Determinants of the Initiation and Duration of Breastfeeding among Women in Kuwait

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Abstract

Regular breastfeeding surveillance is essential to determine to what extent national breastfeeding targets are being met and how breastfeeding practices change over time. There have been irregular infant feeding studies or national surveys carried out in Kuwait so it is difficult to assess secular trends in breastfeeding practices. The objective of the Kuwait Infant Feeding Study (KIFS) was to identify the incidence and prevalence of breastfeeding up to 26 weeks postpartum among a population of women living in Kuwait and to identify the factors associated with the initiation and duration of breastfeeding.

A sample of 373 women recruited shortly after delivery from four hospitals in Kuwait completed a structured, interviewer-administered questionnaire and follow-up telephone interview at 6, 12, 18 and 26 weeks postpartum. Multivariate logistic regression analysis was used to identify those factors independently associated with the initiation of breastfeeding and survival analysis was used to examine the duration of breastfeeding.

In total, 92.5% of mothers initiated breastfeeding and at discharge from hospital the majority of mothers were partially breastfeeding (55%), with only 30% of mothers fully breastfeeding. Prelacteal feeding was the norm (81.8%) and less than 1 in 5 infants (18.2%) received colostrum as their first feed. Only 10.5% of infants had been exclusively breastfed prior to hospital discharge, the remainder of breastfed infants having received either prelacteal or supplementary infant formula feeds at some time during their hospital stay. At six months of age, 39% of mothers were still breastfeeding but none of the women were fully or exclusively breastfeeding. The median duration of any breastfeeding duration was 13.9 weeks.

Breastfeeding at discharge from hospital was independently positively associated with paternal support for breastfeeding and negatively associated with delivery by caesarean section and with the infant having spent time in the Special Care Nursery. Mothers originally from other Arab countries were more likely to initiate breastfeeding in hospital than Kuwaiti mothers. Women whose husbands worked in sales or clerical occupations and Kuwaiti national mothers were at higher risk of early breastfeeding termination. Women whose husband or own mother preferred breastfeeding, breastfed for longer than those women whose husbands or mothers preferred formula feeding or were ambivalent about how they fed the infant. Hospital-related factors including time of first feeds, type of first feed, age of introducing a pacifier and feeding on demand were significantly associated with breastfeeding duration.

The results of this study indicate that while breastfeeding is almost universally initiated, very few women achieve the WHO recommendations of exclusive breastfeeding to 6 months of age. The reasons for the high use of prelacteal and supplementary formula feeding warrant further investigation. Data collected in this study will contribute to the limited breastfeeding surveillance data available for Kuwait and inform future public health policy. Hospital policies and staff training are needed to promote the early initiation of breastfeeding and to discourage the unnecessary use of infant formula in hospital, in order to support the establishment of exclusive breastfeeding among mothers in Kuwait.

Author's Declaration

I declare that the work contained within this thesis is original and is the work of the author Manal Dashti. I have been solely responsible for organization and data collection through recruitment, as well as contacting subjects of this study by telephone follow up, data handling, processing, analyzing, unless otherwise referenced.

Mrs. Manal Dashti, MSc

Professor Christine Edwards PhD. BSc, RNutr, FHEA

بسم الله الرحمن الرحيم

"وَالْوَالِدَاتُ يُرْضِعْنَ أَوْلَادَهُنَّ حَوْلَيْنِ كَامِلَيْنِ ۖ لِمَنْ أَرَادَ أَنْ يُتِمَّ الرَّضَاعَةَ ۚ وَعَلَى الْمَوْلُودِ لَهُ رِزْقُهُنَّ وَكِسْوَتُهُنَّ بِالْمَعْرُوفِ ۚ لَا تُكَلَّفُ نَفْسٌ إِلَّا وُسْعَهَا ۚ لَا تُضَارَّ وَالِدَةٌ بِوَلَدِهَا وَلَا مَوْلُودٌ لَهُ بِوَلَدِهِ ۚ وَعَلَى الْوَارِثِ مِثْلُ ذَٰلِكَ ۗ فَإِنْ أَرَادَا فِصَالًا عَنْ تَرَاضٍ مِنْهُمَا وَتَشَاوُرٍ فَلَا جُنَاحَ عَلَيْهِمَا ۗ وَإِنْ أَرَدْتُمْ أَنْ تَسْتَرْضِعُوا أَوْلَادَكُمْ فَلَا جُنَاحَ عَلَيْكُمْ إِذَا سَلَّمْتُمْ مَا آتَيْتُمْ بِالْمَعْرُوفِ ۗ وَاتَّقُوا اللَّهَ وَاعْلَمُوا أَنَّ اللَّهَ بِمَا تَعْمَلُونَ بَصِيرٌ"

البقرة (233)

