere introduction of an innovation will disperse into society. KSA society and culture are torn between the past and future. While some innovations have been integrated easily and accepted into society, others are refused and discarded. History, religion, and societal structure often create complex and conflicting thoughts and feelings on an innovation, making a persuasive argument either for or against difficult. It is hard to implement a new system if a logical argument cannot always be accepted at face value.

Unsurprisingly, not all women in this study were open to the change or aware of the benefits of increased breast feeding. Many of the participants who were resistant were younger mothers. As KSA society is segregated by gender, women often seek other women to aid and inform them during the child rearing years. Other mothers have a particular influence on whether a mother decides to breast feed. Conversely, Saudi midwives, who prefer the use of formula milk, can dissuade mothers from breastfeeding. These extra-personal influences should not be under-estimated.

One of the major components of the Diffusion of Innovation model is the component of communication. Communication greatly stimulates the degree to which an innovation is incorporated into society as a whole. The model also noted that persuasion is an important component of diffusion. Yet in the case of mothers and midwives, persuasion comes from two differing sources and is often contradictory. Therefore, it is important to inform not just the mothers themselves, but their immediate parenting circle as that can determine whether a mother accepts the innovation or, alternatively, whether uncertainty prevents the innovation from being employed.

While the Diffusion of Innovation model is applicable to this study, there are "softer" characteristics, not included in the model, that could influence how an idea is disseminated. Perhaps one of the greatest difficulties is the relationship between culture and society. While communication is key in changing knowledge, attitudes, and behaviour, women in KSA are limited by their gender roles. Therefore, it was imperative to create an environment in which ideas about breastfeeding could be discussed openly.

The researcher overcame these obstacles by conducting the research in a calm and conducive environment, led by a mother who was breastfeeding. This atmosphere created an opportunity for sharing and collaboration between participants and the researcher, permitting open discussion of the topics being deliberated. By creating a positive environment, there was a clear improvement in participation and a change in knowledge and attitudes regarding breast feeding. The Diffusion of Innovation model could expand upon the notion of the influence of immediate environment when discussing how ideas are disseminated in an organization or society.

The Diffusion of Innovation model may be able to describe why the behavioural response remained mixed. While participants noted that they had increased awareness of the benefits of breastfeeding, shifting this awareness into actual change has many barriers. Perhaps the strongest barriers are society and culture. While expanding the consciousness of the participants about the benefits of breastfeeding was achieved, substantive societal and cultural changes within the KSA could be long coming. One explanation for this lies within the nature of the communication of the innovation. As traditional gender roles permeate society,

there is little available recourse for women to address their breastfeeding concerns, let alone diffuse the recommendations into everyday conversations and practical application.

For many of the previously stated reasons, society and culture have both been implicated; sometimes separately, sometimes together, and often interchangeably. However, differences between the two exist and can exert an impact on how and when an innovation is diffused into society. Culture tends to be ingrained in a nation, and is essentially conservative in nature. Any change to culture tends to warrant a measured response rather than one that ushers in immediate change (Guta & Karolak, 2015). Contrary to culture, societal change can incorporate innovations with more haste (Rogers, 1983).

Participants felt that it was KSA culture and not necessarily religion that was preventing a cultural shift. As KSA culture is rigid on women concealing their bodies, support for breastfeeding becomes more about what is acceptable rather than about issues of infant nutrition. The lack of public breastfeeding areas communicates an inflexible and unaccommodating environment, making the act of breastfeeding embarrassing. One participant noted that KSA culture must assure mothers that breastfeeding in public is now acceptable and would not result in a lack of prestige within their community. Another participant noted that a lack of prestige is detrimental to their self-esteem. Showing the body is so damaging to social standing in KSA culture that mothers much prefer to halt the practice than to provide breastmilk for their child and risk the social consequences. However, steps can be taken to amend KSA culture regarding breastfeeding. Most participants remarked that the mere act of providing public spaces to breastfeed would indicate that KSA culture has changed enough that the act is now not only tolerated but supported by the culture. Incremental change can shift how participants feel about their social standing and self-esteem.

Not all of the women in this study felt that they had the power to support change within society as changing a woman's attitudes towards a theoretical or practical innovation is more difficult than changing society's attitudes. Twelve participants noted that a lack of support for public breastfeeding had caused them to use artificial milk. The dearth of public areas for breastfeeding has left many women feeling that society disparages this activity. The absence of public arenas in which to discuss breastfeed forms another negative aspect of Saudi society

since women lack the ability to converse about the benefits of breastfeeding. It is simply not considered to be a suitable topic for public discussion. Some participants noted that without seeing other mothers commit to the practice they felt limited in their support for breastfeeding.

Societal change is at play, however. As a doctoral student in the UK, I was able to experience the widespread acceptance and support of breastfeeding in public buildings, in restaurants and other places, and this, no doubt, allowed me to see that change was possible. One of the participants had visited Dubai and experienced the same acceptance and a different normality. She then was able to believe that such practices could, one day, begin to be accepted even in the KSA. The Diffusion of Innovation model would describe this phenomenon as homeophily. Homeophily is the notion that people will shape interactions and relationships with other individuals sharing the same facets such as socioeconomic status, religion, cultural beliefs, or sentiments. Participants felt that discussions and shared experiences with other mothers influenced their opinion about breastfeeding. In the case of KSA, homeophily is a strong component in changing minds and raising awareness of breastfeeding among women.

The five stages of the decision-making process can also be beneficial to describing societal changes (Rogers, 1983). Relative advantage requires the mothers to know how breastfeeding is more beneficial than formula milk-feeding. Compatibility assesses how individual values, background, and demand alter how a mother chooses to feed her baby. Compatibility corresponds to how homeophily can make a strong argument for improved awareness of breast feeding. Complexity is used to assess the applicability and implementation of the benefits of breastfeeding education within KSA society. Complexity limits support for innovation due to the societal restraints thereby preventing the participants from considering adoption of the innovation. Yet, the next component, observability, offers a solution to overcome complexity. Participants noted that conversing with other mothers who were breastfeeding influenced their opinions on the subject. By being able to observe other mothers, societal changes are more likely to occur.

FINDINGS	DIFFUSION OF INNOVATIONS	LOCUS OF IMPACT
Knowledge about breastfeeding, breastmilk and the benefits for the mother and the baby increased over time	Diffusion is the procedure that communicates the innovation to the appropriate gatekeepers so that it may be disseminated and implemented in an organization or society.	**Intrapersonal Factors** drove this change. Women were hungry for knowledge and continued to learn after the intervention. This was a matter that was within their control that they felt needed to be disseminated to other women.
Attitudes appeared not to have changed when assessed by IOWA scale, yet it was clear from the interviews that attitudes had changed noticeably. Women wanted to be able to breastfeed, and they demanded that girls should be taught about the benefits at school	Communication is defined as the method of transfer of information between individuals to help to create mutual understanding. Communication is the most important part of this and must be composed of an innovation, a participant who has intimate knowledge of that innovation, an individual who remains unaware of the innovation, and a channel that permits discussion between the two individuals.	**Intrapersonal Factors and Extra-Personal Factors** were influential in this. Women almost needed permission to admit to a change in attitude. They started from the default position of wider cultural and societal expectations but moved to a position of questioning the essential need for these to remain unchanged.
Behaviour change when assessed as uptake and maintenance of breastfeeding was minimal. Despite increased knowledge and more positive attitude, women still knew that they would not be able to continue with breastfeeding because of societal and cultural restraints.	Time is the third element in the theory and individuals must choose a suitable time to ensure better results and to ensure the success of the innovation. The social system is the last element: innovators should concentrate on the system and the environment in which the innovation will be pursued (ie: the Saudi social system).	**Wider Extra-personal Factors** were the main sources of barriers to initiation & maintenance of breastfeeding. Society was not ready. Cultural expectations threatened loss of self-esteem if women engaged in breastfeeding outside the home. Sometimes these factors seemed to be too overwhelming, though there were also suggestions that things could change eventually.

