

Influences and Determinants of Breastfeeding and Weaning Practices of Emirati Mothers

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Abstract

This study explored the factors which affect the feeding and weaning practices of Emirati mothers as well as the experiences and perceptions which influence their breastfeeding decisions. It used both quantitative and qualitative methods to examine Emirati mothers' understanding of infant feeding and to identify the factors which appeared to have a relevant effect and locate them in their cultural context.

In the survey, a convenience sample of 593 mothers with infants aged up to 2 years was interviewed face to face in the maternal and child healthcare centers in Al Ain, Dubai and Abu Dhabi. The interview was based on a pretested structured questionnaire. The results of multiple logistic analysis showed that the time of initiation of the first breastfeed was significantly associated with the infant's birth weight (OR=2.007; $P<0.023$), parity (OR=2.139; $P<0.001$) and rooming in (OR=21.70; $P<0.001$). As for the feeding patterns, the results of the multiple logistic analysis revealed that rooming in (OR=4.485; $P<0.001$), feeding on demand (OR=2.290; $P<0.005$) and feeding more frequently at night ($P<0.001$) emerged as significant factors associated with exclusive or almost exclusive breastfeeding practices. The duration of breastfeeding rate was significantly influenced by many variables. Concerning the duration of lactational amenorrhea, ~~the~~ the multiple logistic analysis showed that mother's age, breastfeeding duration and the early introduction of formula milk and solid food emerged as significant variables.

Among the 593 infants in the study, 24.1% were predominantly breastfed, 25% of the infants were exclusively breastfed, and 49.4% were almost exclusively breastfed since birth.

Fifteen Emirati mothers from each city were interviewed about their breastfeeding practices, beliefs and perceptions. The following themes emerged: the influence of others, the sources of information, infants' behavior, knowledge of and attitudes towards current WHO

recommendations and mothers' perception of the benefits of breastfeeding. Health promotions and healthcare facilities failed to deliver the message of the importance of exclusive breastfeeding. Grandmothers and mothers-in-law appeared to influence the mother's breastfeeding practices.

In conclusion, there is a need for a national community-based breastfeeding intervention programme for the promoting exclusive breastfeeding practices as part of a primary public health strategy .

List of Abbreviations

AAP	American Academy of Pediatrics
AlmEBF	Almost exclusive breastfeeding
BFHI	Baby Friendly Hospital Initiatives
EBF	Exclusive breastfeeding
IBFAN	International Baby Food Action Network
IYCF	Global Strategy on Infant and Young Children Feeding
LA	Lactational amenorrhea
LAM	Lactational Amenorrhea Method
NCDs	Non-communicable diseases
MCH	Maternal and Child Health center
Code	The International Code of Marketing of Breast Milk Substitutes
UAE	United Arab Emirates
UNICEF	United Nations Children Fund
WHO	World Health Organization

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Chapter One

Introduction

1.1 Introduction

This chapter highlights the importance of breastfeeding and provides background information about infant feeding practices and public health concerns in the United Arab Emirates (UAE). It also presents the rationale and purpose of this current study as well as the research questions it aims to answer.

1.2 Importance of breastfeeding for the child and mother

Breastmilk is not just a type of food; it is a complex living nutritional fluid that contains antibodies, enzymes and hormones. It is uniquely tailored to meet the nutrition needs of human infants (Gartner et al., 2005). Optimal breastfeeding of infants under two years of age has the greatest potential impact on child survival among all preventive interventions, with the potential to prevent 1.4 million deaths of children under five in the developing world (Black et al., 2008). Exclusive breastfeeding for six months and continued breastfeeding with safe, appropriate and adequate feeding is recommended as a global health policy in both developing and developed countries (Kramer et al., 2001).

In addition to the numerous benefits of breastfeeding for the infant, there are many benefits for the mother. Breastfeeding delays the menstrual cycle and in turn may increase spacing between pregnancies thus serving as the physiological basis of Lactational Amenorrhea Method (LAM) (Kennedy et al., 1989; Lawrence, 2000; Dewey et al., 2001; Becker et al., 2003).

1.3 Background

The United Arab Emirates (UAE) is one of the Arabian Gulf Countries that experienced vast economic growth after the discovery of oil in the 1970's. The UAE is a rapidly developing country with an excellent infrastructure, clean water supply and advanced health care facilities. More than 97% of births take place in hospitals. The rise in the living standards accompanying economic growth has led to a demand for improved healthcare, more particularly the application of advanced medical technologies. Infant feeding practices are another part of the culture which has been influenced by economic development. The increase in wealth attracted the attention of formula milk companies to the Gulf market. The large-scale promotion of infant formula influences Emirati mothers' traditional feeding practices (Musaiger, 1995; Ogbeide et al., 2004; Al Shoshan, 2007). This changing pattern of infant feeding has been attributed to "the demands of modern life" (Harfouche & Musaiger, 1993). As noted by Berg and Brems (1989), a decline in breastfeeding accompanied society's modernization. On the other hand, cultural beliefs are still strong, and most mothers initiate breastfeeding, but they tend to combine this with infant formula in the early months of their infants' lives (Galal, 1995).

Healthcare standards are considered to be generally high in the United Arab Emirates due to increased government spending during strong economic years. Improved standards of living and health services have led to changes in morbidity and mortality rates. The infant mortality rate declined significantly in the UAE. Mortality rate for infants under five in the UAE decreased from 17 per 1000 live birth in 1990 to 8 per 1000 in 2008 (UNICEF, 2008). Infectious diseases have gradually declined, and chronic non-communicable diseases are being more prevalent.

1.4 Current public health concerns in UAE

The UAE is facing another health problem which is the increasing prevalence of chronic diseases. It was noted that nutrition-related chronic diseases have increased dramatically in recent years and within a very short period of time; they are the major causes of morbidity and mortality in the UAE. Cardiovascular diseases (CVDs) are the leading cause of morbidity and mortality in the UAE, followed by cancers (Ministry of Health, 2009). The UAE is ranked the second highest in the prevalence rate of diabetes (IDF, 2010). These diseases are exerting heavy economic burdens on the healthcare expenditure in the UAE. The WHO (2009) reported that the burden of chronic diseases is rapidly increasing worldwide in developed and developing countries. Already 80% of the deaths attributed to non-communicable diseases occur in developing countries, especially those undergoing fast unplanned transition such as the UAE. One macroeconomic analysis demonstrated that each 10% rise in NCDs is associated with 0.5% lower rate of annual economic growth (Stuckler, 2008). An Institute of Medicine study in the United States in 2010 found that NCDs cost for developing countries is between 0.02% and 6.77% of GDP (Fuster & Kellz, 2010). Since the UAE is facing increasing prevalence of NCDs, and especially diabetes, this will exert heavy burdens on healthcare costs of these diseases. According to the statistics report of the Ministry of Health (2009), diabetes will cost an estimated \$2.7 billion in 2020.

Some efforts are being put into controlling and preventing NCDs in the UAE, but among the problems inhibiting the implementation of these programmes are the lack of risk factor surveillance, the non-harmonization of monitoring and surveillance methodologies and the lack of reliable mortality data (Belal, 2009). Very limited data are available regarding NCDs and risk factors in the UAE.

WHO (2003) reported that obesity and diabetes are showing increasing worrying trends in the world, not only because they already affect a large proportion of the population but also because they have started to appear earlier in life.

It is noteworthy that obesity is a major risk factor for chronic diseases and plays a central role in developing CVD's and diabetes (Kelishadi, 2007). The Gulf countries, including the UAE, are showing an increase in the prevalence of overweight and obesity. It is estimated that between two-thirds to three-quarters of adults and 25– 40% of children and adolescents are overweight or obese in the Gulf (Ng et al., 2011). In the UAE, the prevalence of overweight and obesity was 25.6% among males and 39.9% among females (Belal, 2009). Moreover, Malik & Bakir (2007) reported that the UAE is currently experiencing an epidemic of childhood obesity which may have serious public health consequences. It should be noted that lack of data and longitudinal studies about overweight and obesity prevalence in the UAE limits comparisons over time for all ages (Ng et al., 2011). Evidence shows that childhood obesity tracks to adulthood (Whitaker et al., 1997; Guo et al., 2000). Obesity in adulthood is also associated with increased adult morbidity and mortality (Calle et al., 1999; Narayan et al., 2003) and social and economic constraints (Gortmaker et al., 1993), thus increasing both medical burdens on society and risk for early morbidity and mortality.

Musaiger (2004) reported that in addition to changes in lifestyle and physical activities in Middle Eastern countries, the decline in exclusive breastfeeding and high dependence on bottle-feeding are also important factors associated with the increase in the prevalence of obesity. The World Health Organization reported that promotion of breastfeeding may contribute to the prevention of childhood obesity (WHO, 2003). Since breastfeeding represents one of the earliest nutritional experiences of newborns, the first few months after birth may be a critical window for the development of obesity later on in life (Gillman, 2008).

In the past few years, several systematic reviews indicated that increases in diseases such as diabetes, obesity and CVD are likely to be caused by a decreases in the practice of breastfeeding (Arenz et al., 2004; Horta et al., 2007; Ip et al., 2007). The same studies also revealed that these chronic diseases extend beyond infancy and affect the overall health of a nation. This would suggest that obesity prevention begins with breastfeeding.

The worldwide decline in breastfeeding was thought to be a result of both socio-cultural reasons and the aggressive marketing strategies used by infant formula companies (UNICEF, 2005; Palmer, 2009). This led to the development of international recommendations for optimal infant feeding practices in both developing and developed countries; these include exclusive breastfeeding for 6 months and continued breastfeeding up to 2 years of age or beyond, with timely addition of appropriate complementary foods (Butte et al., 2002; Kramer & Kakuma, 2002; WHO, 2001). However, these recommendations have yet to be implemented effectively. Current breastfeeding patterns have improved significantly in some countries over the past 10 years, but they are still far from the recommended levels in the developing world (UNICEF, 2009). Less than 50% of the infants of the world are exclusively breastfed (UNICEF, 2011).

WHO and UNICEF issued international guidelines to ensure the support, protection and promotion of breastfeeding. These international organizations called for government agencies to implement the international recommendations, and to develop national campaigns and breastfeeding strategies to protect, support and promote breastfeeding in hospitals and health clinics. So the WHO and UNICEF developed the Global Strategy for Infant and Young Child Feeding (IYCF) to revive the world's awareness on the impact of feeding practices on nutritional status, growth, development, health and survival of infants and young children (WHO/UNICEF, 2004). The basis of the strategy is the evidence that nutritional practices during early life are vital for achieving optimal health (WHO/UNICEF, 2004; Moran et al.,

2006). WHO/UNICEF (2004) reported that the “lack of breastfeeding and especially lack of exclusive breastfeeding during the first half-year of life are important risk factors for infant and childhood morbidity and mortality that are only compounded by inappropriate complementary feeding” .

WHO attributed the improvement in exclusive breastfeeding rates in some countries to the implementation of large-scale programmes which were based on national policies guided by the Global Strategy for Infant and Young Child Feeding. These programmes promoted the adoption and implementation of national legislation based on the International Code of Marketing of Breast-milk Substitutes and maternity protection for working women (UNICEF, 2011).

The UAE, as part of the international committee, adopted the WHO recommendations and issued a circular for implementation of the Code in the UAE in 1992. The Ministry of Health in the UAE is also encouraging maternity hospitals to become Baby-Friendly. However, only 6 out of 40 hospitals in the UAE are officially designated as Baby-Friendly.

1.5 Breastfeeding practices

To improve breastfeeding practices, the WHO/UNICEF Global Strategy for Infant and Young Child Feeding recommends that countries plan comprehensive community-based breastfeeding promotion and support programmes (WHO, 2003a). IYCF urges countries to integrate infant feeding promotion and support into family, maternal or child nutrition, and to incorporate health activities in their particular circumstances. However, in order for countries to be successful in implementing activities, they have to go through the process of carefully planning and documenting. This is what needs to be done to ensure appropriate infant and young child feeding for their countries.

The UAE have embraced the WHO recommendations, and the Ministry of Health issued an infant feeding policy which recommends six months of exclusive breastfeeding. However, translation of these policies into action in the UAE would require immense planning and strong implementation programmes and strategies. In the UAE, there are no national breastfeeding goals or targets. The UAE should plan an infant feeding policy in the context of WHO/UNICEF Global Strategy for Infant and Young Child Feeding (WHO, 2007). IYCF reported that once a strategy and an action plan are put in place, then countries will be able to proceed steadily and measure their progress towards established targets.

Limited research in the UAE reported suboptimal infant feeding practices. Mixed feeding was the norm, and many mothers introduced solid food, liquid food or formula to their infants as early as one month. Al Mazroui et al. (1997) reported that 70% of infants received non-milk supplements during the first month. In another study in Al Ain, 76.1% of infants were given milk supplements before the end of their first month, and only 28% of the mothers exclusively breastfed their infant (Osman & El-Sabban, 1999). In a recent study in the UAE, the exclusive breastfeeding rate was 76.5% on day 1, 48.4% at 1 month and 13.3% at 6 months (Al Tajir et al., 2006).

1.6 Community based support for breastfeeding

A good understanding of the local beliefs, customs and traditions related to breastfeeding can help healthcare professionals provide better support and more appropriate counseling to breastfeeding mothers.

In the past 10 years, the focus has shifted from convincing mothers to breastfeed to supporting them in successfully breastfeeding their infants. The successful marketing of formula milk promoted “just as complete” as a mother’s breastmilk had a negative impact on breastfeeding (Nathoo & Ostry, 2009). More international efforts are shifting towards breastfeeding

support from both the health system and the community in order to encourage mothers to breastfeed (Labbok, 2007). Evidence shows that there is a link between community's attitudes towards breastfeeding and breastfeeding duration (McIntyre et al., 2001; Scott et al., 2003). Understanding cultural beliefs and local traditions of a community is important in determining health behavior. Studies on feeding practices in different countries have shown a large variety of beliefs and traditions related to breastfeeding (Geckil et al., 2009; Osman et al., 2009). While some of these can encourage breastfeeding, others may discourage it. Social theories might explain how the social environment influences breastfeeding choices and practices. Several theories note that the development of an individual occurs within the context of a community. Bandura (1977) noted that an individual's personality is a combination of his/her environment, behavior and psychological processes. He believed in the phenomenon of observational learning or modeling. Mothers' behaviors, practices and beliefs about breastfeeding are highly influenced by social norms and by the beliefs and values of other women, family members and healthcare professionals; all of these parties can strongly direct a mother's decision as whether to breastfeed or not (Barton, 2001; Heinig et al., 2006; Moran et al., 2006; Spear, 2006; Britton, 2007). These interactions may be either positive or negative as far as breastfeeding is concerned, and have been shown to affect the mother's confidence and persistence in breastfeeding (Raj & Plitcha, 1998; Dennis, 2002; Chezem et la., 2003). Peer counseling was also found effective in increasing breastfeeding initiation and duration (Martens, 2002; Anderson et al., 2005).

So, before policy makers in the UAE can design programmes that encourage exclusive breastfeeding for 6 months and supplemental feedings after 6 months, they need to accurately understand the cultural beliefs and practices of the population and why these practices diverge from standard recommendations.

1.7 Conclusion

The promotion of breastfeeding can be a potential component of the primary public health strategies to decrease public health problems in the UAE, such as obesity and NCDs and their related risk factors. Promoting breastfeeding is a cost-effective intervention to reduce the high rates of childhood obesity in the Gulf countries in general and the UAE in particular. Considering the many benefits of breastfeeding, it is a strategy worth investing in for combating public health concerns.

The UAE should integrate the WHO Global Infant and Young Child Feeding policy into its infant feeding policies in order to improve breastfeeding practices. It should provide planners and implementers who are involved in maternal and child health with clear guidelines for the appropriate IYCF practices.

1.8 Rationale

In spite of the compelling evidence that supports the importance of breastfeeding and its various health outcomes, data on breastfeeding practices remain limited in the UAE. Only few studies have been conducted, reporting the prevalence and duration of breastfeeding in the UAE. However, their usefulness is limited for several reasons. For instance, the studies did not use a standard definition for exclusive breastfeeding. Moreover, previous studies in the UAE were either specific to a certain region or included all the residents of the UAE, Emirati and expatriates. It is worth mentioning that the UAE is a multiethnic, multicultural community. As a consequence, the results of these studies varied and reflected the different breastfeeding practices of all residents, who were from different nationalities, ethnic groups and cultures. These studies did not give an accurate depiction of the breastfeeding practices of local Emirati mothers, about whom the policy makers in the UAE are mostly concerned.

Moreover, little is known about the factors that influence the initiation and duration of breastfeeding and the prevalence of lactational amenorrhea among this population. Thus, there is great need for quantitative research in order to identify and better understand the factors that influence breastfeeding and weaning practices of Emirati mothers. Moreover, understanding mother's breastfeeding perceptions and experiences is increasingly recognized as a vital tool for health professionals to be able to provide effective support and to promote optimal breastfeeding practices among Emirati mothers (Cooke et al., 2003; Hauck & Irurita, 2003).

The current research focuses on feeding and weaning practices within the social and cultural context of the UAE. This study will investigate infant feeding practices among Emirati mothers.

Although the UAE Ministry of Health issued many codes and circulars to support and promote breastfeeding and to control marketing of formula products, no concrete efforts have been exerted into putting the circulars and policies into an operational framework. The International Baby Food Action Network (IBFAN, 2005) reported that the UAE had very poor compliance with the International Code of Breast-milk Substitutes. IBFAN mentioned that the UAE is considered an extremely promising market for firms that produce and distribute breast-milk substitutes, since a forceful law is absent and punishment of violators is not implemented.

Despite many efforts and plans to promote breastfeeding in the UAE, there are no clear national targets, strategies or action plans to protect, promote and support appropriate feeding practices of infants and young children.

The limited research data and monitoring reports by the Ministry of Health in the UAE clearly noted that the UAE is facing an increased prevalence of obesity and chronic diseases, all of which are exerting heavy burdens on the country's healthcare costs. Still, there is a lack of evidence-based research

and plans for effective strategies to prevent these diseases or decrease their health risks. So, the UAE is facing two critical situations: high incidence of chronic diseases and lack of infant feeding policy.

The significance of this study lies in its ability to provide in-depth knowledge and information that might improve professional understanding of the nature of breastfeeding problems; this kind of data can help in the planning of adequate interventions that attempt to improve breast-feeding rates in the UAE.

The results of this study will encourage the implementation of necessary changes in hospital practices, baby food marketing control and cultural norms to promote optimum breast-feeding and weaning practices among Emirati mothers. It will help in designing prenatal and postnatal educational programmes that enhance exclusive breastfeeding and discourage giving liquid and solid supplements early. It will also help mothers in overcoming breastfeeding barriers.

Studying the breastfeeding and weaning practices of Emirati women will identify those population groups who are most likely not exclusively breastfeeding, and/ or those who are at risk of terminating breastfeeding before the recommended period. It will also highlight the factors that have a significant influence on breastfeeding initiation, exclusivity and duration. Moreover, it investigates the relationship between breastfeeding and lactational amenorrhea, since mother's new pregnancy is one of the main reasons for breastfeeding cessation in the Gulf countries (Al Shehri, 1995; Nuri et al., 1997; Fida & Al Aama, 2003; Ogbeide et al., 2004). The study will also identify cultural practices, traditions and influences of the different feeding practices among Emirati mothers.

The results will provide baseline data necessary for future healthcare plans that might have benefits on the community through improving the nutrition

and health of the mothers and children in the UAE. Increasing rates of breastfeeding in the UAE can help reduce the prevalence of various illnesses and risky health conditions, which may in turn result in lower health care costs. Paracio & Talayero et al., (2006) reported that in industrialised countries, exclusive breastfeeding reduced the risk of hospitalisation due to infections among infants less than one year of age. Moreover, in the United States, a study found that if 90% of U.S. families followed guidelines to breastfeed exclusively for six months, the country would save \$13 billion annually from reduced direct and indirect medical costs and the costs of premature death (Bartick & Reinhold, 2010).

It is hoped that this study will shed light on the nature of the root causes of the problem so that better intervention strategies could be planned; countries will be more successful in planning and implementing breastfeeding programmes once what needs to be done in order to improve infant and young child feeding practices is identified and documented. With evidence-based strategies and action plans in place, a country will be able to proceed steadily and measure its progress towards established targets.

1.9 Purpose of the study

The aim of this study is to evaluate breastfeeding and weaning practices of Emirati mothers in the UAE, and to compare them to the guidelines and recommendations of the World Health Organization.

The objectives of this study are:

- It will explore the knowledge, perceptions and views of these mothers about infant feeding practices.
- It will examine the elements that influence their breastfeeding decisions and behaviours.
- It will investigate and analyze the variables which influence breastfeeding and weaning practices of Emirati mothers and their

attitudes, beliefs, views, perceptions and expectations towards breastfeeding.

- It will explore the reasons they give for starting breastfeeding yet not continuing for long periods of time, and for supplementing early rather than exclusively breastfeeding their infants.

As far as obesity and diabetes are concerned, the ultimate goal of public health specialists in the UAE is to use research findings as baseline data on which future plans and strategies could be built. Improving exclusive breastfeeding rates and practices will contribute to the improvement of the overall health status in the UAE.

1.9.1 Research questions

The research questions that will be addressed in this study are the following:

- 1- What are current practices of breastfeeding?
- 2- What are the different views and perceptions of Emirati mothers regarding different infant feeding practices?
- 3- What are the sociodemographic factors that influence different breastfeeding practices?
- 4- When do mothers initiate breastfeeding after delivery? and for how long do they breastfeed their children?
- 5- What is the percentage of infants who are exclusively breastfed for 6 months?
- 6- When are prelacteal and supplementary fluids or solids being introduced? What are their types? and why do mothers offer them?
- 7- To what extent are the current WHO recommendations of exclusive breastfeeding being followed by Emirati mothers?

- 8- What are different factors that influence the association between breastfeeding and lactational amenorrhea in this population??
- 9- What are the reasons for stopping breastfeeding?

Chapter Two

Literature Review

2.1 Introduction

This chapter reviews the history of breastfeeding and its benefits; it discusses the literature related to infant feeding practices, and relates these practices to public health issues such as diseases. It also reports the variables which influence breastfeeding and weaning practices both internationally and in Arab Gulf countries. It sheds light on the impact of breastfeeding on health practices and policies, and on issues related to its promotion.

2.2 Changes of infant feeding patterns through history

Breastfeeding is a biological and cultural system, specifically geared to preserve, maintain and perpetuate the human race (Harfouche, 1981). Biology determines babies' needs, but cultural expectations and personal situations influence how parents respond to those needs. Breastfeeding is one of the oldest practices. It is recommended in all religions and cultures; it is mentioned in the Holy Quran, Biblical records and ancient Hindu scriptures (Brim, 1963; Venkata Chalam & Rubella, 1971). However, a woman's attitude towards breastfeeding and how she chooses to feed her baby are closely linked to the woman's culture (Webert, 2002).

In almost all societies, the practice of breastfeeding constitutes an integral part of child rearing patterns, and is determined by different interrelated factors such as the socioeconomic structure, population structure as well as cultural and religious beliefs, customs and life styles (Harfouche, 1981). These sociocultural systems are constantly changing, and so are breastfeeding and other child rearing practices which are dynamic and subject to modifications (Sears et al., 1957). Since breastfeeding is a

universal behavior, and since almost all populations of women are capable of breastfeeding, it is important to consider how the practice is formed, changed and transmitted through culture.

2.2.1 Developed countries

Up until the 19th century, nearly all children were breastfed, regardless of their culture or country, home setting or economic status. In the rare situations in which a mother died or was unable to breastfeed, a wet nurse would be hired. Breastfeeding was the norm, and the solution to any breastfeeding problem was to look for another mother, not for other milk (Sokol et al., 2007).

However, throughout history, breastfeeding has been molded by cultural values and scientific behaviors. After the industrial revolution, advances in technology resulted in changing the ways families lived, with an increasing number of women taking up work outside the home; this had an impact on child care. Traditional breastfeeding practices seem to no longer fit the demands of modern societies in which women have to be absent from their homes and their children for extended periods of time, usually for the sake of work (Berg & Brems, 1989).

During early 20th century period, infant feeding recommendations were supported by physicians' vision of "Scientific" infant care or what is called "medicated breastfeeding" (Apple, 1994). Infant formula milk was being mass produced and promoted as a product that is convenient for the mother and nutritious for the infant (Greer & Apple, 1991). Physicians were regarded as the authorities on infant feeding matters. It was the woman, under the strict advice of the physician, who decided when to breastfeed; it was not the infant who signaled that it was time for the breast and the comfort. Thus, as far as breastfeeding was concerned, this natural interaction between infant and mother, which used to be constant and spontaneous, became a practice regulated by hospitals, doctors and

“medical science” (Mead & Newton, 1969). Bottle feeding became more popular than breastfeeding. Weight gain became the foundation of infants’ health, and monitoring an infant’s weight on the growth chart was a standard procedure in “scientific” infant healthcare at that time (Dewey et al., 1995) and the image of a heavy baby was commonly perceived as the healthy norm (Mein, 1990). Women worried that they would not be able to make enough milk to meet their babies’ needs. This led mothers to introduce artificial feeding based on the advice of their healthcare professionals (Throley, 2003).

In the late 1960s, formula feeding became a sign of modernity, freedom, sophistication and affluence. Breasts were viewed as sexual objects, and breastfeeding in public was not accepted (Jelliffe & Jelliffe, 1978). Most mothers in industrialized countries chose not to breastfeed; as a result, traditional infant feeding practices started to be replaced by more ‘modern’ ones (Palmer, 1991). Mothers in developed countries refrained from breastfeeding for a number of reasons: intensive marketing of formula feeding as the better feeding choice for their infants; insufficient knowledge among medical professionals about breastfeeding benefits and techniques; maternity hospital practices; lack of support from family and friends; and increase in women’s employment rate. Young mothers grew up in industrialized environments in which breastfeeding was foreign rather than familiar; they neither saw breastfeeding nor did they learn about it from others. As a result, maternal skills started to vanish, and consequently, a culture that believed in breastfeeding and practiced it was lost (Wright, 2001; Labbok, 2007).

2.2.2 Developing countries

During the late 1960s, infant formula manufacturers shifted their attention towards developing countries where birth rates were high and where newly urbanized cities were starting to appear (Sokol et al., 2007). Many medical personnel in these countries welcomed infant formula as a nutritional and

preferable method of weaning (Sharma et al., 1987). Nestlé and other food manufacturers were marketing their products aggressively through advertising in media, such as TVs, radios and newspapers (Clement, 1978). They even distributed free infant formula samples in hospitals. Traditional breastfeeding practices started to disappear in the developing world due to urbanization, social change and the promotion of formula (Adair et al., 1993). However, hygiene and sterilization were lacking in these societies (Brown, 1973; Jason, 1991). Moreover, many of the mothers were illiterate and/ or poor, this resulted in feeding contaminated and diluted formula, and eventually a dramatic increase in mortality rate because of malnutrition, diarrhea and pneumonia (Plank & Milanisi, 1973; Clavano, 1982; Hunter, 1996).

Formula promotion in developing countries caused preventable infant deaths (Jelliffe & Jelliffe, 1977; Victora et al., 1989; Leon-Cava et al., 2002; Parashar et al., 2003). Health officials began to express concern over the rise in incidents of malnutrition and diarrhea in these countries due to the increasing reliance on infant formula and the concomitant decline in breastfeeding; they realized that breastmilk is the ideal food for infants since it contains essential nutrients and antibodies that protect the child's health (Jelliffe & Jelliffe, 1977). Jelliffe (1972) claimed that in third world countries, deaths that were directly or indirectly attributable to the use of infant formula might have reached ten million per year.

UNICEF (1998) estimated that a formula-fed child living in unhygienic conditions is between 6 - 25 times more likely to die of diarrhea, and four times more likely to die of pneumonia, than a breastfed child.

2.2.3 The downward trend

The decline in the practice of breastfeeding, which started in developed countries, was observed in developing countries, as well. In some countries, most of the change taking place was in the duration of breastfeeding,

whereas elsewhere, the decrease was in initiating breastfeeding (Huffman, 1984).

In the 1960s, the practice of breastfeeding was in rapid decline in many parts of the world. In Mexico, for example, the proportion of six-month old infants who were breastfed dropped from 100 percent to 9 percent between 1960 and 1970 (Jelliffe & Jelliffe, 1978). In 1915, 68% of the U.S. mothers were breastfeeding for at least one month; however, by 1950 the rate had declined to 17% (Hendershot, 1984). In England, breastfeeding declined from 80% in 1900 to 14% in 1960 (Fildes, 1986). During the 1970s, breastfeeding rates declined in most developed countries (Fomon, 2001), and premature weaning of the babies increased in the U.S. The lowest rates were noticed in the U.S. during the 1970's when only 24% of the mothers initiated breastfeeding (Ryan et al., 2002). In Sweden, the breastfeeding rate declined from 85% in 1944 to 35% in 1970 (WHO, 1981). Similar statistics were reported in other developed countries and some urban areas in developing countries (WHO, 1981). This changing pattern of infant feeding has been attributed to “the demands of modern life” and industrialization, as alternative means of feeding became available to the public. As noted by Berg and Brems (1989), a decline in breastfeeding accompanied the society’s modernization. Hirschman and Butler (1981) reported that the decline in breastfeeding before the 1970s is often attributed to difficulties in combining breastfeeding with maternal employment.

Middle Eastern countries are becoming exposed to even greater diversity, as they experienced rapid industrialization and westernization. Modernization factors have had a profound impact on the traditional cultures of the Middle East (Maher, 1991). Western influences on breastfeeding and weaning patterns in the region became widespread especially in the wealthy Arabian Gulf (including the United Arab Emirates). During the oil boom period (1973-1990), these countries experienced rapid economic and social variations, and witnessed changes in breastfeeding patterns (Musaiger,

1995). Infant formula companies saw the potential for increasing their sales and profits in the Gulf, and aggressively advertised unlimited varieties of artificial milk and weaning foods. Throughout the region, urban elite adopted the western lifestyle, including high levels of bottle feeding as feeding infant formula was viewed as a symbol of modernity (Harfouche & Musaiger, 1993).

It should be noted that in Middle Eastern countries, especially in Islamic societies, breastfeeding has a religious basis. Mothers continue to nurse their children for at least two years (Musaiger, 1995). However, modernization as well as the aggressive promotion and marketing campaigns of infant formula and other baby food have influenced the traditions of breastfeeding. This resulted in the increased use of bottle-feeding, and mothers ignored the Quranic recommendations of breastfeeding for two years (World Health Quarterly, 1982; Harfouche, 1982; Balo et al., 1997). In Bahrain, the duration of breastfeeding was about 2 years in 1960, and declined to 11 months in 1970 and to 8 in 1980 (Musaiger, 1990). In the 1960s, Sebai (1984) found that infants in Saudi Arabia were breastfed till two years of age. Another study in Saudi Arabia reported that 85% of the infants were breastfed immediately after birth; this dropped to 38% at the age of 6 months and 22% at the age of 12 months (Elias, 1985). In the UAE, about 50% of the mothers stopped breastfeeding before their infants reached the age of three months, and 40% did not even attempt to breastfeed (Autret & Miladi, 1978). Similar patterns were reported in other Gulf countries (Harfouche & Musaiger, 1993). The National Child Health Surveys carried out in Gulf countries during the 1990s reported that mixed feeding was prevalent and ranged from 48% in Oman to 64% in the UAE (Gulf Council of Health Ministries, 1991).

2.3 International organizations

Declining rates of breastfeeding worldwide led the WHO and UNICEF to identify a need for a global response to the protection, promotion and support of breastfeeding. The decline in breastfeeding was thought to result from both socio-cultural reasons in addition to the aggressive marketing strategies used by infant formula companies worldwide (UNICEF, 2005; Palmer, 2009). Starting the mid twentieth century and until the late 1980s most formula companies abandoned direct-to-consumer advertising and used the medical community as their sole intermediary for advertising (Greer & Apple, 1991). This formula companies' marketing tactics sparked international opposition, rooted in the assertion that formula promotion in developing countries caused preventable infant deaths (Jelliffe & Jelliffe, 1977; Parashar et al., 2003).

Public awareness of the tragic outcomes of the use of infant formula in the developing world led to a consumer boycott of Nestlé products during the late 1970s and early 1980s (Beasley & Amiri, 2007). Consequently, steps were to be taken to encourage breastfeeding and to discourage mothers in developing countries from the use of infant formula preparations. Around this time, the first of a series of international strategies designed to reduce infant mortality rates through regulating the promotion of artificial baby milk was implemented.

2.3.1 International Code of Marketing of Breastmilk Substitutes

The WHO and UNICEF led the development of the International Code of Marketing of Breastmilk Substitutes (The Code); they outlined a set of recommendations to regulate the marketing of breastmilk substitutes, feeding bottles and teats (WHO, 1981a). This Code prohibited the unethical marketing of formula, including the promotion of formula as superior to breastmilk, and the advertising and/or provision of free samples to pregnant women, new mothers and health facilities.

Many countries introduced legislation based on this code, and the use of samples declined but did not stop. The Code had no mechanism for international enforcement (WHO, 1981a). A 1998 report by the International Baby Food Action Network (IBFAN) surveyed 31 countries and found that most were not compliant with the Code (Wise, 1998). Since 1981, 65 countries have enacted legislations which implemented all or many of the provisions of the Code as well as subsequent relevant World Health Assembly resolutions (WHA) (IBFAN, 2004). Code violations by baby food manufacturers are still widespread, especially in countries that have not implemented the code as a national measure as well as those where monitoring and enforcement is weak (Aguayo et al., 2003). The WHO, International Baby Food Action Network (IBFAN), UNICEF and other international organizations perform monitoring of implementation of the code across the world both independently and with governments (WHO, 1996).

The UAE, as part of the international organizations, have issued a circular for the implementation of the code in the UAE in 1992. However, according to IBFAN report (2005), the UAE had very poor compliance with the International Code of Breastmilk Substitutes. IBFAN mentioned that there is no effective law and no implementation of punishment upon violation.

2.3.2 Innocenti Declaration

In 1989, the WHO and UNICEF launched an official joint statement, protecting, promoting and supporting breastfeeding, and recognising the important role of maternity services in promoting breastfeeding. It acknowledged the need for leadership from health professionals in sustaining or re-establishing a “breastfeeding culture”. This statement included Ten Steps to Successful Breastfeeding. In 1990, representatives from thirty countries met in Florence, Italy to create a global action plan to reverse the declining breastfeeding rates, and this gave rise to the Innocenti Declaration and the Protection, Promotion and Support of Breastfeeding

(WHO, 1990). It established four targets; by 1995, all governments were to have achieved the following:

- Implementation of comprehensive government policies on infant and young-child feeding;
- Full support from health and other sectors for two years of breastfeeding or more;
- Promotion of timely, adequate, safe and appropriate complementary feeding (addition of other foods while breastfeeding continues); guidance on infant and young-child feeding, especially in difficult circumstances, and related support for families and caregivers; and
- Passing of legislation or taking suitable measures, to implement the International Code of Marketing of Breastmilk Substitutes as part of the national comprehensive policy on infant and young-child feeding.

2.3.3 Baby Friendly Hospital Initiatives

In 1991, the WHO and UNICEF launched the Baby Friendly Hospital Initiatives (BFHI) to promote the implementation of the second target of the Innocenti Declaration. The Ten Steps to Successful Breastfeeding became the foundation of the BFHI. The two major objectives of BFHI were to end the distribution of free or low-cost supplies of breastmilk substitutes, and to ensure hospital practices that are supportive of breastfeeding.

Since the launching of BFHI in 1991 by UNICEF and the WHO, more than 19,600 hospitals in 152 countries have been designated as Baby Friendly (UNICEF, 2006). In 1997, the UAE started to encourage maternity hospitals to become Baby Friendly; however, only 6 hospitals in the UAE were officially designated as Baby Friendly.

Evidence from developed and developing countries indicates that the BFHI has had a direct impact on breastfeeding rates at the hospital level (Britton et al., 2007; DiGirolomo et al., 2008; Rosenberg et al., 2008; Olang, 2009).