In the Name of God the most merciful the most powerful

PICKTHAL: *Mothers shall suckle their children for two whole years; (that is) for those who wish to complete the suckling. The duty of feeding and clothing nursing mothers in a seemly manner is upon the father of the child. No-one should be charged beyond his capacity. A mother should not be made to suffer because of her child, nor should he to whom the child is born (be made to suffer) because of his child. And on the (father's) heir is incumbent the like of that (which was incumbent on the father). If they desire to wean the child by mutual consent and (after) consultation, it is no sin for them; and if ye wish to give your children out to nurse, it is no sin for you, provide that ye pay what is due from you in kindness. Observe your duty to Allah, and know that Allah is Seer of what ye do.*

(Al Baqara, 233)

"While breastfeeding may not seem the right choice for every parent, it is the best choice for every baby"

~Amy Spangler

This is statement could not hold more truth

°°

It is like a wake-up call for all moms-to-be

°°

Helps in making the decision

°°

Encouraging not to give-up on breastfeeding

°°

Suggesting that the sacred experience of breastfeeding is worth trying

°°

As the bond you share with your little one is unforgettable

°°

I did it & was glad I did it

°°

It was for my girls & I will cherish our time together forever

°°

Dedicated to my family

Terminology glossary

Almost exclusively breast-fed: Allows occasional tastes of other liquids, traditional foods, vitamins, medicines, etc. (Labbok, 2000)

Artificial feeding: Infant is fed only on a breast-milk substitute (UNICEF., 2008)

Breastfeeding and any breastfeeding: The child has received breast milk direct from the breast or expressed (Labbok et al., 2006)

Breastfeeding on demand: No restrictions on the frequency or length of breastfeeds

Breast milk substitute: Any food being marketed or otherwise represented as a partial or total replacement for breast milk, whether or not it is suitable for that purpose (UNICEF., 2008)

Bottle-feeding: The infant has received any liquid or semi-solid food (including breastmilk) from a bottle with a nipple/teat (Labbok et al., 2006)

Colostrum: The yellow or golden first milk produced in the first days after delivery (WHO, 2010b)

Complementary feeding: The child has received both breast milk and solid or semi-solid food. Allows the infant to receive any food or liquid including non-human milk (Labbok et al., 2006)

Duration of breastfeeding: The length of time that a child received breast milk

Early Breastfeeding Initiation: Initiate breastfeeding within one half-hour of birth (UNICEF., 1991)

Exclusive breastfeeding: No other food or drink, not even water, except breast milk, but allows the infant to receive drops and syrups (vitamins, minerals and medicines) (WHO, 2001)

Formula feeding: Infant is fed only on a breast-milk substitute or formula which is any artificial milk for babies made out of a variety of products, sugar, animal milks, soybean, and vegetable oils. They are usually in powder form, to mix with water (UNICEF., 2008)

Full breastfeeding: Exclusive breastfeeding and predominant breastfeeding together constitute full breastfeeding (Labbok et al., 2006)

Incidence of breastfeeding, ever breastfed: The child has received breast milk on at least one occasion

Lactogenesis: The onset of milk production (Wambach *et al.*, 2005)

Mixed feeding: Breastfeeding while also giving other fluids, formula or foods (WHO, 2009), and infant receives both breast milk and any other food or liquid including water, non-human milk and formula before 6 months of age (UNICEF., 2008)

Partial breastfeeding: Mixed feeding, designated as high, medium, or low. Methods for classification suggested include percentage of calories from breastfeeding, percentages of feeds that are breastfeeds, etc. (Labbok, 2000)

Predominant breastfeeding Means that the infant's predominant source of nourishment has been breast milk (including milk expressed or from a wet nurse as the predominant source of nourishment). However, the infant may also have received liquids (water and water-based drinks, fruit juice) ritual fluids and ORS, drops or syrups (vitamins, minerals and medicines). It does not allow the infant to receive anything else (in particular non-human milk, food-based fluids) (WHO, 2001)

Prevalence of breastfeeding: The proportion of children breastfed at selected time points

Prelacteal feed: Administration of any food or drink to the infant before the first breast-feeds (WHO, 2009)

Rooming-in: All mothers should be enabled to stay with their baby 24 hours a day. Separation should only occur for acceptable clinical reasons or as a result of a fully informed choice by the mother (UNICEF., 1991)

Supplementary feeding: Any non-breast milk item (including water) consumed by a breast fed infant after the first breastfeed (WHO, 2009)

List of abbreviations

AdjOR	Adjusted Odds Ratio
AdjRR	Adjusted Relative Risk
CI	Confidence Intervals
IFS	Infant Feeding Survey
IMS	Insufficient Milk Syndrome
LBW	Low Birth Weight (<2500g)
LR	Logistic Regression
OR	Odds Ratios
ORS	Oral Rehydration Salts/ Solution
RR	Relative Risk
SA	Saudi Arabia
SCN	Special Care Nursery
SES	Socio-economic Status
SIDS	Sudden Infant Death Syndrome
SIgA	Secretory Immuno-globulin A
SPSS	Statistical Package for the Social Sciences
UAE	United Arab Emirates
UK	United Kingdom
USA	United States of America
VLBW	Very low birth weight (<1500 gms)
WHO	World Health Organization

Declaration of Publications

List of publications arising from this work

Publication

Dashti M, Scott JA, Edwards CA & Al-Sughayer M (2010) Determinants of breastfeeding initiation among mothers in Kuwait. *Int Breastfeed J* **5**, 7.