Figure 10: The findings mapped against the Diffusion of Innovation model

A POSITIVE OUTLOOK

Signs of change in KSA

While obstacles to societal changes exist, change can be achieved. Perhaps the strongest representation of this change is the new ruling in 2018 which allows women to drive. Societal pressure could influence the government to take progressive approaches to breastfeeding such as offering breastfeeding rooms in public in areas such as universities, the premises of large businesses, government buildings, and shopping malls. Beginning with public institutions and large businesses is often a successful strategy since the new arrangements can be enforced and there is more chance of the (small) required resource being available - such as a room to be converted for use, signage for women to find the room, equipment for hand-washing and baby-changing. This would not only foster breastfeeding, but would give women a chance to discuss parenting issues further that they feel need to be addressed. A simple concession such as breastfeeding rooms could act as a catalyst to inspire larger change and allow the Diffusion of Innovation model to be more widely applied. This staged progression by small changes is likely to be essential to success, rather than enforced, sudden, widespread change. Certainly, starting by influencing the attitudes of individuals is the right approach. The women in the study had moved from rejecting the possibility of breastfeeding outside the home to believing the likely benefits, wishing that they were able to practise the change, and regretting that society at large would prevent it. Some even went as far as asserting strongly that the information should be taught in schools so that one day attitudes would change more widely.

Interventions need to be culturally appropriate

An important component of this study was the intervention which consisted of an interactive educational programme. The intervention sought to assess the attitudes, knowledge, and behaviour of breastfeeding within the KSA. The educational intervention was built upon the breastfeeding awareness work of the WHO and UNICEF. A relaxed environment and a female interviewer, who was also a mother, created an atmosphere for participants to communicate casually, interact, and share their thoughts and experiences regarding breastfeeding within the KSA. The intervention was broken between two parts: theoretical and practical sessions. To start, a PowerPoint presentation briefed the mothers on the importance of breastfeeding. The theoretical portion consisted of an open discussion about breastfeeding allowing for misconceptions to be dispelled.

Manikins were used for a portion of the practical discussion. These dolls acted as a role-play tool to focus on proper breastfeeding and techniques, latching on simulation, skin to skin contact and self-regulated breastfeeding, interpretation of baby's cues, sufficient milk, and interaction with the baby. The manikins provided an opportunity for mothers to further hone their breastfeeding skills while being afforded the opportunity to discuss their concerns and questions.

Two months after the intervention, a follow-up test was given to participants. The research questions were repeated and an interview via phone followed. While telephone interviews do not allow the researcher to record facial expressions, it still provided an opportunity to assess what had changed. The follow-up interview presented participants with an opportunity openly to discuss their thoughts and feelings of the intervention. The investigation began with a baseline assessment of the knowledge between the control group and those who participated in the intervention. It was established that there was no difference in initial knowledge between both groups. The results noted that there was a difference in breastfeeding knowledge and attitude after the intervention.

The impact of culture

However, there is a greater factor that could negate these benefits and that is culture. While, knowledge and support may have increased between the intervention and follow-up interviews, knowledge and awareness do not necessarily dictate cultural trends. KSA culture can stifle any progress made through these interventions. While this may limit the effectiveness of an intervention, it highlights the need for a change in KSA culture to further support breastfeeding. Yet, as indicated by the results, the mere ability to converse freely between mothers may be the key to changing cultural norms towards breastfeeding. A constant communication between mothers could raise awareness first hand, potentially creating a unified front of not just mothers but their family as well. From this unity, mothers could feel more supported to speak to their husbands about their concerns. With greater support from the family regarding breastfeeding, chances for societal pressure to offer public breastfeeding rooms could form.

The potential in new generations of young women

It cannot be understated how the role of the researcher created opportunities for relaxed and honest conversation. Being a young Saudi woman, a healthcare professional, and a mother created strong bonds between the interviewer and participants. Having the interviews and interventions led by a young Saudi mother offered a shared understanding of breastfeeding that may not have been permitted should the researcher have been a man or a foreigner. Being able to demonstrate practices on manikins provided evidence to the participants that the researcher was not looking at the participants as subjects, but rather as equals who were seeking education. Being able to focus on and relate to issues that women find important aided in strengthening the bond between participants and the researcher. Personal one-to-one anecdotes created a unique opening to change breastfeeding beliefs by educating without a feeling of condescension. The walls between the researcher and participants began to break down as the researcher began personal introspection on their own personal beliefs as well.

Societal change

Exploratory conversations offered an opportunity to challenge KSA societal behaviour and beliefs without sounding too radical, which could potentially limit the participants' views and responses. Participants felt more open to learn and express their feelings on the intervention. The relaxed atmosphere allowed the researcher to see that they were enjoying the intervention; not just tolerating it. The most exhilarating aspect of the research process was to see the impetus of change begin to burgeon. While societal change does not occur overnight, merely by offering the intervention and creating a conversation allowed change among participants' beliefs. This shift in beliefs could be a catalyst for societal and cultural change within the KSA.

A societal change would be easier to influence than a cultural change. Figure 11 is a representation of the connections between Saudi society and Saudi culture, and how these relate to potential change in the acceptance of breastfeeding. Culture is deeply embedded, and there is great reluctance to consider any change in what is acceptable, desirable, required or forbidden behaviour. On the other hand, Saudi society develops and changes more readily. Increased exposure to the outside world through study abroad, social media, and improved further and higher education for more people have led to widening of horizons and evidencing of positive outcomes from, for example, open acceptance of breastfeeding. There are aspects

of Saudi life in which the strict cultural observation of separation of the sexes has been set aside. In medical schools, for example, male and female students learn together. If such strong forces could be brought to bear, perhaps breastfeeding could, one day, become accepted as another special case.

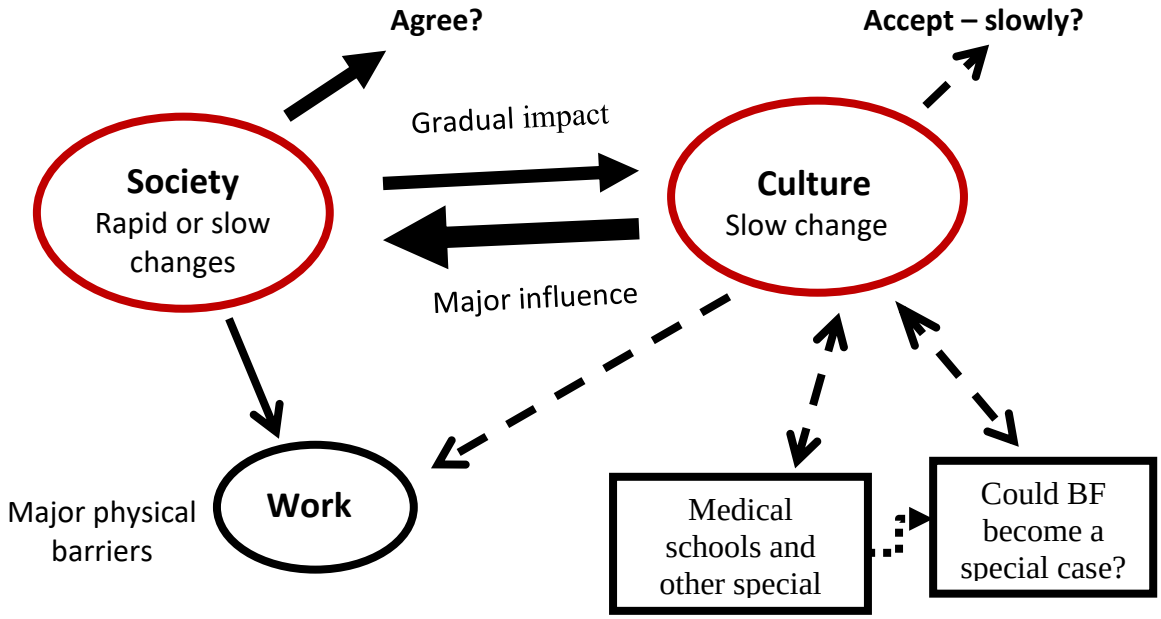

Figure 11: Society, culture and related factors

Eight participants felt that cultural conditions made breastfeeding unacceptable, shameful, and embarrassing. The prestige of their place in society, self-esteem, and a lack of acceptance were all answers as to why KSA culture has remained stagnant on breastfeeding acceptance and education. This is not to say that a culture shift is impossible. BFI and public education on breastfeeding could lay the groundwork to build future policy. Long-term change can be influenced by the citizens themselves.