Mothers who delivered in baby friendly maternity wards were 10% more likely to start breastfeeding than those who delivered in a non-accredited hospital (Bartington et al., 2006). In Switzerland, infants born in baby friendly hospitals were more likely to be breastfed for a longer period of time than those born in non-baby friendly facilities (Merten & Ackermann-Liebrich, 2004). In a randomized controlled trial in Belarus, Kramer et al. (2001) noted improved rates of any and exclusive breastfeeding at 3 and 6 months, and any breastfeeding at 12 months, in infants of mothers giving birth at hospitals randomized to follow BFHI policies, compared to those delivering in control hospitals.

2.3.4 WHO/UNICEF Global Strategy for Infant and Young Child Feeding

Moreover, world leaders met at the United Nations, adopting the "Millennium Declaration" (UN, 2000) with its eight goals to eradicate poverty and hunger in the world, and agreed to achieve these goals by the year 2015. For children under five years of age, two crucial goals are to be accomplished by the year 2015; these are:

- a) To reduce by half the proportion of children who are underweight, and
- b) To reduce by two-thirds the rate of mortality in children.

Building on the Millennium Development Declaration and Goals, UNICEF and the WHO developed the Global Strategy for Infant and Young Child Feeding (IYCF). It is a comprehensive strategy for revitalizing the global commitment to improve infant and young child feeding, nutrition and ultimately, survival, growth and development (WHO, 2003b). The basis of the strategy is the evidence of nutrition's worth in the early years of life, and the idea that suitable feeding practices are part of achieving optimal health (Schiff, 2006).

The Global strategy reinforces the public health recommendations for optimal infant feeding: "infants should be exclusively breastfed for the first six months of life to achieve optimal survival, growth and development.

Thereafter, infants should receive nutritionally adequate and safe complementary foods while breastfeeding continues for up to two years of age or beyond (WHO, 2003b). Implementing the International Code is one of the key steps of the Global Strategy, which includes five additional operational targets:

- Appointment of a national breastfeeding coordinator with appropriate authority, and establishment of a multisectoral national breastfeeding committee;
- Implementation of the 'Ten steps to successful breastfeeding' (i.e., the Baby-Friendly Hospital Initiative) in all maternity facilities;
- Global implementation of the International Code of Marketing of Breast-milk Substitutes and subsequent relevant World Health Assembly resolutions in their entirety; and
- Enactment of imaginative legislation to protect the right of working women to breastfeed, and establishment of means for enforcing legislation on maternity protection.

The IYCF recommends that countries plan Community-based breastfeeding promotion and support programs to improve breastfeeding practices. It was acknowledged that 'no single intervention or group could succeed in meeting the challenge, and so implementation of the strategy would need political will, public investment, awareness among health workers, involvement of families and communities and collaboration between governments and international organizations' (WHO, 2003a). The IYCF established a tool which countries could use in order to assess national practices and programmes in relation to targets set out by the Global Strategy for Infant and Young Child Feeding. IYCF is a blueprint for current and future public health action to improve infant feeding practices worldwide (WHO, 2003).

The Global strategy and the Innocenti Declaration have outlined the directions in which nations need to move in order to reduce malnutrition and mortality amongst infants and young children. Since Innocenti, exclusive

breastfeeding in the first 6 months of life increased substantially, from 34% to 41%. This increase may have been a major contributor to the concurrent decline in child mortality in developing countries, which has been well documented (Labbok, 2007). The Bellagio Child Survival Study Group identified optimal breastfeeding in the first year of life as one of the most important strategies for improving child survival that could save as many as 1.5 million infant lives every year (Black et al., 2003; Jones et al., 2003).

2.3.5 Maternity protection

Maternity protection for the woman is essential to achieve optimal breastfeeding as it helps her to combine her reproductive and productive work (Cattaneo & Quintero-Romero, 2006). Recognising the contribution of women, the International Labour Organization (ILO) developed maternity protection through its various conventions (ILO, 2000). ILO recognizes that women have the right to get a maternity leave and to breastfeed their infants (Humenick & Gwayi-Chore, 2001). However, in many countries, serious obstacles are placed in the way of mothers' rights to breastfeed.

The maternity protection legislation in the UAE had set standards that give Emirati women entitlement to six months' maternity leave: two months with full pay, two for half pay and two unpaid months. The UAE also granted new mothers the right to one paid breastfeeding break daily or a one-hour reduction of work hours for 12 months postpartum in order to promote longer duration of breastfeeding without loss of payment.

Internationally, the WHO, the World Health Assembly, UNICEF and the ILO have shown considerable leadership in developing policies and programmes that protect, promote and support breastfeeding (Moran et al., 2006; WHO, 2002; WHO/UNICEF, 2004). These organizations provide guidelines and serve as support agencies for policies and programmes for all nations.

2.4 Exclusive breastfeeding

Prior to 2001, the WHO recommended that infants be exclusively breastfed for 4-6 months, with the introduction of complementary foods thereafter (WHO, 1995). In 2001, following a report by a WHO Expert Consultation on the optimal duration of breastfeeding (WHO, 2001), the WHO changed its recommendation to exclusive breastfeeding for the first six months of life (WHO, 2001). This recommendation was further endorsed by a systematic review which was commissioned by the WHO, and which assessed infant and maternal health outcomes with exclusive breastfeeding for six months versus exclusive breastfeeding for three to four months (Kramer & Kakuma, 2002). This led to a global recommendation of exclusive breastfeeding for the first six months of life, with the introduction of complementary food thereafter, and continued breastfeeding for up to two years and beyond.

In 2004, WHO/UNICEF reported that “lack of breastfeeding and especially lack of exclusive breastfeeding during the first half year of life are important risk factors for infant and childhood morbidity and mortality that are only compounded by inappropriate complementary feeding”. The impact is life long, and it affects school performance, productivity, as well as intellectual and social development.

2.5 Breastfeeding rates: Resurgence and current situation

In recent years, the global trend has shifted towards improved breastfeeding practices. However, the prevalence of exclusive breastfeeding and other optimal infant feeding practices is still low in many countries (WHO, 2003a).

Resurgence of breastfeeding started in the late 20th century (1990's). In developed countries, breastfeeding was significantly more common among urban residents, women with high education and older mothers (Dubois & Girard, 2003; Millar & Maclean, 2005). However, the use of formula milk was

still widespread and influenced breastfeeding rates in industrialized countries (Wright & Schanler, 2001). It seems that current attitudes towards infant nutrition have been molded by manufacturers of infant formulas who aggressively created a market for their products.

Increased knowledge among health care professionals about the composition of human milk and the benefits of breastfeeding might have also influenced infant feeding practices (Schanler et al., 1999). The same century also witnessed unprecedented changes in society, technology, the role of women, household income, education levels and childbirth practices (Wright, 2001).

Despite the numerous recognized advantages of breastfeeding over artificial feeding even in industrialized countries, breastfeeding rates are typically low, and only slowly improving in the European Region. This is the situation in France, Italy, Netherlands, Spain, Switzerland and the United Kingdom (WHO Global Data Bank, 2006). In 2005, the prevalence of exclusive breastfeeding until 4 months was 7% in the UK, though it was 64% in Norway (Hoddinott et al., 2008).

Breastfeeding rates in the United States increased significantly between 1993 and 2006. The percentage of infants who were ever breastfed increased from 60% among infants born in 1993–1994 to 77% among infants born in 2005–2006 (McDowell, 2008).

In the past two decades, breastfeeding initiation and duration began to increase in many developing countries (Grummer-Strawn, 1996; Lutter, 2000). Survey data from 43 countries indicated a significant increase in exclusive breastfeeding, from 39% to 46% between 1989 and 1999 (WHO, 2003a). DHS surveys indicated that exclusive breastfeeding rates for infants 0–3 months of age ranged from 25% (Dominican Republic, 1996) to 78%

(Peru, 2000) in Latin America, and from 4% (Côte d'Ivoire, 1998/99) to 63% (Malawi, 2000) in Africa.

Current breastfeeding patterns have improved significantly in some countries over the past 10 years, but they are still far from the recommended levels in the developing world as a whole (UNICEF, 2009). In developing world, progress of exclusive breastfeeding has been the modest from 33% around 1995 to 38% around 2008. Rates have increased in all regions except the Middle East/ North Africa (MENA) region where exclusive breastfeeding rate decreased from 37% in 1996 to 32% in 2008 (UNICEF, 2011). UNICEF have reported that the overall prevalence of exclusive breastfeeding for the first 6 months of the infants' age was around 50%, from 2005-2009, in all regions of the world (UNICEF, 2011). Eastern and Southern Africa reported the highest rates of exclusive breastfeeding in the first six months of infants' lives (47%) while rates were particularly low in West and Central Africa (23%), East Asia and Pacific (28%) and Central and Eastern Europe/Commonwealth of Independent States (CEE/CIS) (29%) (UNICEF, 2011).

Moreover, UNICEF (2011) reported that breastfeeding initiation rates are no longer declining at the global level, but less than half of newborns in the developing world (44%) initiated breastfeeding within one hour of birth (UNICEF, 2011 current status). Regional averages range from a high of 61% in Eastern and Southern Africa to a low of 39% in South Asia and West and Central Africa. According to UNICEF State of the World's Children report (2008), exclusive breastfeeding rates in MENA is highest in Tunisia (47%, 2000), Iran (44%, 2000) and Egypt (38%) and lowest in Jordan (22%), in Syria (29%), in Kuwait (12%, 1996) and in Yemen (12%). Continued breastfeeding is highest in Oman (73%, 2000), Bahrain (41%, 1995) and Sudan (40%, 2000) and lowest in Lebanon (11%, 2000) and Kuwait (9%, 1996) (UNICEF, 2008).

UNICEF (2011) reported that it is evident that the increase in exclusive breastfeeding rates in the countries is achieved when countries implement a comprehensive approach to improving infant feeding practices. Mainly breastfeeding campaigns, additional Baby-Friendly Hospitals and trained breastfeeding counselors. Also, the implementation of large-scale programmes in these countries was based on national policies and often guided by the Global Strategy for Infant and Young Child Feeding.

2.6 Importance of breastfeeding

Breastmilk is the first natural food for babies. It provides all the energy and nutrients that an infant needs for the first months of life, and it continues to provide up to half or more of a child's nutritional needs during the second half of the first year and up to one third of the second year (WHO, 2001).

According to the American Academy of Pediatrics, breastfed infants are the reference against which all alternative feeding methods must be measured with regard to growth, health, development and other outcomes (AAP, 2005; Gartner et al., 2005). The WHO has developed new growth charts based on breastfed infants as the normative growth model constituting good nutrition, health and development (WHO, 2006). The WHO urged countries to use the WHO growth charts instead of the old CDC growth charts which were based on infants who were mixed fed; they were falsely interpreting the growth of breastfed infants as faltering (Kuczmarski, 2000).

2.6.1 Composition of breastmilk

Breastmilk provides optimal nutrition to the infant, with its dynamic composition and the appropriate balance of nutrients provided in easily digestible and bioavailable forms (Jensen, 1995; Lawrence & Lawrence, 1999). Breastmilk provides sufficient energy and protein to meet the needs of infants up to six months of age (Butte et al., 2002; Lonnerdal, 2003). The composition of breast milk changes throughout a feed depending on

the time of day; during the course of lactation, the fat content increases as the breast empties (McDonald, 2003). In addition to the nutritional benefits, colostrums which are secreted during the first five days contain immunoglobins that protect infants from illnesses (Hansen et al., 2002; Jackson & Nazar, 2006).

Recently, it was discovered that the composition of breastmilk may also contribute to the protective effects of breastfeeding against weight gain and obesity (Lawrence, 2010). Research has shown that leptin is present in colostrum and mature milk, and it plays a role in regulating food intake and signals satiety (Bouret et al., 2004). Breastmilk leptin levels are negatively associated with weight gain during early infancy and through 2 years of age (Miralles et al., 2006)

2.6.2 Benefits of breastfeeding

Many studies have reported that breastfeeding confers economical, health, developmental, psychological and social advantages on both mothers and babies (Fleischer-Michaelsen et al., 2000; Gartner et al., 2005).

2.6.2.1 Economical benefits of breastfeeding

Breastfeeding provides significant economic benefits to the family in particular as well as the society and the nation in general. It is free. Human milk saves the family money that would otherwise be spent on expensive formulas (Teresa et al., 1995).

Artificial feeding is expensive for families and can contribute to additional costs to the health system, as artificially-fed infants are significantly more likely to get sick and to experience health problems later in life (Leon-Cava et al., 2002; Cattaneo et al., 2005). The World Health Report (2010) stated that each year, 100 million people are pushed into poverty because they have to directly pay for health services for treating non communicable diseases (NCDs); this may represent 5% of the population in low income countries. According to the US Department of Agriculture, the USA would

save a minimum of \$3.6 billion per year in health care and indirect costs if at least 75% of mothers initiated breastfeeding, and 50% breastfed until the infant was at least 6 months old (Kent, 2006; USGAO, 2006). A recent study found that if 90 percent of U.S. families followed guidelines to breastfeed exclusively for six months, the United States would save \$13 billion annually from reduced direct and indirect medical costs and the cost of premature death (Bartick & Reinhold, 2010).

According to WHO (2005), estimated losses in national income from heart diseases, strokes and diabetes in 2005 were \$18 billion in China, \$11 billion in the Russian Federation, \$9 billion in India and \$3 billion in Brazil (all in U.S. dollars).

The medical and economic value of breastfeeding is high because breastfeeding seems to result in cost savings for parents, insurers, employers and society as a whole (Riordan, 2005).

2.6.2.2 Benefits to the Infant

Initiation of breastfeeding while colostrum is still being produced is proved to decrease infant morbidity in developing and developed countries (Duijts et al., 2009). Evidence shows that breastfeeding provides protection against infectious diseases, reduction in the risk of acute otitis media, gastrointestinal illnesses and hospitalizations from lower respiratory tract diseases (Bachrach et al., 2003; Oddy et al., 2003; Ip et al., 2007). These benefits are thought to arise from both the passive immunity conferred through colostrum, which is related to the immunological and antibacterial properties of breastmilk, and the reduced exposure to pathogens introduced by prelacteal or formula feeding practices (Hanson, 2000; Jones et al., 2003; Isaacs, 2005). Breastfeeding has also been related to possible enhancement of cognitive development (Jain et al., 2002; Gomez-Sanchiz, 2004; Rey, 2003). There is also evidence that suggests a relationship between breastfeeding and other morbidities such as childhood asthma and eczma

(Chan-Yeung et al., 2000), and leukemia (Shu et al., 1995). Breastfeeding is recommended for reducing asthma and atopic disease in childhood, even for high risk children (Kemp & Kakakios, 2004; Prescott & Tang, 2005). Breastfeeding is also associated with a reduced risk of sudden infant death (McVea et al., 2000; Vennemann et al., 2009).

In addition to the significant reduction in acute illnesses, breastfeeding can affect the development of chronic diseases such as blood pressure, obesity/overweight, total cholesterol and type 2 diabetes later in life (Arenz et al., 2004; Harder et al., 2006; Owen et al., 2005; Horta et al., 2007; Ip et al., 2007).

2.6.2.3 Benefits to the mother

In addition to the health benefits of breastfeeding for babies, there are also benefits for mothers. The 'naturalness' of breastfeeding and the emotional bonding with their infant are some of the main reasons women intend to breastfeed (Arora et al., 2000). It has long been acknowledged that breastfeeding increases levels of oxytocin, resulting in less postpartum bleeding and more rapid uterine involution (Labbok, 2001; Rea, 2004). There is compelling evidence that breastfeeding is protective against developing breast cancer and ovarian cancer (Beral, 2002; Danforth et al., 2007; Ip et al., 2007; Stuebe et al., 2002). Increased postpartum weight loss, shown in a number of studies, is likely as lactation requires an additional 500–640 calories per day (Kac, 2004; Rea, 2004). In the short term, breastfeeding women experience greater weight and fat loss than non-breastfeeding women, especially those who breastfeed for longer than 6 months and those who do so exclusively (Rooney et al., 2002; Hatsu et al., 2008).

2.6.2.4 Breastfeeding and lactational amenorrhea

The natural contraceptive effect of breastfeeding has long been recognized (Ramos et al., 1996). Breastfeeding suppresses the hormones of ovulation,

not allowing a mother to menstruate or ovulate during the first 6 weeks after delivery (Chertok & Zimmerman, 2007).

The duration of postpartum infertility varies between individuals and between societies; it appears to depend largely on infant feeding practices (WHO, 1998). Early initiation of breastfeeding and refraining from providing the infant with glucose or other prelacteal fluids after delivery are strongly associated with longer duration of postpartum amenorrhea (Khalil et al., 1996; Kennedy, 2002). In particular, exclusive breastfeeding with frequent nursing, day and night, as well as not giving supplementary feeds, delays the onset of menses and decreases the chances of ovulating prior to the first menses (WHO 1998a; Dewey et al., 2001; Becker et al., 2003). The introduction of other foods and fluids may reduce the frequency and duration of breastfeeding (Howie et al., 1981; Gray et al., 1990; Dewey et al., 2001).

A consensus conference held at Bellagio, Italy in 1988 concluded that lactational amenorrhea is associated with infertility during the first 6 postpartum months, provided that the mother is exclusively or almost exclusively breastfeeding. This consensus meeting formalized the lactational amenorrhea method of contraception (LAM), which has subsequently been included in family planning programmes in some developing countries (Kennedy et al., 1989).

It has been claimed that the LAM, when correctly applied, is more responsible for preventing pregnancies in developing countries than all other methods of contraception combined (Madani et al., 1994), and is 98% effective (Vander Wigdan et al., 2008). Several international studies have demonstrated the effectiveness of LAM (Labbok et al., 1997; Lawrence, 2000; Khella et al., 2004).

2.6.2.5 Lactational amenorrhea method and family planning

Family planning is a key strategy for improving maternal and child health (Filipi et al., 2006). Breastfeeding directly contributes to increased birth

intervals by reducing the resumption of fertility in the mother, thus having positive effects on infant survival (Chertok & Zimmerman, 2007). It also maintains maternal health and well-being, which allows the family as a whole to better care for its children (Van der Wijden et al., 2008). Sedgh et al., (2006) reported that closely spaced pregnancies and child births, early child bearing and abortions lead to high maternal and infant mortality.

Findings of studies in both rich and poor countries show that conceptions which take place within 18 months of a previous live birth are at greater risk of fetal death, low birth weight, prematurity and being of small size for gestational age (Conde-Agudelo et al., 2005; Zhu, 2005). Rutstein (2005) and DaVanzo et al., (2005) suggested that about one million of the eleven million deaths per year of children younger than 5 years could be averted by the elimination of inter birth intervals of less than 2 years.

The lactational amenorrhea method (LAM) has been promoted for more than two decades by family planning advocates, especially in developing countries that have difficulty obtaining contraceptives (Kennedy & Visness, 1992; Labbok et al., 1997; Dewey et al., 2001). LAM can be used in a variety of cultures and health care settings (Peterson et al., 2000). So LAM is endorsed by the WHO as a valuable method of family planning worldwide due to its efficacy, lack of side effects and low cost with minimal counseling or follow-up (WHO, 1998a; WHO, 1998b; WHO, 1999).

2.7 Factors influencing breastfeeding

Breastfeeding is a complex human behaviour, and research to date has provided many valuable insights into its determinants (Thulier & Mercer, 2009). Various factors associated with breastfeeding and complementary feeding practices have been identified in many studies. Research in this field is extensive and presents the relevant and predominant determinants of breastfeeding practices. These include maternal characteristics such as age

and education, infant health issues such as problems, birth weight and gender, health-service-related factors such as rooming in and demand feeding, as well as psychosocial and cultural factors such as social support from family, friends and health services personnel (Lande et al., 2003). Understanding the factors associated with breastfeeding and other infant feeding practices is essential for the development and the promotion of healthy infant feeding practices.

2.7.1 Maternal age

Breastfeeding initiation and duration rates have repeatedly been associated with maternal age. Many studies reported that older women are more likely to initiate breastfeeding and to breastfeed for longer periods of time compared to younger mothers (Novotny et al., 2000; Gudnadottir et al., 2006). Older mothers are also more likely to breastfeed exclusively (Al Shehri et al., 1995; Arora, et al., 2000; Bulk-Bunschoten et al., 2001). The older a woman is, the more likely she is to breastfeed for a longer period of time (Scott & Binns, 1999; Susin et al., 1999; Hoddinott et al., 2000; Dubois & Girard, 2003; Zaghloul et al., 2004).

2.7.2 Maternal education

Educated women in developed countries appear to have returned to breastfeeding, while in most developing countries, their counterparts have increasingly switched to bottlefeeding (Rogers et al., 1997; Lande et al., 2003). Highly educated mothers initiated and continued breastfeeding for longer periods than did illiterate or low educated mothers in industrialized countries (Ward et al., 2004; Gudnadottir et al., 2006; Tarrant et al., 2010). On the other hand, in developing countries such as Saudi Arabia, breastfeeding initiation and duration were inversely associated with the mother's education level (Ogbeide et al., 2004).

2.7.3 Parity

There have been numerous studies on the relationship between parity and breastfeeding duration in both developed and developing countries (Al Shehri et al., 1995; Piper & Parks, 1996; Lande et al., 2003). Some researchers reported a longer duration of breastfeeding with increased parity (Shiva & Nasiri; 2003; Simard et al., 2005). Others reported that multiparous mothers were more likely to initiate breastfeeding than primiparous ones (Nolan & Goel, 1995; Scott et al., 2001; Leung et al., 2006). Butler et al. (2004) reported that first time mothers may be at the risk for non-exclusive breastfeeding due to lack of experience. In contrast, other research studies failed to show significant association between increased parity and duration (Harris, 1988; Adams, et al., 2001).

2.7.4 Maternal employment

Another important factor associated with breastfeeding initiation and duration is whether the mother is employed or not. Studies have investigated whether mother's employment influences her decision to breastfeed or to terminate breastfeeding and start bottle feeding (Fein & Roe, 1998; Roe et al., 1999). It was found that one of the main barriers for breastfeeding was the return to paid employment (Stewart-Knox et al., 2003). Many studies also found that maternal return to work is associated with earlier weaning (Novotny et al., 2000; Bulk-Bunschoten, 2001; Taveras et al., 2003) or a shorter breastfeeding duration (Pechlivani, 2005; Khassawneh et al., 2006).

Other evidence suggests that return to employment does not necessarily reduce the initiation of breastfeeding, except for mothers who return to work within the first 6 weeks after delivery (Berger et al., 2005; Calnen, 2007). Other studies indicated that breastfeeding duration is significantly reduced when the mother returns to work in less than 12 weeks after delivery (Guendelman et al., 2009). Moreover, the working place and the maternity leave act as barriers for mothers who desire to breastfeed (Ducket, 1992;

Visness & Kennedy, 1997). It was suggested that offering paid maternity leave may encourage more women to extend the duration of breastfeeding (Calnen, 2007).

2.7.5 Frequency of feeds

Another behaviour which has been linked to breastfeeding duration is the frequency of feeds. “Demand” feeding is offering unrestricted access to the breast in response to the baby’s cues. Some studies found that infants who breastfeed on demand are breastfed for longer than those who feed to a schedule (Hornell et al., 1999; Dennis, 2002a).

2.7.6 Hospital practices

Hospitals provide a unique and critical link between the breastfeeding support given before and after delivery. Hospital practices can influence not only the success of breastfeeding during the hospital stay but also the exclusivity and duration of breastfeeding in general (Abrahams & Lobbok, 2009).

Mothers who deliver in “baby-friendly” hospitals are more likely to continue breastfeeding beyond 6 weeks (DiGirolamo & Grummer-Strawn, 2008). Timing of the first feed was also significantly related to the total duration of breastfeeding. According to the “Ten Steps to Successful Breastfeeding” (WHO/UNICEF, 1989), maternity services staff should assist mothers to initiate breastfeeding within an hour of birth. Babies who were breast fed within 12 hours of delivery were breastfed for longer periods than others (Martines et al., 1989; Murray et al., 2007).

2.7.7 Rooming in

Keeping the infant with his mother after delivery supports mother-infant contact and encourages breastfeeding initiation and demand feeding (Hornell, 1999; Dennis, 2002). Rooming in and timing of the first feed were some of the most important determinants in initiating breastfeeding (Wilmoth

& Elder, 1995). Infants who received breastmilk as their first feed were breastfed longer than those who received either water and glucose or formula milk (Buxton et al., 1991; Chapman and Perez-Escamilla, 1999). Breastfeeding within an hour or two of delivery is associated with the establishment of longer and more successful breastfeeding (Hill, 1991; Kurinj & Shiono, 1991; Lawson & Tulloch, 1995). This may partially explain the longer breastfeeding durations observed among women who are not separated from their babies during the early days after birth (Buxton et al., 1991; Scott et al., 2001).

2.7.8 Breastfeeding problems

During the early postpartum months, the mother encounters a larger number of breastfeeding problems that may hinder initiating or continuing to breastfeed, and would eventually lead to termination (Collin & Scott, 2002; Mcleod et al., 2002; Cernades et al., 2003).

2.7.8.1 Caesarean section

Researchers concluded that caesarean delivery could delay a woman from putting her baby to breast (Chen et al., 1998; Pechlivani et al., 2005). Scott et al., (2007) reported that caesarean delivery was a risk factor associated with the delayed onset of lactation. Some studies show shorter durations of breastfeeding among women who give birth by caesarean section (Leung, 2002; Shawky & Abalkhail, 2003; Theofilogiannakou, 2006; Wang, 2006). Data suggested that a negative association exists between caesarean delivery and breastfeeding initiation, but not duration once breastfeeding has been established (Scott et al., 2001; Cernades et al., 2003; Dennis, 2003). Results suggest that mothers who give birth by caesarean section are more likely to introduce supplements to their babies in the early days postpartum, thereby reducing the duration of full breastfeeding (Giovannini, 2005; Mikiel-Kostyra, 2005).

2.7.8.2 Nipple problems

Sore and cracked nipples were common problems experienced by mothers in studies on breastfeeding (e.g. Collin & Scott, 2002; Cernades et al., 2003). Mothers who suffered from sore nipples breastfed for a shorter duration (Simard et al., 2005; Wambach et al., 2005) and were associated with earlier cessation of breastfeeding (Salih et al., 1996; Sheehan et al., 2001; Collin & Scott, 2002; McLeod et al., 2002) compared to mothers who did not have any nipple problems.

In order to prevent complications with breastfeeding such as cracked/sore nipples and milk insufficiency, a baby needs to be attached to the breast correctly (Renfrew et al., 2000). Also, it is a skill that mothers need to be taught; it is not instinctual, and women have reported that some health professionals lack the skills to teach the mothers how to attach and latch their infants properly (Graffy & Taylor, 2005; Smale et al., 2006).

2.7.9 Health professionals support

Support in hospitals is associated with an increased duration of exclusive breastfeeding (Dennis et al., 2002a). Women consider healthcare professionals' support critical to their continued breastfeeding (Dillaway & Douma, 2004). Conflicting advice and inaccurate information were among the common complaints from mothers, indicating that they have a serious influence on breastfeeding decisions (Simmons, 2002; Tarrant et al., 2004). Mothers preferred to be shown skills rather than to be told how to behave (Hoddinott & Pill, 2000). They found it important that health professionals give them confidence in their ability to breastfeed (McInnes & Chambers, 2008; Sheehan et al., 2009). This lack of practical information and help sometimes resulted in the discontinuation of breastfeeding earlier than mothers had hoped (Lewallen et al., 2006).

Lack of professional support is associated with early weaning and decreased exclusivity of breastfeeding (Taveras et al., 2004).

Interventions by healthcare providers involving breastfeeding education improves breastfeeding initiation rates (Dyson et al., 2006); additional professional support from medical, nursing and allied professionals helps prolong exclusive breastfeeding (Britton et al., 2007).

2.7.10 Social support

Social support from spouse, friends, family members and/or health professionals is identified as an influential factor in infant feeding choices (Bryant, 1982; Baranowski et al., 1983). A recent Cochrane review concluded that lay and professional support together extended the duration of breastfeeding, and contributed to breastfeeding success (Britton, 2007). However, Barton (2001) and Heinig et al. (2006) reported that the attitudes and beliefs of people in women's social networks, rather than those of health care professionals, appear to be particularly influential in infant feeding decision.

Many studies found that the women's husband/ partner was the most important source of support in initiating breastfeeding (Dennis et al., 2003; Li et al., 2004; Spear, 2006). However, the father can act as a barrier if he did not support breastfeeding (Arora et al., 2000) or if he acted ambivalent to how the baby was to be fed (Scott et al., 2001). On the other hand, some mothers may consider formula feeding more convenient than breastfeeding because it allows the father to participate in the feeding process of the baby (Heath et al., 2002). Lack of fathers' breastfeeding knowledge was found to hinder breastfeeding (Shepherd et al., 2000; Lavender et al., 2006).

Other studies reported that opinions and experiences of grandmothers and mothers-in-law also influenced a mother's breastfeeding and weaning decisions, either by encouraging the early introduction of prelacteal feeds, or rather by assisting the mother and supporting her to breastfeed her infant (Semega-Janneh et al., 2001; Ekstrom et al., 2003; Ludvigsson, 2003).

In breastfeeding cultures such as the UAE, mothers have societal support as well as advisors within their own families. Breastfeeding knowledge is passed from mother to daughter in the form of practices and beliefs (Mojab, 2000). Breastfeeding has a religious basis in the Islamic culture. The Holy Qur'an recommends that the mother suckle her offspring for 2 years and states that every newborn infant has the right to be breastfed, "the mother shall give suck to their offspring for two whole years" (Surat Bakara, verse 2:233) (Ali, 1938). Extended families in the Islamic culture have the advantage of relieving young mothers from the burden. Breastfeeding requires the support and the help of the father and other family members to allow the mother and the child to be together undisturbed as much as possible for the first 40 days of the baby's life. It is usual for the grandmother to stay with her daughter, or for the daughter to stay with her mother. The grandmother can thus take care of the daughter and the baby, and provide guidance on how to attend to the baby's needs. The father is obliged to support his wife under any circumstances so that she will be committed to breastfeeding. In the case of divorce, he has to provide shelter and financial support to the mother as long as she is breastfeeding her infant (Shaikh & Ahmed, 2006).

Haddonit and Pill (1999) reported that breastfeeding decisions are more influenced by embedded knowledge gained from seeing breastfeeding than by theoretical knowledge about its benefits. When breastfeeding knowledge was lost in traditional societies because of changes in socio-economic factors, aggressive marketing of formula, techniques such as separation of the mother and infant after delivery in hospital, and a schedule of infrequent feedings, breastfeeding rates declined (Labbok et al., 2007).

2.7.10.1 Peer support groups and counselors

Greiner (1981) indicated that family support systems in developing countries and traditional societies were disappearing in rural areas and needed to be replaced. Breastfeeding Support groups such as Lech League and other

breastfeeding committees appeared to be effective in providing support for breastfeeding mothers, enabling them to overcome breastfeeding difficulties and continue to breastfeed (Alexander et al., 2003; Hoddinott et al., 2006). A peer support group which is composed of women who successfully breastfed their children could be trained as breastfeeding consultants in maternal and child healthcare centers; they can assist and support other women who are facing breastfeeding problems. Peer counseling was found to be effective in increasing breastfeeding initiation and duration (Anderson et al., 2005; Ahmed et al., 2006; Nankunda et al., 2006).

2.7.10.2 Social theories and breastfeeding

Encouraging mothers to breastfeed and to do so for long periods presents a major challenge for health professionals. There are many influences on a woman's decision to breastfeed, including social, cultural, economic and psychological factors (Swanson & Power, 2004). Breastfeeding, as a health behavior, and the decision to breastfeed are guided not only by women's own underlying attitudes, skills, abilities and beliefs, but also by perceptions of what other people think and what is socially accepted or desirable (Swanson & Power, 2004). Therefore, infant feeding and lactation practices might be gained from a mother's surroundings regardless of religious values or scientific significance.

Behaviorists and psychologists have theorized some of the factors that predict behaviors. The Health Belief Model, social learning theory and self-efficacy have all been applied -with varying success- in explaining, predicting, and influencing behavior (Rosenstock et al., 1988). Bandura (1977) believed that people learn through observing others' behaviors and attitudes and their outcomes. When an individual observes another behaving in a specific way, he or she is able to replicate that behavior when put in the same situation. Social theories might explain how the social environment influences breastfeeding choices and practices.

Mothers' behaviors, practices and beliefs about breastfeeding are highly influenced by social norms and by the beliefs and values of other women, family members and health professionals involved in their care. All of these parties can strongly direct the decision as whether to breastfeed or not (Moran et al., 2006). The social learning theory makes it easier to understand how feeding practices are socially learned.

To promote the conceptual development of breastfeeding confidence, and to guide effective supportive interventions, Dennis (2002) incorporated Bandura's (1977) approach to develop the breastfeeding self-efficacy concept and theoretical model. Self-efficacy which is specific to the breastfeeding situation is referred to as "Breastfeeding self-efficacy"; it shows a mother's confidence in her ability to breastfeed her infant. The importance of maternal confidence in breastfeeding outcomes has been highlighted by several researchers (Buxton et al., 1991; Papinczak & Turner, 2000; Ertem et al., 2001; Chezem et al., 2003). Many studies found that breastfeeding self-efficacy is an important variable that significantly influences initiation and duration rates of breastfeeding (Dennis, 2003; Blyth et al., 2004; Noel-Weiss, 2006; Hauck et al., 2007). Dennis (2003) developed the Self-efficacy scales for breastfeeding behavior, and this construct has been shown to predict adherence to breastfeeding recommendations. It predicted the variables that either enhanced or lowered the mother's self- efficacy or confidence. Some research has shown that women whose mothering self-efficacy is low are more likely to perceive their milk supply as insufficient (McCarter-Spaulling & Kearney, 2001), which is often the most common reason provided for early weaning (Binns & Scott, 2002; Kirkland & Fein, 2003; O'Brien et al., 2007). Such screening is of special importance in identifying mothers at risk of early weaning as it would assist when designing intervention programs (Blyth et al., 2004; Dennis, 2006).

2.8 Health consequences of suboptimal breastfeeding

It is well recognized that the period from birth to two years of age is a “critical window” for the promotion of optimal growth, health and behavioural development (WHO, 2003a; Fewtrell et al., 2007). So, optimal breastfeeding of children under two years of age has the greatest potential for a more positive impact on child survival than all preventive interventions (Martorell et al., 1994). Longitudinal studies have consistently shown that this is the peak age for growth faltering, deficiencies of certain micronutrients and common childhood illnesses such as diarrhea and malnutrition (WHO, 2003; Black et al., 2008). Moreover, a number of recent meta-analyses and quantitative reviews have reported that in addition to a significant reduction in acute illnesses, breastfeeding can affect the development of chronic diseases later in life (Horta et al., 2007; Ip et al., 2007). Over time, the risks that populations face tend to shift from risks of under nutrition infectious diseases into risks of chronic diseases. This is because of past successes in combating infectious diseases and their risks, and because worldwide populations are ageing (WHO, 2009).

2.8.1 Current public health concerns

The increasing westernization, urbanization and mechanization in most countries of the world, including the UAE, is associated with changes in diet, which is shifting towards more high fat, high energy-dense foods and a sedentary lifestyle. This is often referred to as the nutrition transition (WHO, 2000; Popkin, 2001). This shift is also associated with the current rapid changes in childhood and adult obesity rates (Popkin & Gordon-Larsen, 2004). Even in many low to medium income countries, obesity is rapidly increasing, and it often coexists with chronic undernutrition in the same population (Popkin, 2001).

It is well documented that morbidity and mortality rates increase with the increase in body weight (Narayan et al., 2003). At least 2.8 million people die each year as a result of being overweight or obese and by 2015 approximately 2.3 billion adults will be overweight, and more than 700 million will be obese. Twenty-two million children under five years old are currently overweight (WHO, 2009).

Many chronic, noncommunicable diseases (NCDs) are positively associated with obesity. Risks of heart disease, strokes and diabetes increase steadily with increasing body mass index (BMI) (WHO, 2000; World Health Report, 2002). Cheng (2005) noticed that parallel to the increase in incidences of type 2 diabetes is the increase of obesity in the population. NCDs deaths are expected to increase by 15% (to 44 million deaths) globally between the years 2010 and 2020 (Alwan, 2010). The greatest increases will be in the WHO regions of Africa, South-East Asia and the Eastern Mediterranean, where NCDs deaths will increase by over 20% (WHO, 2008). NCDs such as cardiovascular diseases (CVDs), type 2 diabetes mellitus, hypertension and certain cancers have become critical problems in the Gulf region. Diabetes mellitus (DM) is gaining the attention of health officials and physicians in the Gulf region in general and the UAE in particular (Ng et al., 2011).