(Appendix 8)

ABSTRACT

Dashti, M., Scott, J.A., Edwards, C. A., Al-Sughayer, M. Prevalence and exclusivity of breastfeeding at discharge from hospital among Kuwait mothers. 19th International Congress of Nutrition, Bangkok. Annals of Nutrition and Metabolism 2009; 55 (Suppl 1): 477

(Appendix 7)

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1.1 Introduction

1.1.1 Purposes of Chapter 1

The purpose of this chapter was to briefly discuss the short-term and long-term infant and maternal health benefits of breastfeeding and the WHO latest breastfeeding recommendations. The importance of identifying modifiable and non-modifiable factors associated with breastfeeding initiation and duration was also discussed. In addition, this chapter aimed to briefly review the determinants of breastfeeding initiation and duration among women in Western countries from major recent systematic reviews and to review the determinants of breastfeeding initiation and duration among women from Middle Eastern countries. The reviews enabled for comparing findings from Western and Middle Eastern countries in terms of weaknesses and strengths based on study design and technique of data analysis. Finally, this chapter discussed the limitations of previous Middle Eastern studies.

1.1.2 Overview of breastfeeding benefits

Breastfeeding is recognised internationally as the optimal way to feed an infant (WHO, 2003). Breast milk provides concrete health benefits to both infants and mothers (Lawrence, 1994) and there is wide spread evidence on the effects of breastfeeding on short- and long- term infant and maternal health outcomes (Horta *et al.*, 2007a; Ip *et al.*, 2007). Research has shown that compared with bottle-fed infants, breastfed infants have a better general health (Bhargava, 1983), growth and development (Dewey, 2001; Khadivzadeh & Parsai, 2004; Kramer *et al.*, 2004; Dewey *et al.*, 2005) and lower risk of many acute and chronic illnesses because of its unique bioactive and immuno-protective properties (Lawrence & Pane, 2007). However, it is not the primary purpose of this literature review to critically evaluate the large volume of evidence associating breastfeeding with short- and long-term health outcomes for both the infant and mother. This evidence has been well reviewed in two major systematic reviews and meta-analyses (Horta *et al.*, 2007a; Ip *et al.*, 2007), the features of which are briefly summarized in Table 1.1.

Horta et al (2007a) reviewed the evidence related to the long-term benefits of breastfeeding in developed countries and concluded that breastfed infants experienced

lower mean blood pressure and total cholesterol, in addition to higher performance on intelligence tests. Breastfed infants also had lower rates of overweight/obesity and type-2 diabetes in later life. There was a statisticaly significant effect for all outcomes; however, for some outcomes their magnitude was relatively modest (Table 1.2).

The review by Ip et al (2007) differed slightly from that of Horta et al. (2007) in that they investigated the evidence for both short and long-term breastfeeding-related health outcomes for infants as well as mothers. Although, their review was limited to data from developed countries, most of the epidemiological evidence related to the long-term health outcomes is derived from data from developed countries so they arrived at similar conclusion to those of Horta and colleagues (2007a) with a few exceptions (Table 1.3).

Table 1.1: Summary of the two major systematic reviews on benefits of breastfeeding

Author, year	Horta et al., 2007	Ip et al., 2007
AIM	To investigate the association of **BF & long-term health outcomes** including blood pressure, diabetes & related indicators, serum cholesterol, overweight & obesity, & intellectual performance	To assess the evidence on **the effects** of **BF on short- & long term infant & maternal health outcomes including** acute otitis media, childhood asthma, cognitive development, SIDS, infant mortality, NEC, maternal breast cancer, return to pre-pregnancy weight, & maternal Type 2 Diabetes in developed countries
Selection Criteria	Observational & randomized studies	Systematic reviews/meta-analyses, observational studies, randomized & non-randomized comparative trials, prospective cohort, & case-control studies
Published Languages	English, French, Portuguese & Spanish	English
Search Strategy	MEDLINE (1966 to March 2006) & Scientific Citation Index databases	MEDLINE, CINAHL, & the Cochrane Library in NOV 2005
Where conducted?	WHO in Geneva, Switzerland, & the University of Pelotas, Brazil	Tufts-New England Medical Centre Evidence-Based Practice Centre, Boston, Massachusetts
Inclusion /Exclusion of studies	• Studies restricted to outcome measurement in infants were excluded from the meta-analyses • Only those studies with internal comparison groups were included • The type of comparison group used (never breastfed, breastfed for less than *x* months, etc.) did not constitute an eligibility criterion, but, the way in which BF was categorized was investigated as a potential source of heterogeneity among the studies	• They updated existing systematic reviews with data from primary studies published subsequent to those reviews • However, they reviewed only primary studies for outcomes that have not been previously evaluated systematically including osteoporosis, ovarian cancer, postpartum depression & infant mortality
Data extraction & analyses	• Two reviewers independently evaluated study quality, using a standardized protocol, & disagreement was resolved by consensus rating • Fixed and random-effects models were used to pool the effect estimates, & a random-effects regression was used to assess several potential sources of heterogeneity	• Used meta-analysis to expand on the individual studies' findings, if it was appropriate & feasible to do so • The studies were graded for methodological quality & those examining only formula feeding were excluded
Number of studies	**Effect on blood pressure:** 30 & 25 estimates for systolic & diastolic blood pressure, respectively **Effect on serum cholesterol:** 23	They screened over 9,000 abstracts. Forty-three primary studies on infant health outcomes, 43 primary studies on maternal health outcomes, & 29