Grandmothers as a major influence on infant feeding choices

Grandmothers (and especially maternal grandmothers) are in a prime place to shape the conversation regarding breastfeeding while promoting its benefits. Early parenting education in schools could provide a basis for future generations to accept such change and to initiate relevant policy. While, grandmothers were cited as being supportive of breastfeeding, the endorsement was not provision-free. Grandmothers pushed the need for non-exclusive breastfeeding, asking mothers to feed the baby breastmilk and water mixed with supplements. Participants often respected their mother's opinions due to the tight familial

structure. Arora et al. (2000) supported these findings by stating that maternal grandmothers and other family members play a big role in breastfeeding. However, there are opportunities to rectify a grandmothers' beliefs in non-exclusive breastfeeding. Asking maternal grandmothers to participate in future interventions could change their opinion on the subject, just as it did for many of the participants. Additionally, by including grandmothers, a stronger bond can be formed between mother, daughter, and granddaughter, thereby creating a stronger, supportive environment for child rearing.

External influences

Additionally, culture can be changed by outside influences. As the KSA becomes more involved with the rest of the world, there will be greater pressure to offer women the same rights as other women throughout the world. Saudi postgraduate students study in many other countries, engaging continually in cultural exchange, and these will become the managers and leaders in the country's important public institutions. This is not to say that Saudi culture and traditions will, or should, be lost: only that aspects of current culture and society which detract from the health of its youngest citizens may become subject to considered, positive change within the overall cultural values of a nation with deep roots and a strong sense of identity.

A means of contextualising the findings and envisioning a strategy

The Diffusion of Innovation model outlines the characteristics to bring forth change. The model details the conditions needed to change existing thought and to disseminate ideas about breastfeeding. It highlights how citizens bring forth change within their organization and society. Yet it also describes the conditions under which innovation succeeds or fails. Unfortunately, this is where the model runs into difficulties. While societal change may offer the quickest route to breastfeeding acceptance, it remains a major challenge. Cultural change can be considered an even bigger endeavour. Expanding breastfeeding knowledge and the right to breastfeed can be influenced through gradual changes in policy, together with social and cultural adjustment. The model is ideal to highlight where and how the proposed changes work, who they reach, and how they are implemented. The model can provide context on why an initiative succeeds or fails. Additionally, through analysis and comparison it can address those concerns in future campaigns to bring about cultural and societal transformation. The Diffusion of Innovation model helped to assess the doctoral study's success as well as offering

practical and scholarly recommendations. Resultant messages for practice and theory will be presented in the next chapter.

The need for change in men's attitudes

In this study there was no effort to influencing men's attitudes. A younger generation of husbands, particularly from professional classes, may want to play a part in bringing up their children. Once the benefits of breastfeeding have been explained to them in an appropriate manner, these men could also be a strength in the movement. Perhaps those who are in the professional classes, who also travel and see other approaches will be instrumental in influencing the direction of society over coming years. Perhaps leadership on such a change is being demonstrated in the recent initiatives by Prince Mohamad bin Salman to modernise some aspects of Saudi life such as changing the law on women driving. This issue needs to be addressed in future research.

Improved knowledge and attitudes, but little behavioural change in the face of overwhelming obstacles

The final interviews and post-test yielded that the intervention yielded positive results. Not only did the interviews indicate that the intervention increased and maintained their knowledge of breastfeeding, the Iowa score also specified that there was an increase of support in their attitudes towards breastfeeding. The results indicated that the educational interventions were successful. The final interview provided additional insight into the participants' viewpoints of the phenomenon.

Without the safe environment of a woman similar to themselves leading the interviews and interventions there was a good chance that these results would have differed. One significant theme among participants was the support they felt about breastfeeding when conversing with other mothers. This support is vital to creating change within the KSA. The results may indicate that the intervention was successful, however, it also demonstrated a major impediment to change.

KSA culture remains the largest barrier to breastfeeding, however, the study uncovered potential answers to challenge this viewpoint. As women gain knowledge and support from breastfeeding from other women there is an opportunity for word of mouth between

mothers. Support and knowledge from other mother aid in growing stronger backing for cultural change. This change can be accomplished by giving mothers enough knowledge and confidence to discuss their opinions with their husbands, midwives, and extended family. By reaching out to all these groups, it could create a sea change in KSA culture that could eventually lead to wide spread cultural change regarding breastfeeding. Further researchers should focus on how word to word conversations between women can alter a woman's view point on breastfeeding and insofar as this change takes place.

LIMITATIONS

1) This study was undertaken in one region of Saudi Arabia, and it is true that there are regional variations in culture across the country which were not addressed, therefore limiting generalisation. However, the key factors of the woman's self-image among other women, gendered roles in society, short maternity leave, and complete lack of facility for breastfeeding away from the home are shared across all regions. It would be wise nonetheless to include more regions in further research, and, if possible, to include other countries in the Gulf region.

2) A small number of women made up the samples in this study. This also limits any notion of generalisation. If a larger study can be conducted, though, it would be important still to provide the intervention in multiple small groups. The social and cultural comfort that was ensured in this manner, with light-hearted exploration of the manikins and willingness to discuss otherwise sensitive topics openly in an exclusive group were central to success.

3) There was no change in breastfeeding behaviour after birth. This was a personal disappointment but perfectly predictable in some senses. That this was always meant to be a cautious first step could be difficult to remember in the passion of pursuing the topic. Even achieving sustained change in knowledge and moving attitudes on so that women accepted that the situation ought to be different was a significant first step, yet seeing a tangible change in infant feeding behaviour is the real goal – the point at which health improvements begin for children.

CHAPTER EIGHT: CONCLUSION AND MESSAGES FROM THE STUDY

SUMMARY OF THE STUDY

The aim of this study was to assess the outcomes of a focused education intervention on the knowledge, attitudes and intended behaviours regarding breastfeeding by Saudi women who were pregnant for the first time. The results of the study were largely positive, creating numerous pathways for future research and policy implications. The study found significant evidence that the educational intervention was effective in enhancing the knowledge and improving the attitude that participants had about breastfeeding. The findings were supported by narrative data. This narrative data helped to categorize findings of both barriers and potential strategies to increase breastfeeding. The success criteria proposed in explaining the aim of the study (p59) were that knowledge and attitude would be affected positively by the intervention, and any improvement in intended behaviour or even actual breastfeeding would be somewhat unexpected but an additional outcome. The first two of these factors were achieved, but change in behaviour as initiating and maintaining breastfeeding could not be reported as being achieved. Nevertheless, a small step had been made in the movement towards acceptance of breastfeeding in Saudi society and culture.

Knowledge about Breastfeeding

Knowledge at baseline about breastfeeding and particularly the benefits to the mother was, as expected, poor. However, knowledge was significantly improved at post-test, and increased even more by follow-up testing, suggesting that women continued to seek further information and had retained the printed information provided during the intervention. Specific knowledge gleaned from the intervention that was especially beneficial were the benefits of breastfeeding, breastfeeding positions, skin-to-skin contact, and how formula milk is deficient when compared to breast milk.

Attitudes towards Breastfeeding

Overall, participants were found to have a positive attitude towards breastfeeding. The narrative data indicated that merely being around other mothers who breastfeed and learning about the positive outcomes of breastfeeding created increased awareness and a more positive reception to the practice. The educational intervention was also a success in changing

the hearts and minds of participants. Participants reported that they were surprised to learn all the benefits for both the baby and the mother of breastfeeding.

Deeper Understanding of Factors

Participants also listed reasons why they did not favour breastfeeding or even a more mixed-feeding approach. Many participants felt that interpersonal, close extrapersonal, and wider extrapersonal relationships had influenced them into not initiating or maintaining breastfeeding. Interpersonal relationships determined that breastfeeding could ruin the mother's social standing. Close extrapersonal relationships were beneficial or detrimental depending on the individual with whom they were conversing. For instance, participants' mothers and husbands were more supportive of breastfeeding than midwives, indicating a need for midwife education. Wider extrapersonal factors such as society, culture, religion, social standing, and work could also influence whether a mother breastfeeds or not.