According to the UAE Ministry of Health report (2009), CVDs are the leading cause of morbidity and mortality in the UAE. In 2010, The International Diabetes Federation (IDF) ranked the UAE's prevalence rate for type 2 DM as the second highest in the world (20%). One out of every four citizens of the United Arab Emirates has diabetes (Saadi et al., 2007; Al Maskari et al., 2008). Very limited data is available regarding NCDs and risk factors in the UAE (Belal, 2009). Some efforts are exerted on control and prevention of NCDs; however, there is lack of risk factor surveillance, and reliable monitoring and surveillance programs and research.

In Gulf countries, between two-thirds and three-quarters of adults, and between 25–40% of children and adolescents, are overweight or obese (Ng et al., 2011). Moreover, Malik & Bakir (2007) reported that the UAE is currently experiencing an epidemic of childhood obesity which may have serious public health consequences. There is a prevalence of obesity in the children of the UAE, where one in every five children is overweight and 13.7% of children are obese.

The comparison of the prevalence trends for children and adolescents in Gulf countries is difficult due to the differing standards used in research, as well as the lack in data and longitudinal studies, thus limiting comparisons over time for all ages (Ng et al., 2011). However the levels reported are higher than those found in developed countries such as the USA, Australia and the UK (Popkin, 2006). Evidence shows that overweight and obese children and adolescents are significantly more likely to be overweight or obese adults (Q & Karlberg, 1999). Obesity in adulthood is associated with increased adult morbidity and mortality as well as social and economic constraints (Guo et al., 2000; Kain et al., 2002; Narayan, et al., 2003).

In this regard, based on current knowledge and scientific evidence from studies conducted in developed countries, the increasing incidence of childhood obesity and its long term effects will be a potential emerging public health issue for these countries. In particular, developing countries experiencing rapid unplanned urbanization, such as the UAE, are likely to comprise an enormous socioeconomic and public health burden in the near future (Freedman et al., 2001).

2.8.2 Breastfeeding and obesity – What are the Links?

Recently, research has turned its attention to breastfeeding as a practice that protects against childhood obesity (Dietz, 2001; Dewey, 2003). It was noted that with the decline in breastfeeding in the United States, health care specialists observed an increase in obesity in young children (Nation's

Health, 1999). With one obese child in each five, studies started to investigate early feeding patterns in the USA (Couvillion, 2002), and suggested that breastfeeding could become part of a preventive plan against obesity in the United States.

The current interest in long-term consequences of early life exposures originated from the "Barker Hypothesis", which stated that the size of the infant at birth and during infancy is related to the development of adult diseases, including diabetes, hypertension and cardiovascular conditions (Barker et al., 1992). The concept of "Nutritional programming" suggests that many human diseases in adulthood are related to growth patterns during early life and early life nutrition (Martorell et al., 2001). With its unique composition, breastmilk could be implicated in metabolic imprinting, and the early nutritional experience of the infant could result in a long-lasting effect that predisposes him/ her to certain diseases (Balaban & Silva, 2004). The notion that nutrition during early phases of human development programmes later onset of adult diseases is of considerable interest to researchers and of great concern to public health specialists (Arenz et al., 2004; Horta et al., 2007). The protective effect of breastfeeding against childhood obesity was initially proposed by Kramer in 1981. Since that report came forth, several studies have supported this effect to various extents.

A systematic review by concluded that breastfeeding has a small but consistent protective effect against obesity in children (Arenz et al. (2004). It was found that the greater the duration of breastfeeding, the lower the odds of being overweight (Harder et al., 2005). Other studies, including a review of systematic studies and meta analyses, have reported inconsistent results (Horta et al., 2007). The findings from a major large-scale intervention study, the Promotion of Breastfeeding Intervention Trial (PROBIT), did not find any significant differences in weight, BMI or adiposity measures upon comparing breastfed to non- breastfed infant populations at birth and then at 6.5 years for follow-up (Kramer et al., 2007). Exclusive breastfeeding indeed appears

to have a stronger protective effect than does breastfeeding combined with formula feeding and the effect being dose-responsive (Owen et al., 2005). Data suggest that the introduction of solid foods earlier than 4 months of age is associated with increased body fat or weight in childhood (Wilson et al., 1998; Settler et al., 2000; Barker et al., 2005; Kim & Peterson, 2008). Other studies found no association between the timing of solid food introduction and body fat (Reilly et al., 2005).

Possible mechanisms for breastfeeding to have a protective effect against obesity were explored. Breastfed infants regulate their food intake quite precisely according to their needs for growth and maintenance. Thus, they control the breastmilk production of their mother (Lucas et al., 1981; Balaban & Silva, 2004; Lawrence, 2010). In contrast, satiety can be challenged by bottlefeeding, as the saturated infant is encouraged to empty the bottle, and as milk formulas are more concentrated in energy and nutrients than breastmilk (Dewey et al., 1991; Fisher et al., 2000). A second possibility pertains to higher plasma insulin concentrations in the blood of formula-fed infants (Lucas et al., 1981). Higher insulin concentrations stimulate more deposition of fat tissue, which in turn increases weight gain, obesity and risk of type 2 diabetes (Odeleye et al., 1997).

In spite of many other factors found to be associated with childhood obesity, such as socio-economic status, parental obesity, birth weight and rapid early weight gain, early infant nutrition is a modifiable behaviour that may protect against childhood obesity (Twell & Newhook, 2010). Dewey (2003) concluded that breastfeeding is of great public health importance, and Couvillion (2002) suggested that breastfeeding could become part of a preventive measure to fight against obesity in the United States.

Considering the many benefits of breastfeeding, the promotion of breastfeeding as a population-based strategy aimed at obesity prevention is a strategy worth promoting and supporting in all countries, especially those

which suffer from high rates of obesity in general and childhood obesity in particular such as Gulf countries including the UAE.

2.9 Weaning practices

Complementary feeding can be defined as the gradual substitution of breastmilk with solids or semisolids to fulfill the growing needs of the infant (Foote & Marriot, 2003). The WHO recommended that nutritionally adequate and safe complementary foods be added to breastmilk in babies' diets at around 6 months of age, to meet their changing nutritional requirements, yet breastfeeding should continue for up to 2 years of age (WHO, 2002). It was concluded that the potential health benefits of waiting until six months to introduce other foods outweigh any potential risk for developing and developed countries, as indicated by two systematic reviews (Kramer et al., 2001; Kramer & Kakuma, 2002).

Around the age of six months, an infant is developmentally ready for food and his / her needs for energy and nutrients start to exceed what is provided by breastmilk; complementary foods become necessary to meet those needs (Domellof et al., 2002; Dewey & Adu-Afarwuah, 2008). Timely introduction of appropriate complementary foods promotes good nutritional status and growth in infants and young children (Michaelsen et al., 2000). The early or late introduction of complementary foods is not an appropriate feeding practice, as it carries many risks which contribute to persistent child malnutrition (Onyango, 2003; Hussein, 2005).

Another important determinant of the appropriate age for weaning is the physiological maturity of the gastrointestinal tract and renal function. There are concerns that the high permeability of the young infant's digestive tract may prevent large foreign proteins from penetrating and provoke immune sensitization; and may result in a big load on the infant's kidneys (Foote & Marriott, 2003). So, if solid foods are introduced early before the complete

maturation of the gastrointestinal tract, they will trigger illnesses such as eczema, allergy and food intolerance (Leon-Cava et al., 2002; Van Odiijk et al., 2003; Muraro et al., 2004).

What is appropriate as complementary food differs between populations due to differences in both availability and culture (Michaelsen & Friis, 1998). A cereal-based porridge is the main complementary food in most developing countries. Typically, it is prepared from maize, rice, sorghum or millet; it is bulky and has a low nutrient density, with little vegetables and no animal products (Michaelsen & Friis, 1998; Onofiok & Nnanyelugo, 1998; Mamiro et al., 2005). The nutritional content of weaning foods is of increased importance as infancy progresses (Foote & Marriott, 2003) because replacing breastmilk with foods of low nutrient density will result in growth deficits accompanied by diarrhea and delayed development (Michaelsen & Friis, 1998).

The WHO recommendation applies also to developed countries although the risks from episodes of gastroenteritis are minimal (Kramer et al., 2001; Lanigan et al., 2001; Foote & Marriott, 2003; Fewtrell et al., 2007). It is widely believed that there are significant health implications of the introduction of inappropriate solid foods to infants in the developed world, including the risk of eczema, asthma, allergy, food intolerance, excess weight gain, obesity and diabetes (Butte, 2001; Davis, 2001; von Kries et al., 2002; Stuebe et al., 2005; Tarini et al., 2006; Allcutt & Sweeney, 2010).

Research suggests that complementary foods offered to infants before 6 months of age tend to displace breastmilk without conferring any growth advantage over exclusive breastfeeding (Cohen et al., 1994; Dewey et al., 1999; Dewey, 2001). Other research studies have associated the early introduction of solids with shorter breastfeeding durations (Bourgoin et al., 1997; Novotny et al., 2000; Hayman et al., 2002). Moreover, delaying supplementation protects a child's health by delaying maternal fertility

postpartum and reducing the child's risk of morbidity and mortality in disadvantaged populations (Molbak et al., 1994; WHO, 2000a).

Data from developed and developing countries have shown that mothers tend to introduce solid foods early to their infants. In a study in the UK, about 50% of babies were given solid foods between the ages of 4-6 months (Bolling et al., 2007). In New Zealand, 45% of infants were given solid foods before the age of 4 months (Heath et al., 2002). The majority of respondents in Ireland (67%) gave their infants solid foods earlier than the recommended age for weaning breastfed babies (Allcut & Sweeny, 2010). Giovannini et al. (2004) stated that factors which explained the early introduction of solid foods were the infants' body weight at 1 month of age and maternal smoking during pregnancy. Most participants in a relevant study conducted in South Africa gave solid foods to their babies between 2 and 3 months of age, since they thought this was the appropriate age to do so (Kruger & Gericke, 2002). No consideration was given to the type, nutritional value, variety or quantity of foods given to the children; only the general appearance of the child and the weight measurements were recorded on the growth chart. In Nigeria, prelacteal feeds such as water, formula or herbal tea were given by all mothers before the infant reached 4 months of age (Okolo et al., 1999). In Jordan, 30% of the mothers practiced mixed feeding since birth (Khassawneh et al., 2006).

In Gulf countries, the abundance of milk substitutes, the availability of infant formula and baby foods on the market and the high purchasing power played an important role in the introduction of these foods at early ages (Firebace, 1983; Ogbeide et al., 2004). Weaning foods are introduced very early in all Arabian Gulf countries (Musaiger, 1995). This includes the early introduction of water, glucose and water, herbal water and infant formula during the first week (El Mouzan et al., 2009). Studies in Saudi Arabia and the UAE reported that mixed feeding is still the norm, with the early introduction of prelacteal and solid foods widely practiced among Emirati

and Saudi mothers (Osman & Al Sabban et al., 1999; Al Jassir, 2004; El Ghilani, 2010).

2.10 Reasons for discontinuation of breast feeding

A variety of reasons have been given by mothers for early weaning: insufficient breastmilk supply, fatigue and lack of support (Hillervick-Lindquist, 1991; Bagwell et al., 1992; Wyli & Verber, 1994; Blyth et al., 2002). Others reported sore nipples or mastitis, inability to sleep long hours, baby not satisfied and return to work (Hill & Humminick, 1998; Savage et al., 1998; Schwartz, et al., 2002). In addition to these reasons, in Western countries where women participated more in the labor force, their return to work and the barriers they faced at the work place were the main reasons for weaning their babies (Fein & Roe, 1998; Roe et al., 1999). Moreover, considering breastfeeding in public to be an embarrassing behaviour was associated with a shorter duration of breastfeeding in many western countries (Cambel, 1996; Heath et al., 2002). Reasons for stopping breastfeeding were almost the same across Middle Eastern and Gulf Countries: insufficient breastmilk supply and new pregnancy (Salih et al., 1993; Al Shehri, 1995; Nuri et al., 1997; Fida & Al Aama, 2003; Ogbeide, 2004; Batal et al., 2006; Haroun et al., 2008).

2.10.1 Insufficient milk supply

Many women chose to wean their infants before six months because they thought that “the infant was old enough” or stated that the “infant weaned itself” (Kirkland and Fein, 2003). The underlying reason is that the mother felt that she did not have sufficient breastmilk supply. The perception that they had insufficient milk, either real or perceived, was the most common reason for weaning reported in most research (Taveras et al., 2004; Wambach et al., 2005; Lewallen et al., 2006). However, evidence indicated that less than five percent of women were physiologically incapable of producing an adequate supply of breast milk (Renfrew et al., 2000).

Binns and Scott (2002) suggested that the insufficient supply of breastmilk is a complex problem that crosses international, cultural and socioeconomic lines. It was described as a mother's feeling that her milk supply is inadequate either to satisfy her infant's hunger or to support adequate weight gain (Hill & Humenick, 1989; Bulk-Bunschoten et al., 2001). This is explained by mothers' poor understanding of effective techniques to increase their milk supply (Heath et al., 2002).

Ineffective infant suckling is the main reason that may lead to inhibition in milk production and the feeling that women have insufficient milk. Factors that interfere with effective suckling include poor positioning at the breast, not breastfeeding frequently and not emptying the breast fully to maximize the stimulus (Lamontagne et al., 2008). In response to inadequate supply, mothers most often provide supplementary formula or food. Early formula supplementation has been associated with a reduced milk supply and shorter duration of breastfeeding (Ekstrom et al., 2003; Li et al., 2004; Simard et al., 2005).

Infants must learn to latch and suckle effectively at the breast during the first days of life in order to breast-feed successfully (Howard et al., 2003). Promoting the early initiation of breastfeeding established healthy breastfeeding practices and made great contributions to child survival (Edmond et al., 2007).

The WHO Update, "Not enough milk" (WHO, 1996), advises health workers to assess the problem in three steps:

- First, decide whether the baby is getting enough milk or not.
- Second, if the baby is not getting enough milk, decide why.
- Third, decide how to help the mother and baby.

So, physiological research adopted two approaches to assess milk supply: (1) observing changes in the baby's weight and (2) measuring breast

volume before and after feeds (Daly et al., 1993). This helps in assessing whether mothers are actually producing insufficient milk or not, with the option to “treat” those not producing enough milk and reassure those who are.

2.10.2 Insufficient milk supply and maternal confidence

Other types of research may be equally important in understanding mothers’ perceptions of insufficient milk (Hector et al., 2005). Using qualitative methods, Dykes & Williams (1999) identified that feeding behaviour, as well as socio-cultural, physiological and psychological factors; all interact as a mother formulates a perception of her milk supply. A mother may therefore perceive that she does not have sufficient milk when levels are in fact adequate, because of low levels of confidence and/ or negative family and social influences (Graffy & Taylor, 2005; Moor & Coty, 2006). Maternal breastfeeding confidence played a significant role in sustaining breastfeeding, and a relationship was found between low confidence levels and perceptions of insufficient milk (Dykes & Williams, 1999; Dykes et al., 2003).

2.10.3 Insufficient milk supply and infant growth

Another factor that influenced the perception of inadequate milk supply is related to the infant's growth spurts. The previously used growth charts CDC/ NCHS (Kuczmarski et al., 2000), which were based on children with mixed feeding patterns, were inappropriate for evaluating the weight of breastfed babies, and may have even indicated or implied inaccurate faltering growth at 8 weeks (Cohen et al., 1994). When babies were not gaining weight, mothers questioned their milk supply, perceiving it as insufficient to satisfy the growth pattern of their babies. This perception led mothers to introduce formula or solids, sometimes based on the advice of their health professionals; they sometimes even stopped breastfeeding because they believed they had inadequate milk (Lund-Adams & Heywood, 1995; Thorley, 2003). It should be noted that weight gain in breastfed infants

shows a rapid increase in the first 3 months, and a slower rate between 3 and 5 months. The application of the new WHO growth chart, which is based on breastfed infants, reflects the true weight trajectory of the infants; this will help mothers overcome the perception of insufficient milk supply if their infants' weights were found to be normal (De Onis et al., 2007). So, professionals need to be aware of these factors in order to provide mothers with adequate support and advise them properly (Kramer et al., 2002).

Encouragement, support and appropriate assistance with breastfeeding techniques play an important role in increasing the mother's self-efficacy and helping her feel that she has sufficient milk. Mothers in such circumstances will greatly benefit from the support of a trained peer worker who provides information, encouragement and reassurance (Haddonit & Pill, 1999; Dennis et al., 2002).

2.11 Infant feeding patterns in the UAE

The UAE is a rapidly developing country with an excellent infrastructure, clean water supply and adequate health care facilities. Following the oil discovery in 1972, social and economic advances in the UAE led to changes in lifestyle and nutritional habits. Infant feeding practices are another part of the culture, and have influenced by economic development.

The UAE is a multiethnic, multicultural community. The population in the UAE is a mixture of Emirati and expatriates from different countries. The national population (UAE nationals) represents 15-20% of the total population. This study differs from others in that it focuses specifically on UAE nationals.

2.11.1 Women employment in the UAE

It is clear that women in the UAE have made substantial progress in terms of literacy and education; this increased their employment opportunities.

However, women in the UAE do not show much enthusiasm for seeking employment. The educational qualifications obtained by many UAE women are not always of high demand in the job market. Moreover, in order to take care of family, a significant number of UAE women cease to work after marriage and bearing children.

2.11.2 Mortality indicators

The rise in living standards that accompanied economic growth led to a demand for improved health care and, in particular, the application of advanced medical technologies. Healthcare standards are generally high in the UAE as the strong economy allowed increased government spending. More than 97% of births take place in hospitals. Moreover, improved standards of living and health services led to changes in the morbidity and mortality rates (UNICEF, 2008).

2.11.3 The UAE health care system

The Healthcare system in the UAE passed through several phases of development. In the 1980's, a network of health and medical facilities providing primary and secondary medical care was established. These facilities are easily accessible and free for all national residents. Tertiary services are provided in certain referral hospitals located in Abu Dhabi, Dubai and Al Ain cities.

In 1989, a maternal and Child Health (MCH) department was established. MCH programs provide care for mothers and women at child bearing age in general. Antenatal care is offered to all pregnant women at MCH centers. Pregnant women are followed up and referred to maternity hospitals at 28 weeks in preparation for confinement. Child health services are offered to all children (Emirati and expatriates) below five years, but they are free only for Emirati. Care starts immediately after birth through regular monitoring of the weight and length/ height of the child, administering the required vaccines

according to the schedule specified in the national immunization program, providing education on nutrition and encouraging mothers to breastfeed.

In 1992, The MCH department joined the global effort of promoting, protecting and supporting breastfeeding by encouraging as many hospitals as possible to adopt the baby-friendly hospital initiative by 1997. To date, six governmental hospitals have met the international criteria and have been declared baby-friendly hospitals. The maternity wards in two major hospitals in Al Ain, one in Dubai and one in Abu Dhabi have also been recognized as baby-friendly. The rest are in other cities.

Although the economic growth produced a dramatic improvement in the living conditions of the people, it has also brought about its own problems. Infectious diseases have become phenomena of the past due to the excellent provision of preventive and curative health services, such as immunization, a good water supply and good sewage systems. Chronic diseases are intricately linked to the lifestyle of the people however, and their pattern is a replica of what is being seen in highly developed countries in the West.

2.11.4 Health costs

The Ministry of Health is undertaking a multimillion-dollar program to expand health facilities and hospitals, medical centers and a trauma center in the seven Emirates. According to the UAE government statistics, total expenditures on healthcare between 1996 and 2003 were US \$436 million. In 2004, WHO reported that the UAE total expenditures on healthcare constituted 2.9 percent of the gross domestic product (GDP), and that the per capita expenditure on healthcare was US \$497 million. Healthcare is currently free only for Local Emirati citizens. The Ministry of Health Report (2009) showed that the UAE spends between US \$100 and US \$200 million annually on treating diabetes alone.

2.11.5 Government regulations

The Ministry of Health issued a circular in 1992, which was updated in 2003, on the code of marketing for breastmilk substitutes:

- All health facilities should promote, protect and support breastfeeding.
- All health centers and hospitals should stop accepting and distributing free samples of breastmilk substitutes; they should rather encourage and assist mothers to breastfeed within half an hour of the time of delivery and keep the babies with their mothers in the same room.
- A national breastfeeding committee is planned to be in place soon. This committee will coordinate the work of all relevant institutions and ministries to promote breastfeeding and limit breastmilk substitute utilization.

However, this circular had no force of law, and there were no sanctions for non-compliance. Being a country made wealthy by its oil resources and pro-investment trade policies, the UAE is favoured by baby food companies. The few government initiatives to promote breastfeeding are not complemented by enforceable measures to protect the practice. According to IBFAN report (2005), there is a lack of information to parents - mothers in particular – concerning optimal infant and young child feeding, and very poor compliance with the International Code of Breastmilk Substitutes. IBFAN recommended that the UAE incorporate the International Code of Marketing of Breastmilk Substitutes and subsequent World Health Assembly Resolutions into a strong national law.

2.11.6 Maternity protection

On mother care and childhood issues, the Council said that a woman is entitled to five separate periods of maternity leave during her employment. The law stipulates that a woman is also entitled to 6 months of leave in total to look after her newborn child, comprising two months with full pay, two months with half pay and two months with no pay. Moreover, in order to promote longer duration of breastfeeding without loss of payment, new mothers have the right to one paid breastfeeding break daily, or rather the reduction of work hours by one hour per day up to 12 months after delivery.

2.11.7 Breastfeeding practices in UAE

In spite of the evidence that supports the importance of breastfeeding, and the variety of health outcomes that are related to breastfeeding, data on breastfeeding practices remain limited in the UAE. Previous studies in the UAE were either specific to a certain region or included mothers of different nationalities. Moreover, the indicators used in these studies to assess breastfeeding practices and prevalence of exclusive breastfeeding are not similar among surveys; therefore, it is difficult to obtain trend data on all variables from previous research on breastfeeding in the UAE.

Traditionally, children in the UAE were breastfed for about 2 years. Urbanization and economic transition have taken many women out of their traditional social support systems. In 1979, Autret & Miladi reported that 50% of mothers ceased to breastfeed their infants before the age of three months. While 14% of infants under 3 months were entirely breastfed, 47% were entirely bottle-fed. It seems that Emirati mothers had high purchasing power, and their desire to spend money on their infants prompted them to bottle feed these babies; moreover, bottle feeding was considered as a symbol of westernization (Harfouche & Musaiger, 1993). In 1981, the First Nutrition Status Survey, conducted by the Ministry of Health, found that bottle feeding was introduced to the infant at very early ages - between 1 and 2 months. When mothers were asked about the main source of advice on artificial feeding, 54.6% said that physicians were the main source, followed by nurses and then the media.

In 1992, another National Nutrition Survey in the UAE showed that 42% of mothers gave their children the bottle during the first month, 21% during the second and 9% during the third month. One study conducted in Al Ain reported low levels of exclusive breastfeeding (4%) during the first 4 weeks, and only 51% initiated breastfeeding on day one. Seventy percent of the infants received non milk supplements such as juices, teas, herbal drinks and water during the first week (Al Mazroui et al., 1997). Another study also

in Al Ain found that only 28% of the mothers exclusively breastfed their infants, and 76.1% of the infants were given milk supplements before the end of their first month (Osman & El-Sabban, 1999). Reasons reported for stopping breastfeeding were similar to those obtained from many other research studies: insufficient milk, baby refusal or a new pregnancy. In a recent study, the exclusive breastfeeding rate was found to be 76.5% on day 1, 48.4% at 1 month and 13.3% at 6 months. The level of education of the mother significantly affected the exclusive breastfeeding rate. The more educated the mother was, the less likely she was to exclusively breastfeed up to 6 months (Al Tajir et al., 2006).

Green and Smith (2006) were the first researchers to publish a study conducted on national mothers in the UAE. They compared the generational difference in breastfeeding practices among grandmothers, mothers and daughters in the UAE. It was noted that there was a decline in the exclusive breastfeeding rate from the grandmother to the daughters. While the age of weaning did not differ amongst the three groups, the type of food given changed: from traditional foods to commercially prepared baby foods. Grandmothers primarily used dates and rice as first foods; mothers used a mix of rice, vegetables and bread, while daughters reported feeding their infants commercially prepared infant foods such as vegetables, cereal and fruit.

The above-mentioned studies (were conducted on both Emirati and expatriate mothers living in the UAE. So, these studies reflected the different cultural, ethnic habits and behaviours of the different nationalities residing in the area. This had a great influence on the results reported. Moreover, there is absolutely no reported data that show the relationship between breastfeeding patterns and duration of lactational amenorrhea among Emirati mothers.

Chapter Three

Methodology

3.1 Introduction

This research uses two complementary methods to cast light on breast-feeding practices, as well as the factors influencing them and their regulation among Emirati women in the United Arab Emirates. A structured survey designed for tabular analysis and inferential statistics has been used to explore what those breastfeeding practices of Emirati mothers are. More qualitative research using relatively unstructured interviews and illustrated or supported by what people actually say (rather than numbers of people) has been used to explore people's reasons for acting as they do. Perceived interpersonal influences, cultural and structural constraints and enabling factors which incline people to behave in one way rather than another have also been investigated.

3.2 Research setting

The study was conducted in three cities in the United Arab Emirates (UAE): Abu Dhabi, Dubai and Al Ain.

UAE is a rapidly urbanized country with more than 90% of the population living in the cities. Only about 20% of the population is of UAE nationality and the rest are from different nationalities such as Arabs, Asians, Europeans, etc...

Abu Dhabi is the capital city of UAE. The population size is 350,000. It is the largest city in UAE (approximately 15% of the population living in Abu Dhabi are Emirati).

Dubai is the second largest city. It is UAE's main port and commercial center. Its population size is 370,000 (of which approximately 10% are Emirati).

Al Ain is a rapidly growing inland oasis. Its population size is 250,000. Its local residents are indigenous and still live in a traditional and closed society as compared to the other two cities (approximately 20% of the population are Emirati).

In the above mentioned cities, Maternal and Child Health Centers (MCH) were chosen as locations for collecting the data, both survey and interview, because the target group was easily accessed due to the regular visits by the children and their parents for routine screening and vaccination. The clinics are homogenous as they are governmental clinics that render maternal and child health services for Emirati mothers. MCH centers were established for the antenatal care of pregnant Emirati women. In principle there is a risk of sampling bias in that women who do not use the clinics are excluded from the sample, but in fact almost all Emirati mothers bring their infants to these centers immediately after birth for regular monitoring of weight and length / height of their children, and for administration of the required vaccines according to the schedule specified in the national immunization program. This service is provided free of charge.

The questionnaires were administered and the later interviews conducted during normal clinic hours with the respondents in the waiting area, a natural setting.

3.3 The Survey

Surveys are a systematic way of obtaining formal objective data to describe variables and explore their relationships. This method allowed the researcher to ask all the respondents precisely the same questions, with

predetermined responses. Frequency tables and graphs have been used to analyze and interpret the findings.

3.3.1 Study population, sampling and procedures

3.3.1.1 Sampling

A multi-stage cluster sampling technique was used to collect data. In the first stage cluster sampling, a list of the MCH centers within each city was obtained and enumerated with four out of ten centers from each city being selected using simple random sampling. Then a convenient sample of 200 subjects were selected from the four centers from each city with sizes proportionate to sizes of the clinic. Sampling was based on the number of eligible mothers visiting the MCH centers. The researcher visited the MCH centers a fixed number of times at different times and days and recruited all eligible mothers.

3.3.1.1.1 Power analysis

To estimate the combined proportion of exclusive breastfeeding in the three cities, power analysis for the sample from each city revealed a power analysis of 6%.

$$N = \frac{1.96^2 \times p(1-p)}{b^2}$$

where:

p= the estimated prevalence of exclusive breastfeeding among Emirati mothers in UAE, assumed to be 24%

b= precision of 6%

n=194

The study sample for each city in this research of 200 yield a precision of 6% when estimating the proportion of exclusive breastfeeding of 24% of the whole studied population.

However, when calculating the precision of the study sample size of the three cities (600), the power analysis will be 4%.

3.3.1.2 Selection

The inclusion criteria were that the mother should be Emirati (UAE nationality) and have an infant less than 2 years of age. Because almost all the Emirati mothers with children of less than 5 years attended the MCH centers for vaccination - a service provided free for Emirati mothers - almost all Emirati mothers visit these centers after delivery. Thus there should be no particular selection bias due to non-attendance by any substantial group of mothers. The available mothers were asked individually by the researcher if they had infants less than two years of age and the researcher chatted with each about the study and obtained her permission to interview her while she was waiting for her turn to see the doctor. The infant's age, weight and height was obtained from the infant's medical record in the MCH center.

The MCH centers are usually very crowded and the mothers usually come to the MCH centers knowing that there will be long waiting hours. These centers became socializing place where the mothers would bring with them all or some of their children and some of their family members (grandmother, sister). However the mother was interviewed alone without the interference of her family members, who would be busy taking care of the children. There was absolutely no refusal from the mothers. Mothers with children aged less than 2 years were interviewed face to face until the required numbers were obtained. The interviews lasted between 10-15 minutes. Informed consent was signed by each mother. The interview was in the Arabic language (the native language of the mothers and the researcher). Participants were informed that their participation was purely voluntary and that they were free to decline or withdraw at any time in the course of the study. It was transparently clarified that the information provided was for research purposes and would therefore be strictly anonymous and dealt with confidentially.

The age of the mothers interviewed ranged from 17 to 45 years (mean age \pm SD = 27.9 \pm 5.3). Infants were 345 male and 248 female with birth weights ranging from 1.15 kg to 5.00 kg (mean weight \pm SD = 3.15 \pm 0.08 kg).

3.3.2 The questionnaire

In this part of the research, the instrument used to collect data was a structured interview with a predesigned questionnaire. This allowed objective data collection from the respondents and prevented bias or subjective judgments by the researcher. All the respondents were asked the same questions, which allows for objective comparison of results.

The questionnaire was carefully designed after reviewing the past literature in the world, in the Middle East and the Gulf region about breastfeeding and weaning practices and the factors influencing them. The questions were designed based on WHO recommendations and guidelines and the ten steps of the Baby Friendly Hospital Initiatives (BFHI) to elicit information about the factors influencing breastfeeding and differences in weaning practices. In addition, questions were designed to investigate the relationship between lactational amenorrhea and breastfeeding practices in UAE.

3.3.2.1 Pilot testing

Pilot testing of the questionnaire was done to test efficiency and consistency of the questions. A convenient sample of 15 mothers, not included in the main survey, was used for the pilot survey to check clarity, sequence and precoded questions and assesses the time needed for completion of questions. After pretesting, minimal changes were done. Some questions were reordered and some further coded categories were added. The results collected during pretesting were not used as part of the main study.

The pretested structured questionnaire consisted of 53 questions. It was used to obtain demographic data of the mother and her infant such as

mother's age, father's and mother's employment, mother's and father's education level and information about the infant's age, weight, birth order, family size.

The questionnaire was divided into four sections:

Section 1: included sociodemographic questions

Section 2: included questions about the infant (weights and lengths of the infants were obtained from medical records).

Section 3: included questions about breastfeeding and weaning practices and at which age different complementary foods were added.

The mothers were asked about:

- Hospital practices such as where the infant was placed after delivery and whether he/she was given any fluid supplements by the staff, and when she started breastfeeding her infant.
- The different feeding practices such as when she introduced the different prelacteal feeds and solid and liquid supplements and what type of food and liquid supplements were given to the infant.
- The mother was also asked until what age she breastfed her infant and whether she breastfed during the night, and how often.

Section 4: included questions about the mother, such as health status, type of delivery, and if she was currently pregnant.

The mothers were asked:

- To recall when their regular vaginal bleeding started that lasted more than one day. They were asked if they were pregnant, if they use contraception and if so, what type of contraception.

Content validity of the questionnaire was assured by the fact that the variables were created based on the results of similar studies in other countries. Experts in this field also reviewed the questionnaire. The questionnaire was written in the Arabic language, as it is the native language of the respondents, and this minimized errors due to misunderstanding.

Infant Feeding patterns were categorized into four groups according to WHO criteria and Labbok and Krasovec (WHO, 1991; Labbok & Krasovec, 1990):

Exclusively breastfed infants: infants who were only breastfed since birth with no water, formula or liquid

Almost exclusively breastfed infants: infants who received only breastmilk and water since birth

Predominately breastfed infants: infants who were mainly breastfed, but infant formula and other liquid or non- dairy food were introduced since birth

Formula fed infants: infants who received formula milk since birth and did not breastfeed

3.3.3 Data analysis

After excluding incomplete questionnaires from the 600 interviews, the achieved sample in this study was 593. The data were coded and analyzed using the Statistical Package for Social Sciences (SPSS) version 17. Tables were generated to display frequencies, percentages, means and medians and standard deviations, and cross-tabulations were produced by key variables. Descriptive statistics such as frequencies, percentages, means and standard deviations were calculated for the demographic characteristics and some other variables. Percentage distributions of sample characteristics were computed to describe the study participants. Comparative statistics were calculated using the Chi square (χ^2) test for categorical variables and one-way analysis of variance (ANOVA) for duration of breastfeeding analysis to compare the association of categorical predictors with the breastfeeding duration. ANOVA is used whenever the normality and equal variance assumptions are satisfied. Otherwise, the Kruskal-Wallis test was used. Statistical significance was defined as $P < 0.05$.

Simple binary logistic regression analysis was used to examine the relationship between the initiation time of first breastfeed, feeding patterns, duration of lactational amenorrhea and a number of characteristics that were

identified from the literature as having possible effects. The initiation time of first breastfeed is classified as either within an hour of delivery or after that ($\leq 1\text{hr} = 1$ or $>1\text{hr} = 0$). While for feeding patterns the dependent variable is classified as either mothers exclusively or almost exclusively breastfed their infants or not (Exclusive or almost exclusive breastfeeding = 1 or not = 0). As for duration of lactational amenorrhea the dependent variable was classified as the mother being amenorrheic for either less than 6 months or more than 6 months (0 to 6 months = 0 and >6 months to 1 year = 1). The variables that were significant ($P < 0.05$) on bivariate analysis were analysed by multiple logistic regression analysis using forward stepwise multiple logistic regression to identify the most predictable variables and odds ratios (ORs) with 95% confidence intervals (CIs; $p_{\text{entry}} = 0.05$, $p_{\text{exit}} = 0.1$).

3.4 The Interview study: interviews with mothers

3.4.1 Sampling

In this part of the research study, a purposive convenience sampling method was followed. Purposive sampling is based on a researcher's judgment about which participants are most prepared to answer the research question (Polit & Hungler, 1999) and which will give a variety of answers. The desired sample size was decided to be 15 from each city and they were selected from the mothers who visited the MCH centers in the three areas: Abu Dhabi, Dubai and Al Ain. The rationale for using a small sample size is to ensure that the investigator is able to obtain rich information about the phenomenon of interest (Polit & Hungler, 2001). The sample size was sufficient since participants were repeating the same themes with no new themes being introduced; in other words, what is called 'theoretical saturation' was reached. The researcher begins to hear the same things repeatedly and no new information is coming out during the interview process (DeVos et al., 2002).

In-depth face-to-face semi-structured interviewing was the method used to collect the data (De Vos & Fouche, 1998). Interviews started only after all structured surveys were completed, because the results of the survey provided the main themes for discussion during the interviews.

Fifteen Emirati mothers from each region who had infants aged more than 6 months but less than 2 years and who did not participate in the survey research, were interviewed by the researcher in the MCH centers in Abu Dhabi, Dubai and Al Ain. Mothers were interviewed individually. The researcher started the session by introducing herself to the mother and explaining the purpose of the research. The mother is interviewed after explaining to her the nature of the research and signing the consent form. The interviews lasted between 30-45 minutes. Open-ended questions were used to generate mother's descriptions and perceptions of breastfeeding, following a predetermined agenda of issues arising from the survey results. Other questions arose automatically to direct the interview. The contents of the discussion focused on breastfeeding practices, decisions and perceptions of the mothers.

All mothers were encouraged to explain what they said about breastfeeding and reasons for weaning and to give the influences on their decision-making. Prompts such as, "What influenced your breastfeeding decision?", "What is your opinion about WHO guidelines?"; "Tell me how you feel about breastfeeding in public" were used to stimulate mother's own accounts.