	studies, 28 estimates of total cholesterol were derived **Effect on overweight and obesity:** 39 estimates of the effect of BF on prevalence of overweight/obesity **Effect on type-2 diabetes:** five papers evaluated relationship between BF duration & type-2 diabetes **Effect on intelligence & schooling:** For the assessment of performance in intelligence tests, they obtained data from eight studies that controlled for intellectual stimulation at home & collected information on infant feeding in infancy, in which the duration of BF was of at least one month among breastfed subjects	systematic reviews or meta-analyses that covered approximately 400 individual studies were included in the review
Limitations of study	• Because nearly all studies included in the analyses are observational, it is not possible to completely rule out the possibility that these results may be partly explained by self-selection of BF mothers or by residual confounding • Publication bias was assessed by examining the effect of study size on the estimates and was found not to be important for most outcomes • Very few studies were available from low/middle-income countries, where the effect of BF may be modified by social & cultural conditions	• Majority of data obtained from observational studies • The wide range of quality of the body of evidence across different health outcomes • Limited only to studies from developed countries, therefore not generalisable to low/middle income countries • Some results must be interpreted with caution because of the possibility of recall biases & suboptimal adjustments for potential confounders in the studies • Possibility of bias in the smaller studies i.e. case control studies (smaller study size) • The lack of adjustments for potential confounders in some studies could exaggerate the magnitude of an association (i.e. Type 2 diabetes)
Reviewers conclusion	The available evidence suggests that BF may have long-term benefits **Infants outcome** • Subjects who were BF experienced ↓ mean **blood pressure & total cholesterol**, as well as higher performance in **intelligence tests** • Furthermore, the prevalence of **overweight/obesity & type-2 diabetes** was ↓ among BF subjects • All effects were statistically	Despite these limitations, the reviewers concluded that a history of BF is associated w/ ↓ risk of many diseases in infants & mothers from **developed countries** **Infants outcome** • ↓ RR: **Acute ostitis media, atopic dermatitis, non-specific gastrointestinal infections** during the first year of life, **obesity** in adolescence & adult life, hospitalization due to **lower respiratory tract diseases** in infants <1 year of age, **Type 2 diabetes**, **childhood leukaemia,**

	significant, but for some outcomes their magnitude was relatively modest	**SID** • The studies found little or no evidence for an association between BF in infancy & **cognitive performance** in childhood • Mixed conclusions w/ **asthma** including 2 studies finding an ↑ risk of asthma associated w/ BF. They updated meta-analysis w/ new studies & their analysis showed that BF for at least 3 months was associated w/ a 27 % ↓ in the risk of asthma. Relationship between BF & the risk of asthma in older children & adolescents remains unclear & will need further investigation • Unclear & need further investigation the risk ↓ **cardiovascular disease**: systolic blood pressure, LDL cholesterol, cardiovascular mortality • Results for **Type 1 Diabetes** suggest that BF for at least 3 months ↓ risk of childhood Type 1 Diabetes compared w/ BF for < 3 months. However, these results must be interpreted w/ caution due to recall bias & potential confounders • Because of the limited data, relationship between BF & **infant mortality** in developed countries remains unclear & further investigation is needed **Maternal outcomes:** • Effect of BF **Return to Pre-pregnancy Weight** remains unclear • **Maternal Type 2 Diabetes:** In parous women without a history of gestational diabetes, each additional year of BF was associated w/ RR of developing Type 2 Diabetes • Little or no evidence between lifetime BF duration & risk of fractures due to **osteoporosis** • More investigation needed w/ **postpartum depression** • Consistent evidence suggests that there is an association between BF & a RR of **breast & ovarian cancer**

RR= Reduced Risk

Table 1.2: Long-term health outcomes associated with breastfeeding (Horta *et al.*, 2007b)