The Diffusion of Innovation model aided in understanding how these types of relationships and communications can be beneficial or detrimental when introducing a new concept into society or an organization. Participants indicated that the lack of public breastfeeding facilities was persuasive to them that breastfeeding is not appropriate in the KSA. Additionally, the stigma of public breastfeeding, the lack of opportunities to breastfeed at work, and the restricted length of maternity leave also indicated the strength of societal resistance to breastfeeding.

Perhaps the most glaring support for the educational intervention and for further efforts to rectify the situation regarding breastfeeding in KSA came from the participants directly. Participants were ardent in their support for educational classes for mothers and their support system (largely their own mother), doctors, midwives, and husbands to learn the comprehensive benefits of breastfeeding. The results of the study suggest that breastfeeding knowledge and support can be improved, thereby widening the range of mothers who might be prepared to initiate and to continue breastfeeding. Further effort would be needed to move this on to exclusive breastfeeding because of the deeply entrenched belief in the need for supplementary water feeds for the baby.

THE UNIQUE CONTRIBUTION MADE BY THIS STUDY

This study was unique in a variety of ways.

1. **One of few studies about breastfeeding in KSA especially in Hail, it was the first study in the region to address knowledge, attitude and behaviour in a single study.**

2. **It was also the first to study women in KSA who were pregnant with their first baby to pursue findings after the birth with the new mothers to understand the reasons for behavioural responses in the light of changes in knowledge and attitude.**

3. **This was the first study in the Gulf region to employ an interactive educational intervention to promote breastfeeding knowledge, awareness and practice. The use of manikin babies was important and novel, adding tactile stimulus to theoretical presentation of the breastfeeding issue, and recognition of the creation of a safe space for women to talk about breastfeeding to other women was also central to success.**

4. **This was the first study in KSA and in the region to recognise the dual impact of maternal grandmothers in both supporting the initiation of breastfeeding and preventing exclusive breastfeeding through cultural insistence on supplementary feeds of water for the baby.**

5. **This was the first study within the KSA and in the Gulf region to adopt the approach of modifying individual characteristics first before progressing to wider implications found within societal infrastructure and cultural acceptance**

KEY MESSAGES

It is vital to start the process of transformation of breastfeeding in KSA by first addressing women's knowledge and attitudes.

A change of breastfeeding practice in KSA can be achieved, however multiple steps must occur to reach that lofty goal. While changing Saudi culture is imperative, a smaller movement must begin first. The intervention was shown to be particularly successful in raising awareness, knowledge, and attitudes of breastfeeding among women. This knowledge, when coupled with the opportunity for women to communicate the benefits of breastfeeding between

themselves begins the transformation process. Therefore, it is vital to begin with an information campaign on breastfeeding to further propagate the knowledge between mothers and their immediate family. By accomplishing this goal, an environment could be established where a sea change in culture could occur.

The intervention in this study was effective in increasing knowledge and this increase continued at follow up.

The initial results from the intervention were positive. While participants noted that they enjoyed and gained knowledge from the programme, it was surprising and welcoming to see that the stimulus was so great that participants would continue to support breastfeeding well past the initial intervention. The continued increase of knowledge speaks wonders to the viability of the intervention. The intervention was successful not just at a surface level, but to the degree that it could shape participant's core thoughts on the subject of breastfeeding.

Participants stated unequivocally that breastfeeding educational intervention classes were beneficial. Topics such as breastfeeding positions, benefits of skin-to-skin contact, and nutritional benefits were all seen to influence the perception of breastfeeding. Many participants were unaware of the benefits of breastfeeding for the mother as well as for the child. Additionally, this study used a safe space for women to converse with others to talk to about the benefits of breastfeeding, creating an opportunity for word of mouth messages to spread which is vital to societal and cultural changes.

Participants specified that both the educational classes as well as their personal experiences transformed their outlook on breastfeeding in one of three ways. The first way was beneficial in that participants' positive attitudes on breastfeeding grew. The second way in which the classes were valuable was that they helped to expand the connection and respect between mothers who were breastfeeding. This is a positive communication that could help to promote change in society since the views of other women are a central part of a Saudi woman's self-esteem. Lastly, the classes ultimately helped mothers to feel more prepared and supported in motherhood. This should be noted especially as it indicates that education for new mothers may not be offered, or if it is offered it remains underutilized.

Although the measures did not show significant change in attitudes, the women explained in interviews that their attitudes had, indeed, changed, but they still felt unable to act on this due to the constraints of Saudi society and culture.

While the intervention demonstrated both immediate and long lasting results, the potential for widespread change remains limited. Increased awareness and knowledge only goes so far, as Saudi culture still looks down on breastfeeding. These constraints are supported largely through action. Without a designated breastfeeding station, women feel that the KSA is not ready to implement this change. Additionally, there is still the issue of diminished social standing that occurs with breastfeeding. Without a shift in Saudi society and culture, the influence of interventions would remain limited.

Behaviour changed only to a limited degree in that some women decided to breastfeed and did so briefly and usually as mixed feeding, even though they knew that this could not persist once they had to return to work.

As stated earlier, the breastfeeding intervention created long-term change in the participants' minds. This is evidenced by the fact that women continued to breastfeed even for a short period of time (and most commonly as mixed feeding) despite forthcoming obstacles such as going back to work. The intervention exerted a profound impact that women continued to use their new knowledge (and a few experienced breastfeeding briefly) even knowing that it would not be sustainable once their maternity leave was over. Clearly, while knowledge and attitude were enhanced significantly, the change in behaviour was severely limited. The women struggled to effect the desired change, though they knew that this would be the case. Yet they continued to hope that change would come, however gradually. While women may be limited in how, where, and when they breastfeed, that participants would at least try to do so despite obvious obstacles speaks to the strength of the programme. With this knowledge, women can speak to other mothers at work, creating the potential opportunity for mothers to unite and express their grievances about the lack of breastfeeding rooms to their employers. By expressing their opinions in large numbers there is a greater hope to enact change.

Take the intervention into schools to start to influence new generations

The intervention was successful, but also highlighted a lack of knowledge among women. Pre-existing thoughts and notions were shown to have infiltrated their opinions. Therefore, to

counteract this detrimental thinking, it is important to teach women at an early age of its benefits. A strong recommendation would be to use this programme in schools to garner support. This would lead to an increase of knowledge among young women and aid in shifting Saudi culture, creating a more tolerant view of the subject.

Include grandmothers in the intervention because of the strength of their influence on the mother's infant feeding behaviour

As the Diffusion of Innovation model states, communication is a vital aspect of adopting an innovation. In this case, mothers were influenced by their surrounding support system. Mothers of the participants were shown to have a great influence on accepting the benefits of breastfeeding while midwives were largely against it, mainly due to a lack of education on the subject. This lack of education is applicable to men, too. Although gender roles in rearing children are largely defined by Saudi culture and society, participants noted that their husbands can greatly influence their opinion on parental decisions. Therefore, educational interventions must expand past the exclusivity of the mother.

As indicated in the results, family, friends, and immediate support system greatly influence breastfeeding. While all of them can persuade or dissuade the act of breastfeeding, the grandmothers were shown to have the most influence. Therefore, intervention programmes should not be limited to mothers, but should include grandmothers as well. Educating grandmothers would help to ensure that new mothers receive the proper knowledge and support in the early years of child rearing. Therefore, grandmothers should be included in all future interventions.

IMPLICATIONS FOR FURTHER RESEARCH

Replication of the study

As noted in chapter one, there has been a deficit of studies on women's breastfeeding habits in the KSA. Yet with a changing Saudi society, having robust data on the sentiments, knowledge, obstacles, and benefits of breastfeeding is needed now more than ever. This study provides a new baseline and pointers for future research. To begin, this research study needs to be replicated in a variety of locations nationally to see if the findings hold true. One major obstacle to increased breastfeeding was found to be a loss of social standing and shaming. However, this may differ depending on the region. Rural mothers may have different worries

to those of mothers in urban areas. Other reasons may account for the lack of progress in breastfeeding such as education level, medical access, and extended education.

Similarly, this study should be replicated in other countries within the Middle East. This would determine discrepancies between societies and cultures, thereby leaving opportunities to further understand a nation's role in breastfeeding. Additionally, those countries that support the movement may offer a blueprint for increased breastfeeding in other countries in the region.