Tape recordings have the advantage of capturing data more faithfully than written notes and can make it easier for the researcher to focus on the interview. However, because of cultural constrains, interviews were not taped (the interviewees were very much intimidated by the presence of the tape recorder and did not approve it). To minimize the weaknesses of note-taking as a method of data recording - not reporting or missing out some details of the interview - field notes were taken during the interviews

themselves, written quickly without worrying about spelling and punctuation. Moreover, the field note book had a wide margin in which the researcher recorded the date, place and start and end time of the interview; also, personal thoughts, feelings and interpretations were written in the margin, separated from the main data. This helps to isolate personal bias and to use personal thoughts as analytically useful information. The interview notes were reviewed immediately after the interview ended, for accuracy and context and to make sure that all remembered information—had been recorded. At the end of each day, notes were examined and missing details added and the notes were rewritten clearly with all the personal ideas and the researcher’s reflections and interpretations written in the margin.

In assessing these field notes we need to be aware of the possibility of selectivity on the part of the interviewer, as she was relying on memory and jotted notes; and of the filtering processes that took place between what the interviewee actually said and the original field notes as well as after the event as further details were recalled (see Sapsford & Jupp, 2006)

3.4.2 Analysis

According to Denzin and Lincoln (1994) the analysis of the data should begin shortly after the data collection and beyond. Field notes were analyzed using “grounded theory” (Glaser & Strauss, 1967; Strauss & Corbin, 1998).

The process of analysis is done through a series of stages:

- 1- Coding and categorizing
- 2- Identifying themes and patterns
- 3- Developing conclusions: Explanation and interpretation of data
- 4- Writing up

Analysis begins with identification of the themes emerging from the raw data, a process sometimes referred to as "open coding" (Strauss and Corbin, 1990). Careful analysis of the collected data involved examining

participants' responses, reducing texts into categories and making comparisons among the categories.

3.4.2.1 Coding and sorting of data

The field notes were reviewed each day. The transcripts were read thoroughly several times and examined for any emerging themes, new topics or categories which were relevant to the research objectives. The lines were numbered to identify different themes. Then the data was summarized on cards in English. The notes are rewritten on wide margin cards and coded to include the researcher's observations, comments and questions. Coding the data involved reading thoroughly through the transcripts and identifying themes such as the mother's decisions about different breastfeeding practices, reasons for weaning, influences and attitudes of others on the mother's decisions, cultural beliefs and habits related to infant feeding. The notes were then typed into the computer and filed.

Cards were used in the development of categories as they could be readily sorted. Categories arose from the data themselves and from the respondents' expressions and views which added to the understanding of their perceptions about breastfeeding practices and what influences their behaviours.

3.4.2.2 Compare and contrast: Glaser and Strauss (1967) refer to this stage as the 'constant comparative method'. The aim of this is to clarify what the categories that have emerged mean, as well as to identify sub-categories and relationships among categories.

The data was compared and contrasted (Strauss and Corbin 1990) to identify categories and subcategories, the relationship among them and to confirm the association of themes. These themes were categorized. During this phase categories were split or merged and elements reassigned to other categories, to give meaning to the structure developing out of the data

.As new categories emerged previously coded data was recoded and reorganized.

Memos were written to refine and keep track of ideas that developed whilst comparing the data and any new ideas emerged are recorded in the margin. Memos enable the researcher to explore connections and relationships between themes.

Continuous crosschecking between the original field notes, the data presented and the themes originating was carried out.

3.5 Ethical considerations

Prior to the start of this study, ethical approval was granted by both the Board of Ethics Committee of the Faculty of Medicine at UAE University and the Ethics Committee at The University of Teesside-UK. The objectives of the study, the questionnaire and the methodology were carefully reviewed by the Board of Ethics Committee in the Faculty of Medicine in UAE University. After getting their approval to conduct the study; the Ministry of Health issued letters allowing the researcher to collect data from the MCH centers in the three cities.

It should be noted that the officials in the MCH department expressed their interest in the study and asked for a report of the results.

The purpose of the study was explained to every participant and that they had the right to decline and stop the interview at any time. The participants were assured of confidentiality and anonymity and care was taken to ensure that no information collected was accessed by anyone except the researcher. The respondents were asked to sign a written consent form to indicate their willingness to participate in the study.

3.6 General limitations of the research design

3.6.1 Familiarization

A researcher's knowledge can come from two sources; a literature review, or personal experience. Researchers may be influenced by their prior knowledge and thus miss or put aside valuable insights from participants (Strauss & Corbin, 1998). A researcher's preconceived notions must act as only a guide in the first few interviews. However, the researcher's knowledge of the given area would provide the researcher with insights through which to improve and enhance the quality of the interview and support the study, especially during data collection and analysis (Brink, 1996). Moreover, this improves the skill of the interviewer, puts the participant at ease and creates a more conversational atmosphere that has the aura of trust (Strauss & Corbin, 1998).

The researcher conducted a literature review for background information and again after the data analysis to compare the findings of the study with those of previous studies. Knowledge of the given area may provide the researcher with insight that allows them to bypass unnecessary data and formulate questions that guide the interview more efficiently.

3.6.2 Reflexivity and credibility

Nightingale & Cromby (1999) argues that reflexivity requires an awareness of the researcher's contribution to the construction of meanings throughout the research process, and an acknowledgement of the impossibility of remaining 'outside of' one's subject matter while conducting research. Reflexivity then, urges us to explore the ways in which a researcher's involvement with a particular study influences, acts upon and informs such research.

In trying to minimize researcher reactivity in this study, several tactics were followed. Before interviewing; the researcher identified herself as a research

investigator. The researcher tried to establish rapport by making friendly, informal conversation. During the interviews the researcher was careful not to pass any personal judgments or comments, either verbally or by non-verbal reactions on the mothers' answers.

The interviewees were very sociable and appeared to feel relaxed and not intimidated by the interviewer. The interviewer remained in control of the interview without influencing the relaxed atmosphere. The interviews lasted between 30 and 60 minutes and they were conducted in the local dialect in order to have a more relaxed and open atmosphere. The researcher (who is Lebanese) is familiar with the Emirati culture, traditions and dialect since they are from the same ethnic and religious background but may differ in some cultural and social aspects. Soonthorndhada & Isarabhakdi (1993) reported that the best practice to minimize interviewer bias is to match the ascribed characteristics of interviewers with respondents.

Validity issues also arise at the data-analysis stage and in writing up. The credibility of a qualitative research report relies heavily on the confidence readers have in the researcher's ability to be sensitive to the data and to make appropriate decisions in the field (Eisner, 1991; Patton, 1990).

Sandelowski (1986) proposed that a qualitative study was credible or authentic when it presents "such faithful descriptions or interpretations of a human experience that the people having that experience would immediately recognize it from those descriptions or interpretations as their own". The researcher draws on knowledge and analytical frameworks with which the participants would generally not be familiar, nonetheless every effort has to be made to remain faithful to the nature of the social setting as perceived by the participants.

3.6.3 Recall bias: One important limitation of this study is recall bias due to the retrospective nature of the approach to data collection. This might lead

to over/under estimation of actual practices and inaccuracy about dates, particularly in the survey. Whereas In the qualitative interviews it was possible to make use of natural ‘anchor points’ in the mother’s accounts, such as the developmental stages of the child. To minimize any bias and maximize reliability, all interviews were conducted by the same researcher, and this should have ensured a consistent technique and interpretation of the answers. The researcher was also careful not to convey personal thoughts or comments and to minimize their role in the qualitative interviews. It should be pointed out that this research shares the problem of recall with virtually all the studies with which its results are compared; there have been very few prospective studies in this area.

3.6.4 Selection bias: The sample was mainly selected from mothers visiting the MCH centers by convenient sampling and so excluded mothers who do not visit these centers. This is more of a problem for the survey, which aims to represent the population statistically, but it should also be born in mind while interpreting the qualitative results; it is possible that mothers who do not attend the centers differ in some way – attitude, perhaps – from those who do so. However, the MCH centers do serve the vast majority of the Emirate mothers, as they provide free services for them and their infants. Further, when mothers who came to these centers were compared to the general population of Emirati women, they shared similar demographic characteristics to the general population.

An expected result, which was what was indeed found, was that Emirati mothers would breastfeed less and introduce other foods earlier than WHO or the Emirates medical system recommend. Mothers who do not visit the centers are less likely to be adopting the exclusive breastfeeding policy recommended by the WHO because they will not receive the same amount of medical / nursing advice and rely on information from lay people. If anything, then, the shortfall in breastfeeding practice is likely to be more extreme than the survey shows, not less.

3.6.5 Interview bias: There is a potential for “researcher reactivity” in all research which involves face-to-face interaction. Mothers might have been tempted to respond according to what they perceived as the researcher’s expectations. To overcome that, the researcher identified herself as an investigator and not as a member of health care personnel and started the interview with friendly and informal conversation. Moreover, the researcher was careful to avoid any personal judgments about their decisions, opinions and practices and tried to minimize leading questions. The researcher tried to become less “visible” and facilitate a more natural and honest response from the participants (Berg, 1998).

3.6.6 Knowledge bias: Care was taken to try to avoid interpretation and structuring of the data as a result of prior knowledge or preformed opinion, in interpretation and in writing up the account of the informants’ views and perceptions. Moreover, personal feelings and observations of the researcher were recorded in a separate margin of the notebook during the interview and analysis.

Although prior experience and knowledge may represent a hindrance to the researcher in the sense that they may lead her to miss or put aside valuable insights from the participants, the researcher’s knowledge that was acquired through literature reading provided insights that guide the interview more efficiently without influencing the respondents’ views and perceptions.

Chapter Four

Results (1): The Survey

4.1 Introduction

This chapter will report the results of the survey on breastfeeding and weaning practices and examine the relationships between variables and different breastfeeding parameters. The study looked at the relationship between demographic characteristics and different breastfeeding practices such as exclusive breastfeeding, almost-exclusive breastfeeding, predominant breastfeeding and the different weaning practices of the Emirati mothers. Logistic regression analysis was used to explore the significant predictors influencing the breastfeeding initiation, exclusivity and lactational amenorrhea.

4.2 Characteristics of the study population

4.2.1 General Characteristics of the study population

The general characteristics of the study population are shown in table 4.1.

Characteristics	Mean	SD	Median	Min	Max	95%CI
Mother Age (yrs)	27.9	5.3	27.0	17	45	27.4,28.3
Marital Age (yrs)	20.7	4.2	20.0	13	37	20.3,21.0
Infant birth weight (kg)	3.15	0.10	3.00	1.15	5.00	3.09,3.19
No. of children in family	2.5	1.7	2.0	1	8	2.4,2.6
Infant birth order	3.0	2.1	2.0	1	12	2.8,3.2
Duration of breastfeeding (mths)	8.6	5.8	7.0	1	24	8.1,9.0
Duration of LA (mths)	6.1	3.7	5.0	1	24	5.5,6.4

A total of 593 infants aged between 1 month and 24 months was included in the study: 200 infants from Abu Dhabi, 198 infants from Al Ain and 195 infants from Dubai. In terms of gender, 58.2% of the infants were boys and 41.8% were girls. The mothers who participated in the study were between 17 and 45 years of age, with a mean age (\pm SD) of 27.9 ± 5.3 years. These mothers' marital ages ranged between 13 and 37 years, with a mean marital age (\pm SD) of 21 ± 4.2 years (Table 4.1). The average number of children in a family (\pm SD) was 2.54 ± 1.74 . The mean birth weight (\pm SD) of the infants was 3.15 ± 0.08 kg. Also in this study, the mean duration (\pm SD) of any breastfeeding was 8.6 ± 6.25 months. While the mean duration for lactational amenorrhea (\pm SD) of the breastfeeding mothers was 6.1 ± 3.7 months.

4.2.2 Characteristics of the Mothers and Fathers

The characteristics of the infants' mothers and fathers in this study are presented in Table 4.2.

Table 4.2. Percentage distribution of the demographic variables of the mother and father in each region

Variables	Region							
	Abu Dhabi		Dubai		Al Ain		Total	
	No	%	No	%	No	%	No.	%
Mother's and Father's characteristics								
Mother's education level								
Illiterate	14	7.0	8	4.1	12	6.1	34	5.7
Low education	24	12.0	25	12.8	24	12.2	73	12.0
Moderate education	119	59.0	99	50.8	98	49.7	317	53.5
High education	43	21.5	63	32.3	63	32.0	169	28.5
Mother's employment*								
Working	18	9.0	48	24.6	25	2.6	91	15.3
Not working	182	91.0	147	75.4	173	87.4	502	84.7
Maternal Age (years)*								
<25	78	39.0	58	29.7	86	43.4	222	37.4
25 – 30	81	40.5	56	28.7	74	37.4	211	35.6
31 – 35	27	13.5	52	26.7	23	11.6	102	17.2
>35	14	7.0	29	14.9	15	7.6	58	9.8
Father's Education								
Illiterate	7	3.5	4	2.1	5	2.5	16	2.7
Low Education	17	8.5	18	9.2	19	9.6	54	9.1
Moderate Education	120	60.0	128	65.6	116	58.9	365	61.6
High education	56	28.0	45	23.1	57	28.9	158	26.6
Father's Occupation								
Amy, Police officer	130	65.0	111	56.9	119	60.1	360	60.7
Government Employee	45	22.5	39	28.2	51	24.2	148	25.0
Businessman	10	5.0	11	3.1	16	4.2	37	5.9
Skilled labourer	10	4.5	10	4.6	6	5.1	26	4.7
unskilledlabourer	2	1.0	1	1.5	6	3.0	9	1.5
Retired	3	1.0	7	0.5	3	3.0	13	2.2

*Chi-square analysis, P<0.005

The majority of the mothers who participated in this study were full-time housewives (84.7%); only 9%, 24.6% and 2.6% of these mothers worked as teachers or government employees in Abu Dhabi, Dubai and Al Ain respectively. Those seemed to be the only jobs that local UAE women preferred mostly because they are accepted by the society as they require limited working hours, thus allowing these women to attend to other responsibilities, primarily their families. More than half of the mothers had received moderate education (53.5%), and 21.5% in Abu Dhabi, 32.3% in Dubai and 32.0% in Al Ain completed their university or college degrees.

About sixty one percent of the fathers worked in the army or as policemen, and 25.0% worked for the government. With regard to the fathers' educational level, more than 60% of them received moderate education, and 26.6% had university diplomas. These results were similar in all three regions. It should be noted here that Emirati men seem to prefer governmental, army or police jobs since these jobs pay well, offer many benefits for the locals and do not require high education (Table 4.2).

4.2.3 Infant and family characteristics

Table 4.3 presents the infant and family characteristics in each region.

Table 4.3. Percentage distribution of the child demographic variables in each region

Variables	Region							
	Abu Dhabi		Dubai		Al Ain		Total	
	No	%	No	%	No	%	No	%
Infant and family Characteristics								
Infant sex *								
Male	117	58.5	126	64.6	102	51.5	345	58.2
Female	83	41.5	69	35.5	96	48.5	248	41.8
Infant birth weight(kg) *								
<2.5	20	10.3	33	17.5	35	30.9	88	14.8
2.5-3.0	51	26.3	64	33.9	67	35.4	182	30.7
3.1-4.0	115	59.3	88	46.6	88	46.6	291	49.1
>4.0	8	4.1	4	2.1	0	0	12	2.0
No. of children in the family*								
1-2	115	57.5	124	63.6	93	47.0	332	55.9
3-5	79	39.5	65	33.3	89	44.9	233	39.3
6-7	6	3.0	6	3.1	16	8.1	28	4.7
Housemaid*								
Yes	126	63.0	113	57.9	153	66.1	392	66.1
No	74	7.0	82	42.1	45	22.7	201	33.9
Parity*								
Primi	52	26.0	70	35.9	49	24.7	171	28.8
Multiparous	148	74.0	125	64.1	149	75.3	422	71.2

*Chi-square analysis, P<0.005

In this study, about half the infants weighed between 3 and 4 kg (49.1%) upon birth. Approximately 69% of the families in Dubai, 57.5% in Abu Dhabi and 47% in Al Ain had 1-2 children per family. The majority of the families in the three cities, 66.1% to be more accurate, had housemaids (Table 4.3).

4.2.4 Infant feeding variables characteristics

Infant feeding variables in each region is presented in table 4.4.

Variables	Region							
	Abu Dhabi		Dubai		Al Ain		Total	
	No	%	No	%	No	%	No	%
Frequency of breastfeeding^{a,*}								
Upon demand	137	91.3	76	76.2	105	92.9	318	88.6
Scheduled	14	8.7	20	23.9	8	7.1	41	11.4
Delivery method*								
Normal	158	79.0	157	80.5	180	90.9	495	83.5
Cesarean	42	21.0	38	19.5	18	9.1	98	16.5
Types of contraceptive*								
None	91	46.0	136	69.7	133	67.2	360	60.7
Hormonal	104	44.4	43	17.9	29	11.6	176	29.7
Non hormonal	5	9.6	16	11.2	36	21.2	57	9.6
Nipple problems*								
Yes	133	66.5	57	29.2	56	28.3	246	41.5
No	67	47.0	138	60.0	142	44.9	347	58.5
Place of infant after delivery*								
With the mother	196	98.0	144	73.8	177	89.4	517	87.2
In separate room	4	2.0	51	26.2	21	10.6	76	12.8
No. of breastfeeds at night*								
None	50	25.0	43	22.1	24	12.1	117	19.7
1-3	135	67.5	108	55.4	103	52.0	346	58.3
4-6	15	7.5	44	22.6	71	5.9	130	21.9

**Chisquare analysis, P<0.005; ^a included only infants who were still breastfeeding at the time of study

As can be concluded from table 4.4, the majority of the infants were fed upon demand and about half of them were breastfed between one to three times at night in Abu Dhabi, Dubai and Al Ain. More than three quarters of the infants were placed with their mothers after delivery in the three cities. In Dubai and Al Ain, more than 60% of the mothers did not use contraception, and nearly 50% in Abu Dhabi did not do so either.

4.3 Initiation time of the first breastfeed

The initiation time of the first breastfeed is the time when the mother starts breastfeeding her newborn after delivery. It is recommended by the WHO

that the initiation of the first breastfeed take place within an hour after delivery.

Table 4.5. Percentage distribution of the initiation time of the first breastfeed in the three regions

Region	Initiation time of the first breastfeed (hr)			
	≤one hour		>one hour	
	No	%	No	%
Abu Dhabi	194	97.0	6	3.0
Dubai	104	55.3	84	44.7
Al Ain	172	88.2	23	11.8
Total	470	80.6	113	19.4

Chi-square analysis, P<0.001

In total, about 98% of the mothers in this study initiated breastfeeding. Only 10 infants were not breastfed since birth (1.7%). Of the mothers who attempted to breastfeed in the hospital, 80.6% put their infants on their breast within one hour after delivery, while the rest delayed breastfeeding their babies till after one hour postpartum (19.4%). Nearly all the mothers in Abu Dhabi (97%) compared to 88.2% in Al Ain and 55.3% in Dubai, started breastfeeding their newborns immediately after birth. The delay in initiation time is significant as it illustrates that the hospitals in Dubai, compared to those in the two other regions, did not implement the baby-friendly hospital initiatives which require that the baby be given to his/her mother for breastfeeding directly after delivery (P<0.001)(Table 4.5).

4.3.1 Initiation time of the first breastfeed and the influencing Factors

Factors potentially associated with the initiation time of the first breastfeed were examined. The simple binary logistic analysis of the factors associated with the initiation time of the first breastfeed after delivery is shown in Table 4.6.

Table 4.6. Simple binary logistic regression for the predictors associated with the initiation time of the first breastfeed

Variables	No.	OR**	95% CI***	P value
Mother age				0.291
<25*	215			
26-30	209	0.981	0.617-1.558	
30-35	102	0.642	0.376-1.097	
>35	57	0.685	0.353-1.330	
Infant Sex				0.898
Male*	338			
Female	245	1.235	0.676-1.512	
Parity				0.001
Primi*	165			
Multiparous	418	2.269	1.519-3.390	
Mother Occupation				0.011
Working*	90			
Not working	493	1.090	1.172-3.084	
Infant birth weight(kg)				0.001
<2.5kg*	85			
2.5-3.0	180	1.939	1.117-3.366	
3.1-4.0	287	2.906	1.711-4.934	
>4.0	12	0.872	0.256-2.974	
Mother level of education				0.248
Illiterate	33	2.175	0.793-5.969	
low	72	1.165	0.620-2.190	
moderate	313	1.432	0.930-2.205	
High*	165			
Rooming in				0.001
With mother	514	17.648	9.634-32.326	
In separate room*	69			
Type of delivery				0.001
Normal	488	2.188	1.369-3.499	
Cesarean*	95			

*reference group **odds ratio *** Confidence interval

Results of this study indicate that multiparous mothers were more likely to initiate breastfeeding within an hour after birth than primi mothers (OR=

2.269; 95% CI 1.519-3.390). Moreover, working mothers were more likely to delay initiation time of the first breastfeeding till an hour after delivery compared to non-working mothers (OR=1.090; 95% CI 1.172-3.084). Mothers who delivered cesarean were significantly less likely to initiate the first breastfeed within an hour of delivery than did mothers who had a normal delivery (OR=2.188; 95% CI 1.369-3.499). Also, infants who were kept with their mothers in the same room after delivery were significantly more likely to be breastfed earlier than those who were kept in a separate room (OR=17.648; 95% CI 9.634-32.326). Infants who had a normal birth weight (2.5-3.0 kg or 3.1-4.0 kg) were more likely to be breastfed earlier than those with a lower birth weight (<2.5 kg) (OR=1.937; 95% CI 1.117-3.366 and OR=2.906; 95% CI 1.711-4.934 respectively). Finally, as the analysis show, the mother's age, her level of education and the infant's sex were not significant factors influencing the time of initiation of the first breastfeed.

4.3.2 Multiple logistic regression analysis of the variables influencing initiation time of the first breastfeed

To identify the factors that were most predictive in the initiation time of the first breastfeed, only the significant variables that were associated with the initiation time of the first breastfeed were analysed further using multiple logistic regression models. Only parity (OR= 2.139; 95% CI 1.225-3.735; P<0.001) and infant's with birth weight between 2.5-3.0kg (OR= 2.007; 95% CI 0.979-4.117; P<0.023), and rooming in (OR= 21.797;95% CI 11.5-41.310; P<0.001) emerged as predictive factors associated with the early initiation of the first breastfeed (≤ 1 hr) once intercorrelation was taken into account.

4.4 Duration of breastfeeding and the influencing factors

Duration of breastfeeding refers to the length of the breastfeeding period (in terms of number of months) of infants who were breastfed originally but who had stopped being breastfed by the time of the study.

Table 4.7. Mean duration of breastfeeding by location

Group	No.	Duration of breastfeeding Months(mean± SD)
Abu Dhabi	50	5.8 ± 4.5
Dubai	99	8.6 ± 6.2
Al Ain	85	10.7± 6.6
Total	234	8.6 ± 5.8

One way ANOVA, P <0.001

The total average duration of breastfeeding (±SD) in this study was 8.6±5.8 months (Table 4.7). The highest mean breastfeeding duration rate was in Al Ain (10.7±6.6 months), followed by Dubai (8.6±6.2 months), and then Abu Dhabi (5.8±4.5 months). Details regarding the mean (±SD) duration of breastfeeding and the factors associated with it are shown in Table 4.8.

Table 4.8. Factors associated with the duration of breastfeeding * (n=234¹)

Factors	No.	Duration of breastfeeding Months (mean± SD)	P value
Infant sex			0.783
Boy	144	8.7 ± 6.1	
Girl	90	8.4 ± 5.6	
Parity			0.024
Primi	86	7.6 ± 5.0	
Multiparous	148	9.5 ± 6.8	
Mother's age			0.034
<25	88	7.2 ± 5.1	
25-30	77	9.7 ± 7.0	
31-35	42	9.5 ± 6.5	
>35	27	10.0 ± 6.3	
Mother's educational level			0.001
Illiterate	15	9.5 ± 8.3	
Low	24	13.1± 6.2	
Moderate	124	7.6 ± 5.6	
High	70	9.2 ± 6.0	

* ANOVA is used whenever the normality and equal variance assumptions are satisfied.

Otherwise the Kruskal Wallis test was used.

¹ included only infants who were breastfed and stopped breastfeeding at the time of the study.

Table 4.8. (Cont'd). Factors associated with the duration of breastfeeding * (n=234¹)

Factors	No.	Duration of breastfeeding Months (mean± SD)	P value
Mother's occupation			
Working	34	8.9± 6.6	0.261
Not working	200	8.8± 6.2	
Rooming in			
With the mother	200	8.7± 6.3	0.903
In Separate room	34	8.9± 5.9	
Frequency of breastfeeding			
Upon demand	200	8.4± 5.3	0.157
Schedule	34	7.6± 5.1	
Nipple problems			
Yes	95	7.5± 5.4	0.010
No	139	9.7± 6.7	
Use of contraceptive			
None	138	9.4± 6.1	0.025
Non Hormonal	28	10.0±7.3	
Hormonal	68	7.1± 5.8	
Type of delivery			
Normal	193	8.8 ± 6.3	0.758
Cesarean	41	8.8 ± 6.2	
No. of breastfeeds at night			
None	87	6.1± 5.0	0.001
1-3	96	9.7 ± 6.2	
4-6	51	11.7 ± 6.4	

* ANOVA is used whenever the normality and equal variance assumptions are satisfied.

Otherwise the Kruskal Wallis test was used.

¹ included only infants who were breastfed and stopped breastfeeding at the time of the study.

Multiparous Mothers breastfed their infants for a significantly longer period (9.5±6.8 months) than did primi mothers (7.6±5.0months) (P<0.024). As the mother's age increased, the duration of breastfeeding increased as well: from 7.2±5.1 months for mothers less than 25 years old to 10.0±6.3 months for mothers older than 35 years of age. Mother's education level was significantly related to the breastfeeding duration (P<0.001); mothers with little education breastfed for longer periods (13.1 ±6.2 months) than did mothers of other educational levels. Also, as expected, mothers who did not have nipple problems breastfed for significantly longer (9.7±6.7months) than did mothers who suffered from nipple problems (7.5±5.4 months). Moreover, mothers who either did not use any contraception or used non-hormonal

contraception breastfed their infants for a significantly longer period (9.0-10.0 months) than did mothers who used hormonal contraception (7.1±5.8 months) (P<0.025). In addition, mothers who used to breastfeed more frequently during the night (4-6 times) breastfed their infants significantly longer than did mothers who did not breastfeed their infants during the night (11.7±6.4 months vs. 6.1±5.0 months respectively) (P<0.001). However, rooming in, frequency of breastfeeding, type of delivery, and mother's occupation were not among the significant factors which influenced breastfeeding duration in this study.

4.5 Infant feeding patterns

Infants in the study were categorized, according to their feeding patterns since birth, into four categories: exclusive breastfeeding, almost exclusive breastfeeding, predominant breastfeeding and formula feeding. The percentage distribution of the four feeding patterns in this study is shown in Table 4.9.

Table 4.9. Percentage distribution of different feeding patterns in the study Population

Feeding Pattern	No	%
Exclusive breastfeeding	147	24.8
Almost exclusively breastfeeding	293	49.4
Predominant	143	24.1
Formula Feeding	10	1.7
Total	593	100

Among the 593 infants in this study, 24.1% were predominantly breastfed since birth, and only 10 mothers exclusively formula-fed their infants (1.7%). About a quarter of the infants were exclusively breastfeeding and about half of them were almost exclusively breastfed since birth. The percentage of infants who were either exclusively or almost exclusively breastfed for 4 or 6 month was calculated, the results showed that 7.4% (n=44) of the infants

were exclusively breastfed for 4 months while only 1.9% (n=11) breastfed exclusively for 6 months. Moreover, the percentage of infants who were almost exclusively breastfed for 4 months was 18.0% (n=106), and the percentage of infants who were almost exclusively breastfed for 6 months was 7.1% (n=42).

4.5.1 Factors influencing breastfeeding practices

Factors influencing exclusive and almost exclusive breastfeeding practices were explored using binary logistic regression analysis (Table 4.10).

Table 4.10. Simple binary logistic regression for the predictors associated with exclusive and almost exclusive breastfeeding

Variables	No.	OR**	95% CI***	P value
Infant Sex				0.058
Male [*]	345			
Female	248	0.692	0.472-1.013	
Mother age				0.099
<25 [*]	222			
26-30	211	0.914	0.584-0.430	
30-35	102	1.666	0.998-2.780	
>35	58	1.435	0.760-2.711	
Mother level of education				0.010
Illiterate	34	2.123	0.875-5.165	
low	73	2.128	1.112-4.074	
moderate	317	1.907	1.264 -2.877	
High [*]	169			
Mother Occupation				0.009
Working [*]	91			
Not Working	502	1.899	1.174-3.070	

*reference group **odds ratio *** Confidence interval

Table 4.10.(Cont'd). Simple binary logistic regression for the predictors associated with exclusive and almost exclusive breastfeeding

Variables		OR**	95% CI***	P value
No. of breastfeeds at night				0.006
None*	117			
1-3	346	1.972	1.258 -3.090	
4-6	130	2.196	1.253 -3.848	
Parity				0.002
Primi*	171			
Multiparous	422	1.838	1.245 -2.715	
Rooming in				0.000
with mother	517	5.875	3.540 -9.753	
In separate room*	76			
Frequency				0.006
Scheduled*	43			
Upon demand	320	2.761	1.379 -5.526	
Nipple problems				0.072
Yes*	246			
No	347	1.419	0.969 -2.078	
Type of Delivery				0.001
Caesarean*	98			
Normal	495	2.209	1.401 - 3.483	
Use of contraception				0.262
None	360			
Non-Hormonal	176	1.182	0.586-1.592	
Hormonal*	57	0.835	0.438-1.598	

*reference group **odds ratio *** Confidence interval

The analysis showed that mother's education level, occupation, parity, rooming in, type of delivery, frequency of breastfeeding and the numbers of breastfeeds at night were significant factors associated with exclusive and almost exclusive breastfeeding patterns. Housewives were two times more likely to provide exclusive or almost exclusive breastfeeding of their infants than working mothers (OR= 1.899; 95% CI 1.174-3.070). Moreover, multiparous mothers were 1.8 times more likely to either exclusively or almost exclusively breastfeed their infants than primi mothers (OR =1.838;

95% CI 1.245-2.715). The odds of either exclusive or almost exclusive breastfeeding of the infants by the mothers who were low or moderately educated were about two times compared to the corresponding odds for highly educated mothers. Mothers who delivered normally were more likely to either exclusively or almost exclusively breastfeed their infants than did those who delivered by cesarean section (OR= 2.209; 95% CI 1.401-3.483). Infants who were breastfed upon demand (OR= 2.7611; 95% CI 1.379-5.526) were more likely to be either exclusively or almost exclusively breastfed than did infants who were breastfed on schedule. Moreover, the odds for mothers who kept their infants with them in the same room after delivery (rooming in) to either exclusively or almost exclusively breastfeed their infants were six times the corresponding odds for the mothers who kept their infants in separate rooms (OR= 5.875; 95% CI 3.540-9.753). Also, the odds for mothers who breastfed their infants at night to either exclusively or almost exclusively breastfeed their infants were double the corresponding odds for the mothers who did not breastfeed their infants during the night ($P<0.001$). It was noted that infant's sex, mother's age, mother's nipple problems, and the use of contraception were not among the significant factors which influenced breastfeeding practices.

4.5.2 Multiple logistic regression analysis of the variables influencing the infant feeding practices

In order to identify the most predictive factors in infant feeding practices in this study, only significant variables that were associated with the infant feeding practices in the simple binary logistic test were analysed further using multiple logistic regression models. Rooming in (OR=4.485; 95% CI 2.141-9.392; $P<0.001$), breastfeeding on demand (OR=2.926; 95% CI 1.394-6.144; $P<0.005$), and breastfeeding at night for 1-3 (OR=3.377; 95% CI 1.272-8.962; $P<0.015$) or for 4-6 times each night (OR=3.503; 95% CI 1.165-10.535; $P<0.026$) were the factors that remained in the equation as associated with infant's exclusive or almost exclusive breastfeeding, allowing for intercorrelation.

4.5.3 Feeding patterns by region

The percentage distribution of the different feeding patterns by location is shown in Figure 4.1.

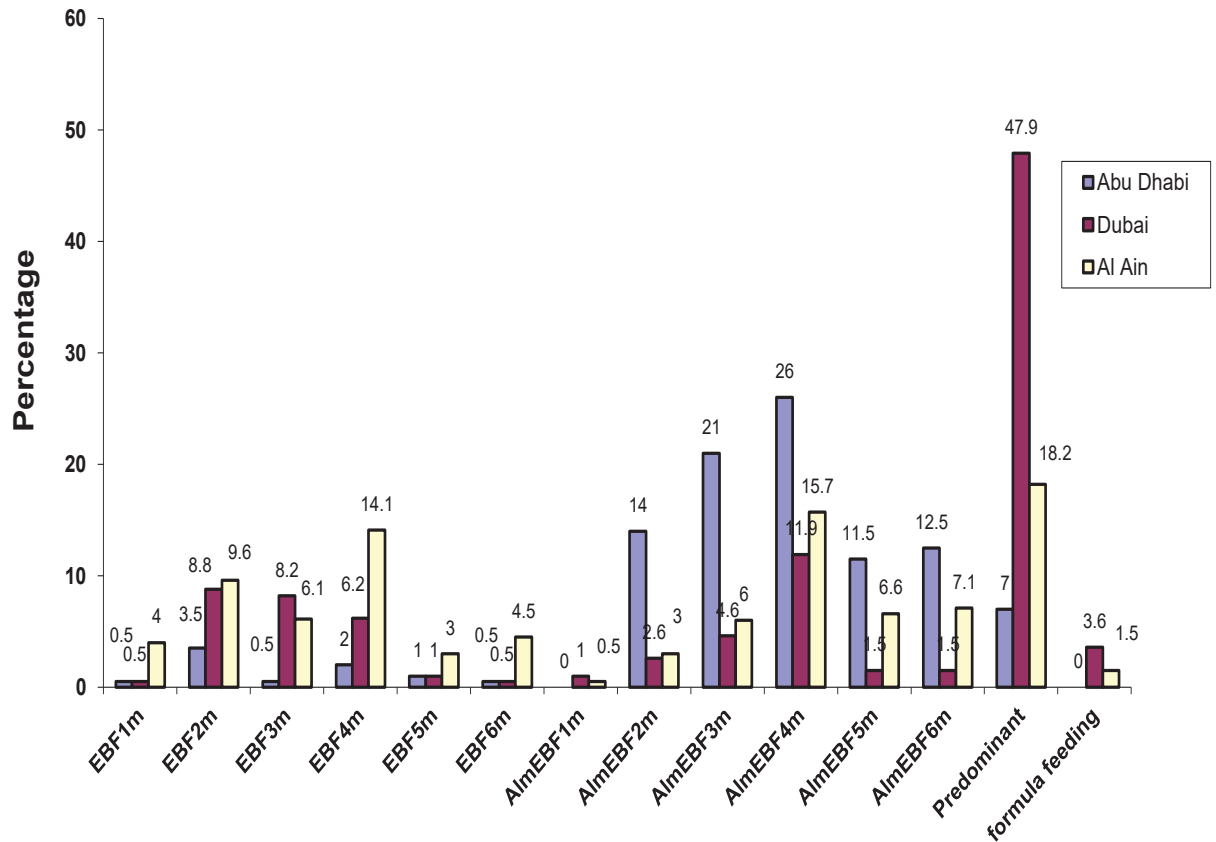


Figure 4.1. Types of different feeding patterns in the three regions (percentage).

In Al Ain, the exclusive breastfeeding rate was the highest in almost all stages, followed by Dubai and then Abu Dhabi. Moreover, in Abu Dhabi, only 2% of the infants were exclusively breastfed for 4 months, and this figure declined to 0.5% at 6 months. In Dubai, 6.2% of the infants were exclusively breastfed for 4 months, and the percentage decreased to 0.5% at 6 months. In Al Ain, the rate of exclusive breastfeeding was 14.1% at 4 months, and then decreased steeply to 4.5% at 6 months. It was noted that the three regions reported very low exclusive breastfeeding rates.