Long term outcomes	Pooled effect size 95% CI – favouring breastfeeding
Blood pressure SBP DBP	 mean difference: -1.21 mmHg; 95% CI: -1.72 to -0.70 mean difference: -0.49 mmHg; 95% CI: -0.87 to -0.11
Serum cholesterol Adults	 mean difference: -0.18; 95% CI: -0.30 to – -0.06 mmol/L
Overweight and obesity	pooled OR: 0.78; 95% CI: 0.72-0.84
Type-2 diabetes	pooled OR: 0.63; 95% CI: 0.45-0.89
Cognitive performance	mean difference: 4.9 points ; 95% CI: 2.97-6.92

SBP, Systolic Blood Pressure; DBP, Diastolic Blood Pressure

For instance, Ip and colleagues (2007) found little or no relationship between breastfeeding in term infants and cognitive performance after reviewing one well-performed sibling analysis and three prospective cohort studies which adjusted their analyses specifically for maternal intelligence. However, most studies adjusted their analyses for socioeconomic status and maternal education but not specifically for maternal intelligence, and for those studies that reported a significant effect after specific adjustment for maternal intelligence, residual confounding from other factors such as different home environments cannot be ruled out. Horta et al (2007a) found a relatively small increase in cognitive development which is open to debate because this was found in studies that controlled for socioeconomic status and stimulation at home. Also, it is still unclear whether the association is related to the properties of breast milk itself or whether breastfeeding enhances the bonding between mother and child which then contributes to intellectual development.

Table 1.3: Comparison of significant findings from two major reviews

Health outcomes	(Horta *et al.*, 2007a)	(Ip *et al.*, 2007)
Infants health outcomes		
Acute Otitis Media	NR	↓ RR
Atopic dermatitis	NR	↓ RR
Non-specific gastrointestinal infections (1st yr)	NR	↓ RR
Obesity in adolescence & adult life	Prevalence of overweight/obesity ↓ among BF subjects	↓ RR
Lower respiratory tract diseases	NR	↓ RR
Type 2 Diabetes	Prevalence Type 2 Diabetes	↓ RR

	↓ among BF subjects	
Childhood leukaemia	NR	↓ RR
SID	NR	↓ RR
Cognitive performance in childhood	Subjects who were BF experienced ↑ performance in intelligence tests	Little or no evidence for an association between BF in infancy & cognitive performance in childhood
Asthma	NR	• Mixed conclusions w/ asthma incl. 2 studies finding ↑ risk of asthma associated w/ BF • Updated meta-analysis w/ new studies: BF for at least 3 months associated w/a 27% ↓ in risk of asthma • The relationship between BF & risk asthma in older children & adolescents remains unclear & need further investigation
RR cardiovascular disease: systolic blood pressure, LDL cholesterol, cardiovascular mortality	Subjects who were BF experienced ↓ mean blood pressure & total cholesterol	Unclear & need further investigation
Type 1 Diabetes	NR	• BF for at least 3 months ↓ risk childhood Type 1 Diabetes compared w/ BF for < 3 months • Results must be interpreted w/ caution due to recall bias & potential confounders
Infant Mortality	NR	Because of the limited data, the relationship between BF & infant mortality in developed countries remains unclear & further investigation is needed
Maternal Health outcomes		
Return to Pre-pregnancy Weight	NR	Effect of BF remains unclear
Maternal Type 2 Diabetes	NR	In parous women w/out history of gestational diabetes, each additional year of BF was associated w/ ↓ risk Type 2 Diabetes
Osteoporosis	NR	Little or no evidence between lifetime BF (D) & risk of fractures due to osteoporosis
Postpartum depression	NR	More investigation needed
Breast & ovarian cancer	NR	Consistent evidence suggests that there is an association between BF & a reduced risk

RR= Risk Reduction; NR= Not Reviewed

Other difference between the two reviews was on the effect of breastfeeding on cardiovascular disease. Ip and colleagues (2007) indicated that the correlation of breastfeeding with risk reduction of cardiovascular disease markers is unclear and needs further investigation due to the deficiencies in data, biases and major limitations of studies, whereas Horta (2007b) concluded that subjects who were breastfed experienced a lower mean blood pressure and total cholesterol during adulthood. However, socioeconomic status is one of the most important confounders in studies of long term effects of breastfeeding. The variation in the direction of confounding by socioeconomic status can lead to overestimation or underestimation of the beneficial effect of breastfeeding and even they are controlled for through multivariable analyses, there is a residual confounding. So, although the Horta's review concluded with a positive effect of breastfeeding on reducing cardiovascular disease, they suggested that because high socioeconomic status is related to a lower prevalence of cardiovascular disease, this would overestimate the long-term benefits of breastfeeding.