Establishing the benefits of breastfeeding among support roles

The Diffusion of Innovation model highlighted the importance of communication between parties when introducing a new idea or practice. Persuasive communication is vital in order to bring about change to society and culture, as well as to mothers. Many participants stated that their support system had a large influence on their parenting decisions. However, not all members of the support system are equal in their support of breastfeeding. While mothers of the parent are more inclined to espouse the benefits, midwives remain largely against breastfeeding. Additionally, siblings, co-workers and other parents may influence a mother's choice. Therefore, future research should focus on how to expand the support system's knowledge of breastfeeding.

Lastly, this intervention should be offered to men and the outcome measured to establish not only change in their own knowledge and attitude but also the impact on breastfeeding initiation and maintenance by their wives and daughters. Despite there being strict gender roles in parenting, participants noted that husbands' opinions mattered in their decision to breastfeed or not. Therefore, fathers should have an extended education on the subject to make an informed opinion. As men largely form policy in the KSA, having men become more aware could make the diffusion of the idea more palatable to the population.

Assessing the benefits and negatives of the intervention in the context of the model

The Diffusion of Innovation model provided extended context on how to disseminate information or action into an organization or society. While some components of the model such as communication and influence were entirely relevant to the project, there were areas of the model that require more specification and clarity regarding the implementation of

breastfeeding awareness into KSA society. Further examination of the model and breastfeeding should focus on how the innovation was created and if it matched what was outlined in the model. Other research should reapply the model to the positive and negative results of the study separately, followed by comparing and contrasting these results to determine how any differences occurred.

Establishing best practices and outlines for awareness and intervention

This study presented one map on how to raise breastfeeding awareness. However, there must be other ways to influence breastfeeding behaviour. Examining the existing measurement instruments and comparing them to other questionnaires could determine improved strategies for teaching breastfeeding. It would also aid in confirming the validity of the instruments used. Perhaps there are other lessons which may influence participants more, especially considering that not everyone responds to lessons the same way. Therefore, further research is needed in establishing outlines and practices to improve breastfeeding.

IMPLICATIONS FOR BREASTFEEDING EDUCATION

Improved communication

Many participants were impressed by the benefits of breastfeeding that were taught. However, the lack of knowledge creates a question of why participants remained unknowing about the given information. Society and culture may play a part in whether it is acceptable to breastfeed in public, but it does not account for the lack of knowledge among new mothers. For instance, new mothers stated that they did not know that all women are capable of breastfeeding as there are procedures and practices that can help provide the infant with enough milk. This sort of knowledge should be imparted by doctors, nurses, midwives, and any other individual who works with mothers and infants. Communication of the benefits of breastfeeding should come as early as possible to effect widespread change.

Support systems and groups

While medical professionals can improve their communication to new mothers on breastfeeding, they are far from the only influence on a mother's decision. Immediate family, co-workers, other mothers, midwives, and husbands can all influence a mother's choice of whether or not to breastfeed. However, many of these individuals also remain unaware of the benefits of breastfeeding. The study revealed that merely conversing with other mothers led

to an increase in participants' knowledge and comfort with breastfeeding. Therefore, it seems advisable that breastfeeding education should occur in groups where mothers can converse and discuss the practice.

Educating those in the medical field to espouse breast feedings benefits

Both the existing literature detailed in chapter two, as well as the results from this study indicated that knowledge on breastfeeding remains low among new mothers. While improved communication and support groups can aid in imparting the knowledge of breastfeeding, education for new mothers must begin early and often. This education should come from medical professionals. However, medical professionals must also be aware of the benefits in order for them to offer their advice. Many studies have shown that breastfeeding is beneficial to the mother and child. Yet communicating the benefits remains an obstacle. Those in the medical field are optimally placed to improve public perceptions of breastfeeding. The curriculum in medical education must be augmented to convey breastfeeding knowledge. Whether it is a doctor, nurse, or a midwife, professionals must be aware of the benefits in order to promote increased breastfeeding for large scale dissemination of the practice to take place.

POLICY IMPLICATIONS

Public breastfeeding rooms

Public breastfeeding rooms could greatly aid in increasing the number of women who breastfeed. Merely through the offering of such public rooms a societal message could be sent that breastfeeding is acceptable. Public breastfeeding rooms also offer another option for new mothers to converse about the topic and to seek both affirmation of their behaviour and answers to problems that emerge. Additionally, many mothers indicated that they would have continued their breastfeeding if public breastfeeding locations were offered at work. In order for a societal change to occur, there needs to be a visible acceptance of breastfeeding, and offering locations to breastfeed in public buildings, the premises of large businesses, and shopping malls would be a viable starting point.

Strengthening familial roles to support breast feeding

Family roles play a large part in breastfeeding. While grandmothers and mothers influenced the participants' perceptions of breastfeeding, the family position that needs to be

strengthened the most is that of the father. As gender roles remain a huge part of Saudi culture, educating men on breastfeeding could provide the needed support to continue the practice. Campaigns in the UK to promote this through images of male celebrities and men of different backgrounds (perceived as being tough men) holding babies in skin-to-skin contact were particularly effective. A culturally acceptable equivalent in KSA might be established. This has recently been expanded to a world-wide "Super Dads" campaign by UNICEF (2017). While having men take a more active role in parenting may be a task in and of itself, it would be unwise to discount it as a solution for the societal and cultural concerns.

Cultural/societal shifts

Lastly, societal and cultural shifts are needed for breastfeeding to be truly accepted. Despite the strict gender roles, women have been gaining rights within Saudi culture as evidenced by the recent change in the right for women to drive cars. Many of the recommendations already presented could lead to a shift in tolerance of breastfeeding. Including men in the education process could create advocates for further advancements. Public breastfeeding locations could offer visible support, paving the way for other changes such as expanded maternity leave and workplace acceptance. While cultural and societal shifts can be described as the hardest goal to achieve, it would also be the most beneficial in making breastfeeding acceptable and permit expanded education of its benefits.

CONCLUSION

Communication from other mothers, family members, and medical professionals can influence how breastfeeding is perceived. Communication from doctors and nurses could be a prime opportunity to instruct and encourage new mothers in breastfeeding. Family members also provide guidance. However, it is imperative that health professionals and family members be educated on the benefits in order for any change to occur. Simply communicating with other new mothers raised awareness.

Participants indicated that by offering breastfeeding locations in public or at work the shame and stigma of breastfeeding could be reduced. This simple change could provide a catalyst and cultural shift that would aid women in Saudi culture, not only with breastfeeding but in other aspects of their day to day life. However, despite these goals, it is important to note that both cultural and societal change is more complicated by the predefined gender roles within the

nation. Leaving women without a voice to advocate their positions makes communication that much more difficult. Therefore, changes should begin at the family level, especially with husbands as they have more power to make any of these suggestions come to fruition.

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APPENDIX 1

The EPHPP Quality assessment criteria for selecting papers for inclusion in the review.

QUALITY ASSESSMENT TOOL FOR QUANTITATIVE STUDIES

COMPONENT RATINGS

A) SELECTION BIAS

(Q1) Are the individuals selected to participate in the study likely to be representative of the target population?

Very likely

Somewhat likely

Not likely

Can't tell

(Q2) What percentage of selected individuals agreed to participate?

80 - 100% agreement

60 – 79% agreement

less than 60% agreement

Not applicable

Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

B) STUDY DESIGN

Indicate the study design

Randomized controlled trial

Controlled clinical trial

Cohort analytic (two group pre + post)

Case-control

Cohort (one group pre + post (before and after))

Interrupted time series

Other specify _____

Can't tell

Was the study described as randomized? If NO, go to Component C.

No Yes

If Yes, was the method of randomization described? (See dictionary)

No Yes

If Yes, was the method appropriate? (See dictionary)

No Yes **RATE THIS SECTION**	STRONG	MODERATE	WEAK
See dictionary	1	2	3

C) CONFOUNDERS

(Q1) Were there important differences between groups prior to the intervention?

Yes

No

Can't tell

The following are examples of confounders:

Race

Sex

Marital status/family

Age

SES (income or class)

Education

Health status

Pre-intervention score on outcome measure

(Q2) If yes, indicate the percentage of relevant confounders that were controlled (either in the design (e.g., stratification, matching) or analysis)?

80 – 100% (most)

60 – 79% (some)

Less than 60% (few or none)

Can't Tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

D) BLINDING

(Q1) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants?