The ‘almost exclusive breastfeeding’ group showed a different trend. Abu Dhabi reported the highest rate of almost exclusive breastfeeding in all stages. The highest percentage of almost exclusive breastfeeding rate was for 4 months in all three regions. The percentage of infants who were almost exclusively breastfed for 4 months in Abu Dhabi, Al Ain and Dubai was 26.0%, 15.7% and 11.9% respectively. However, the rate for almost exclusively breastfed infants for 6 months was lower compared to rate of infants almost exclusively breastfed for 4 months in all three regions, with the highest percentage observed in Abu Dhabi (12.5%), followed by Al Ain (7.1%) and Dubai, where a very low almost exclusively breastfeeding rate at 6 months was registered (1.5%). Almost half of the infants in Dubai were predominantly breastfed (47.9%), followed by Al Ain (18.2%) and finally by Abu Dhabi, where only 7% of the infants were predominantly breastfed.

4.6 Breastfeeding and lactational amenorrhea (LA)

Mothers were asked to report the time when their first regular vaginal menses which lasted more than one day were observed. The total mean duration of lactational amenorrhea (\pm SD) of the mothers in this study was 6.1 ± 3.7 months (Table 4.11).

Table 4.11. Mean duration of lactational amenorrhea (LA) of the breastfeeding mothers in each region

Region	No.	Mean duration of LA (months) mean \pm SD
Abu Dhabi	108	4.3 \pm 1.9
Dubai	75	6.9 \pm 4.5
Al Ain	108	7.2 \pm 4.8
Total	291	6.1\pm3.7

One way ANOVA, $P < 0.001$

The mean duration of lactational amenorrhea (\pm SD) for the mothers from Abu Dhabi, Dubai and Al Ain was 4.3 ± 1.9 months, 6.9 ± 4.5 months and 7.2 ± 4.8 months respectively. Mothers from Al Ain had the longest mean duration of lactational amenorrhea as compared to their counterparts in Dubai and Abu Dhabi (Table 4.11). It should be noted that these results are aligned

with the breastfeeding duration results, which indicated that mothers in Al Ain had the longest breastfeeding duration whereas mothers in Abu Dhabi reported the shortest duration.

4.6.1 Factors affecting mean duration of lactational amenorrhea

Different variables were analyzed to identify the factors which significantly influenced the mean duration of lactational amenorrhea (Table 4.12).

Table 4.12. Simple binary logistic regression for the predictors associated with lactational amenorrhea duration

Variables	No.	OR**	95% CI***	P value
Mother age				0.002
<25*	222			
25-30	211	2.331	1.279 - 4.251	
30-35	102	3.117	1.588 - 6.118	
>35	58	2.957	1.332 - 6.563	
Type of Delivery				0.419
Cesarean*	485			
Normal	98	1.300	0.678 – 2.494	
Parity				0.001
Primi*	171			
Multiparous	422	3.651	1.841- 7.238	
No. of breastfeeds at night				
None*	117			0.001
1-3	346	3.803	0.415 - 9.059	
4-6	130	3.977	1.558 -10.149	
Frequency				0.455
Scheduled*	320			
Upon demand	43	1.935	0.664 – 5.644	
Duration of breastfeeding (mth)				0.002
1-6*	127			
7-12	83	19.327	2.238-150.090	
12+	43	30.722	4.229 -223.189	
Introduction of solids (mths)				0.001
0-6*	495			
7-12	23	7.637	3.227-18.075	
Introduction of formula milk (mths)				0.001
0-6*	535			
7-12	46	3.790	1.960-7.327	

*reference group **odds ratio *** Confidence interval

Table 4.12.(Cont'd). Simple binary logistic regression for the predictors associated with lactational amenorrhea duration

Variables	No.	OR**	95% CI***	P value
Use of contraception				0.056
None*	360			
Hormonal	176	0.514	0.291 -0.909	
Non-hormonal	57	0.901	0.420 -1.932	
Feeding Patterns				0.029
Predominant*	143			
Exclusive breastfeeding	147	2.462	1.249-4.856	
Almost exclusive breastfeeding	293	1.585	0.836-3.004	

*reference group, **odds ratio, *** confidence interval

Simple binary Logistic regression analyses showed that maternal age, parity, night breastfeeding, duration of breastfeeding, the use of contraception, feeding pattern, introduction of formula milk and solid food were the variables significantly associated with the duration of lactational amenorrhea (table 4.12).

The odds for lactational amenorrhea duration to last more than 6 months among mothers whose ages were above 25 years were significantly higher than those of the corresponding mothers whose ages were less than 25 years ($P < 0.002$). Moreover, parity was a significant factor associated with the odds of increased duration of lactational amenorrhea lasting more than 6 months. Multiparous mothers were about twice more likely to have longer durations of lactational amenorrhea lasting more than 6 months compared to primiparous mothers ($P < 0.001$). When comparing the influence of the use of contraceptives among breastfeeding mothers on the duration of lactational amenorrhea, the odds of duration of lactational amenorrhea to last more than 6 months among the hormonal users was found to be significantly lower, almost by half, than the odds of the corresponding non users ($P < 0.056$). Furthermore, night breastfeeding was associated with significantly higher odds of lactational amenorrhea duration to last more than 6 months compared to the odds of mothers who did not breastfeed at night ($P < 0.001$). It was also found that the odds of the mothers to have lactational amenorrhea duration lasting more than 6 months were significantly higher

for mothers breastfeeding for more than 6 months. Exclusive breastfeeding was significantly associated with the duration of lactational amenorrhea. Mothers who exclusively breastfed their infants were about 2.5 more likely to have a longer lactation amenorrhea lasting for more than 6 months as compared to mothers who predominantly breastfeed their infants ($P < 0.029$). Moreover, mothers introducing either formula milk or solid food earlier than 6 months of the infants age were most likely to have lactational amenorrhea duration shorter than 6 months as compared to mothers who introduce these supplements later than 6 months of the infant's age ($P < 0.001$ and $P < 0.001$ respectively). Finally, there was no significant association between the duration of lactational amenorrhea and both the frequency of breastfeeding and the type of delivery.

4.6.2 Multiple logistic regression analysis of the variables influencing lactational amenorrhea duration

To identify which factors were the most predictive of the duration of lactational amenorrhea, only significant variables that were associated with the duration of lactational amenorrhea were analysed further using multiple logistic regression models. Mother's age more than 25 years old ($P < 0.011$), duration of breastfeeding more than 6 months ($P < 0.002$), and introduction of formula milk (OR=3.498; 95% CI 1.511-8.094; $P < 0.003$) and solid food (OR=5.379; 95% CI 1.755-16.488; $P < 0.003$) were the variables which remained in the equation as those associated with longer duration of lactational amenorrhea lasting more than 6 months.

4.7 Complementary feeding

Complementary food should be introduced gradually into a baby's diet; it complements breast milk at first and progressively replaces it as the child adapts to an adult diet. This is an important period of adaptation and transition from breastmilk which satisfies all the nutritional needs of the infant in the first few months to a mixed diet containing solid foods that will

adequately supply the infant with all the calories and nutrients needed for growth and development.

Fluid or solid supplements are usually introduced to the infants gradually while they are still breastfeeding. In this study mothers were asked about the type of liquid or solid supplement offered to their infants and when did they first introduce it to the diet of their baby.

4.7.1 Introduction of liquid supplements

Mothers were asked if their infants were offered any type of foods or fluids during the first three days of stay at the hospital. The main fluids given to infants are listed in Table 4.13.

Table 4.13. Percentage of infants who received fluids during the first three days after delivery

Type of fluids	No.	(%)
None	432	72.8
Water	36	6.1
Formula milk	96	16.2
IV Fluids	23	3.9
Crushed dates	3	0.5
Yansun	3	0.5

About 73% of the infants were not given any supplements during the first three days after delivery. Formula milk was given to 16.2% of the infants during the first three days postpartum, while the rest received water, hospital fluids (IV fluids), crushed dates or yansun.

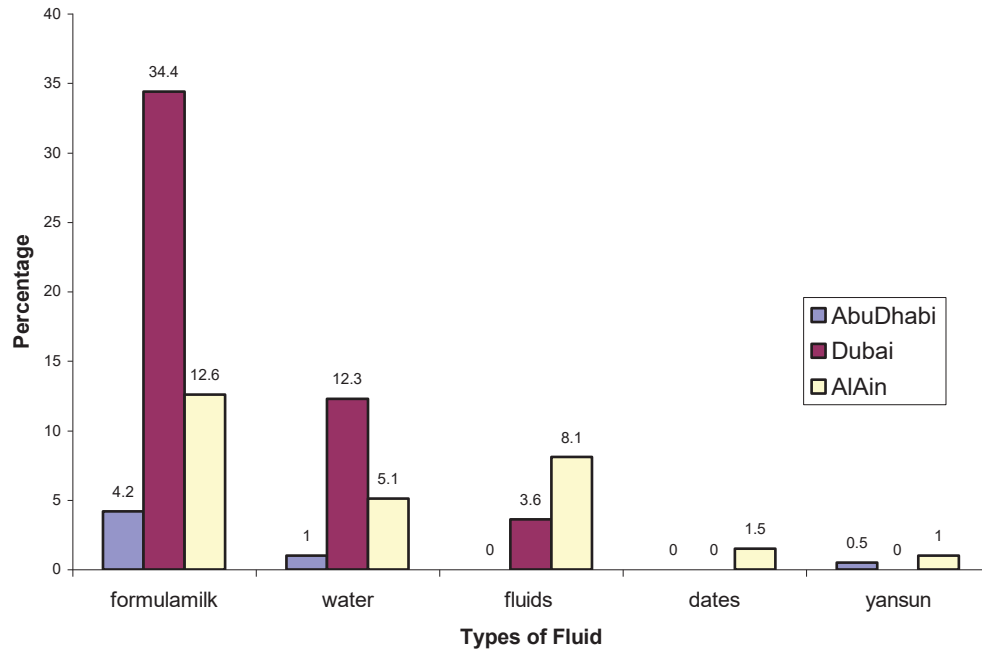


Figure 4.2. Percentage distribution of the different fluids given to the infants during the first three days postpartum in each region

Figure 4.2 showed that of the total infants who received milk during the first three days after delivery, 34.4% were from Dubai, 12.6% of the infants in Al Ain, and only 2.0% in Abu Dhabi. Water was the second most common fluid introduced to the infants during the mother's hospital stay. In Dubai, 12.3% of the infants received water, whereas very few mothers gave water to their infants in Al Ain and in Abu Dhabi while in the hospital.

Other fluids given to the infants during their stay in the hospital were hospital fluids offered to babies with low birth weight or sick babies (8.1% in Al Ain and 3.6% in Dubai). Crushed dates and yansun were also given to a very small percentage of the infants in Al Ain (1.5% and 1% respectively).

4.7.1.1 Non milk supplements (traditional drinks)

Mothers were also asked if they gave their infants any traditional drinks or fluid supplements while breastfeeding (Table 4.14).

Table 4.14. Percentage distribution of infants who were given non milk supplements (traditional drinks) early (1-3 months of infant's age)

Type of fluids	No.	(%)
None	413	69.6
Grippe water	91	15.3
Yansun	60	10.1
Tea	15	2.5
Other herbs	10	2.0

About 70% of the mothers said that they did not give any fluid supplements to their infants below 3 months of age. However, 15.3% of the respondents said that they had given grippe water, 10.1% had given yansun and 2.5% had given tea to their infants during the first three months of the infant's age.

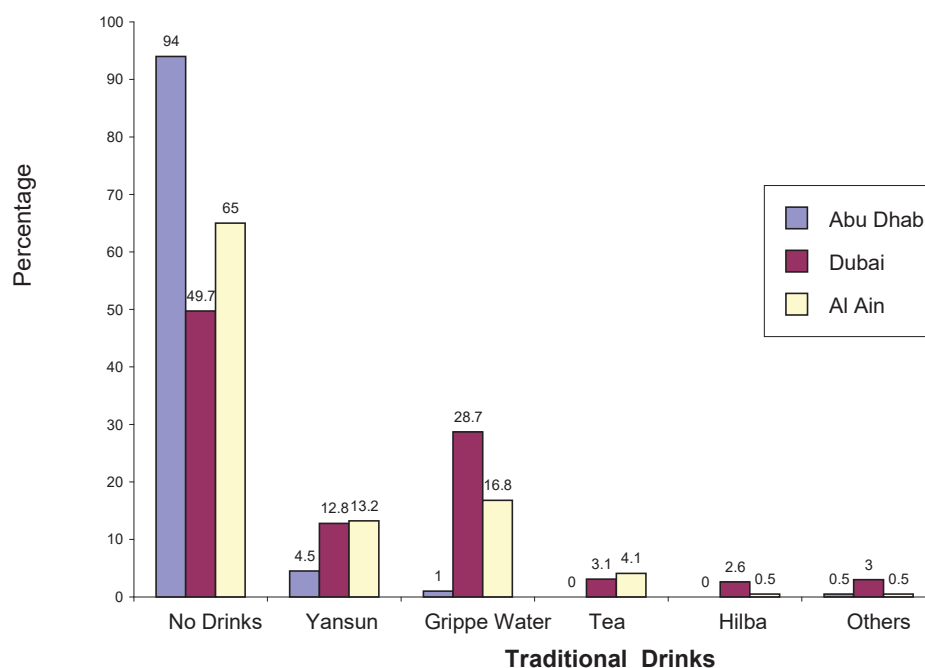


Figure 4.3. Percentage distribution of Folk Drinks introduced to the infants in the three regions

The above-mentioned fluid supplements were mostly offered by mothers in Dubai and Al Ain to soothe the baby from colic pains (Figure 4.3). About 30% of the mothers in Dubai gave their infants grippe water, compared to 16.8% of the mothers in Al Ain. The percentages of mothers who gave their infants yansun drinks in Dubai and Al Ain were similar.

4.7.2 Introduction of solid supplementation

It is generally recommended by the WHO that solids be introduced to the infants at 6 months of age, as infants are physiologically and developmentally ready for new foods, textures and modes of feeding at this age.

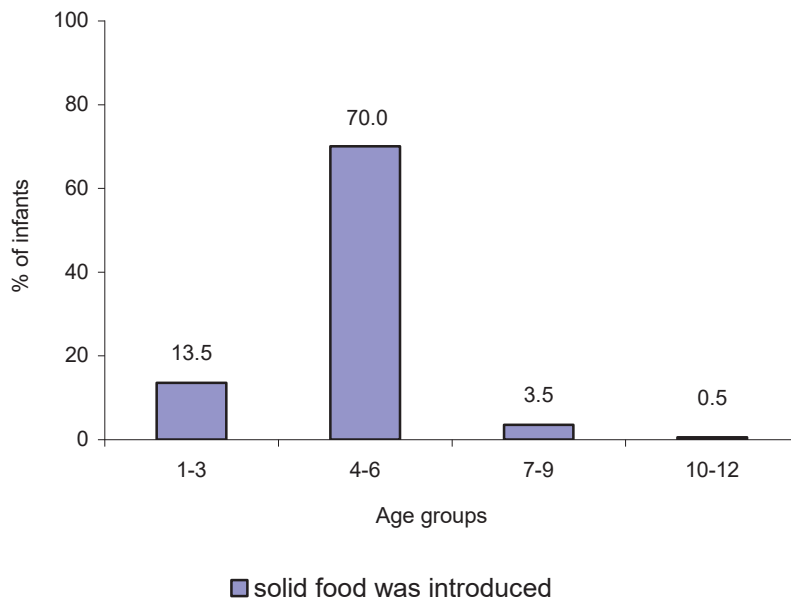


Figure 4.4. Percentage of infants receiving solid foods for the first time in different age groups

The majority of the infants in this study were introduced to solid foods before the recommended age of 6 months (83.5%). About 13.5% of them were given solids, mostly home-made cereals or ready-made cereals, before the age of 3 months (Figure 4.4).

The age at which solid foods were introduced in each region is shown in table 4.15.

Table 4.15. Age at which solid food supplements were introduced to the infants in the three regions

Infant age	Abu Dhabi		Dubai		Al Ain		Total	
	No.	%	No.	%	No.	%	No.	%
1-3	52	65.0	16	20.0	12	15.0	80	13.5
4-6	126	30.4	149	35.9	140	33.7	415	69.9
7-9	11	5.8	4	2.4	5	3.1	20	3.4
10-12	-	-	-	-	3	1.9	3	0.5

It was noted that in Abu Dhabi, 65% of the mothers gave their infants solid food before the age of 3 months, compared to 20% and 15% of the mothers in Dubai and Al Ain respectively. About 36% of the infants in Dubai and 34% of the infants in Al Ain were introduced to solid food at the age of 4-6 months. The majority of the infants in Abu Dhabi (95.4%), and more than half of the infants in Dubai (56%) were introduced to solid food when they were less than 6 months of age as shown in Table 4.15.

Mothers were asked to recall the type of foods introduced to their infants as well as the age at which these foods were offered to the infant. Table 4.16 lists the foods that were introduced to the infants and the mean infant age.

Table 4.16. Mean age at which each of the complementary food was added

Complementary food	Mean age \pm SD	Median	Min	Max
Formula milk	3.8 \pm 3.8	3.00	1	24
Home made cereal	4.9 \pm 1.7	4.00	1	13
Ready-made cereal	4.6 \pm 1.1	4.00	2	12
Fruits	5.1 \pm 1.6	5.00	2	13
Vegetables	5.9 \pm 2.5	5.00	3	24
Legumes	7.8 \pm 2.6	7.00	3	18
Eggs	7.4 \pm 2.1	7.00	3	18
Meat	8.8 \pm 3.1	8.00	3	24
Chicken	8.6 \pm 2.9	8.00	3	24
Fish	9.1 \pm 3.3	8.00	4	24

It was noted that the mean infant age (\pm SD) at which formula milk was introduced was 3.8 \pm 3.8 months. Home made cereals and ready made

cereals were introduced to infants at 4.9 ± 1.7 months, and 4.6 ± 1.1 months respectively. Fruits and vegetables were introduced at a mean infant age (\pm SD) of 5.1 ± 1.6 months, and 5.9 ± 2.5 months respectively. Legumes and eggs were given to the infants at about 7 months, while meat and chicken were introduced at the age of about 8 months. Fish was introduced later on average at 9 months.

Supplementation of milk and foods among the different infant ages is shown in Table 4.17.

Table 4.17. Percentage of mothers introducing complementary food at different infant's age group

Complementary food	Age (months)						N
	1-3	4-6	7-9	10 -12	13-15	16-24	
Formula milk	61.8	24.7	4.7	8.0	1.2	-	388
Ready made cereals	6.8	89.3	3.5	0.4	-	-	457
Home made cereals	16.7	70.1	11.6	1.4	0.2	-	431
Fruits	7.2	78.4	11.8	2.4	0.2	-	501
Vegetables	3.0	71.5	16.6	7.6	0.6	0.6	471
Legumes	0.4	37.3	38.2	21.5	2.2	0.4	288
Eggs	0.6	34.3	51.1	13.1	0.3	0.6	321
Meat	0.3	21.9	46.0	25.0	3.1	3.7	324
Chicken	0.3	23.8	47.9	23.0	1.7	3.4	357
Fish	-	18.5	47.0	26.7	3.2	4.6	281

It was noted that more than half of the children (61.8%) were given formula milk, and 23.5% were given cereals (ready made cereals and home-made cereals) before 3 months of the infant's age. When the infants reached 6 months of age, 85.6% and 74.5% of them were given fruits and vegetables respectively. As for meat, chicken and fish, 22.2%, 24.1%, and 18.5% of the infants were introduced to these foods before the age of 6 months.

The percentage distribution of the different foods given to the infants in each region is presented in Figure 4.5

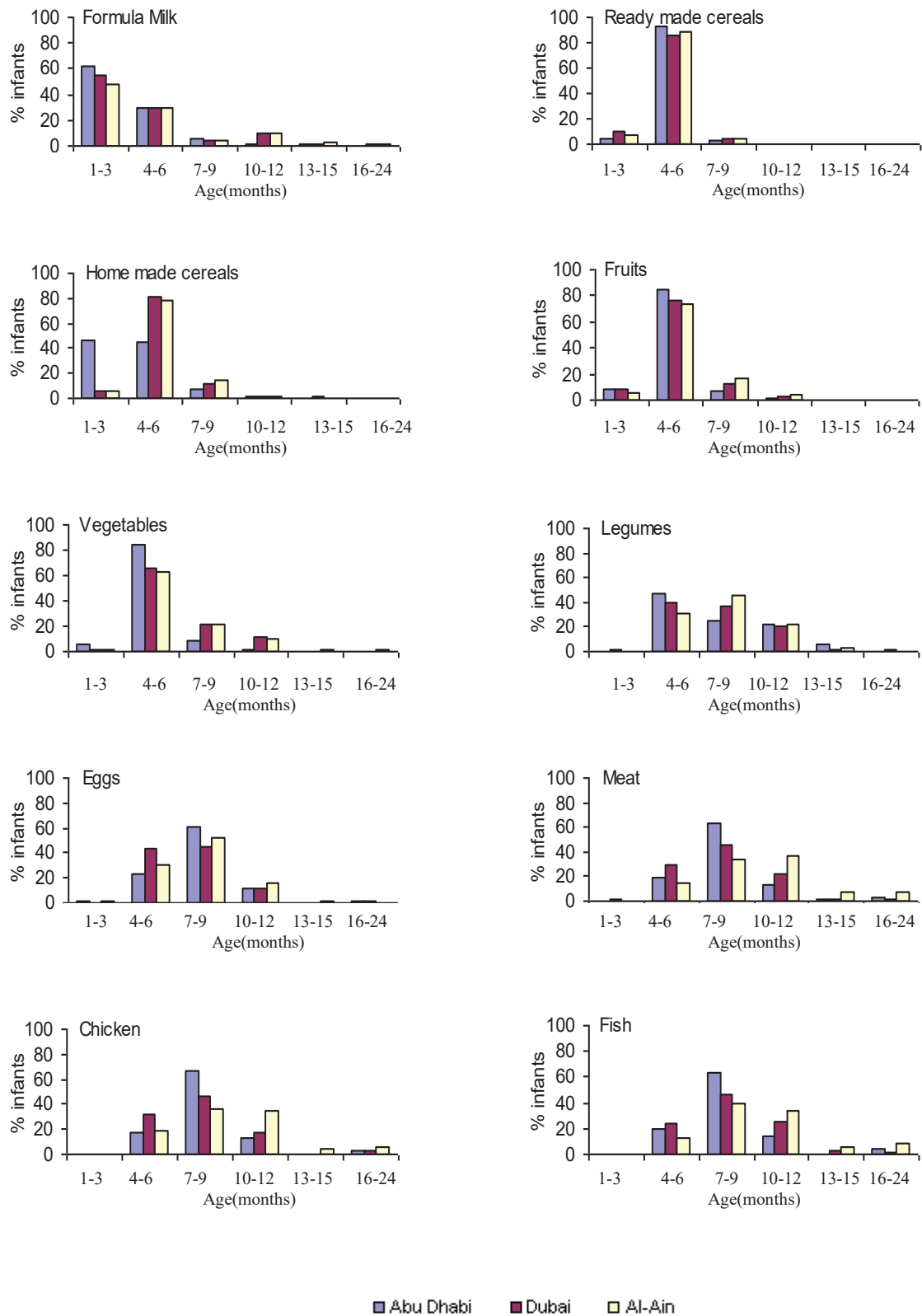


Figure 4.5. Age of introduction of various complementary foods during the first 24 months after birth in the three regions

Formula milk: About 70% of the infants in Dubai were given formula milk when they were less than 3 months of age, compared to 62.9% of the infants in Abu Dhabi and 48.4% of the infants in Al Ain. In Abu Dhabi, the majority of the mothers introduced formula milk to their infants before the age of 6 months (92.4%), compared to 88.8% and 77.8% of the mothers in Dubai and Al Ain respectively.

Home made cereals: This food was given very early to the infants (1-3 months) in Abu Dhabi. About half of the mothers in Abu Dhabi (46.6%) gave their infants home- made cereals. Then at 3-6 months, 80.5% of the mothers in Dubai and 78.6% of the mothers in Al Ain introduced home made cereals to their infants.

Ready made cereals: Here also, 92.4% of the mothers in Abu Dhabi introduced this food supplement between the age of 3-6 months - slightly more than the mothers in Dubai (85.9%) and Al Ain (89.1%).

Fruits and vegetables: Most of the infants between the age of 3 to 6 months in Abu Dhabi (84.3%), Dubai (76.8%), and Al Ain (73.6%) had received fruits. The same trend was noticed for the introduction of vegetable. Fruits and vegetables were introduced almost at the same time in a mashed form.

Legumes and Eggs: Mothers in Abu Dhabi (47.2%), Dubai (39.6%), and Al Ain (30.2%) introduced legumes as food supplements to their infants as early as 3-6 months. Moreover, eggs were introduced early to the infants between the age of 3-6 months: 23.9% in Abu Dhabi, 43.4% in Dubai, and 30.4% in Al Ain.

Meat, chicken and fish: The introduction of meat, chicken and fish to the infants was similar among the three regions. Most of the mothers offered these three food items together at about the same time. About one third of mothers in Dubai gave their infants meat and chicken as early as 3-6 months (29.5% and 31.9%, respectively). At 6-9 months of the infant's age, the percentage of mothers giving meat to their infants was 63.9% in Abu Dhabi, 45.0% in Dubai and 33.9% in Al Ain. Chicken was offered at similar rates as the meat in the three regions. Fish was introduced at a slightly later

age of the infants. Chicken was a more popular food than meat and fish in all three regions. Sixty percent of the infants were given chicken as a food supplement, compared to 54.6% who were offered meat and 47.4% who were given fish.

4.8 Reasons for termination of breastfeeding

Mothers in this study were asked why they stopped breastfeeding. The main reasons for stopping breastfeeding as stated by the mothers were mainly new pregnancy and breastmilk insufficiency. Some mothers said that they terminated breastfeeding because they got pregnant again (32.9%; n=77), while about 24.4% (n=57) of the mothers stopped breastfeeding because they said they did not have sufficient breast milk. Others said that the child refused to continue breastfeeding (24.4%; n=57). Other reasons for terminating breastfeeding were child's reaching weaning age (6.0%; n=14) and mother's sickness (5.6%; n=13). Mother's refusal, infant sickness and mother's returning to work were reported by 6.8% (n=16) of the interviewees as the reasons behind stopping breastfeeding.

4.9 How mothers terminated breastfeeding

Mothers who stopped breastfeeding their infants in this study followed different methods for terminating breastfeeding. Some of them physically distanced themselves from their infants. Some even said that they had sent their children to relatives, most often the children's grandparents, for several days. Others started introducing formula milk so their children would get used to it. While some of the mothers rubbed their nipples with lipstick or a bitter substance called "sabr" so that the infant would dislike breastfeeding.

Chapter Five

Discussion of Results (1): The Survey

5.1 Introduction

In this chapter, findings of the survey research study are discussed and compared to those existing literature. It presents the influences of breastfeeding practices : initiation, duration, and exclusivity as well as the variables influencing the lactational amenorrhea duration among Emirati mother. It also focuses on the major findings of the different weaning practices of introducing different fluid and solid supplements. Moreover, it reveals the reasons mentioned by the mothers for terminating breastfeeding.

The study was conducted on Emirati mothers of 593 infants from Abu Dhabi, Dubai and Al Ain. It investigated the breastfeeding and weaning practices of Emirati mothers in order to obtain baseline data about the practices policy-makers in the UAE are concerned.

5.2 Discussion

Exclusive breastfeeding for six months and continued breastfeeding with safe, appropriate and adequate feeding is recommended as a global health policy in both developing and developed countries (WHO, 2001). WHO/UNICEF Global Strategy for Infant and Young Child Feeding (IYCF) recommends that countries plan a comprehensive programme for community-based breastfeeding promotion and support actions to improve breastfeeding practices (WHO, 2007). In order to implement appropriate interventions for improving IYCF practices in the UAE, it is important to have sound research data about local breastfeeding and complementary feeding practices. So, it is essential to have infant feeding baseline data such as breastfeeding initiation, exclusive breastfeeding rates, duration of breastfeeding and prevalence of infant formula feeding among Emirati

mothers in order to support the UAE breastfeeding promotion strategy in accordance with global standards, strategies and practices.

It is noteworthy that there are no national policies for promotion and support of breastfeeding practices in the UAE where only few studies had been published on the prevalence and duration of breastfeeding. Lack of data in the UAE limits comparisons over time for breastfeeding duration and initiation as well as exclusive breastfeeding rates. However, it can be deduced from the limited research done in some regions in the UAE that the exclusive breastfeeding rates were low and that mixed feeding was the norm (Al Mazroui et al., 1997; Osman & El-Sabban, 1999; Sharief et al., 2001; Al Tajir et al., 2006). However, the usefulness of these studies is limited as they have included mothers of all nationalities and were not exclusively conducted on Emirati mothers.

5.2.1 Initiation time of the first breastfeed and the factors influencing it

Establishment of lactation within an hour after birth may have important consequences on the health and development of the newborn (Holman & Grimes, 2003). Initiation of breastfeeding while colostrum is still being produced is thought to decrease infant morbidity especially in non-industrialized countries by reducing the risk of gastroenteritis and diarrheal diseases (WHO, 2001a; Edmond et al., 2007). According to the “Ten Steps to Successful Breastfeeding” (WHO/UNICEF, 1989), maternity services staff should assist mothers to initiate breastfeeding within an hour after birth. Breastfeeding within an hour of delivery is associated with the establishment of long and more successful breastfeeding (Riorden, 2004). Infants need to learn to attach and suckle effectively at the breast during the first day to breastfeed successfully and receive sufficient milk supply (Howard et al., 2003). Evidence from developed and developing countries indicates that the BFHI had a great impact on breastfeeding rates and initiation at hospitals (Merten et al., 2005; Britton et al., 2007; Rosenberg et al., 2008). The indication of an increase in breastfeeding rates in Norway coincides with the

implementation of “the Mother-Baby-Friendly Initiatives” in 1993 (Lande et al., 2003).

The results of this study showed that almost all the Emirati mothers had initiated breastfeeding (98%) during the first day. A previous survey conducted by the Ministry of Health in the UAE (National Child Survey, 1991), which included the whole population (Emirati and expatriates), reported that 42% of the infants were breastfed within one day after delivery. Moreover, Al Mazroui et al. (1997) reported that only 51% of the mothers had initiated breastfeeding within the first day. These figures are much lower than the results reported in this study (98%). This suggests either that there is an improvement in the breastfeeding initiation rate in the UAE or that Emirati mothers are different from mothers of other nationalities in the Emirates. This rate is comparable to the breastfeeding initiation rate of some Middle Eastern Countries such as 100% in Iran (Fallahzadeh et al., 2009), 98.2% in Turkey (Ertem et al., 2001), 95.4% in Lebanon (Batal & Boulghaurjian, 2005) and 92.5% in Kuwait (Dashti et al., 2010). Moreover, rates of breastfeeding initiation were over 90% in some European countries such as Germany (Dulon et al., 2001), Italy (Giovannini et al., 2004) and Switzerland (Merten & Ackermann-Liebrich, 2004), whereas lower rates were reported in Jordan (86.6%) (Oweis et al., 2009), Saudi Arabia (77.8%) (Amin et al., 2011), UK (77.3%) (Health Report, 2011), USA (77%) (Thulier & Mercer, 2009) and Australia (88%) (Scott et al., 2001). Nevertheless, while this study revealed that the majority of mothers in the UAE initiated breastfeeding, only 80.6% of the infants were breastfed within an hour after delivery, while the rest received prelacteal or supplementary feeds at sometime during hospital stay. The practice of delayed breastfeeding initiation deprives infants of the benefits of colostrum (Uruakpa et al., 2002) and delaying initiation beyond two hours postpartum has been associated with shorter breastfeeding duration (Nakao et al., 2008).

Simple binary logistic analysis of the factors which influence time of initiation of the first breastfeed showed no difference in the time of initiation of the first breastfeed by gender or mother's sociodemographic characteristics (level of education and age). Other variables such as type of delivery, infant birth weight, parity, rooming in and mother's occupation were important factors associated with the time within which breastfeeding is initiated. After performing multiple logistic analysis, it was revealed that rooming-in ($P<0.001$), parity ($P<0.001$) and infant birth weight ($P<0.023$) were the strongest predictors associated with the time of initiation of the first breastfeed. In this study, infants who were placed with their mothers directly after delivery were more likely to be breastfed within an hour after delivery than did infants who were placed in a separate room. This encourages mothers to start breastfeeding immediately, strengthens the mother-infant bond, enhances mothers' confidence and stimulates lactation (Perez-Escamilla et al., 1994; Fida & Al Aama, 2003). Moreover, rooming in improves demand feeding which reflects the mother's availability for breastfeeding (Lawson & Tulloch, 1995; Scott et al., 2001). Furthermore, in this study, multiparous mothers who are housewives, and who had a normal delivery of infants with normal birth weights were significantly more likely to initiate breastfeeding within an hour after delivery, compared to primi, working mothers who delivered by operation or those who gave birth to low birth-weight babies. A previous study in Al Ain reported that normal-weight newborns were three times more likely to be breastfed within the first day than low birth-weight babies; the same study concluded that babies delivered normally were breastfed twice as often during the first day compared to babies delivered by operation (Al Mazrou et al., 1997). Similarly, previous research studies found that mothers of a healthy full-term infant initiated breastfeeding earlier (Pande et al., 1997; Ryan, 1997). Cesarean delivery was reported to have negative association with timely initiation of breastfeeding in many studies (de Chateau et al., 1997; Shawky & Abalkhail, 2003; Ogbeide et al., 2004; Scott et al, 2007). The association between parity and breastfeeding initiation was reported by other studies;

multiparous mothers were more likely to initiate breastfeeding than primiparous ones (Nolan & Goel, 1995; Scott et al., 2001; Leung et al., 2006). Scott et al. (2007) reported that primi mothers and mothers who deliver by cesarean section are most likely to experience delayed onset of lactation. So, health professionals need to be aware of this possibility in order for first time mothers who deliver by cesarean section to receive appropriate and continued support and encouragement until their milk comes. Moreover, the data in this study revealed that housewives were more likely to initiate timely breastfeeding directly after delivery compared to working mothers. Analogous findings were reported by another study, which indicated that mothers who were employed were less likely to initiate breastfeeding early (Batal et al., 2006). Maternal employment is rarely mentioned as a reason for hindering the initiation of breastfeeding in the Gulf, but is often mentioned as a reason for the early introduction of the bottle and weaning foods (Musaiger, 1995). This is different from other western countries where maternal employment was found to be one of the main reasons of the delay in the initiation of breastfeeding (Roe et al., 1999; Harrison et al., 2003; Hawkins et al., 2007).

5.2.2 Duration of Breastfeeding

While the overall average initiation of the first breastfeed within a day among Emirati mothers in all three cities was very high (98%), the mean duration rate of breastfeeding in this study was 8.6 months. The breastfeeding duration rate varied among the three cities: Al Ain mothers had the highest mean breastfeeding duration rate (10.7 months), followed by the mothers in Dubai who breastfed their infants for 8.6 months; Abu Dhabi reported the lowest mean duration of breastfeeding (5.8 months). Similar mean durations of breastfeeding rates were reported in Libya (Bredan et al., 1988) and Bahrain (Musaiger, 2000) as the mean duration of breastfeeding was 8.8 months in both countries. A study by Amin et al., (1989) in Kuwait reported a mean of 5.8 months. In a previous survey conducted by the Ministry of Health in the UAE (National Child Survey, 1991), the breastfeeding duration

reported was 9-10 months, which is similar to the result reported in this study. This shows that despite some successful attempts to increase breastfeeding initiation rates in the UAE, limited progress has actually been made in lengthening breastfeeding duration.

Upon studying the factors which might have influenced the duration rate of breastfeeding in this study, it was found that some sociodemographic factors such as maternal age and education as well as parity were significantly associated with breastfeeding duration. This study, and several other studies, has confirmed that the level of education of the mothers is a factor that is strongly associated with the duration of breastfeeding (Kuan et al., 1999; Scott et al., 1999; Leung et al., 2003). However, education as a predictor differs between developing and developed countries. Educated mothers in most developed countries have returned to breastfeeding (Ford and Labbok, 1990; Nolan and Goel, 1995; Piper and Parks, 1996; Kassam-Lallanie, 2002; Simard et al., 2005), while in developing countries, mothers with high education have increasingly switched to bottle feeding or mixed feeding (Wilmoth & Elder, 1995; Mussaiger, 2000; Zaghoul et al., 2004). In the current study, mothers who received little education breastfed for longer durations than did their moderately or highly educated counterparts. This was partly explained by a common trend among educated mothers to accept and adopt new lifestyles and technologies faster than non-educated mothers; moreover, educated mothers may have also been influenced by the marketing and advertising schemes of infant food companies (Al Shehri et al., 1995). This interpretation is further explained by Abada et al., (2001) who report that higher education is associated with the adoption of modern ideas, often leading to the abandonment of traditional practices including breast-feeding. These findings are congruent with other reports that found a correlation between mother's higher education and a shorter period of breastfeeding (Al Shehri et al., 1995; Morisky et al., 2002; Al-Shoshan, 2007). This suggests that interventions should be tailored to target urban women populations with higher education (Batal et al., 2005).