Table 1.4: Association of breastfeeding with infants and maternal short- and long- term health outcomes

Health outcomes	Effect size favouring BF
Infant Short-term outcomes:	
Infection diseases	
Otitis Media	Overall: pooled OR: 0.60; 95% CI: 0.46-0.78
Non-specific gastroenteritis	Unadjusted pooled estimate of the cohort studies: OR 0.36; 95% CI 0.32, 0.41; heterogeneity $p<0.01$ Unadjusted pooled estimate of 2 case control studies: OR 0.54; 95% CI 0.36, 0.80; heterogeneity $p=0.35$ **Comments:** • Majority of studies suffered from methodological deficiencies; 4 studies fulfilled criteria of controlling for detection bias, analyses of confounders, having a clear definition of infant feeding practices & infectious outcomes; 3 of these studies reported BF was protective against non-specific GI infection • Only unadjusted estimate was reported in the summary
Lower respiratory tract infection	Relative Risk: 0.28, 95% CI 0.14-0.54
SIDS	AOR: 0.51, 95% CI 0.51-0.81
Infant mortality	Limited data in this area, unclear evidence
Infant Longer-term outcomes	
Cognitive development	NA
Childhood cancer (including Leukaemia)	Pooled OR: 0.91; 95%CI: 0.83-1.00) Pooled OR: 0.80; 95% CI: 0.71-0.91)
Type II diabetes	Pooled AOR: 0.61; 95% CI: 0.44-0.85
Asthma	OR: 0.72; 95% CI: 0.62-0.84 **Comments**: • A well-performed meta-analysis from 2001 concluded that breastfeeding was associated with a

	reduction in the risk of developing asthma. This association was stronger in those subjects with a positive family history. However, three new primary studies and one follow up study reported conflicting results • Further studies concerning the effect of a family history of asthma on long-term outcome of asthma is warranted
Atopic dermatitis	OR: 0.68; 95% CI: 0.52-0.88
Blood Pressure	There is an association between a history of bf during infancy & a small reduction in adult blood pressure, but the clinical or public health implication of this finding is unclear
Overweight/ Obesity	Pooled AOR (comparing ever breast feeders to never breast feeders) 0.76 (95%CI 0.67-0.86) Arenz 2004 meta-analysis 0.93 (95%CI: 0.88-0.99) Owen 2006 meta-analysis
Maternal Short-term outcomes :	
Postpartum depression	Early cessation of BF: AHR: 1.25; 95% CI 1.03- 1.52) Onset of postpartum depression occurred before cessation of BF in most cases
Postpartum weight loss	Unclear
Maternal Longer-term outcomes :	
Breast cancer	A significant reduction in risk of breast cancer by 4.3 %; 95% CI 2.9-5.8 for each yr of BF
Ovarian cancer	Overall: OR:0.79; 95%CI 0.68-0.91
Diabetes II	• Multivariate-adjusted model including current BMI, each additional yr of lactation : HR: 0.96; 95%CI 0.92 - 0.99
Osteoporosis	NA

NA,= no association; SIDS= Sudden Infant Death Syndrome; UC= UnClear; AOR= Adjusted Odds Ratios; AHR =Adjusted Hazard Ratio; source: (Ip *et al.*, 2007)

While the benefits of breastfeeding are well established, there is some debate over how long an infant should be exclusively breastfed. The main outcomes are related to energy requirements, iron needs and exposure to allergies and infections. Kramer and Kakuma (2002) systematically reviewed available evidence of the effect of the recommended duration of exclusive breastfeeding for six months on child health, growth and development versus exclusive breastfeeding for three to four months followed by mixed breastfeeding (introduction of complementary liquid or solid foods with continued breastfeeding) to 6 months. The reviewers identified 22 independent studies meeting the selection criteria (11 from developing countries and 11 from developed countries), independently assessed study quality and extracted data selecting all internally-controlled clinical trials and observational studies. The overall evidence from the included studies showed that infants who continued to be exclusively breastfed for six months showed no deficits in weight or length gain. They experienced less morbidity from gastrointestinal infection and respiratory infections than those infants who were mixed fed for three to four months. Also, mothers who exclusively breastfed their infants for six months or longer had more prolonged lactational amenorrhea. Kramer & Kauma emphasized in their conclusion that the recommended period of exclusive breastfeeding to six months of age is evidenced-based and concerns about apparent risk in recommending this period of exclusive breastfeeding in both developing and developed setting are insignificant.

On the other hand, a study hypothesised that breast milk transfer of energy to the infant will often be inadequate to meet infant energy requirements and suggested acknowledgement of the need for some flexibility in the recommendation to breastfeed exclusively to six months by reinstating the recommendation to prevent lack of energy in some cases it needs to be supplemented with complementary feeding before six months of age. A systematic literature review based on mathematical calculations of a number of assumptions, Reilly and Wells (2005) argued that exclusive breastfeeding up to six months leads to the theoretical possibility of infants receiving inadequate energy intake from about five months of age. Thus, they suggested that the introduction of complementary feeding may be necessary before six months of age. However, this debate is based on limited data of exclusive breast milk intake and its likely energy content at six months and all of the five studies reviewed were from the 1980s (Annon, 2006).