Yes

No

Can't tell

(Q2) Were the study participants aware of the research question?

Yes

No

Can't tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

E) DATA COLLECTION METHODS

(Q1) Were data collection tools shown to be valid?

Yes

No

Can't tell

(Q2) Were data collection tools shown to be reliable?

Yes

No

Can’t tell

RATE THIS SECTION	STRONG	MODERATE	WEAK
See dictionary	1	2	3

F) WITHDRAWALS AND DROP-OUTS

(Q1) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

Yes

No

Can’t tell

Not Applicable (i.e., one time surveys or interviews)

(Q2) Indicate the percentage of participants completing the study. (If the percentage differs by groups, record the lowest).

80 -100%

60 - 79%

less than 60%

Can’t tell

Not Applicable (i.e., Retrospective case-control)

RATE THIS SECTION	STRONG	MODERATE	WEAK	
See dictionary	1	2	3	Not Applicable

G) INTERVENTION INTEGRITY

(Q1) What percentage of participants received the allocated intervention or exposure of interest?

80 -100%

60 - 79%

less than 60%

Can’t tell

(Q2) Was the consistency of the intervention measured?

Yes

No

Can’t tell

(Q3) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results?

Yes

No

Can’t tell

H) ANALYSES

(Q1) Indicate the unit of allocation (circle one)

community organization/institution practice/office individual

(Q2) Indicate the unit of analysis (circle one)

community organization/institution practice/office individual

(Q3) Are the statistical methods appropriate for the study design?

Yes

No

Can't tell

(Q4) Is the analysis performed by intervention allocation status (i.e. intention to treat) rather than the actual intervention received?

Yes

No

Can't tell

GLOBAL RATING

COMPONENT RATINGS

Please transcribe the information from the grey boxes on pages 1-4 onto this page. See dictionary on how to rate this section.

A SELECTION BIAS	**STRONG**	**MODERATE**	**WEAK**	
	1	2	3	
B STUDY DESIGN	**STRONG**	**MODERATE**	**WEAK**	
	1	2	3	
C CONFOUNDERS	**STRONG**	**MODERATE**	**WEAK**	
	1	2	3	
D BLINDING	**STRONG**	**MODERATE**	**WEAK**	
	1	2	3	
E DATA COLLECTION METHOD	**STRONG**	**MODERATE**	**WEAK**	
	1	2	3	
F WITHDRAWALS AND DROPOUTS	**STRONG**	**MODERATE**	**WEAK**	
	1	2	3	Not Applicable

GLOBAL RATING FOR THIS PAPER (circle one):

1 STRONG (no WEAK ratings)

2 MODERATE (one WEAK rating)

3 WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (A-F) ratings?

No Yes

If yes, indicate the reason for the discrepancy

1 Oversight

2 Differences in interpretation of criteria

3 Differences in interpretation of study

APPENDIX 2

Cochrane Data Extraction Tool for Quantitative studies, adapted to meet the needs of this review as advised by the developers.

First Author Date Country of Study Journal	Participants	Study Methods	No. of Patients	Confounders (if any)	Statistical test used and significant data?	Critical Appraisal Comments/ Strength of the study/ weakness of study	Conclusion

APPENDIX 3

Patient Information Sheet.

University of Salford MANCHESTER

Patient Information Sheet

(Version 2, 29 July 2016)

The impact of a focused education session on the knowledge, attitude and intended behaviour regarding breastfeeding by Saudi women who are pregnant for the first time

Who are you?

My name is Nojoud AlReshidi. I am a research student undertaking a PhD at the University of Salford in the UK. I am also a postgraduate teacher in the Maternal and Child Health Department at Hail University. I would like to invite you to take part in a study about breastfeeding by Saudi women. I have been given permission to conduct the study by the Ministry of Health.

What is the purpose of the study?

The aim of my study is to test the effect of an education session about breastfeeding on improving the knowledge, attitude, and intended behaviour regarding breastfeeding by Saudi women who are pregnant for the first time.

Why have I been asked if I want to be involved?

You have been asked because you are pregnant with your first baby and you are attending the hospital antenatal clinic. We need to include a group of women will not experience the education session immediately so that we can see if the results are the same even without this intervention. You will not be required to attend the session, therefore, but if you would like the materials at the end of the study I will arrange that.

Do I have to take part?

No, you do not have to take part. Participation is entirely voluntary. You can choose whether or not to take part and your decision will not affect your health care at all.

What will happen to me if I take part?

You will be invited to complete short questionnaires now, and again by telephone two months after the birth of the baby.

What might be good about taking part, and are there any risks?

You would help me and other health researchers to understand more about breastfeeding and the decisions that women make about how they will feed the baby. There are no risks. The study has been approved by the research ethics committees of the University of Salford and the hospital.

Will anyone know who I am or what I have said?
The information you provide will be confidential. Your identity and personal contact details will be known only to the researcher. The researcher will not use your name or any information that could reveal your identity in publications or reports.

What if I'm not sure about carrying on to the telephone call later?
Take your time, talk to your friends and family about it. If you want to, you can talk to me. My telephone number is here, but if you want to you can email me.

What if I want to make a complaint?
You can contact me directly, or through my supervisor, Professor Tony Long.
Nojoud AlReshidi Tel _____ Email: N.A.Alreshidi@edu.salford.ac.uk.
Professor Tony Long: t.long@salford.ac.uk. (English only)

If you are not satisfied with the supervisor's response, you can contact the University Research Centres Manager:
Anish Kurien, Joule House, University of Salford, Salford M5 4WT. 0161 295 5276 a.kurien@salford.ac.uk

Thank you for taking the time to read this information sheet.

Nojoud AlReshidi
PhD Student
School of Nursing, Midwifery, Social Work & Social Sciences
University of Salford

APPENDIX 4

Consent form for intervention group.

University of Salford MANCHESTER

CONSENT FORM
(Version 2, 29 July 2016)

The impact of a focused education session on the knowledge, attitude and intended behaviour regarding breastfeeding by Saudi women who are pregnant for the first time

Please Initial

TO BE COMPLETED BY THE PARTICIPANT

1. I confirm that I have read and understand the information sheet (Version 1, 12 April 2016) for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without me healthcare service being affected. ☐
3. I understand that the intervention will be a single session of 2 hours and that it will include instruction and the opportunity to engage in the practical use of training materials. ☐
4. I understand that I will be asked to complete a questionnaire on three occasions, including a brief telephone discussion with the researcher on the last occasion. ☐
5. I understand that the researcher will write a report of the study from information that I provide and that the findings will be presented in publications and conference presentations in anonymised form. Nothing that could identify me will be included. ☐
6. I agree to take part in the study. ☐

_____	_____	_____
Name of Participant	Date	Signature
Nojoud AlReshidi	_____	_____
Name of Researcher	Date	Signature

APPENDIX 5

Consent form for comparison group

University of Salford MANCHESTER

CONSENT FORM

(Version 1, 12 April 2016)

The impact of a focused education session on the knowledge, attitude and intended behaviour regarding breastfeeding by Saudi women who are pregnant for the first time

Please Initial

TO BE COMPLETED BY THE PARTICIPANT

1. I confirm that I have read and understand the information sheet (Version 2, 23 August 2016) for the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my healthcare service being affected. ☐
3. I understand that I do not have to answer all of the questions ☐
4. I understand that the researcher will write a report of the study from information that I provide and that the findings will be presented in publications and conference presentations in anonymised form. Nothing that could identify me will be included. ☐
5. I agree to take part in the study. ☐

_____	_____	_____
Name of Participant	Date	Signature
Nojoud AlReshidi	_____	_____
Name of Researcher	Date	Signature

APPENDIX 6

Letter of approval from the University of Salford Research Ethics Panel

University of Salford MANCHESTER

Research, Innovation and Academic Engagement Ethical Approval Panel

Research Centres Support Team
G0.3 Joule House
University of Salford
M5 4WT

T +44(0)161 295 2280

www.salford.ac.uk/

30 August 2016

Dear Nojoud,

RE: ETHICS APPLICATION HSCR 16-33 – The impact of a focused education session on the knowledge, attitude and intended behaviour regarding breastfeeding by Saudi women who are pregnant for the first time.