Also, in the present study, young mothers with one child breastfed for shorter periods than did older multiparous mothers ($P < 0.024$). Similar results were reported in many other countries such as the Netherlands (Bulk-Bunschoten et al., 2001), Saudi Arabia (Al Shehri et al., 1995), Kuwait (Amine et al., 1989) and Australia (Forster et al., 2006). Kronborg & Vaeth (2004) explained that multiparous mothers' previous experience and practical knowledge were associated with long duration of breastfeeding. However, the literature on parity and duration of breastfeeding is not consistent (Prabhakar et al., 1991; Ford et al., 1994; Clements et al., 1997). Analyzing the other variables in the present study revealed that nipple problems, use of contraception and number of breastfeeds at night influenced the breastfeeding duration rate. Sore and cracked nipples were common breast problems experienced by the mothers in other studies (e.g. Collin & Scott, 2002; Cernades et al., 2003). In this study, mothers who suffered from sore nipples breastfed for a shorter duration compared to those who did not have any nipple problems ($P < 0.010$). Similarly, some studies reported that breast problems were reasons for the initiation of weaning (Simard et al., 2005; Wambach et al., 2005) as well as the early cessation of breastfeeding (Salih et al., 1936; Sheehan et al., 2001; Collin & Scott, 2002; McLeod et al., 2002). Correct breastfeeding management and education is likely to prevent breast problems. Many investigations found an association between the use of hormonal contraceptives and the disruption of lactation (Ogbeide et al., 2004; Espey et al., 2006). In this study, mothers who used hormonal contraception breastfed for 8.0 months on average, compared to 10.8 months for those who used non-hormonal contraception ($P < 0.025$). The use of contraceptive methods was mentioned as one of the main reasons for early termination of breastfeeding in urban -rather than rural- Saudi Arabia (Al Shehri et al., 1995).

5.2.3 Breastfeeding Patterns and Factors influencing them

In 2001, WHO revised its earlier recommendation for exclusive breastfeeding, extending the period from 4-6 months to exclusive breastfeeding until 6 months of age. This recommendation was based upon research which confirmed that breastmilk alone is sufficient to meet the infant's nutritional requirements for the first 6 months (WHO, 2001).

Few studies have attempted to differentiate between mixed feeding, full or exclusive breastfeeding as well as partial breastfeeding. These studies use varying terminology to define breastfeeding practices (Labbok & Krasovec, 1990). Some referred to 'exclusive breastfeeding' as breastmilk plus water, oral fluids and vitamins (Martines et al., 1989; Lande et al., 2003; Li et al., 2003). One study even defined 'exclusive breastfeeding' as breastmilk plus semisolids (Al Ayed and Qureishi, 1998). In this study, 'exclusive breastfeeding' and 'almost exclusive breastfeeding' were defined - that is, no food or drink is offered to infants with the breastmilk in the former, while only water is offered with breastmilk in the latter.

Based on WHO recommendations, the UAE Ministry of Health issued many circulars and recommendations for UAE infants to be exclusively breastfed for 6 months. However, earlier studies reported low exclusive breastfeeding rates in the UAE and higher trends of early supplementation (Al Ali et al., 1997; Al-Mazroui et al., 1997; Osman & El-Sabban, 1999; Al Tajir et al., 2006). Although the majority of Emirati mothers, in this study, breastfed their infants, only about 25% of them exclusively breastfed. The percentage of infants in this study who were exclusively breastfed for 4 months was 7.4%, and the rate declined to 1.9% for infants who were exclusively breastfed for 6 months. Similarly, low levels of exclusive breastfeeding were recorded in other countries (Davis-Adetugbo, 1997; Marques et al., 2001; Awumbila, 2003; Li et al., 2003). In Saudi Arabia, a study reported that 27.3% of the infants were exclusively breastfed for 6 months (Ogbeide et al., 2004). A decline in exclusive breastfeeding after the fourth month is common

elsewhere in the world (WHO, 2002). Higher rates of exclusive breastfeeding were recorded in New Zealand (Heath et al., 2002) and Norway (Lande et al., 2003), where 42% of the infants were exclusively breastfed for 4 months. However, even in these countries, exclusive breastfeeding declined to 7% at 6 months of age. This means that there still exists a need for encouraging mothers to continue exclusive breastfeeding till the infants are 6 months old. While many mothers in this current study initially gave the impression that they were exclusively breastfeeding, it was only after specifically asking about water that its use was confirmed. Providing children with water, as early as one month after birth is a normal practice in the UAE, as well as many other communities (Faber & Benade, 1999; Okolo, 1999; MacIntyre et al., 2005; El Mouzan, 2009). Emirati mothers justified this practice by stating that the UAE have a hot climate, and infants need to be hydrated. In this sense, higher rates of almost exclusively breastfed infants (who were receiving water with breastmilk) (49.4%) were reported in this study. Engle (2002) reported a similar situation in India and explained that giving water was considered a normal part of infant feeding. Therefore, it is important to ask interviewed mothers specifically if they give water to their infants during the first six months. Mothers should be made aware that breast milk alone can maintain adequate water balance in young infants and supplementary fluids are not needed even in warm climates (Almorth & Bidinger, 1990; Sachdev, 1991).

It is interesting to note that only 1.7% of this study's population was never breastfed. Reasons given by mothers for not breastfeeding their infants were either child refusal or sickness. This rate corresponds with findings from other studies (Michaelsen et al., 1994; Lande et al., 2003); however, 7.1 % of the infants in Egypt were only bottle-fed (El Gilany, 2003). The frequency of never breastfeeding was 10% in Saudi Arabia (Al-Mazrou et al., 1994).

It is important to recognize the underlying factors associated with the different breastfeeding practices of the mothers in the present study. Factors affecting breastfeeding patterns have been analyzed by simple logistic analysis which showed that some sociodemographic variables such as maternal educational levels, occupation, parity, rooming in, breastfeeding frequency, type of delivery and number of breastfeeds at night were influencing factors associated with exclusive or almost exclusive breastfeeding. It was found that multiparous housewives with low education who delivered normally were more likely to exclusively or almost exclusively breastfeed their infants than employed primi with higher education who delivered by cesarean section. Analogous results were reported by previous research which found that mothers who are illiterate or with lower education, and who had more than one child, exclusively breastfed their infants for longer periods compared to young highly educated primiparous mothers (Cohen et al., 1999; Bulk-Bunschoten et al., 2001; Heath et al., 2002; Batal et al., 2006; Al Shoshan, 2007; Amin et al., 2011). In contrast, Ward et al. (2004) and Tarrant et al. (2010) reported that mothers with higher education were more likely to exclusively breastfeed than those with lower education. Moreover, Rowe-Murray & Fisher (2009) also reported that caesarean delivery has a negative influence on exclusive breastfeeding.

The gender of the child was not among the significant variables affecting breastfeeding patterns in the present study. The association between the baby's gender and exclusive breastfeeding was not consistent in the literature (Bulk-Bunschoten et al., 2001; Lande et al., 2003; Duong et al., 2004; Batal et al., 2006), but in Nigeria, the sex of the child was found to be positively associated with exclusive breastfeeding (Eregie, 1998). Moreover, in some countries, male infants are weaned earlier than female infants (Perez-Escamilla, 1995; Scott et al., 2001).

Multiple logistic analysis indicated that rooming in ($P < 0.001$), number of breastfeeds at night ($P < 0.015$) and breastfeeding on demand ($P < 0.005$)

were the most significant predictors influencing breastfeeding patterns. Rooming in encourages demand and night feeding, and this allows frequent and close contact between the mother and the baby (Batal et al., 2006); it also encourages the establishment of longer duration of exclusive breastfeeding (Hornell et al., 1999; Scott et al., 2001).

5.2.4 Breast feeding patterns among the three cities

It was noted that mothers in Al Ain had exclusively breastfed their infants more than mothers in Dubai and Abu Dhabi. Abu Dhabi mothers were 'almost exclusively' breastfeeding their babies, and Dubai mothers were mostly 'predominant' breastfeeders. The high prevalence of exclusive breastfeeding rates in Al Ain as compared to Abu Dhabi and Dubai might be attributed to the fact that the two main governmental hospitals in Al Ain, where the majority of the Emirati mothers deliver, were baby-friendly hospitals. The maternity wards in these two hospitals had been applying the ten steps of the baby-friendly hospital initiatives (BFHI) since 2001. Moreover, MCH department in Al Ain is more active in implementing plans with steps to promote and support good breastfeeding practices, such as initiating mother support groups and peer counseling. Working in rural Bangladesh, Haider et al. (2000) were able to increase the number of mothers exclusively breastfeeding their babies up to 5 months of age more than tenfold: from 6% to 70%; this was done by providing them with sufficient community assistance and support. In addition to that, mothers in Al Ain are conservative and of indigenous nature; they still stick to traditional practices more than mothers in Dubai and Abu Dhabi who lead a more modernized lifestyle. Modernization is usually associated with the involvement of the urban mothers in the labor force, a rise in purchasing power, the commercial promotion of formula milk and a decline in extended families and traditional practices (Tan, 1983; Huffman, 1984; Al Shehri et al., 1995). In addition, inappropriate hospital practices such as offering newborns formula milk as early as the first day of life and separating the infants from their mothers could significantly affect exclusive feeding

practices (Ogbeide et al., 2004; Murray et al., 2007). It should be also noted that there is only one hospital in each of Abu Dhabi and Dubai recognized as baby-friendly. It is worth noting that the majority of mothers in Abu Dhabi (98%) had their infants placed with them after delivery as compared to Al Ain (89.4%) and Dubai (73.8%). This was evident by the high initiation rate of breastfeeding within an hour after delivery in Abu Dhabi (98%) as compared to Al Ain (88.3%) and Dubai (55%).

An increase in breastfeeding initiation and duration as well as exclusive breastfeeding due to implementation of baby-friendly hospital initiatives has also been reported in other countries such as Scotland (Broadfoot et al., 2005), Brazil (Braun et al., 2003), Norway (Lande et al., 2003) and Switzerland (Mertin et al., 2005). However, in these countries, interventions were made through maternity wards in the BFH hospitals, were complemented by following up on policies and programs that were concerned with establishing and promoting good breastfeeding practices. But in the UAE, no follow-up surveys or strategies were initiated to evaluate breastfeeding programs, BFHI implementations on breastfeeding patterns and practices as well as the influencing factors. So there is great need to reinforce the BFHI implementation in the maternity wards in the hospitals in UAE as well as planning followup programs and strategies to promote exclusive breastfeeding and appropriate complementary feeding.

5.2.5 Introducing Formula milk and liquid Feeds

Studies on worldwide child feeding practices show that exclusive breastfeeding is rare, and early supplementation with water, teas, juices and other fluids is the norm (Serenius et al., 1988; Popkin et al., 1990; Ashraf et al., 1993; Mussaiger, 1995; Awumbila, 2003; Wayland, 2004; Batal et al., 2006). There is a general perception that the infant needs additional fluids, especially water, to maintain his/her water balance (Davies-Adetugbo, 1997; Kerr et al., 2007). In the present study, it was also noted that formula milk and other liquids were frequently introduced at an early age during

breastfeeding. Nearly thirty per cent of the infants in this study received some type of liquid supplement during the first three days at the hospital, such as milk, water and yansun. Moreover, 30.4% of the mother stated that they gave their infants yansun, grippe water and tea during the first three months of the infant's age.

Introducing water and tea at early ages can be expected to interfere with the establishment of normal breast suckling technique and frequency, and hence a reduction in milk production may result (WHO, 1988). Supplementary feedings have been associated with delayed milk production (Perez-Escamilla et al., 1996). Shirima et al., (2000) reported that the early introduction of liquids and solids is unnecessary as it reduces the duration and frequency of breastfeeding and increases the risk of infant morbidity and mortality. The use of pre-lacteal feeding is another current deterrent impeding the promotion of exclusive breastfeeding in many developing countries (Engebretsen et al., 2007). Even water consumption, although non-caloric, decreases the frequency of breastfeeding and can therefore lead to decreased milk supply (Mckena & Shankar, 2009). Furthermore, the feeding of fluid supplements could make the infant less hungry and hinder the establishment of a good milk supply (Marques et al., 2001). Giving liquid feeds early is considered a normal behaviour in many countries, and strategies to reduce and stop this behaviour are also warranted.

Over 60% of the infants in this study received formula milk before the age of 4 months. Results reported in a study in the USA that breastfeeding frequency and duration declined quickly after the start of regular formula feeds (Heinig et al., 1994). Moreover, Blomquist et al. (1994) reported that supplementation with formula milk during the early neonatal period has been associated with early termination of breastfeeding.

It was observed in this study that 34.4% of the infants in Dubai were offered formula milk during their stay in the hospital. Many studies revealed that the

practice of hospitals offering formula milk and giving milk samples at discharge increased the likelihood of using formula milk later, and this is associated with a shorter duration of breastfeeding (Baranowski et al., 1983; Palmer, 1991; Wilmoth & Elder, 1995; Ogbeide et al., 2004). Moreover, Hornell et al. (2001) illustrated that breastfeeding frequency and suckling duration declined quickly after the introduction of formula feeds. So, inappropriate hospital practices in Dubai had a negative influence on the exclusive breastfeeding practices of the mothers. This could be one of the reasons that explain the low exclusive breastfeeding figures among infants in Dubai as compared to the other two cities.

Beside the effect of formula itself, the use of the bottle and other artificial nipples is known to interfere with the baby's latch and suck reflex in the early days of breastfeeding, and causes nipple confusion (Auerbach, 1993; Neifert et al., 1994). Mothers should be encouraged to use a cup and spoon for feeding rather than bottles (Lang et al., 1994). Moreover, many studies on child feeding practices reported that bottle use interferes with optimal breastfeeding practices, and early supplementations may expose the infant to contamination, cause diarrhea especially in developing countries (Dualeh & Henry, 1989; Rao & Kanade, 1992; Davis-Adetugbo, 1997) and significantly increase the risk of infant morbidity and mortality from diarrhea and infection (Popkin et al., 1990; Kamel et al., 1997).

5.2.6 Introducing solid food

Beginning at 'about six months', breastfeeding should be complemented with appropriate solid foods according to WHO recommendations (WHO, 2001). It is important to avoid the replacement of breastmilk, and the additional feed should not be so much that the breast milk production is reduced (Greiner, 1995).

However, in this study the complementary feeding practices were less than optimal. The majority of the infants were introduced to solid food before the

age of 6 months (83.5%). Of the mothers who reported supplementing the breast milk with solid food, 13.5% gave solid supplements to their infants before the age of 3 months. Similarly, in previous studies, it has been found that the majority of the infants were introduced to solid foods at younger ages. In the United Kingdom, 85% of the infants received solid food before the age of 4 months (Foote & Marriott, 2003). In Sudan, 82.5% of the mothers introduced food supplements before 6 months of age (El Bushra et al., 1994). In Norway, 21% of the infants were given solids before the age of 4 months (Lande et al., 2003). Li et al. (2002) reported that 31% of the mothers in the USA believed that the infants ought to be fed cereals by 3 months of age. Musaiger (1996) revealed that weaning foods are introduced very early in all Arabian Gulf countries. Supplementary food was introduced by 59.2% of Saudi mothers before the child completed 6 months (Al Shoshan, 2007). This was attributed to the high purchasing power and the wide availability of many commercial baby foods in the market (Al Frayh, 1989; Musiager, 1995). Research suggested that complementary foods offered to infants before 6 months of age tend to displace breastmilk without conferring any growth advantage over exclusive breastfeeding (Dewey, 2001). Extensive studies have reported that there is a link between early introduction of solid food and increased health risks such as food intolerance, excessive weight gain, type two diabetes and cardiovascular diseases (Arenz et al., 2004; Owen et al., 2005; Allcutt and Sweeney, 2010). Tarrant and Kearney (2008) reported that delaying the introduction of solids and promoting exclusive breastfeeding are seen as potential components in the primary healthcare strategy to decrease obesity and health related risks. Early introduction of other foods or drinks is an area of concern mainly because it marks the end of exclusive breastfeeding which has protective effects (Hornell et al., 2001). Therefore, in the UAE, a country with a rapid increase in obesity and non-communicable chronic diseases such as cardiovascular diseases and type two diabetes (Ng et al., 2011), increasing prevalence and duration of exclusive breastfeeding and discouraging early supplementation is vital.

Cereals, home-made or commercial, were the preferred type of solid food introduced early before three months of the infant's age in this study (22.5%). Cereals, mostly rice, have been the traditional supplement in several other Arab countries due to availability and low cost (Musaiger, 1995; Batal et al., 2006).

The majority of the infants in the present study received solid foods between 4 and 6 months of age: 89.3%, 70.1%, 78.4% and 71.5% of the infants were given ready and home-made cereals, fruits and vegetables, respectively. Meat, chicken, fish, egg yolk and legumes were most commonly introduced between 7 and 9 months of age. These figures show that the majority of the mothers in the three cities still did not follow the appropriate pattern of introducing complementary feeding, and this suggests that the strategy of exclusive breastfeeding till 6 months is not being followed. Patterns of solid supplementation in this study do confirm those observed in previous research (Lande et al., 2003; Wayland, 2005).

Formula milk and cereals were the preferred supplements given early to the infants in the present study. In Dubai, 72.7% of the infants were given formula milk as early as 1-3 months, while in Abu Dhabi 46.6% of the mothers introduced home-made cereals to their infants during 1-3 months of age. The introduction of early food supplements by the mothers in Abu Dhabi could explain the short breastfeeding duration (5.8 months) as compared to Dubai and Al Ain. Quandt (1984) found that infants who were introduced to solids before the age of 4 months decreased their breastfeeding frequency; these infants self-regulated their energy intake by decreasing breastmilk consumption when complementary foods were added (Heinig et al., 1993; Cohen et al., 1994). As a result, the suckling decreased causing less milk production in the breast and eventually causing the mother to think that she did not have sufficient milk for her infant (Sachdev et al., 1991; Al Ayed & Qureshi, 1998).

5.2.7 Reasons for supplementation and terminating breastfeeding

In previous literature, there seems to be a widespread perception of lactation insufficiency, and accordingly, the infant is given supplements at a very early age. A number of studies in western countries such as the USA (Houghton & Graybeal, 2001), Australia (Scott et al., 2001) and New Zealand (Heath et al., 2002) reported that perceived insufficient breast milk supply was the most common reason to stop breastfeeding.

Similar results were reported in other Arab countries (Amine et al., 1989; Al Ayed & Qureshi, 1998; Batal et al., 2006; Khassawneh et al., 2006) where the mothers' concern about sufficiency of their breastmilk was the most serious problem often resulting in the cessation of breastfeeding. Insufficient weight gain, crying and colic pains were the reasons for which mothers resorted to supplementing the infant's feeding regimen (also see Bulk-Bunschoten et al., 2001; Hector et al., 2005). Crying of the baby is interpreted as a sign of hunger or illness, and this motivated the mother to give supplements to her baby such as food or herbal and ritual preparations (Davies-Adetugbo, 1997).

In this study, 24.4% of the participants stated that they stopped breastfeeding and started formula feeding because they believed that their breastmilk was insufficient. The mother's concern about milk insufficiency could be explained by her poor understanding of the proper techniques to increase breastmilk.

Meedya et al. (2010) reported that this is a perceived rather than a real problem, and it has psychological correlates. Contrary to this belief, most mothers are able to produce breastmilk in quantities adequate for the proper growth of their infants, even in societies where the mother's diet is poor (Ruel and Menon, 2002). Physiological studies have suggested that only 1-5% of women have genuine problems with milk production and supply (Inch

& Renfrew, 1995). Daly and Hartmann (1995) revealed that maternal milk production is finely tuned to the demand of the infant. When infant demand increases, maternal milk production increases. Therefore, frequent and exclusive breastfeeding is critical for stimulating optimal milk production. At this time, mothers need support, and they should be taught about effective techniques to increase their milk supply; the factors that cause these mothers to doubt their milk supply should be investigated.

Another reason that was mentioned by the mothers for terminating breastfeeding was that the infant refused to breast feed (24.4%). Many other studies reported that the child had weaned itself (Sawaya et al., 1987; Fida & Al Aama, 2003; Ogbeide, 2004; Wayland, 2004). This reason could be correlated with breast milk insufficiency; it could mainly be explained by the fact that the early supplementation with bottle milk or food as well as the consequent decrease in breastmilk supply caused the infant to refuse breastfeeding.

In the present study, the most frequently reported reason for starting weaning and terminating breastfeeding was that the mother became pregnant (32.9%). This reason was also recorded by other studies for discontinuing breastfeeding (Wayland, 2004; Al-Jassir et al., 2006; Haroun et al., 2008). Other pregnant mothers ceased breastfeeding because they thought breastmilk could be harmful or no longer nutritious, and that breastfeeding may harm the fetus (see Greiner, 1995; Davis, 1997). The belief that the breast milk of pregnant women is bad and that breastfeeding might hurt the fetus is widely common among Gulf women, and this prompts the majority of mothers to stop breastfeeding as soon as they become pregnant (Musaiger, 1995).

Therefore, introducing the Lactation Amenorrhea Method as a contraceptive which does not disrupt milk production and prevents pregnancy for 6 months could be beneficial to Emirati mothers. It is essential to investigate the

relationship between breastfeeding and lactation amenorrhea among Emirati mothers.

5.2.8 Breastfeeding and Lactational Amenorrhea (LA)

The relationship between breastfeeding and lactational amenorrhea was investigated in this study in order to explore the use of breastfeeding for birth spacing in family planning in UAE. Many previous studies demonstrated the beneficial role of breastfeeding in birth spacing (e.g. Short, 1984; McNeilly, 1996). It is the most common means of contraception in many developing countries (WHO, 1998a). The lactational amenorrhea method (LAM) has been promoted by family planning advocates, especially in developing countries where obtaining contraceptives is difficult (Kennedy and Visness, 1992; Labbok et al., 1997; Dewey et al., 2001). Many studies have shown that menses can be delayed using LAM, from 7 to 9 months on average (Gross & Eastman, 1983; McNeilly et al., 1983).

In the present study, the mean duration of lactational amenorrhea among the breastfeeding Emirati mothers in the UAE was 6 months. This figure is similar to -or higher than- those reported in Saudi Arabia (Madani et al., 1994) and Egypt (Khalil et al., 1996) where the duration of lactational amenorrhea was 6 months and 5 months, respectively. However, the figures in the UAE are lower than the value of 12 months as reported in Sudan (Khalifa, 1986). Australian women were reported to have an average duration of lactational amenorrhea of 8.5 months (Gross & Burger, 2002).

Dewey et al. (1997) reported that frequency and exclusivity of breastfeeding are important factors in delaying postpartum amenorrhea. A Cochrane Database of Systematic Review of LAM also concluded that exclusively breastfeeding women who stay amenorrheic have a very small risk of getting pregnant (Van der Wijden et al., 2008). In this study, mothers who breastfed their infants exclusively were 2.5 times more likely to have lactational amenorrhea duration longer than 6 months than did mothers who

predominantly breastfed their infants ($P < 0.029$). It was observed that the key factor in the mechanism of lactational amenorrhea is the frequency of suckling, which induces changes in the hypothalamus that affect the ovarian steroids (McNeilly et al., 1983). Suckling stimulus by frequent feeding day and night is a major variable associated with delay of ovulation (WHO, 1998a; WHO, 1998b). The LAM guidelines also encourage breastfeeding at night, which is suspected to lengthen the duration of lactational amenorrhea by preventing long intervals between feedings (Heinig et al., 1994; Geerling, 1995). The association of such practices with the duration of postpartum amenorrhea was revealed in this study. The frequency of breastfeeding at night was a strong predictor of the duration of lactational amenorrhea in this study. Mothers who breastfed their infants more frequently at night were more likely to have longer duration of lactational amenorrhea lasting more than 6 months compared to mothers who did not breastfeed at night. Moreover, mothers who breastfed for longer periods (more than 6 months) were more likely to be amenorrheic for more than 6 months as compared to mother breastfeeding for shorter periods than 6 months. The length of breastfeeding as a predictor of the duration of lactational amenorrhea has been reported in other studies (Howie & McNeilly, 1982; Kennedy & Visness, 1992; Newcomb et al., 1994).

Studies have found a strong correlation between the timing of introduction of liquid and solid food and the duration of lactational amenorrhea (Diaz et al., 1991; Tay et al., 1996). The results of the present study confirm findings of other studies; these results indicate that the introduction of formula milk and solid food supplements reduces the duration of lactational amenorrhea (Howie & McNeilly, 1982; Heinig et al., 1994). It was noted in this study that mothers who introduced either formula milk or solid food earlier than 6 months of the infant's age were more likely to have a shorter lactational amenorrhea duration than 6 months, compared to mothers who introduced those supplements after the infant reached 6 months of age ($P < 0.001$). Because the introduction of other foods and fluids may reduce breastfeeding frequency and duration, it could be assumed that this would increase the

risk of ovulation and menses resumption during lactation. In fact, several studies have shown an inverse association between the timing or amount of infant supplementation and the duration of lactational amenorrhea (Gray et al., 1990; Kennedy & Visness, 1992; Simondon et al., 2003). The later the mother started to give regular supplements, the longer she remained amenorrheic. Food supplementation causes the infant to suckle less frequently; this decreases the neuroendocrine stimulus at the breast and hastens the return to fertility (Howie & McNeilly, 1982). It is advisable, therefore, that mothers who breastfeed less frequently use a suitable contraceptive methods (Kennedy & Visness, 1992).

The use of other contraceptives soon after birth, especially hormonal contraception, may shorten the duration of the postpartum amenorrhea. In Saudi Arabia, Al Sukait (1988) found that there was a difference between users and non-users of contraceptives in terms of the duration of postpartum amenorrhea -7 months and 12.6 months respectively. Longer periods of lactational amenorrhea were observed in Egypt among women who used non-hormonal contraceptive methods compared to those who used hormonal contraception (Khalil et al., 1996). In this current study, mothers who used hormonal contraception had a lower duration of lactational amenorrhea than did mothers who did not use any contraception methods. The use of other methods of contraception is associated with shorter amenorrhea, but the lack of clarity about causal directionality should still be admitted.

Other factors were investigated to influence the duration of lactational amenorrhea were investigated. Parity and age of the mother were two factors reported in earlier studies as related to the duration of lactational amenorrhea (Heinig et al., 1994; Mannan & Islam, 1995). In this study, older women with high parity were more likely to have longer lactational amenorrhea than young primiparous women. It was noted that young women tend to introduce food supplements much earlier than older women.

The findings of this research study suggest a number of areas related to breastfeeding that need to be prioritized and addressed. These findings showed that the breastfeeding duration and exclusivity rates are still below the WHO recommendations and that complementary feeding practices are suboptimal. The study also showed that the introduction of food for infants aged 4–6 months is a crucial factor that influences the duration of lactational amenorrhea.

5.3 Limitations

One important limitation of this study is recall bias due to the retrospective nature approach to data collection. This might over or under estimate the actual practice. It should be also noted that epidemiological studies of this kind do not establish causality but may suggest associations

Another limitation of this study is the representation of all the Emirati women who had babies and breastfeeding during the period of research. Generalisability is defined as the degree to which the findings of a research study can be generalized from the study sample to the entire population (Polit & Hungler, 1991). The generalisability of the survey results is limited by the element of convenience sampling – samples were drawn at the MCH clinics, which increase the likelihood of some types of people being selected rather than others. However, (a) strong attempts were made to match the demographic characteristics of the general population of mothers, and (b) a large proportion (more than 90%) of Emirati mothers do use the clinics for following up with the vaccination programs of their infants, as required by the Ministry of Health. More importantly, the effect of any such bias would be to exaggerate the results rather than to minimize them. The main findings underline the extent to which people do not follow WHO guidelines in their breastfeeding practices, and the clinics are the places where people are most likely to be influenced by medical and nursing opinions. If this group,

well exposed to information and argument, were not entirely won over, it would be extremely unlikely that the few women who give birth without attending the clinics would be following WHO guidelines any more closely.

Chapter Six

Results (2): The Interview

6.1 Background

It might be argued that the decision to breastfeed is largely a matter of individual choice and rational decision making. Breastfeeding decisions and experiences are complex, however, and rather than being individual acts, they are constructed and practiced within the social milieu in which the mother lives (Dettwyler, 1995). In Islamic culture the mother is required by the Quran to breastfeed her infant for two years. Even if she is divorced, the father has to pay her the cost of living so she will be devoted to nursing the baby for 2 years. Extended families are the norm in Islamic societies, and the mother receives help and guidance from her family; traditional knowledge is passed on and to some extent enforced – a relationship of authority between younger mothers and older women in the extended family is involved here. Since the UAE is an Islamic country, it is considered a breastfeeding culture with most people having direct experience of the activity. Breastfeeding knowledge is rooted in culture and passed from mother to daughter in the form of practices and norms. Norms for breastfeeding – beliefs about the needs of the infant – have in fact grown up in the Emirates which are at odds with the Quran's requirements and have modified breastfeeding practice: it is now believed that children need more than breastmilk at a relatively early age and that to cease breastfeeding more or less when solids are introduced is good for both child and mother. In this case traditional women's knowledge has to some extent supplanted religious pronouncement, though a woman who breastfed for two years would still be considered more pious than one who ceased earlier. When new information challenges a mother's culturally based beliefs she may mistrust the information, which may challenge the traditional knowledge and even clash with the world-picture in which it is embedded.

It is important to examine parental attitudes and beliefs in order to elucidate reasons for noncompliance with current guidelines and the belief-set and/or set of authority relations that underlies them. Understanding the underlying process by which decisions are made is important before designing an intervention to change behavior in line with the governmental recommendations on feeding practices (based upon WHO recommendations). Despite the availability of breastfeeding support and instructions on how to breastfeed, each mother must find it workable from her own personal perspective and within her social milieu. In the UAE, there are no data on the relationship between attitudes towards breastfeeding, information about breastfeeding and the actual breastfeeding patterns.

The purpose of the current qualitative research was to explore the perceptions and experiences of the Emirati mothers about different feeding practices. And to further understand what influences the mother's decision not to adhere to the WHO recommendations by not exclusively breastfeeding her infant for 6 months and the early introduction of liquid and solid supplements, while also not following the Quran's prescription of breastfeeding for two years. This qualitative study was designed based upon the results of the questionnaire.

In this study face-to-face in depth interviews with open ended questions were used to allow participants to express their perceptions freely about the breastfeeding education and programs and practices in the MCH centers and hospitals and to tell their stories about the factors and influences that shaped their infant feeding decisions.

Fifteen mothers were interviewed in depth in each city. Their ages ranged between 20 and 42. The education level of the mothers ranged from elementary to secondary in Al Ain and Abu Dhabi with three mothers having university degrees from Dubai and two from Abu Dhabi. All the mothers in Al

Ain were housewives with only two mothers working in Abu Dhabi and four in Dubai.

The mothers were interviewed face to face in the MCH centers. The participants signed consent forms. Before interviewing, the researcher identified herself as a research investigator; and did not wear a nursing uniform, in an attempt to make the interviews conversational rather than medical and to avoid being told what the medical staff had told the mothers. The researcher tried to establish rapport by making friendly, informal conversation about their babies. Each interview started with discussing the purpose of the interview and then proceeding with the questions. The agenda of questions included prompts such as, "What influenced your breastfeeding decision?" "What is your opinion about WHO guidelines?" "Tell me how you feel about breastfeeding in public" "When did you give your child supplementary feedings and why?" These were used to elicit more information from the mother to recall her breastfeeding experiences in the context of her life and social settings in order to understand from where she drew her opinions about breastfeeding practices. Non-verbal encouragement maintained motivation for the respondents to continue the interview. The interview lasted about 30-35 minutes. The words of the study participants are presented in *Arial italics* to highlight these from the rest of the text.

6.2 Themes

Passages that had relevance to the research objectives were identified. Text was reduced into categories to allow comparisons amongst categories to be made. Themes then started to appear such as the influences and sources of breastfeeding information, grandmother and mother in law interference and how the mother perceived their infant's behaviour in influencing their feeding practices. The information gathered gave the researcher the ability to understand the beliefs and attitudes of the mothers with regard to their

feeding practices. The themes identified in this study were grouped into six main concepts:

- 1- Influences of others on mother's decisions concerning infant feeding practices and supplementation.**
- 2- Mother's sources of breastfeeding information: family, healthcare facilities and personnel, and baby food advertisement.**
- 3- Infants' behaviour and participants' views and decisions about when to introduce supplementary feeding.**
- 4- Knowledge of and attitudes towards current WHO recommendations**
- 5- Mothers' perception of the benefits of breastfeeding**
- 6-The embarrassment of breastfeeding in public (a topic explored because it is important in Western research literature)**

6.3 Influences of others on mother's decisions concerning infant feeding practices and supplementation

Mothers are vulnerable, have little trust in themselves or the babies so they seek the advice and rules from perceived experts (Greiner, 1981). Attitudes and information provided by various individuals in a mother's social or kinship network have been hypothesized to exert influence on her decision regarding infant feeding (Scott & Mostyn, 2003). Grandmothers (participant's mother), mothers-in-law, fathers, friends, and healthcare providers have been identified as important sources of positive informational and emotional support for breastfeeding mothers, and older women in particular are seen as the custodians of knowledge in this area.

6.3.1 Family influences

Mothers' perception of the opinions of their relatives and husbands were explored as these were identified as influencing the mother's breastfeeding decisions. The infant's father and grandmother may play important roles in supporting and favoring breastfeeding practices because of their emotional

importance to the mother. It should be noted that in UAE culture most married women live in the same house complex with the husband's family.

All mothers in this study had initiated breastfeeding and identified some reasons for doing so. The infant feeding culture of the mother's family was counted as an important factor influencing breastfeeding. The study population has a tradition of breastfeeding. This was clearly stated by some mothers who explained that they and their siblings were breastfed and in turn they breastfed their infants. So it was a natural progression for them to do it too. *"I breastfed my baby the same as my mother had breastfed me."* (Nora, 28y, Al Ain). This shows that there is a link between early infant feeding behaviours and their daughters' decision to breastfeed. For others breastfeeding their babies was unquestionable and the obvious choice since it is natural and best for the baby *"I breastfed all my children, breastmilk is the best"* (Sallama, 32y, Abu Dhabi). So initiation of breastfeeding was a natural process for the mothers. Stewart–Knox et al. (2003) reported that exposure to breastfeeding was associated with a positive attitude and that role models are important in order to have a cultural support for breastfeeding.

Although breastfeeding was their choice of feeding method, there was debate about the timing of introducing liquid and solid supplements and evidence of the influence of others, which was noted from the results of the survey research. Mothers are vulnerable, however, and have little trust in themselves or their babies, and they seek advice and support intentionally and unintentionally from those who are around them

Everybody was trying to help me and give me advice about breastfeeding and how to care for my baby since this is my first baby
(Mariam, 18y, Dubai).

However, if the respondents believed they were right or if they noticed that the advice did not work with their babies, they stopped following the advice without discussing it. A mother from Al Ain, who had an infant suffering from severe diarrhoea, blamed her mother in law who gave her son cereal

pudding with egg. She said *“enough is enough, I will never let her interfere with my child feeding any more,”* (Leila, 37y, Al Ain).

One mother said that she knows more on breastfeeding than the doctors since she had four children and she breastfed them all successfully (Sara, 35y, Al Ain). It seems that mothers with previous successful breastfeeding experience and women who perceived that the advice had endangered their babies gained self-confidence and were empowered to dissent. Previous experience, support and physical health have been shown to increase maternal self efficacy, whereas tiredness, anxiety and stress undermine it (Blyth et al., 2002).

Mothers expressed the importance of the emotional and practical support from others. Fatima (24y) from Dubai expressed her intention to breastfeed her child since she said that her husband and his family were supportive.