A recent review and summary of recent meta-analyses of studies, linking premature weaning (defined as not being breastfed at the time of introduction of solids in all outcomes measured) from breast milk and later-life chronic disease risk, based on

historical breastfeeding prevalence data in Australia since 1927, has shown that lack of breastfeeding (the most common classification in the studies included in the meta-analyses was “never” versus “ever” breastfed) is associated with an increased risk of asthma and this association is stronger for those infants with a family history of asthma (Smith & Harvey, 2010). However, Smith and Harvey (2010) indicated that no significant relationship has yet been determined between the timing of weaning from breastfeeding and the prevalence of asthma. Moreover, a recent review of current knowledge for the effect of four main infant feeding practices on allergy (Grimshaw *et al.*, 2009) questioned whether exclusive breastfeeding for six months is an effective primary prevention measure for allergic disease. They concluded that despite the fact that all available evidence agreed that breastfeeding is best for infants; the evidence that it prevents allergic diseases is arguable as no studies have shown long term benefits related to allergic outcomes.

A randomized, double-blind, placebo-controlled trial involving exclusively breasted infants, intervened with iron supplementation or placebo, has shown that the prevalence of iron deficiency anaemia is low (3%) among unsupplemented breastfed infants in the first six months of life (Ziegler *et al.*, 2009). Kramer and Kakuma (2004) in their review reported that the data are conflicting with respect to iron status in breastfed infants and they suggested that exclusive breastfeeding without iron supplementation up to six months of age may affect hematologic status.

So the available evidence suggests that exclusive breast feeding to six months is optimal but more research may be needed to establish the best weaning time for infants with a family history of allergy and those infants with higher energy needs.

1.1.3 WHO recommendations for breastfeeding

Breastfeeding is the optimal and natural method of providing young infants with the nutrients they require for healthy development. The World Health Organization provides global public health recommendations for infant feeding, based on the conclusions of an expert panel consultation that completed a systematic review of the optimal duration of exclusive breastfeeding, to attain and sustain optimal growth, development and health (WHO, 2003). They also considered complementary feeding which should be sufficient and safe, properly fed and at the right infant age. WHO recommend exclusive breastfeeding up to six months of age with continued breastfeeding with appropriate complementary foods up to two years of age or beyond (WHO, 2003). Colostrum, is a yellowish, sticky breast milk highly concentrated in immunoglobulins which provides an

exclusive source of immunity. It is produced at the end of pregnancy and gradually changes in composition to a milk that more closely resembles mature milk by about day three (Stelwagen *et al.*, 2009). Since it is the perfect food for infants, feeding should be initiated within the first hour after birth (WHO, 2003).

The Global Strategy for Infant and Young Child Feeding was introduced in 2003 (WHO, 2003). It aimed to regenerate efforts to promote, protect and support proper infant and young child feeding. It encourages governments to develop and implement comprehensive policies on infant and young child feeding, allow all mothers to have sufficient support to initiate and sustain exclusive breastfeeding for six months, to implement the Baby Friendly Hospital Initiative and to train health workers for breastfeeding counselling.

Despite international breastfeeding efforts, many women do not achieve these recommendations. Only 38 per cent of infants in the developing world are exclusively breastfed for the first six months of life (UNICEF., 2007). This indicates that many women are either unaware of, or do not comply with these recommendations. We need to understand the determinants of breastfeeding practices to understand the reasons behind the under achievement of these recommendations and to target high risk women through interventions.

1.1.4 Determinants of breastfeeding initiation and duration

1.1.4.1 Introduction

Breastfeeding is a complex and multi-determinant practice. Factors associated with breastfeeding outcomes can be classified in a number of ways. Firstly, factors can be classified as modifiable or non-modifiable. The modifiable factors affecting breastfeeding outcomes, for example, are hospital practices and hospital staff knowledge and attitudes; social support and societal attitudes. They can be modified through various ways such as improving hospital practices towards a more baby friendly atmosphere for both infants and mothers, increasing the knowledge of hospital staff through training and educational lessons and through interventions to educate members of the community including influential family members. Non-modifiable factors are maternal age, educational level, occupation, ethnicity and parity. These factors can be useful in identifying vulnerable groups of mothers who are less likely to commence breastfeeding or breastfeed their infants for shorter length of time than the international recommended duration. Recognizing these factors will help in identifying the groups of mother who may benefit

from breastfeeding interventions which promote early initiation and longer duration. The determinants can be broadly grouped into socio-demographic, biomedical, hospital practices, and psychosocial factors. Furthermore, initiation and duration of breastfeeding need to be studied as separate outcomes as it is unlikely that events that occur after the birth of the child will influence the initiation of breastfeeding but may influence the duration. In Western countries, infant feeding practices are well studied compared with Middle Eastern studies. Most recent Western studies have employed multivariate analysis techniques to control for potentially confounding factors, to identify factors independently associated with breastfeeding initiation and duration. The following section summarizes the evidence of the determinants of breastfeeding initiation and duration among Western women.