Based on the information you provided, I am pleased to inform you that application HSCR16-33 has been approved. Please note that the letter of confirmation from Hail Maternity Hospital is also accepted in good faith.

If there are any changes to the project and/ or its methodology, please inform the Panel as soon as possible by contacting Health-ResearchEthics@salford.ac.uk

Yours sincerely,

pp. Andrew Clark (Deputy Chair)

On behalf of

Sue McAndrew
Chair of the Research Ethics Panel

APPENDIX 7

Letter of approval from Hail Ministry of Health Hospital

المملكة العربية السعودية
وزارة الصحة
الإدارة العامة للبحوث والدراسات

الإدارة العامة للبحوث والدراسات
الرقم: 2661813
التاريخ: 1437-10-12هـ 2016-07-17
مرفقات: 16 ثقة

الموضوع: بحث الطالبة نجود الرشيدي.

سعادة/ مدير عام الشؤون الصحية بمنطقة حائل **المحترم**

ص. لسعادة/ مدير مستشفى النساء والولادة بحائل **المحترم**

السلام عليكم ورحمة الله وبركاته، ،،،

إشارة إلى البحث المقدم من الطالبة/ **نجود عبدالله دعيع الرشيدي**، المبتعثة من جامعة حائل لدراسة درجة الدكتوراه في تخصص "**التمريض - صحة الأم والطفل**" بكلية التمريض بجامعة سالفورد بالمملكة المتحدة، رقم السجل المدني (١٠٥٨٦١٩٦٨٣) وعنوان الرسالة: " **تأثير دورة التعليم التي تركز على المعرفة والموقف والسلوك اتجاه الرضاعة الطبيعية عند النساء السعوديات الحوامل لأول مرة**".

نحيطكم علماً بأن الطالبة قد إستوفت كافة المستندات المطلوبة وتمت مراجعتها من اللجان المعنية بالإدارة العامة للبحوث والدراسات بوزارة الصحة ولجنة الأخلاقيات بمدينة الملك فهد الطبية (مرفق صورة)، وتمت الموافقة على تسهيل مهمة إجراء هذا البحث، وحيث أن الطالبة ستقوم بجمع بيانات دراستها من مستشفى النساء والولادة بمنطقة حائل.

وعليه، نأمل من سعادتكم التفضل بالإطلاع والإيعاز لمن يلزم بتسهيل مهمتها لجمع البيانات اللازمة بما يضمن أن لا يكون هناك أي تأثير على خدمة المراجعين، مع العلم بأن وزارة الصحة تضمن حقوقها في نتائج هذا البحث من خلال إتفاقية المشاركة في البيانات والتي تم توقيعها بين الباحثة والإدارة العامة للبحوث والدراسات.

وتفضلوا بقبول خالص تحياتي ،،،

مرفق مستندات وملخص المقترح البحثي ،،،

مساعد مدير عام الإدارة العامة للبحوث والدراسات

ص. عذاري فيصل العتيبي

الرمز البريدي: ١١١٧٦ ص.ب الرياض: ٢٧٧٥ فاكس: ٠١١٤٧٣٥٠٣١ هاتف: ٠١١٤٧٣٥٠٣٨
e-mail: research@moh.gov.sa

APPENDIX 8

Study questionnaire

Demographic characteristic of the sample:

1- Age:

- 18 – 27 ☐
-28– 38 ☐

2- Educational Level:

- Primary ☐
- Intermediate
- High school ☐
- Bachelor
- Post Graduate ☐

3- Employment:

- Employed ☐
- Not employed ☐

Frequency Distribution of the participant Knowledge about Breast Feeding:

Item-correct response:

1- Formula feeding is the best feeding for the baby. ( )

2- Breastfeeding protect the baby from disease such as diarrhea, allergy and ear infection.

( )

3- Breastfeeding is cheaper than bottle feeding. ( )

4- Exclusive breastfeeding is not recommended for the first 6 months. ( )

5- Breastfeeding protect the mother from breast cancer. ( )

6- Formula feeding are rarely constipated. ( )

7- Infant breastfed exclusively tend to develop motor skills faster. ( )

8- Bottle fed babies are more intelligent than those breastfed. ( )

9- Breastfeeding provides a closer bonding between the mother and her child. ( )

10- Breast feeding may protect your child from obesity. ( )

11- Breast feeding may protect the mother from osteoporosis later in life. ( )

12- Breast feeding helps the uterus contract after birth to control postpartum bleeding. ( )

13- Breastfed babies are healthier than bottle feeding. ( )

14- Breast milk is more easily digested than bottle feeding. ( )

15- Breastfeeding more convenient than bottle feeding. ( )

Participant Attitude about Breast Feeding: (The Iowa Infant Feeding Attitude Scale).

For each of the following statement, please indicate how much you agree or disagree by circling the number that most closely corresponds to your opinion (1= strong disagreement, 2=disagreement, 3=neutral, 4=agreement and 5=strong agreement)

	Strong disagreement	Disagreement	Neutral	Agreement	Strong Agreement
1. The nutritional benefits of breast milk last only until the baby is weaned from breast milk.	**1**	**2**	**3**	**4**	**5**
2. Formula-feeding is more convenient than breastfeeding.	**1**	**2**	**3**	**4**	**5**
3. Breast-feeding increase mother-infant bending.	**1**	**2**	**3**	**4**	**5**
4. Formal-feeding is the better choice if a mother plans to work outside the home.	**1**	**2**	**3**	**4**	**5**
5. Mother who formula-fed are miss out one of the great joys of motherhood.	**1**	**2**	**3**	**4**	**5**
6. Mother should not breast-feed in public place such as restaurant.	**1**	**2**	**3**	**4**	**5**

7. Babies fed breast milk are healthier than babies who are fed formula.	**1**	**2**	**3**	**4**	**5**
8. Breast-fed babies are more likely to be overfed than are formula-fed babies.	**1**	**2**	**3**	**4**	**5**
9. Father feel left-out if a mother breast-feeds.	**1**	**2**	**3**	**4**	**5**
10. Breast milk is the ideal food for babies.	**1**	**2**	**3**	**4**	**5**
11. Breast milk is more easily digested than formula.	**1**	**2**	**3**	**4**	**5**
12. Breast-feeding is more convenient than formula feeding.	**1**	**2**	**3**	**4**	**5**
13. Breast milk is less expensive than formula.	**1**	**2**	**3**	**4**	**5**
14. Breast milk is lacking in iron.	**1**	**2**	**3**	**4**	**5**
15. Formula-fed babies are more likely to be overfed than are breast-fed babies.	**1**	**2**	**3**	**4**	**5**
16. Formula is as healthy for an infant as breast milk.	**1**	**2**	**3**	**4**	**5**

APPENDIX 9

Interview Guide for intervention group

Interview Guide

(Version 1, 04 April 2016)

Introduction Key Components • Thank you • Purpose • Confidentiality • Duration • Confirmation of consent	Thank you for Allowing me to call you for this final part of the study. Our conversation should not take more than 30 minutes, but I have plenty of time to talk to you for as long as you like. I will be audio-recording the session so that I don't miss any of your comments. No-one else will hear the recording. It's just to help me to remember. Are you still happy to continue with the discussion? I would like to check your responses again on the questionnaire, but we can do this on the phone *(Do the questionnaire – Follow-up version for "behaviour" since baby now born).* Can we talk a little more about how you found the session and whether or not it made any difference to you? PROMPTS • Did you find things out that you did not know before? • Did you feel any differently about women breastfeeding after you attended the session? • Did it make you think more about perhaps breastfeeding? • Is there anything that you can think of that I could do differently that might have an impact on women who attend the session? Thanks and parting

APPENDIX 10

Interview Guide for comparison group

Interview Guide

(Version 1, 04 April 2016)

Introduction Key Components • Thank you • Purpose • Duration • Confirmation of consent	Thank you for Allowing me to call you for this final part of the study. Our conversation takes only 10 minutes, but I have plenty of time to talk to you for as long as you like. Are you still happy to continue with the discussion? I would like to check your responses again on the questionnaire, but we can do this on the phone *(Do the questionnaire – Follow-up version for "behaviour" since baby now born).* Any other comments… Thanks and parting