I wanted to breastfeed my boy and my husband and mother in law told me it is better to breastfeed him (Fatima, 24y, Dubai).

In addition the mothers of the participants' were involved in the breastfeeding decisions of their daughters.

My mother was great help for me. I stayed with her at home for one month and she took care of me and my baby (Moza, 21y, Abu Dhabi).

Some grandmothers (participant's mother) had a great influence on the mother's decision to initiate breastfeeding and were very supportive of the mother to breastfeed. Grandmothers often serve as a support for the mother and child in the first few months after delivery .It is culturally expected that the mothers learn from the grandmother's and the mother-in-law's experience. However, grandmothers and mothers-in-law may not necessarily have an adequate knowledge of infant feeding, leading to a potentially conflicting situation.

- *I am not comfortable with the way my mother in law is interfering with my infant feeding and giving him yansoon and hilba (Hala, 19y, Al Ain).*
- *It is hard to argue with my mother in law (Samira, 23y, Abu Dhabi).*

The pressure exerted from the older female members on the mothers by imposing their opinions, experiences, advice and technique onto the mother with respect to breastfeeding has a great influence on the mothers' breastfeeding practices and decisions. In some cases whenever the mothers faced a breastfeeding problem, it was noted that some grandmothers and mothers-in-law would say:

Give him bottle or give him cereals. He is hungry and you don't have enough milk.

Some grandmothers and mothers-in-law were supportive of exclusive breastfeeding and discouraged the mother of giving prelacteal feeds while others advised the mother to start giving her child liquid or solid feeds for different reasons. Fatima's mother from Al Ain stopped her from giving her daughter formula milk and encouraged her to only breastfeed her: "*don't give her a bottle just breastfeed her*". However, Salma, (26y, Al Ain) said:

My mother and husband encouraged me to breastfeed my baby and not to give him any drinks, however my mother in-law gave my baby water and she even told me to give him formula milk since he is crying a lot because my breast milk was not enough for him.

Eventually Salma started giving her baby prelacteal feeds such as yansun and grippe water for colic pains when her baby was 2 months old. Mothers always seek advice and support and they want it to be practical and individualized to their needs. It seems that grandmothers and mothers-in-law were the sources of influence and information concerning different feeding problems that the mothers faced. Salama from Abu Dhabi said that her

mother and mother in law advised her to give her baby water and hilba so he would grow better. While Amna (Dubai) gave her son formula milk since birth and she gave him water to clean his mouth as her mother had told her:

My mother allowed me to give formula milk while my mother in law pressed me to continue breastfeeding.

Moreover, Salma (31y, Al Ain) wanted to start giving her baby cereals when he was 6 months but her mother-in-law told her to start feeding him cereals when he was 4 months old. Some grandmothers even interfered by giving water and dates (crushed dates are mixed with water and sometimes given to newborns for religious reasons) without the consent of the mother. “*My mother gave my newborn water and dates*” (Amna, 21y, Abu Dhabi). Maitha from Al Ain said that:

My mother in-law gave my child water and gripe water so not to cry. She even gave him formula milk while I was away.

So the grandmothers had significant influence over baby feeding practices and even interfered in the feeding process itself.

This may lead to conflicting situations between healthcare professional information and the actual practices at home.

The nurse at MCH center told me not to give my child any liquids and only to breastfeed him. However, when I came back home, my mother in law ignored that and gave my daughter hilba and yanson drinks to prevent colic pains (Saleema, 27y, Abu Dhabi).

Another mother (Mariam, 27y, Dubai) also said:

I am not comfortable with the way my mother-in-law gave cerelac to my daughter. But it is very hard to argue with her about it, as she would be very disappointed.

Men’s assistance concerning their infant's feeding practices is limited in traditional societies and they are often not fully involved. Most of the mothers in our study perceived that the father was in general very supportive of breastfeeding and discouraged the mother from giving formula

milk *"My husband wanted me to breastfeed and not give my baby formula milk"* (Salma, 26y, Al Ain). Another mother from Al Ain said:

My husband wanted me to breastfeed my son and not give him formula milk since it is good for his health.

There were a few fathers who were passive and did not interfere with the mother's choice of feeding.

The father did not care about how I feed my baby as long as the baby does not cry (Fatima, 30y, Dubai).

One father from Abu Dhabi did not encourage the mother to breastfeed so she could be more free, but the mother said that she continued to breastfeed, however in addition she had started giving formula milk to her infant since birth.

6.4 Mother's sources of information: Family, healthcare facilities and practices, advertisement

Mothers were asked about their main source of information about breastfeeding. It was revealed from the analysis that beliefs, values and advice from others such as the family, healthcare professionals as well as baby food advertisement were the mother's sources of information. The majority of mothers stated that their main source was their family (especially grandmothers). *"My mother and mother in law informed me about breastfeeding"* (Farida, 20y, Abu Dhabi).

Some mothers indicated that they received information through leaflets and brochures and not by direct contact with the health personnel. However this seems of limited use since one mother said: *"I do not read the brochures. I collect them from the clinic and when I reach home I throw them"* (Khawla, 29y, Dubai). Some mothers expressed confusion between what they read and hear in the healthcare system and what is practiced at home. Indeed, it seems that the influence of some grandmothers is more powerful.

I didn't want to give my son any food but my mother in-law insisted on giving him water and hilba and that it wouldn't harm the baby (Maha, 21y, Al Ain).

The support of the healthcare providers has been shown to influence breastfeeding rates, and successful breastfeeding depends, in part, on the support of the staff directly involved with breastfeeding mothers (Bernaix, 2000; Cox & Turnbull, 2000 and Hong et al., 2003). In UAE, healthcare professionals are urged to support breastfeeding through the prenatal clinics and maternity wards. Public health activities are aimed at promoting, protecting and supporting breastfeeding through encouraging the adoption of baby friendly hospital initiatives. Breastfeeding education campaigns and programs in UAE are based on distributing brochures and leaflets and poster displays more than actual face to face learning. Audiovisual media is not used as a teaching or informational tool for breastfeeding education despite Forster et al. (1997) supporting the use of television as an educational tool to promote breastfeeding.

Some mothers in Al Ain stated that they had some information in the form of leaflets and brochures in the maternity clinics and wards. Few mothers in Dubai and Abu Dhabi stated that their source of information was the health workers, except for those who delivered in non BFHI hospitals. One mother from Dubai stated that:

I read magazines and got information from the internet about the benefits of breastfeeding (Shaikha, 35y, Dubai). Support was high for breastfeeding mothers in the healthcare systems in Al Ain. The two major governmental hospitals in Al Ain are BFHI. All mothers in Al Ain reported that healthcare personnel had informed them about breastfeeding.

I was taught all about breastfeeding and how to express my breast milk at the hospital (Nada, 23y, Al Ain).

Another mother from Al Ain said that the hospital staff discouraged her from giving prelacteal feeds and kept her daughter with her in the room so she

could breastfeed her at any time. Some mothers in Dubai and Abu Dhabi claimed not to have breastfeeding education in the maternity wards, especially when they delivered in non-BFHI hospitals. *"I do not know what exclusive breastfeeding is"* (Rawdah from Dubai, who delivered in a non-BFHI hospital). Sherina from Abu Dhabi said: *"Nobody told me how to breastfeed in the hospital."* Hamda from Dubai delivered in a BFHI hospital in Dubai and knew the meaning of exclusive breastfeeding but did not know until when she should breastfeed her baby exclusively. It was noted that mothers who delivered in a BFHI hospital had more information about breastfeeding than the mothers who delivered in a non-BFHI hospital. In these hospitals mothers were informed about not giving liquid or solid food before 6 months and told to continue breastfeeding until 2 years. However, this information may not have been successful in promoting healthy behaviour and dissuading the mother from giving liquid or solid food at an early age.

Some mothers in this study were not satisfied with the information they had received about breastfeeding complications they might face and how to avoid them. They said that they were informed only about breastfeeding techniques and benefits.

Nobody had told me how to avoid cracked nipples or treat it ... they are hurting me a lot while breastfeeding (Fayza, 20y, Dubai).

Mothers listen to the healthcare advice but they may not follow it. Babies are perceived as hungry and need to eat. Mothers are tired and frustrated and want to calm their babies so they seek support from experienced family members.

My daughter is not sleeping all night...she is crying always and I am breastfeeding her all night.. I am feeling tired...I think she is hungry (Huda, 26y, Dubai).

It seems that whenever the mothers face breastfeeding problems , the easiest thing for the grandmothers and mothers-in-law is to say *"Give him a bottle"* or *"feed him some cereals"* or *"give him hilba or grippe water"* .

The impact of advertisement in the UAE mass media was explored, since baby milk and food advertisements are frequently presented in the UAE mass media through satellite channels. Although it is banned by law in the UAE to advertise infant commercial formulae, most women in our study were exposed to commercial advertisement. However, some mothers expressed their indifference about infant formula: *"I don't care much about the advertisement of baby formula milk or food"*. It seems the influence of media had little effect on some of the participants. With only two mothers saying *"I buy and try them with my baby and see if he accepts the taste"* (Aisha, 25y, Dubai and Mariam, 29y, Abu Dhabi).

Formula manufacturers aggressively promote the idea that today's "highly-scientific" breast milk substitutes have been "specially formulated" to be "like breast milk". Infant formula advertising does not give parents unbiased information. It is used by companies to increase their market share, which increases the number of people using their product. Some mothers remarked that in the advertisement of commercial infant cereal products they mention that these food products could be given to the infant when he or she is 4 months old.

I gave my child 'Cerelac' when he was 4 months since they say that on the package (Iman, 30y, Abu Dhabi).

It is interesting to note that mothers considered what is said during advertisement as recommendation for the mothers and some had followed it. This caused conflicting ideas between what they see and hear on TV or read on the label and the WHO recommendations.

This highlights the importance of using the television for breastfeeding promotional campaigns to ascertain positive breastfeeding knowledge and practices.

6.5 Infants' behaviour and participants' views and decisions about when to introduce supplementary feeding

When exploring what influences the Emirati mothers to introduce supplementary feeding earlier than the recommended age of six months, another theme appeared to influence the mother's decisions to supplement. It was the infant's behaviour and what the mother perceived as encouraging behaviour by the infant.

So some mothers believed that the decision to introduce of solids to the baby was led by some physical characteristics or behavior of the infant such as baby reaching four months of age, reaching a good weight, or size (the baby is big) or when the baby started teething *"I think when the baby teethes then he is ready to eat solid food"* (Hamda 29y, Dubai). Increased saliva production whenever the baby sees food *"When my baby sees me eating he draws and opens his mouth and stretches his hand"* (Nora, 35y, Abu Dhabi) is also another perceived cue from the child to start solid food. Some mothers were alert to watching for perceived signs of hunger –interpreted differently by mothers and their relatives - and this might trigger early weaning. That the baby had a 'hunger cry' was the most frequently mentioned and acknowledged reason for giving prelacteal feeds.

- *My mother in law told me that my baby is crying because he is hungry and she told me to give him formula milk* (Salma, 27y, Al Ain).
- *My mother advised to give my daughter hilba and yansoon so she will not have colic pains and sleeps better* (Samira, 25y, Abu Dhabi).

Mariam from Abu Dhabi had noticed that her baby did not breastfeed as often as before when she gave him cereals at the age of 4 months and she said that her baby stopped breastfeeding at nine months. Exclusive breastfeeding was rarely practiced; most participants started giving their babies other feeds from the age of 2-4 months. *"I gave my son hilba and*

yansoon for colic pains” (Nora, 35y, Abu Dhabi). Another mother from Dubai said that she started

Introducing their infants to the taste of adult family food when he reached 4 months so he gets used to the taste of the grown-up food (Rawdah, 30y, Dubai).

Another mother from Abu Dhabi expressed her pleasure when her baby started tasting the adult food and that her daughter loved the taste and wanted more. Sleeping all night is another reason stated by the mothers for starting solids or giving formula milk. Saleema said: *“My son slept all night when I gave him a bottle before bedtime”*.

6.6 Knowledge and attitudes towards current WHO recommendations

It appeared from the analysis that mother's knowledge of the exclusive breastfeeding recommendations was not fully understood. Unlike most of the mothers in Al Ain, not all the participants from Dubai and Abu Dhabi were aware of the meaning of “exclusive breastfeeding” and that the WHO recommends not to introduce any solid or liquid food before the age of six months. They were confused about exclusive breastfeeding; they perceived it as not giving solid food but thought that water, prelacteal drinks and juices were allowed. Most of the mothers from Dubai did not know until what age exclusive breastfeeding is recommended.

- *Nobody told me about exclusive breastfeeding (Rawdah, 30y, Dubai)*
- *I don't know for how long I am supposed to exclusively breastfeed my baby (Hamda, 29y, Dubai).*

Moreover, most of these mothers, as well as those in Abu Dhabi, had a vague, incomplete understanding of the recommendations. Most of the participants in all the cities agreed that exclusive breastfeeding until 4 months of age was more acceptable and easier to follow since most of them had added solid or liquid feeds at this age: *“Why wait until 6 months”*

(Samira, 25y, Abu Dhabi). Almost all of them expressed the idea that the age of 4 months is good for introducing solids *"because the baby is big enough"* and *"the milk is not enough"* and one even said :*"This is what is written on the baby food packages"*. One mother said:

My mother told me that she had given us all hilba and cerelac when we were 4 months and nothing happened to us (Jameela, 32y, Dubai).

Practicing exclusive breastfeeding for six months without giving water seems to be difficult, since most of the mothers had expressed the necessity of giving water to their babies since *"the baby is too small to express its thirst"* and *"UAE has a very hot climate"*.

One mother stated that *"Infants should be given sugared water because they are born with low sugar level"* (Shaikha, 22y, Al Ain). Another one said that her mother had advised her to give water to her infant; otherwise his eyes will squint from thirst. Moreover, it is worth noting that most families still practice "Tahneek" (which is an Islamic tradition of rubbing the infants' mouth with chewed dates when he or she is born).

It seems that exclusive breastfeeding education campaigns and programs in the healthcare facilities were not sufficiently clear and detailed enough for the Emirati mothers who were convinced that water and some fluids are needed by the infants.

6.7 Mother's perception of the breastfeeding benefits

The researcher wanted to investigate whether Emirati mothers were knowledgeable about the benefits of breastfeeding and whether the information and education they have received from the health care professionals informed them about the benefits of breastfeeding and especially exclusive breastfeeding.

Leffler et al., (2000) reported that the decision to breastfeed is greatly influenced by breastfeeding knowledge and awareness of the potential benefits of breastfeeding.

It was noted that while there was a general belief among the participants that breastfeeding is the best way to feed a baby, the general public was fairly uninformed when it came to the specific benefits of breastfeeding and exclusive breastfeeding. Breastfeeding campaigns in the BFHI prenatal clinics and maternal wards has been somewhat successful in improving mother's knowledge and understanding of the general benefits of breastfeeding for both themselves and their babies. However, the respondents had limited factual knowledge and only stated one or two benefits of breastfeeding. Many mothers reported that breastmilk is the best for its immunological and health benefits. There was a general recognition that breastfeeding offers the baby some protection from illness and disease "*Breastfeeding gives immunity to my child*". Other mothers stated other benefits of breastfeeding; for example, one mother said that "*breastfeeding is good for my baby's brain and bones*" (Amna, 27y, Dubai). Some mothers mentioned that breastfeeding is beneficial for the mother by changing body shape and weight back to normal: "*Breastfeeding is good for my body.*"

When mothers were asked about the relationship between breastfeeding and decreased fertility, only a few recognized this relationship and the rest did not know why their regular menses had been delayed. The influence of breastfeeding on mother's fertility was barely mentioned in the breastfeeding education campaigns.

- *I did not know that breastfeeding prevents pregnancy.*
- *Nobody told me about that*

This is one of the important breastfeeding benefits knowledge that need to be stressed upon during the breastfeeding education campaigns since

second pregnancy was reported as one of the main reasons, reported in the survey research, why some mothers stopped breastfeeding.

6.8 The embarrassment of breastfeeding in public

Embarrassment towards breastfeeding in public has been cited as one of the factors influencing breastfeeding in western countries, and it was explored in this study.

It should be noted that the Emirates have a culture of breastfeeding with most people having much direct experience of the activity and consequently breastfeeding enjoys social acceptability; it is considered as a normal act by all. Almost all the participants indicated that they do not feel embarrassed when breastfeeding in public since the general public find this acceptable. Several respondents illustrated the strength of breastfeeding acceptability in public. *"I don't mind breastfeeding my son in front of others."* UAE is an Islamic culture and in Islam breasts are not visualized as a sexual object during breastfeeding; thus mothers feel comfortable breastfeeding their babies in front of others. Some said that they would breastfeed in public but in a private setting *"I take a private seat and breastfeed my child"*. Another factor that facilitated breastfeeding in public is the type of clothing. Mothers are dressed in long, loose-fitting clothes that are easily adjusted to allow breastfeeding to take place.

I can breastfeed my baby whenever he is hungry and it is easy, I can breastfeed him at anytime he wants (Salma, 30y, Al Ain)

There was no difference in the responses of the mothers in the three cities except for one mother from Abu Dhabi, who refused the concept of breastfeeding in public: *"This is only done by non-educated mothers"*. She elaborated that she thinks that mothers of higher class would not breastfeed in public. However, this idea was not mentioned by any other mother from any of the three cities. It is worth mentioning, however, that the Emirate women do not in fact usually mingle freely in mixed public areas. However, it

seems that this topic was not an issue that deters the Emirati mothers from breastfeeding.

Chapter Seven

Discussion of Results (2): The Interview

7.1 Introduction

In this chapter, the findings of the interview study are discussed in terms of the main themes which emerged from the analysis of the data. These findings are compared and contrasted with relevant findings in existing literature.

7.2 Limitations

The subjectivity of the researcher (reflexivity) was closely controlled in this study. The knowledge and behavior of the researcher were recorded in separate journal during interviews and analysis (Krefting, 1991). Results are of course interpreted through the lens of the researcher and influenced by the purpose and history of the research, but every attempt has been made to reflect on these influences and to remain true to the views and understandings of the mothers who were interviewed. The findings of this study reflects clearly and in depth the participants views and opinions without undue interference of the researcher's personal interpretations.

Generalizability is not a primary concern of qualitative research (Mayer, 2000). The aim, then, is on producing research that can inform and enhance reader's understandings and provide explanatory theory for the experiences of other individuals who are in comparable situations.

In this part of the research study a major strength of this qualitative approach is the depth to which explorations are conducted and descriptions are written. Moreover, all data was included in the study and the findings reported the participants' views clearly and included excerpts of raw data in the form of quotations without the influence of the researcher's perspectives

except in the selection of examples. Narrative data can realistically describe patterns of behaviour (Terre Blanche & Durheim, 2002).

7.3 Background

The Arab Gulf family is a basic unit with cultural components that extend from Arab Islamic sources, in which social interactions between family members occur within the context of the values and norms of this culture. The family in the UAE, as in other Arab Gulf countries, is gradually acquiring some of the characteristics of the Western nuclear family, but these two types of families are not the same yet. Families in the UAE are still characterized by extended relations, which are not always present in the typical Western family. Hence, the Arab Gulf family is currently in a transitional stage whereby it carries many features of both the Western model and the traditional extended family model (El-Haddad, 2003).

The Gulf family has kept its traditional size. Studies have shown that the extended family is still large in number and that families retain their traditional kinship ties (El-Haddad, 2003). The tribe is still an important authority in determining the behavior of sons and daughters, especially with regard to marital choice. Most marriages occur within the framework of kinship. Moreover, although education gives women the chance to leave the house and to work, it does not give them the right of self-determination.

In Islamic societies, the Holy Book “Quran” promotes breastfeeding: “Mothers shall give suck to their children for two full years for those who desire to complete the term” (Qur’an, 2:233). Hence, breastmilk is given a high value in Islam. Children who are breastfed for more than five full feeds by the same woman are considered siblings of her children, and are forbidden from marrying these children even though the two parties are not biologically related.

Breastfeeding has been strongly encouraged throughout the UAE; new mothers are expected to breastfeed. Breastfeeding seems to be a natural and instinctive behavior in traditional societies because learning about it takes place during youth and in subtle ways that are integrated into the culture (Greiner, 1981). However, the breastfeeding tradition does not mean that women necessarily conform to what health experts would recommend as best for both baby and mother, particularly in terms of duration and exclusivity. In the UAE, the promotion of breastfeeding is increasing, and the government requires that maternity wards become 'baby-friendly'. However, it is important to examine parental attitudes and beliefs in order to elucidate reasons for non-compliance with current breastfeeding and complementary feeding guidelines (Savage et al., 1998; Tedstone et al., 1998). To date, no research in the UAE exists in the area of social and cultural attitudes towards breastfeeding and complementary feeding.

Understanding women's breastfeeding perceptions and experiences is increasingly recognized as a vital tool for health professionals to be able to provide effective support that would encourage the extension of the breastfeeding period (Cooke et al., 2003; Hauck & Irurita, 2003; Blyth et al., 2004). The study by Hauck and Irurita (2002) shows that it is important to support mothers in their decisions in order to empower them to deal with the later challenges of mothering. Hence, mothers should have a positive perception of their own breastfeeding experience.

A qualitative methodology was employed in this study in order to identify and explore the range of factors which influence feeding decisions in the UAE. March and Morrow (1994) argued that maternal decisions for breastfeeding result from the complex interaction of societal, cultural, economic, family dynamic, and personal considerations. Barclay et al. (1997) also suggested that there is a need to focus more on the social and cultural context involved in the process of becoming a mother. Talking to mothers in a relatively unstructured manner proved to be a better strategy that would help elicit

cultural stereotypes and locate the mother in her culture compared to asking direct questions about 'factual' issues. This chapter presents the qualitative analysis of what the participants said about their breastfeeding experiences. The unstructured interviews allowed a more intimate rapport with the participants and a better understanding of their environment; this proved to be a successful strategy to get a complete view of the behaviours and perceptions pertaining to their breastfeeding and complementary feeding experiences.

7.4 Influence of others on the decisions to breastfeed

Family and household members, including husbands, mothers and mothers-in-law, have all been mentioned as parties who have an influence on infant feeding perceptions and practices in this study. This is congruent with various studies that supported the notion that breastfeeding knowledge and attitudes are socially learned within the family (Wombach & Cole, 2000; Milligan et al., 2000; Alexander, 2003; Chen et al., 2011). Family members often have frequent and on-going interaction with the mother, providing her with practical information about breastfeeding and complementary feeding (Scott & Mostyn, 2003; Spear, 2006; Stamp & Casanova, 2006). Tarrant et al. (2004) reported that it was common for Asian women to make their infant feeding decisions based on the wishes of significant others such as their mothers, mothers-in-law and husbands. Studies in other societies also confirmed that successful breast-feeding experiences had an empowering influence on women when a supportive network acknowledged their efforts (Locklin, 1995; Arora et al., 2000; Sikorski et al., 2003).

The UAE Society is patrilineal, with patriarchal social structures in which women marry into men's lineage, and men as well as elderly people are highly respected influential parties in traditional societies. Households usually embody relationships of power, domination and subordination, often based on age and gender (Wolf, 1990). The role of the mother-in-law in

household decision-making is crucial, especially when it comes to childcare and infant feeding. In nearly all households where the mother-in law was present, she played a dominant role in breastfeeding and weaning decisions. This is because of the high status of the mother-in-law within the household and the extended family system. As a result, and in order to avoid conflict, wives often hesitate to contradict the opinions of their mothers-in-law regarding feeding decisions; they often implement these decisions even when they contradict recommendations made by health professionals. Traditionally, the grandmother usually looks after the mother and the infant in the first few months after delivery. The purpose is to help the new mother regain her strength and health in order to take care of her newborn.

New mothers are culturally expected to learn from the experiences of their own mothers (the newborns' grandmothers). These grandmothers may consciously or unconsciously influence their daughters' breastfeeding decisions and their ways of communicating with their babies (Hove et al., 1999). The new mother may simply repeat her own mother's ways of interacting with her newborns. Kearney (1988) and Middleton (2005) said that mothers who were breastfed as babies were more likely to choose breastfeeding and succeed at it. However, grandmothers may not necessarily convey accurate knowledge of infant feeding, and this may lead to conflicting situations (Duong et al., 2005).

The presence of grandmothers in this study seemed to support breastfeeding in general, yet not exclusive breastfeeding in particular. All grandmothers appeared to play an important role in supporting some desirable child-feeding and child care practices, such as encouraging the mother to breastfeed and dissuading her from only formula feeding her infant. However, some grandmothers also encouraged giving liquid supplements such as hilba and yansun to the newborn even without the consent of the mother.

Similarly, in other traditional communities in Africa, Asia, Latin America and the Pacific, older women, or grandmothers, traditionally have considerable influence on decisions related to new mothers' and infants' health at the household level and they support mother for the first 6 months (Kannan et al., 1999; Aibel et al., 2001). Family support to the new mother takes the form of help in child care, household work, emotional support or informational support; it is an important resource that facilitates the new mothers' child care (UNICEF, 1990). Several studies have shown the influence of grandmothers and mothers-in-law on infant feeding practices in other societies (Ekstrom et al., 2003; Susin et al., 2005; Sharma & Kanan, 2006).). Moreover, a study in rural Gambia revealed that the presence of the maternal grandmother had beneficial effects on the child's nutritional status and mortality (Semega-Janneh et al., 2001). In Lesotho, Southern Africa, grandmothers encouraged exclusive breastfeeding, and considered that supplementation with water was unnecessary and harmful to the child's health (Almroth et al., 2000). In Brazil, it was reported that grandmothers may have a negative influence on both the duration and exclusivity of breastfeeding, advising that water and/or teas should be given to the infants (Susin et al., 2005).

Although most of the Emirati fathers in this study were supportive of breastfeeding for the healthy development of the infants, their actual assistance in infant feeding was limited. It is a traditional norm that men should not involve themselves with infant feeding because it is believed to be a "women's job". In this study, the father's role was mostly perceived to be encouraging the mothers to breastfeed. Few fathers were either ambivalent or indifferent. This is in fact contradictory with what actually happens in western societies. In the west, and as mothers expressed the need to share the baby care with the father, paternal involvement seemed to discourage breastfeeding, as fathers would assist by providing infants with formula (Arora et al., 2000). Thus, baby feeding would not be limited to the

mother but would actually be shared, and breastfeeding is not exclusive. In other cases, some fathers were ambivalent to how the baby is fed (Scott et al., 2001). Men's support has been cited in many research studies as an important influence on woman's breastfeeding decisions (Li et al., 2004; Scott et al., 2004; Pisacane et al., 2005). Hauck et al. (2002) reported that mothers who perceived their husbands to prefer breastfeeding were more likely to breastfeed. Similarly, Howard et al. (1999) reported that women whose partner did not favour breastfeeding were more likely to discontinue breastfeeding at anytime compared to women whose partners favoured breastfeeding.

Ramos & Almeida (2003) reported that external opinions and interferences contribute to the success of breastfeeding. Women who breastfed for longer periods of time, and those who had positive experiences as new mothers, considered that the participation of their mothers and husbands was important (Rempel, 2004).

Support and encouragement were found to be crucial reasons for continuing to breast feed. Hauck et al. (2002) concluded that emotional and practical support by others helped the mother's breastfeeding practices and decisions. Support can be provided in many ways, both by lay people and health professionals (Ekstrom et al., 2003). Greiner (1981) explained that where traditional support systems (such as family) no longer function, other institutions in the society must design and provide them and that is why breastfeeding support groups were beneficial in some communities.

Although support is recognized as important for breastfeeding, findings of this study suggest that not all interventions are perceived as positive. Negative social—influence has been identified as an obstacle to breastfeeding success (Raj & Plichta, 1998).

Some of the participants in this study mentioned the conflicting baby care advice they got from grandmothers, mothers-in-law and health professionals. If advice is confusing and conflicting, it tends to undermine the women's confidence in their ability to feed the baby successfully. Conflicting advice has an overwhelming and negative effect as it confuses rather than empowers new mothers, hence reinforcing a woman's lack of self-confidence (Simmons, 2002). Several researchers (Rajan, 1993; Cox & Turnbull, 2000; Gill, 2001) found a correlation between poor or conflicting advice and breastfeeding duration. So, the mother's level of confidence or self-efficacy is believed to determine if she will change or adopt a certain behaviour (Bandura, 1997). Research has shown that maternal self-efficacy, also referred to as "breastfeeding confidence", plays an important role in breastfeeding behaviour (Pollard et al., 2009).

Confidence or self-efficacy works in conjunction with support and encouragement (Dennis, 2006). It is the ability of the mother to breastfeed in spite of the problems she faces (Manhire et al., 2007). Dennis (2002) and Blyth et al. (2002) further explained that maternal self-confidence, or a mother's self-perceived ability to breastfeed her baby, affects breastfeeding duration. Simmons (2002) reported that women who lack the confidence to successfully feed their babies would seek the help of so-called experts. In the traditional culture, maternal confidence is supported by the family, friends and society. Accordingly, in this study, the authority of the grandmother and the mother-in-law might have had an influence on the mothers, who decided to abide by the traditional and cultural habits when it came to breastfeeding and complementary feeding decisions. Whenever the mother found a difficulty in breastfeeding or faced breastfeeding problems, she was pressured to supplement by formula, liquid or solid supplements. Encouraging the mother to supplement and give her baby liquid or solid foods can have a negative effect on breastfeeding, and can also undermine the mother's confidence in feeding her baby herself. Moreover, due to the

process of supply and demand, if the baby feeds less frequently at the breast, then the mother will not produce enough milk.

Insufficient milk supply was one of the most common reasons that mothers in this study gave for breastfeeding cessation. This is a biological factor which has a strong psychological component (Hector et al., 2005). Insufficient milk supply is generally more perceived than 'real', which suggests that other factors were causing the women to doubt their milk supply (Meedya, 2010). This study found that this perception was associated with an unsettled baby (crying continuously) as well as slow baby weight-gain. McCarter-Spaulding and Kearney (2001) found a significant correlation between perceived insufficient milk supply and low maternal breastfeeding self-efficacy in early weeks of breastfeeding. They concluded that women who believe in their ability to deal with any breastfeeding challenges perceive sufficient milk supply. Moreover, mothers who doubt their breastfeeding ability may perceive insufficient milk supply, and thus start complementary feeding (Kirkland & Fein, 2003; Lewallen et al., 2006). Hence, mothers' confidence is undermined when they perceive that they have insufficient milk, and when they receive conflicting advice from lay, support or professionals (Graffy & Taylor, 2005; Moore & Coty, 2006). However, Benn et al. (2003) suggested that the problem might be the woman's interpretation of the advice and the support she received rather than inconsistency in the advice; hence, it may be concluded that it is the mother's interpretation of the experience that determines her breastfeeding behaviour. Hauck and Irurita (2003) found that women were sensitive to comments regarding their breastfeeding and complementary feeding performance. Their role as mothers depended on 'good' reviews.

Overall, the mothers' comments revealed the importance of a woman's interpretation and perception of the positive or negative events happening around her, and within her breastfeeding experience. Their responses were affected by physical factors, communication with health-professionals and

others' expectations. Most significantly, the positive interpretations by the mother increased her confidence and reinforced a desire to recommit to breastfeeding and sustain it.

So regardless of whether the problem was in communication or interpretation, the consequence for the mothers in this study was that they perceived the information they received as conflicting and confusing.

7.5 Mother's sources of information: Family, healthcare facilities and practices, advertisement

Breastfeeding promotion in the UAE has focused on encouraging mothers to breastfeed for a prescribed duration, usually according to the government's standards rather than the mother's own wishes. Health professionals tend to offer weaning advice based on official guidelines and recommendations. However, the actual infant behavior has been found to exert the greatest influence on parents' weaning practices (Walker, 1995). Barton (2001) and Heinig et al. (2006) reported that mothers often rely on family members and others for infant-feeding guidance rather than ask for assistance from health professionals when facing difficulties. Aubel et al. (2001) reported that the health of women and children is determined not only by women themselves, but also –and to a great extent- by the knowledge, attitudes, roles and resources of other household members such as older women (especially mothers-in-law) and fathers. This was confirmed in this study as mothers reported that their main sources of information were family members. They received information from health-care services, usually directly from health personnel or indirectly via handouts or brochures. Breastfeeding education promotion in the UAE concentrated on distributing posters, leaflets and brochures. However, the use of media was limited or lacking. McIntyre et al., (2002) emphasize the use of media (TV and newspaper advertisements) to increase the effect of breastfeeding promotion.

Posters which promote breastfeeding were displayed at every health care facility, especially during breastfeeding week. Some leaflets, pamphlets and manuals relevant to breastfeeding were usually available on display in the clinics and MCH centers. Posters and video presentations on breastfeeding were also provided for pregnant women while they were waiting for a nurse or a doctor. However, the distribution of leaflets in the MCH centers was inadequate and did not reach all mothers.

Although breastfeeding was positively promoted in the clinics, and the focus was almost entirely on its benefits, there was little reference to techniques. Most women in this study reported that health personnel and information from the mass media focused on breastfeeding benefits. Greiner (1981) argued that mothers require practical breastfeeding knowledge rather than just information on the benefits and the physiology of lactation. Since mothers lacked practical 'how to' information (such as how to latch the baby, how to increase breast milk secretion, how to overcome nipple problems, beside others), it would be very helpful for new mothers to receive first hand information from an experienced breastfeeding mother (Dearden et al., 2002; Ahmed et al., 2006; Nankunda et al., 2006). Peer counseling was reported by many studies to be an effective support for breastfeeding mothers (Haider et al., 2002; Scott & Mosty, 2003; Chapman et al., 2004). Mothers often feel more comfortable talking about breastfeeding with other mothers rather than health professionals (Alexander et al., 2003).

Most nutrition and health-education approaches view mothers as passive receptors of knowledge, with the communication flow going in one direction: from experts to lay people; these approaches ignore the important role of the family and community in early child development (Lee & Garvin, 2003). They assume that as mothers receive new information about childcare, they will modify their behavior (Lee & Garvin, 2003; Aibel et al., 2004). Benzer Kerr et al. (2008) suggest new approaches for health education promotions and activities for mothers by involving key family members such as

grandmothers and mothers-in-law, and by acknowledging the power dynamics that exist in extended families. It was also suggested that these nutrition education programs should employ “transformative learning” which emphasizes dialogue and problem-solving to increase knowledge (Kent, 1988; Aubel & Sihalathavong, 2001; Lee & Garvin, 2003).

In 1992, the UAE Ministry of Health issued a circular that bans the distribution of infant formula samples and supplies in health facilities, and requires infant formula to be given under medical prescription. Moreover, advertising formula for infants less than six months of age has been banned since 1992 on national UAE TV. However, advertising of all infant formula via radio, television and magazines is still taking place as this circular had no force of law, and there are no sanctions for non-compliance.

In September 2001, Nestlé announced its support for Resolution 54.2 (WHA, 2001) which recommends exclusive breastfeeding for 6 months. The company changed its labels in some countries, including the UAE (but only recently). The Resolution also recommended that infant formula manufacturers be forced to label their products with a warning that babies should be breastfed exclusively for the first six months. However, changing the age recommendation on labels means nothing if promotion continues to target very young babies. For example, a 2005 Nestlé desk calendar for health workers in the UAE promotes “Cerelac” as a “gentle first food” for babies of very young ages (IBFAN-ICDC, 2006). The baby formula and food advertisements in UAE had some influence on the mothers in this study; some are still convinced that baby food should be given at four months of age.

7.6 Infant's behaviour and participants' views and decisions about when to introduce supplementary feeding

Mothers in this study believed that the introduction of solids was baby-led and initiated by some physical characteristic or behavioral action of the infant. As previous studies have shown (see Rajan, 1986; Harris, 1988; Walker, 1995), the infant's behaviour appeared to be the main stimulus for changing feeding practices.

Actual infant behavior has been found to exert the greatest influence on parents' weaning practices (Walker, 1995). Walker also found that parents were aware when the choices they made regarding weaning did not comply with official recommendations, but they still based their decisions on infant behavior. Receiving advice that conflicted with their own perceptions of their child's readiness was found to be a common dilemma mothers shared regarding their child's weaning experience. Bottorff (1990) believed that breastfeeding is an emotionally-reflexive maternal action that is reciprocated by the baby's contentedness and development, which continues the exchange. Some responses in this study illustrated this point. When asked about the reasons why the babies were no longer breastfed, or why they started giving their babies solid or liquid foods, mothers in this study said that the baby was old enough, teething, dribbling, crying, and sleeping all night.

The crying of a baby in this study was understood as a sign of hunger and an indication that the baby was not getting enough food from breastmilk. Mothers have noted that their mothers-in-law influenced all child-care and feeding activities by their interpretations of behaviours such as crying. A lot of the participants identified other signs of hunger including when the baby looked at the food others were eating or when he/she tried to reach out for food. Several foods or drinks were given to a baby if it cried. Some mothers-in-law pressured the mothers in this study to give liquid feeds such as

yansun, hilba or grippe water in order to satisfy the baby's hunger or treat his/ her colic pains.

Mothers listened to the advice and recommendations of healthcare specialists but did not necessarily follow. Babies were sometimes perceived as hungry, and mothers thought that there was not enough milk in their breasts to satisfy this hunger; therefore, solid food was introduced to the baby's diet. Mothers did not know how to stimulate their breasts for more milk. Moreover, researchers reported that a mother's lack of confidence about the adequacy in quality or quantity of her breastmilk to satisfy her infant's needs is an underlying cause of the insufficient breastmilk syndrome (Graffy & Taylor, 2005; Moore & Coty, 2006). In this study, many women wondered at some time whether they had enough milk for their babies, especially when their babies cried a lot, and this was a trigger for them to give their babies supplementary feeds.

Maternal insecurity combined with – or as a result of- of the child's continuous crying was presented as an event which triggered weaning. Many studies in other cultures reached similar findings (Kruger & Gericke, 2001; Anderson et al., 2001; Manhire et al., 2007), but this belief has no foundation in biology. The mothers appeared to lack adequate knowledge and skills to stimulate lactation (see also Duong et al., 2005). Wight (2001) indicated that insufficient milk supply is related to breastfeeding mismanagement due to inappropriate timing and duration of feeds, formula supplementation and improper positioning and latching.

7.7 Knowledge of and attitudes towards current WHO recommendations

In this study, current advice on avoiding solids until the baby was 6 months of age appeared to be of somewhat limited relevance in the mothers' eyes, in comparison to individual babies' perceived developmental stage. Most

participants had a vague, unclear and incomplete understanding of why they were being recommended to wait until 6 months before introducing supplementary feeding. For example, some of the participants reported that their own mothers gave them solid foods before they were 6 months of age, and they still led a healthy and a good life. It is perfectly conceivable that the participants based their feeding decisions on their experiences rather than on recommendations, as they found themselves healthy and their babies happy.

Anderson et al. (2001) reported that low confidence in government recommendations on food and health may undermine motivation to comply with current dietary guidelines. In addition, low awareness of the evidence base for the current recommendations relevant to health, in addition to possible inconsistencies in dietary advice from lay advisors compared to professional advisors, may add to confusion over how important the timing of weaning really is in infant health and development.

Solid foods were introduced to most of the babies in this study before the recommended age of 6 months. The reasons mentioned most frequently were that the mothers did not have enough milk to satisfy their babies, that the babies were crying or that the mothers were following the advice of the grandmothers and mothers-in-law. Health-related reasons for supplementation were generally concerned with what was good or nutritious for a baby, making a baby strong and healthy and causing weight gain (Kruger & Gericke, 2001). All the other reasons the participants reported were concerned with the importance of giving babies water every day. Some of these reasons were not scientifically sound. When mothers were asked if they thought exclusive breastfeeding for six months was possible, they reported it would be difficult. The major reason given was the infant's need for water.

While mothers in this community accepted that breastfeeding protected the infant, they still did not believe strongly in the power of exclusive breastfeeding. Few had heard about exclusive breastfeeding and knew what it really meant. Similarly, in their qualitative study in Vietnam, Duong et al. (2005) suggested that some mothers were confused about exclusive breastfeeding. Some perceived exclusive breastfeeding as not giving solid and semisolid foods to infants, but water, fruit juice, sugar solution and even formula milk were permissible. The women interviewed in Abidjan were well informed about the benefits of breastfeeding in general. However, the idea of exclusive breastfeeding was not well accepted since the mothers felt that water, especially, was a necessary supplement for their infant (Yeo et al., 2005).

The dilemma of developing a flexible approach to child care behaviour and being advised to follow rigid guidelines on avoiding solid feed till 6 months clearly presents a problem in this study. Black et al. (2001) concluded that an intervention program that specifically targets cultural barriers that may interfere with the mothers' acceptance of established guidelines for feeding will be successful. Anderson et al. (2001) further explained that the decision of when to introduce solids is complex, and understanding the decision-making process is an important step prior to designing an intervention strategy to affect change in behaviour.

7.8 Mothers' perception of the benefits of breastfeeding

Health promotion in the UAE presents breastfeeding as the best method of infant feeding. The biophysical benefits of breastfeeding are widely discussed and illustrated in the brochures and posters in the prenatal clinics and MCH centers.

The health promotion messages of breastfeeding in the UAE portrayed that breast is best; they have been successful in improving mothers' knowledge

and understanding of the general benefits of breastfeeding - in contrast with formula feeding- for both themselves and their babies. However, these messages were vague and not detailed. Many interviewed mothers still did not know that exclusive breastfeeding could delay ovulation and increase child spacing. Some of the participants explained that they usually do not read the brochures since they already know the information written. Breastfeeding duration is greatly influenced by breastfeeding knowledge and awareness of the potential benefits (Leffler, 2000).

All the mothers in this study identified some of the advantages of breastfeeding, particularly that breastfeeding offers protection for their infants from illness. Mothers in this study had the general perception that breast milk is better than infant formula, making babies healthier, protecting them from diseases such as diarrhea, and even making the child wiser and more intelligent. The majority of those surveyed agreed that breastfed babies get all the required nutrients, and that breastfeeding reduces the risk of infection. However, most of them did not identify the benefits of breastfeeding that are related to the mother's fertility, such as delaying ovulation. Daykin and Naidoo (1995) suggested that health education campaigns are successful in informing mothers about the benefits of breastfeeding; however, they are not always successful in promoting healthy behaviours.

7.9 The embarrassment of breastfeeding in public

This topic is raised in this study because it is so important in the Western literature, since this issue comprise one of the main reasons deterring mothers from breastfeeding. Negative images of breast-feeding in public have been a constant theme of much research conducted in the West. Mothers in these societies have limited visual experiences of breastfeeding, and that influenced both breastfeeding duration and initiation (Scott et al., 1997). However, historically and religiously, breastfeeding is perceived as

normal and ordinary within the UAE society. The data suggest that mothers in this study did not feel embarrassed when they nursed in public. There was no embarrassment of breastfeeding in public since breastfeeding is viewed as normal and traditional in contrast to the western culture. This raises the issue of what breasts are for and what they represent within the society. As Carters (1993) points out, within western societies, there is tension between the breast's function as a symbol of sexuality and as an organic source of nutrients for infants. In western cultures, the breast is largely symbolized as a sexual object, and one of the reasons given for refraining from breastfeeding is embarrassment (Dykes et al, 1998; Sheehan et al., 2003). In this study, the sexual image of breasts was not found to be compatible with the participants' view of their mothering role. Breasts of breastfeeding mothers in traditional societies were visualized as biological organs (Dettwyler, 1995) and this still seems the case in UAE.

Chapter Eight

Conclusions, Recommendations and implications for Practice and Research

8.1 Introduction

This chapter summarizes the major findings of the study based on which policy recommendations and implications for practice are outlined.

This research study explored and analyzed the variables which influence the breastfeeding and weaning practices of Emirati mothers, and examined their attitudes, beliefs, views, perceptions and expectations towards breastfeeding. The study employed both quantitative and qualitative methods of inquiry. It was unique in the sense that it sampled exclusively Emirati mothers, as opposed to other similar studies which featured also expatriates within the UAE. This is important because there is no reason to suppose that the Emirati culture and history are similar or identical to the cultures and histories of the many foreigners who come to live in the UAE.

There were a number of advantages of applying both quantitative and qualitative methods in this research, as elsewhere. Quantitative methods ensured high levels of reliability of the data that were gathered, at the cost of some simplification of concepts; they permitted valid generalization to the extent that the sampling is sound. Qualitative methods allowed a more complex reflection of real life, and helped us obtain more in-depth information about how the mothers perceived breastfeeding in its cultural context. The use of different research methods allowed the researcher to build on the strengths of each while minimizing the weaknesses. The weaknesses of the quantitative method, such as failure to provide information about the context of the situation and pre-determined outcomes written into questionnaires at the design stage, were compensated for by the

qualitative interviews. These interviews made it possible for the interviewer to interact with the research participants, and to learn more about these mothers' own individual views and perceptions about what influences their breastfeeding and weaning decisions. The findings of the qualitative part of the study uncovered new research themes, and added a strong theoretical foundation to the research by crosschecking with the results of the statistical analyses and literature.

8.2 Conclusions

The questionnaire provided baseline data about the relationship between breastfeeding practices (initiation, continuation and exclusivity) and a number of sociodemographic factors. The qualitative research findings showed that mothers' views and attitudes as well as the beliefs of significant others greatly influenced the mothers' breastfeeding practices.

Results from the questionnaire in the three cities indicated a preference of breastfeeding over formula feeding as far as feeding mode was concerned. However, the breastfeeding promotion plans and programs initiated by the MCH department in Al Ain as well as the implementation of BFHI in maternity wards were both showing encouraging results. This was reflected in higher results in initiation, duration and exclusive breastfeeding, in addition to longer lactational amenorrhea duration as compared to the results in the other two cities (Abu Dhabi and Dubai). Nonetheless, there is still a need to reinforce these programs in order for mothers in Al Ain to overcome the obstacles which prevent them from exclusively breastfeeding their infants till 6 months. In Dubai and Abu Dhabi, where the figures reported were lower than those in Al Ain, mothers need more support. Mothers in these cities need to have better awareness of the reasons why they should not introduce formula milk and cereals to their infants before the age of 6 months. Maternity wards in the hospitals of these cities, especially in Dubai, should be encouraged to adopt BFHI recommendations in order to

increase initiation and establish exclusive breastfeeding practices. Moreover,

In general, a high rate of breast feeding initiation, a moderate rate of breastfeeding duration, early introduction of liquid and solid feeding and failure to practice exclusive breastfeeding were widespread in the UAE. This research study showed that the major cause of concern in the UAE is the premature introduction of water, liquid feeds and solid supplements to infants younger than 6 months of age. This is a main concern because it marks the end of exclusive breastfeeding with its protective and nutritious benefits.

In addition to the influence of socio-economic variables on breastfeeding initiation, duration and exclusivity, this study concluded that the perceptions and personal experiences of other –usually older- women in the family also have an impact on the new mother’s infant feeding practices. The opinions and experiences of the infant’s grandmothers (maternal and paternal), and less importantly those of other family members such as the father, have a profound effect on the breast feeding practices of Emirati mothers.

Before policy makers can design programs that encourage exclusive breastfeeding for 6 months and supplemental feedings after 6 months, they need to know the real cultural practices in the population, and why these practices diverge from standard recommendations. Therefore, the reasons why some mothers reduced or abandoned breastfeeding and started supplementation before their infants reached 6 months of age were investigated in depth through out the qualitative part of the study.

This research study revealed the power dynamics within the household in the UAE. The views and opinions of the grandmother and –more importantly- mother-in-law about breastfeeding practices were highly valued by and influential on the mother. Mothers in this study often found it impossible to ignore the advice of elders; they indicated that their mothers-

in-law were the key decision-makers as far as introducing foods other than breastmilk to their babies' diet was concerned.

According to the findings, even though breastmilk was regarded as the best food for infants, there was also a strong conviction that infants needed water and other traditional drinks such as yansun, hilba or grippe water. These fluids were given to new-born infants, based on the belief that they needed additional fluids especially plain water, to keep them hydrated or relieve them from colic pains. A common belief among mothers-in-law was that mothers often had insufficient milk, and babies needed water or other liquids to supplement breast milk.

The findings of the qualitative part of this research study indicate that strategies to promote exclusive breastfeeding should not focus only on mothers as targets for awareness, information and education programs. All relevant decision-makers, especially grandmothers, mothers-in-law and fathers, should be acknowledged and included. The mothers in this study were more inclined to behave according to the beliefs, experiences, expectations and recommendations of their mothers or mothers-in-law, rather than according to what they personally and originally intended on doing. This highlights a key problem that healthcare authorities face as they are responsible for changing the attitude of the grandmothers and mothers-in-law as well as empowering the mothers.

The qualitative study also revealed that some mothers had limited understanding of the term "exclusive breastfeeding". It showed that their main concerns as well as those of their mothers-in-law were about the quantity of breastmilk and whether it is sufficient for the baby for six months. This perception of milk insufficiency appears to be rooted in lack of information or lack of confidence concerning how to manage lactational problems; these may be the reasons which eventually led to supplementation (Powers, 1999; Binns & Scott, 2002). Mothers should be

made aware that breastmilk supplies all the necessary nutrients and hydration needed by the infant for the first 6 months. Ladas et al. (1972) reported that lack of information was related to all the reasons given for premature supplementation and discontinuation of breastfeeding.

It seems that breastfeeding awareness programs in the maternity units in the UAE have focused on the health benefits and the practices of breastfeeding without investigating to what extent mothers actually understood these recommendations and abided by them. The study found high prevalence of sub-optimal feeding practices, and showed the importance of working towards appropriate feeding for infants, with particular emphasis on exclusive breastfeeding for infants below 6 months of age.

Moreover, it seems that the promotion of exclusive breastfeeding by the MCH centers in the UAE is targeted at mothers, who attend health education sessions in the clinics. However, as the qualitative study findings indicated, such promotion might be inadequate, since the mothers were not the only party who always decided what their infants fed; mothers-in-law had valid input as far as this decision was concerned. It could be important to involve grandmothers and fathers in programs that promote breastfeeding. Through this, they question –and hopefully modify– their beliefs towards breastfeeding by receiving accurate and updated information. Grandmothers and mothers-in-law would thus be better prepared to exert a positive influence, so as to ensure successful breastfeeding practices for their daughters or daughters-in-law.

Feeding practices are major determinants of the health and nutritional status of children (WHO, 2003a). Breastmilk contains all the nutrients required by an infant for the first six months of life. In addition, breastfeeding has multiple other benefits, such as psychological benefits, physiological benefits like protection from illness, contraceptive benefits such as child spacing and economic benefits to mothers, children, families and

communities (Arenz et al., 2004; Gartner et al., 2005; Horta et al., 2007). Recently, more and more research is focusing on breastfeeding as a means of protection from childhood obesity (Arenz et al., 2004; Owen et al., 2005; Lawrence, 2010). Moreover, studies revealed that these diseases extend beyond infancy and affect the overall health of a nation. Breastfeeding makes a difference in lowering the risks of long-term obesity and all associated health risks, including cardiovascular diseases and diabetes (Horta et al., 2007; Ip et al., 2007). Huh et al. (2011) recently reported that the introduction of solids before the age of 4 months was associated with almost six fold increased odds of obesity when the child reaches three years of age. So the promotion of exclusive breastfeeding may be considered as a potential component of the primary public health strategy to decrease health risks and problems in the UAE. Especially that in the UAE, a country with high prevalence of obesity and non-communicable diseases such as diabetes and CVD (Ng. et al., 2011), promoting exclusive breastfeeding could be of particular importance, since this study revealed risky practices of Emirati mothers, such as low rates of exclusive breastfeeding, early introduction of solid feeding and early cessation of breastfeeding. WHO (2003a) reported that appropriate nutrition interventions to improve exclusive breastfeeding rates and appropriate complementary feedings of infants and young children are essential for reducing high rates of obesity and nutrition-related diseases.

The WHO and UNICEF developed the Global strategy for Infant and Young Child feeding (IYCF) in order to increase the world's awareness of the impact of breastfeeding on the nutritional status, growth, development, health and survival of infants and young children. It also urged countries to optimize exclusive breastfeeding and complementary feeding of infants and children (WHO, 2003a).

The findings of this study evaluated breastfeeding and complementary feeding practices among Emirati mothers in the UAE, comparing them to the

guidelines set by the WHO. Moreover, it investigated knowledge of optimal infant feeding practices among these mothers and among other influential family members. These findings provide a better understanding of the barriers to achieving optimal IYCF practices in the UAE.

8.2.1 Major findings

The results provided potential implications for clinical practices and public health policies on promoting and supporting breastfeeding. The current study revealed many important issues:

- Infant feeding practices were influenced by various factors such as parity, rooming in, frequency and type of delivery.
- Mothers at the risk of not exclusively breastfeeding or the risk of terminating breastfeeding early were identified as young primi mothers who are of moderate or high education.
- Influences that affect mothers' infant feeding decisions included healthcare facilities as well as family members such as fathers, grandmothers and – especially- mothers-in-law.
- Breastfeeding was perceived as the norm. Mothers were exposed to breastfeeding through the observation and the knowledge of family members.
- Lactation problems such as nipple problems and insufficient milk supply were factors that influenced breastfeeding practices and lead to supplementation.
- Early supplementation of fluids, especially water, was a common practice.
- Complementary solid food was given to the infants earlier than the recommended age of 6 months.
- There was evidence that there is a relation between lactational amenorrhea duration and exclusive breastfeeding, breastfeeding duration and early introduction of either formula milk or solid supplements, however the associations does not prove or demonstrate a direct causal chain but is epidemiologically strongly indicative of an underlying causal relationship.

- The mother's new pregnancy was the most common reason given for terminating breastfeeding.

It is worth mentioning that in the UAE, there are strong cultural and religious traditions and foundations which promote breastfeeding – but not necessarily exclusive breastfeeding and for 6 months.

Since breastfeeding is a process that is influenced by culture, promotional strategies need to be developed within the cultural context of the target population. Educational programmes on breastfeeding are more effective when they emerge from the culture itself (Riordan & Gill-Hopple, 2001). Information regarding infant feeding practices from different countries must not be projected to other cultures (Hauck & Irurita, 2002).

Using the findings of this study would be an important step to develop appropriate exclusive breastfeeding intervention programmes and campaigns, and to monitor the level of success in changing behaviours and improving child health.

8.3 Recommendations and implications for practice and research

The evidence emerging from this study might assist in creating a focus for the design of a national breastfeeding intervention programme in the UAE. The planning of public health interventions to promote longer and more exclusive breastfeeding practices requires understanding of the factors that affect breastfeeding, improving mother's knowledge and understanding of the recommendations and addressing the concerns expressed by the mothers about the quantity of milk.

The WHO global strategy for IYCF requires countries to assess before taking action, since the intervention programmes will be more successful in implementing activities after recognizing what needs to be done.

In order to optimize IYCF, findings and practices that need to be the focus of the intervention programme are highlighted hereafter.

- Young and primi mothers with moderate or high education were identified as a risky group which is prone to supplement or terminate breastfeeding at early ages.
- Influences on Emirati mothers' feeding practices and decisions were identified as mainly mothers-in-law, then grandmothers and fathers.
- Risky behaviours and practices that were identified in this study were:
 - o Feeding water and liquid supplements to infants less than 3 months of age.
 - o Feeding formula milk to infants less than 6 months of age.
 - o Feeding solid complementary food, particularly cereals, to infants less than 6 months of age.

The intervention program

The aim of the infant feeding intervention programmes should be put in the context of IYCF strategies; this is in order to change knowledge and behaviours, to increase exclusive breastfeeding rates and to encourage complementary feeding at the proper age of the infant thus optimizing the infant's health.

The objectives of the intervention should be as follows:

This intervention aims to protect, promote and support exclusive breastfeeding for the first six months, and continued breastfeeding up to 2 years and beyond, with the proper introduction of complimentary food after 6 months of the infant's age.

1- Promote exclusive breastfeeding for the first six months of the child's life: This requires that all health facilities offering maternity services implement the Baby-Friendly Health Facility Initiative (BFHI) and be certified as Baby-Friendly. Mothers are supported to initiate early breastfeeding within half an hour after delivery and to be rooming in with the baby. They should be counseled to breastfeed frequently on demand, both by day and

night. Moreover, it is advisable to strengthen information and communication on the importance of avoiding prelacteal feeds such as water, glucose water, teas and herbal preparations for newborn babies. Mothers should learn how to position and attach the baby to the breast correctly, and to completely empty one breast before offering the second, ensuring the baby gets the rich hind milk and avoiding breast problems.

Moreover, the intervention strategy should address the introduction of complementary foods at 6 months of the infant's age, stressing on continuing breastfeeding.

2- Promote timely, adequate, safe and appropriately fed complementary foods with continued breastfeeding up to 2 years or beyond: To ensure that children's requirements are met, complementary foods should be timely, adequate, safe and appropriately fed. Appropriate complementary feeding depends on accurate information and skilled support from the family, community and health care system.

8.3.1 The framework of intervention programme

The intervention programme should be multifaceted, using a combination of interpersonal communication strategies as well as media to change individual behaviour; at the same time, it should educate and engage those who influence the mother's feeding choices (Hector et al., 2004).

Health care professionals in the UAE may be able to support a woman to exclusively breastfeed for a longer period of time by designing an intervention that promotes the woman's desire to prolong exclusive breastfeeding, assists the woman to identify her existing support and enhances her own sense of breastfeeding self-efficacy. High maternal breastfeeding self-efficacy has been reported to be associated with prolonged breastfeeding (Dennis, 1999; McCarter-Spaulding & Kearney, 2001; Blyth et al., 2002).

8.3.1.1 Educational programme

Educational interventions have been recommended by many studies to support and promote breastfeeding practices (De Oliveria et al., 2001; Scott et al., 2001; Mattar et al., 2007). Educational interventions that aim to increase maternal self-efficacy are reported to be more effective than those that focus on enhancing knowledge (Ertem et al., 2001; Dennis, 2002; Dennis, 2003).

Breastfeeding education should occur during prenatal and postnatal periods. The target audience should include not only mothers but also influential family members, which were identified in this study as grandmothers, mothers-in-law and fathers. Problems as well as benefits need to be discussed. Moreover, the educational sessions should address the concerns expressed by the mothers, especially young primi mothers, and should include effective ways to overcome the anticipated breastfeeding problems such as cracked nipples and insufficiency of breastmilk. Mothers should also be educated about the importance of LAM as a birth spacing strategy and about the feeding practices that lead to prolonged lactational amenorrhea duration.

8.3.1.2 Postnatal Support

To maintain the new practice or behaviour, the mother needs support from her family and health workers after being discharged from the hospital. Postnatal support should include home visits, counseling at healthcare centers as well as peer and professional support groups. Evidence indicates that community-based breastfeeding promotion and support can be effective in increasing optimal breastfeeding and improving infant health (Haider, 2000) as mothers share experiences and learn from each other (Hoddinott et al., 2006). Peer support is recognized as an effective strategy to increase breastfeeding duration (Haider et al., 2002). Beliefs of grandmothers and mothers-in-law that this study identified as barriers to exclusive breastfeeding should specifically be addressed by peer counselors

as part of the training. It is essential to provide healthcare workers with technical, communication and counseling skills in order to increase their breastfeeding knowledge and hone their capacity to detect and resolve breastfeeding problems or difficulties. They also need to understand cultural beliefs and practices in order to provide effective counseling to breastfeeding women. So, support groups will provide the opportunity to negotiate with mothers to try out better practices or adopt new behaviours such as not giving water for the infant or not giving the infant traditional drinks when he/she cries. They follow up and empower mothers against family influences and practices that are unhealthy. Ekstorm et al. (2003) suggested providing grandmothers with the opportunity to discuss their breastfeeding perceptions with their daughters as a helpful intervention to support breastfeeding.

Moreover, postnatal education should include information about the appropriate latch and position for feeding and the adequate feeding process in order to address the problem of milk insufficiency. In this direction, Gatti (2008) suggested that for milk supply advice such as feeding on demand, checking how many wet and dry nappies a baby has, checking the baby's weight and checking the position and attachment of the baby at the breast are all positive ways that could help the mothers deal with this problem. Educating mothers about how to overcome breastfeeding problems will empower them and increases their self efficacy or confidence.

8.3.1.3 Social Marketing

Another part in the intervention programme is social marketing which includes advertisements in media such as TV, radio and print. These campaigns should target the community and healthcare providers, focus on supporting exclusive breastfeeding messages and encourage behavioural changes to eliminate unhealthy practices. Key messages that are clear and concise should address the behaviours identified in this study as deterring mothers from exclusive breastfeeding, such as giving water to quench thirst.

Mothers should know that, “Breastmilk alone is sufficient to quench thirst even in hot weather” and that “Breastmilk is sufficient to satisfy the hunger of the infant for 6 months”. The campaign should target common traditional fluids such as hilba, yansun and grippe water and highlight their adverse effects. “Supplementation would disturb breastmilk production due to process of supply and demand”; “if baby sucks less then breastmilk production will be less”.

The intervention strategies should include conducting formative research to shape explicit and effective messages, and monitoring as well as evaluating the programme’s progress.

It is worth noting that the Diffusion of Innovation Theory (Rogers, 1983) is useful for examining how new ideas and messages are introduced and adopted in a community. Mothers are likely to adopt a new behaviour if it is simple, practical, beneficial and socially accepted. It is important to note that mothers may believe that a certain behaviour will assist them in continuing to breastfeed, but may have little confidence in their own ability to execute that behavior (Dennis, 1999). Thus, to employ a behaviour successfully, and to have confidence in performing the specific behaviour, a mother must believe that it will help produce a certain outcome. Mothers need to feel as if they own their decisions about infant feeding. Ryan (1998) adds that infant feeding outcomes are more satisfactory, resilient and robust when women are positioned as agents of decisions and are socially supported in their infant feeding preferences. This entails supporting women to resist the dominance of older females, and especially mothers-in-law, which is particularly difficult when the baby is the mother’s first child and when she has no successful experience of her own on which to draw.

8.3.1.4 Behaviour changes theory

So, strategies for improving the breastfeeding practices of Emirati mothers should include approaches that focus on individual as well as group

behaviour based on behaviour changes theory. Breastfeeding interventions will likely be strengthened with the incorporation of aspects of the behavioural theory, and they can be employed to better understand breastfeeding decisions (Risica, 2008). Behavioral theories can help guide investigators towards the identification and understanding of modifiable factors influencing the breastfeeding decision (Humphreys et al., 1998). These theories should be incorporated into counseling strategies and materials developed in the clinical and public health facilities to encourage and improve breastfeeding initiation, duration and exclusivity. This could result in more successful breastfeeding educational strategies.

Hence, in order to aid health care professionals in planning individualized interventions, the Breastfeeding Self-Efficacy Scale could be administered (Dennis, 2003). This tool not only identifies high-risk mothers with low breastfeeding confidence but also provides important assessment information to help individual health care professionals plan to meet the special needs of their population. Increasing a new mother's confidence in her ability to breastfeed will help her persevere and continue even if she encounters difficulties. Humphreys et al. (1998) reported that the lack of theoretically informed breastfeeding interventions may be one factor contributing to the plateau in breastfeeding rates. So, additional research is needed to evaluate these proposed confidence-building strategies, determine to what extent breastfeeding self-efficacy can be enhanced, alter breastfeeding outcomes and overcome barriers in the UAE. These theories should be incorporated into counseling strategies and materials developed for the clinical and public health programs which encourage and improve breastfeeding initiation, duration and exclusivity.

8.3.2 Future research and intervention programmes

The planning of public health interventions to promote longer and more exclusive breastfeeding practices in the UAE requires an understanding of the factors that affect breastfeeding, improving mother's knowledge and

understanding of the recommendations, and addressing the concerns expressed by the mothers about the quantity of milk for the recommended duration.

Given the increasing evidence that early nutrition practices, specifically the early introduction of solid supplements, can have not only short-term but also longer-term effects on the health status of the infants, more research is needed to investigate this linkage and its influence on NCDs in the UAE.

It is also necessary to educate Emirati mothers on the relationship between exclusive breastfeeding on one hand and short-term and long-term health benefits for the mother and the child on the other.

This is the first interview study in this area of research in the UAE; it should be considered as a starting point for the development of a theory about these mothers' breastfeeding experiences. This study also provides considerable insight into knowledge as well as current attitudes and practices related to infant feeding in the UAE. The findings can help shape nutrition interventions in the UAE, and can be particularly useful in the development of educational programmes aimed at promoting a positive change in infant feeding behaviours. It would be interesting to repeat this research study, with larger sample size, at regular intervals in order to monitor changes in the factors which influence infant feeding. In the future, more focus groups should be examined in order to better understand the cultural factors connected with breastfeeding. There needs to be continuous monitoring of the implementation of the Baby Friendly Hospital principles in all the UAE hospitals and strong implementation of the Code in UAE.

Moreover, The Ministry of Health in the UAE adopted the WHO growth charts to be implemented in all MCH centers. Using the WHO growth charts to evaluate the weight changes of a baby will encourage more mothers to

breastfeed exclusively and for longer durations as their infants will not be categorized as not thriving.

The findings of this study should be the foundation of future studies that investigate the feeding patterns in the UAE, and eventually assist in creating a national infant feeding policy. There is a need for a larger more detailed study following women from before birth until they stop breast feeding their babies, the thoughts and feelings of the mother and her social networks at each stage of the process should be explored. The study needs to address the information requirements of women at each stage, taking account of their attitudes to breast feeding. Breastfeeding rates should be monitored regularly to assess whether breastfeeding initiation, duration and exclusivity rates are improving. This could be done through continuing research and surveillance using comparable methods, thus making it possible to identify common factors and breastfeeding practices trends for more effective intervention programmes.

Therefore, an infant feeding policy in the UAE should be integrated in the context of WHO Global Strategy for IYCF. It should provide planners and implementers involved in mother and infant health with clear guidelines about the appropriate IYCF practices. This will contribute to improving the health, nutrition and well-being of both infants and mothers by protecting, promoting, supporting and monitoring breastfeeding. Moreover, national targets and goals should be set towards increasing the percentage of infants who are exclusively breastfed for the first 6 months of age in the UAE.

The Public Health Policy should be based on evidence from research findings employed to support the interventions and determine the level of effectiveness. The approaches used by LINKAGES in Madagascar, India and Mexico provided successful interventions to improve breastfeeding practices in some countries, and can serve as models for future intervention programmes in the UAE. (WHO, 2003a)

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Appendix I

Questionnaire

A Questionnaire for investigating Breastfeeding and Feeding Practices of Infants and Young Children in the United Arab Emirates

Quest. No:

General Information:

1- Emirate: 1- Abu Dhabi 2- Dubai 3- Al Ain

2- Mother's Age: ----- year

3- Mother's Marital age: ----- year

4- Mother's level of education: 1- illiterate 2- read & write 3- elementary
4- intermediate 5- secondary 6- diploma 7- university

5- Mother's occupation: 1- working fulltime, type:----- 2- not working

6- Father's level of education: 1- illiterate 2- read & write 3- elementary
4- intermediate 5- secondary 6- diploma 7- university

7- Father's occupation: 1- working, type: ----- 2- not working

8- Do you have a maid at home: 1- yes 2- no

9- Family size: -----

Information about the Infant:

10- Infant sex: 1- male 2- female

11- Infant age: ----- month

12- Infant weight: ----- Kg

13- Infant weight at birth: ----- Kg

14- Number of children in the family (age below 10 yrs): ----- child

15- Order of the infant in the family: 1 2 3 4 5 6

16- Age of the directly older child: 1- ----- month 2- none

Feeding & Weaning Practices

17- When did you start breastfeeding: 1- directly after delivery

2- after ----- hour 3- after one day 4- after ----- days

5- didn't breastfeed

18- Was the newborn given any fluids other than breast milk during his first

three days: 1- yes, what: 2-no

19-After birth, was the infant placed in: 1- bed with mother

2- in separate crib but in the same room 3- in a separate room

20- Is your infant still breastfeeding: 1- yes 2- no

21- If (yes) when do you breastfeed: 1- upon demand

2- in definite time

22- If (no) did you breastfeed him before: 1- yes 2- no

3- did not breastfeed

23- How long did you breastfeed him before you stop:

1 ----- month 2-stillbreastfed 0- did not breastfeed

24- Reason for refusal breastfeeding : 1-mother sickness

2-mother refusal 3-child refusal 4-not enough milk

5- child reached weaning age 6-mother pregnancy

7- child still breastfeed

25- How long did you exclusively breastfeed : ----- months

0- didn't breastfeed

26- Do you breastfeed at night : 1- yes 2-no

27- If yes , how many times:

28- Weaning method : 1- use of substance ----- 2- keeping infant away

3- other, state: ----- 4- still breastfeed

29- Does your infant have food allergy : 1- yes 2- no

30- If yes, state the kind of food : -----

31- Do you give him supplements : 1- vitamins 2- minerals 3-other: -----

32- Do you give him folk medicine: 1- yes, what: ----- 2- No

When you did first introduced the following complementary food to your infant's diet :

	<u>Type of food</u>	<u>Age of the infant</u>	
33-	Home prepared cereals	----- month	0-did not add
34-	cereals(ready prepared)	----- month	0- did not add
35-	formula milk	----- month	0-did not add
36-	fruits	----- month	0-did not add
37-	eggs	----- month	0-did not add
38-	meat	----- month	0-did not add
39-	chicken	----- month	0-did not add
40-	fish	----- month	0-did not add

41- vegetables ----- month 0-did not add
42- legumes ----- month 0-did not add
43- water ----- month 0-did not add

44- Method of feeding complementary food: 1- by spoon 2- bottle 3- cup
4- spoon&cup 5- spoon&bottle 6- cup&bottle 7- spoon,cup&bottle
0- still breastfeeding

45- Do you feed him before or after breastfeeding: 1- before 2- after
3- both 4- didn'tbreastfeed 0- still breastfeeding

Mother's Health Data:

46- Type of delivery: 1- normal 2- caesarian

47- Are you pregnant now: 1- yes 2- no

48- Do you have any health problem: 1- yes 2- no

49- If yes what kind:-----

50- Do you use contraceptive methods: 1- yes 2- no

51- Did you have mastitis or sore nipples: 1- yes 2- no

52- Did your menstruation period cease while breastfeeding: 1- yes 2- no

53- If yes, when did you first have your period

(at least one day of spotting):----- mths

54- What is your weight: ----- kg 0-I don't know

55- What is your height: ----- cm 0 -I don't know

Appendix II

Information Sheet

This study is investigating the factors influencing breastfeeding and feeding practices of UAE infants from birth till two years of age.

To do that we need to interview mothers who have infants in the same age category .A questionnaire will be filled out about the nutritional habits, feeding patterns, socioeconomic, social and health information of the mother.

This study is anonymous and no names will be recorded .The questions are coded and the information given will be secured by the investigator.

Moreover there are no potential risks and you will have all the right to ask about any information and clarifications needed . Also you have the right to refuse to participate and stop the interview at any time and this will not affect your medical care

Incase of any inquiries you could contact the investigator at the following address:

Hadia Radwan
POBox: 17831
Al Ain
UAE
Tel:037658933

Appendix III

Informed Consent Form

You are voluntarily making a decision whether or not to participate in this research study. Your signature certifies that the content and meaning of the information sheet have been fully explained to you. Your signature also certifies that you have had all your questions answered to your satisfaction.

Signature of the Subject Date

In my judgment the subject is voluntarily and knowingly giving informed consent to participate in this research study.

Signature of the investigator Date

Appendix IV

Agenda of Questions

Were you educated about breastfeeding techniques and benefits in MCH and the hospital?

Where did you deliver?

Did the hospital staff offer any drinks to the baby?

Who helped you in caring for the baby at home?

Did you give any fluids to your baby at the hospital? At home?why?

What are your sources of information about breastfeeding?

What influenced your breastfeeding decision?

Do you know what exclusive breastfeeding is?

What is your opinion about WHO guidelines?

Tell me how you feel about breastfeeding in public

Do you watch TV advertisements about baby food?

Appendix V

Published paper and abstracts of conference presentations

- ♦ Radwan, H., Musaiger, A.O., and Hachem, F. 2009. Breastfeeding and Lactational Amenorrhea in UAE. *Journal of Pediatric Nursing*, 24(1):62-68.
- ♦ Radwan, H. 2006. Breastfeeding and Lactational Amenorrhea in UAE. *The First Gulf Conference on Health & Nutrition of School Children & Adolescents*, in Bahrain, November 28-30.
- ♦ Radwan, H. 2009. Breastfeeding and Weaning Practices in UAE. *Annals of Nutrition & Metabolism*, 19th International Congress of Nutrition, Bangkok, Thailand, p.426.