APPENDIX 11

Examples of the manikins

Appendix 12

Overview of Differences between Formula Milk and Breast Milk

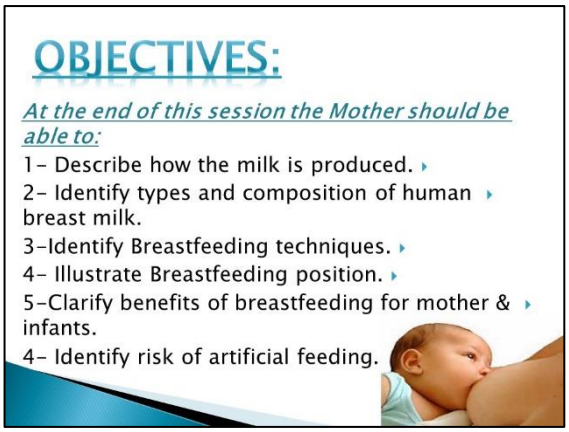
Breast Milk	Formula Milk
Breast milk is enriched with omega-3 fatty acids, docosahexaenoic acid (DHA), and Arachidonic acids (AA). It contains cholesterol and also has the lipid-digesting enzyme called lipase.	Formula milk has no docosahexaenoic acid (DHA), Arachidonic acid (AA), lipase, or cholesterol (in the amount that is required for cell membranes, digestion and vitamin D production.
Breast milk is enriched with oligosaccharides and lactose.	Some formula milks have no oligosaccharides and lactose.
Breast milk is softer in consistency, easier to digest, and its absorption is more complete.	Formula milk is hard in consistency, more difficult than formula milk to digest, and absorption is incomplete.
Breast milk has higher protein content.	Formula milk has lower protein content.
Breast milk has lysozyme (part of the immune system).	Formula milk does not have lysozyme.
Breast milk has lactoferrin, which ensures healthy intestines.	Formula milk does not have lactoferrin.
Breast milk is enriched with immunoglobulins for immunity.	Formula milk has few immunoglobulins, and these are ineffective in boosting the child's immunity.
Breast milk contains white blood cells, thereby increasing child's immunity.	Formula milk does not contain live white blood cells.
Breast milk is rich in selenium, which is an antioxidant.	Formula milk is low in selenium compared to breast milk.
Breast milk has better absorbed minerals like iron, calcium, and zinc.	The absorption of minerals in formula milk is lower than that in the breast milk.
Breast milk is enriched with digestive enzymes like amylase, which aids in digestion of carbohydrates, and lipase, which helps in the digestion of lipids/fats.	Formula milk is devoid of digestive enzymes. Therefore, formula milk provides little benefit in helping digestion within the baby's gastrointestinal tract.
Breast milk is enriched with a variety of hormones like thyroxine, prolactin, and oxytocin.	Formula milk is devoid of these hormones.
Breast milk contains stem cells which promote the development of human organs and tissue and their regeneration.	Formula milk is devoid of stem cells, therefore it does not provide any help in the regeneration of tissues.
Breast milk has bacteria which are of benefit to the baby's gastrointestinal tract and promote the digestion of various substances inside it.	Formula milk does not have bacteria.

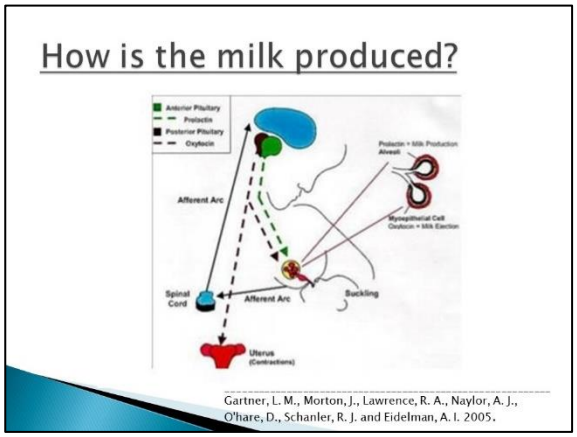
APPENDIX 12

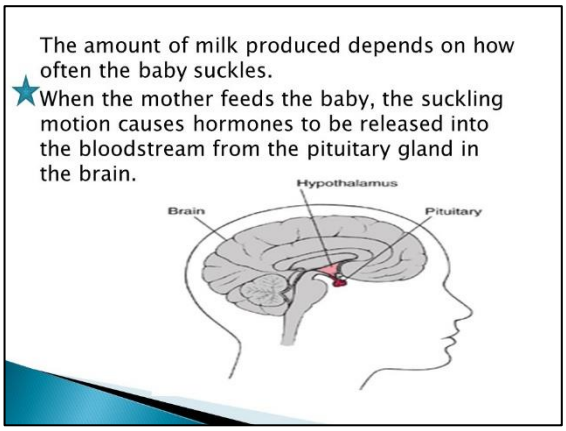
Content of education session (PowerPoint presentation) in Arabic.

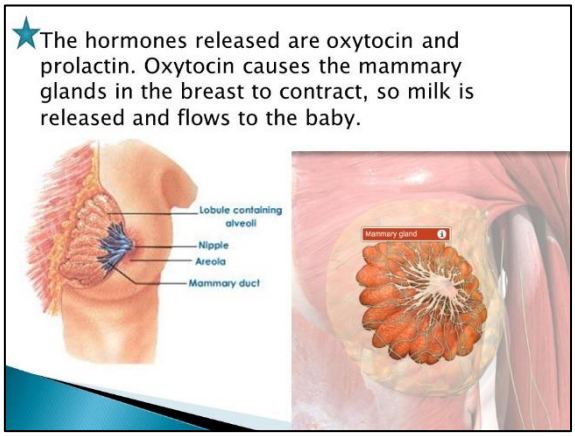
APPENDIX 13

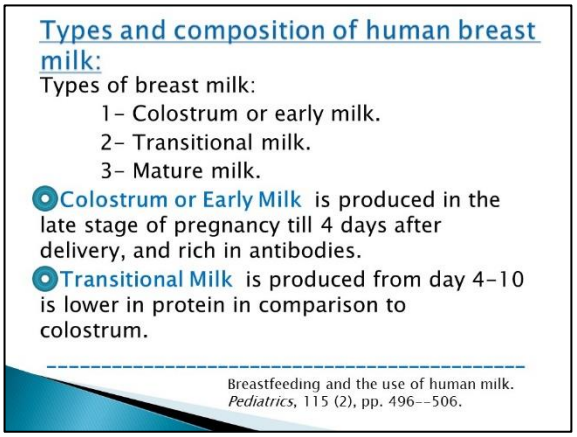
Content of education session (PowerPoint presentation) in English.











Mature Milk is produced from approximately ten days after delivery up until the termination of breastfeeding.

Breastfeeding and the use of human milk. *Pediatrics*, 115 (2), pp. 496--506.

Good Breastfeeding Techniques:

Good latch

Signs of a good latch:

- Baby's mouth is opened wide, like a yawn.
- Baby's tongue is over his lower gum.
- Baby's lips are curled out, like a fish.
- Baby's chin firmly touches your breast.

(Genna, C. W. 2008)

Correct Infant Latch-on Position

Breastfeeding positions:

Cradle hold

*This is the most common position used by mothers

Breastfeeding positions cont:

Football hold position

*the infants is placed under the arm, like holding a football.

Breastfeeding positions cont:

Side lying position

*the mother lies on her side propping up her head and shoulder with pillows.

*the infant is also lying down facing the mother.

Breastfeeding positions cont:

Cross cradle hold position

*ideal for early breastfeeding.

Breastfeeding positions cont:

Australian hold position (saddle position)

*usually used for older infant.

*not commonly used by mothers.

*best used in older infants with runny nose and ear infection .

Benefit breastfeeding for infants:

Reduce the risk of
*Gastroenteritis (diarrhea and vomiting)
*Chest infection.
*Diabetes.
*Ear infection.
*Urine infection.
Improves
*Response to immunisation.

Stanway, P. 2005. *Breast is best.* London: Pan

Benefit breastfeeding for Mothers:

Reduce the risk of
*Breast cancer.
*Ovarian cancer.
*Reduced the risk of Osteoporosis.
Improves
*Return to pre-pregnancy weight.

Risk of artificial feeding:

*More diarrhea and respiratory infection.

*Malnutrition:
Vitamin A deficiency.

*Increased risk of some chronic diseases.

any question ?