1.1.4.2 General history of breastfeeding

Breastfeeding practices change with time and it is important to know the history of breastfeeding to understand the direction and type of change as a trend. Traditionally, infants worldwide were breastfed by their mothers prior to the discovery of breast milk substitutes and in the case of inability to breastfeed for illness or other reasons; they were fed by another lactating woman or a "wet nurse". This practice was going on for hundreds of thousands of years and in some rare cases infants were fed milk from other animals such as a cow or goat, usually with fatal consequences (Annon., 2010b). The time of change started in the 19th century, when scientific investigations led to formula milk being mass produced and made commercially available as infant food in 1867 by Henri Nestle (Annon., 2010a). In 1873, half a million boxes of Nestle milk food were being sold in America, Europe, Mexico and Argentina (Annon., 2010a).

1.1.4.3 1920's-1960's

Prior to the 1920s most women delivered their babies in their own home but by the 1960s most women delivered in hospital, and hospital practices were not generally supportive of breastfeeding. Nathoo and Orstry (2009) in their book argued that during that time, the increase in hospital births led to a decline in breastfeeding because of the lack of early infant-mother-contact, rooming-in, demand feeding and over worked nurses and doctors would often substitute formula at the first indication of a breastfeeding problem. Furthermore, the promotion of formula feeding through advertising as a modern and better way of feeding resulted in the dramatic rise of the number of formula fed infants in the

United Sates in 1950s, and breastfeeding was replaced with formula for 50% of infants in that year (Annon., 2010b).

1.1.4.4 1960-2000

During this period of time, the women's movement and related natural childbirth movement, and the international concerns about formula feeding were the forces that changed the trends towards an increase in breastfeeding (Nathoo & Ostry, 2009), accompanied by changes in hospitals including practicing rooming-in to ensure longer time for mother and infant contact. By the 1970's, Western women from developed countries who were more educated than women in the developing world realized the importance and benefits of breastfeeding and made knowledgeable choices based on what was best and not what was trendy (Annon., 2010b). Therefore, rates of breastfeeding increased in the developed world, and manufacturers shifted their marketing to the developing world by advertising through different formula companies (Nathoo & Ostry, 2009). The worldwide boycott of Nestle pressured the World Health Organization and UNICEF to develop the Code of Marketing of Breast Milk Substitutes in 1981 which limited the promotion and advertising of infant formula (WHO, 1981). This increase in international action developed the cooperation between governments and health professionals through adopting effective health policies and implementing interventions to promote and rediscover breastfeeding (Fairbank *et al.*, 2000; De Oliveira *et al.*, 2001; Guise *et al.*, 2003). The main strategy of these interventions is to focus on education to promote breastfeeding.

1.2 Determinants of breastfeeding among women in Western countries

1.2.1 Overview

The factors associated with breastfeeding initiation and duration among Western women have been well studied and summarized in five major literature reviews (Scott & Binns, 1999; Dennis, 2002; Callen & Pinelli, 2004; Thulier & Mercer, 2009; Meedya *et al.*, 2010) (Table 1.6). The evidence from these reviews is supplemented with more recent primary data from a variety of relevant Western studies. Scott & Binns (1999) reported an inconsistency in the association between breastfeeding and many of the factors commonly investigated because the earlier studies reported significant associations using univariate analyses, while the later studies employed multivariate analysis to control for possible covariate and confounding factors. This is a brief review of the recent primary literature, therefore majority of these data come from studies that have used multivariate analytical techniques.

Table 1.5: Determinants of breastfeeding initiation among Western mothers

Determinants	+ve association	-ve association	No association
Socio-demographic Maternal age - older	(Scott & Binns, 1999; Dennis, 2002; Callen & Pinelli, 2004; Li *et al.*, 2005)		
Education level - higher lower	(Scott & Binns, 1999)	(Bertini *et al.*, 2003)	
Marital status – married	(Callen & Pinelli, 2004)		(Scott & Binns, 1999) Used to be strongly associated in univariate but found to be Less consistent in multivariate analyses, Scott 1999
Employment: Employed full time		(Dennis, 2002)	
Geographical location - South USA		(Li *et al.*, 2005)	
Socioeconomic status - lower income Family income - higher Unsupported financially	(Callen & Pinelli, 2004)	(Dennis, 2002) (Dennis, 2002)	(Scott & Binns, 1999)
Belong to ethnic minority		(Dennis, 2002)	
Biomedical Physical challenge of bf - mastitis, sore nipples, engorgement		(Thulier & Mercer, 2009)	

Infant health problems - spend time in SCN			(Scott & Binns, 1999)
Maternal obesity - maternal pre-pregnancy wt		(Li *et al.*, 2003; Amir & Donath, 2007)	
Method of delivery - Caesarean			(Scott & Binns, 1999)
Parity			(Scott & Binns, 1999)
Hospital-related Lack of knowledge in health care professionals/ inaccurate or inconsistent advice/ negative support		(Dennis, 2002)	
Psychosocial *Support:* Father's role on bf decision -husband support	(Scott & Binns, 1999; Dennis, 2002)		
Support from non-professionals	(Dennis, 2002)		
Attitude & intentions Maternal infant feeding positive attitude	(Thulier & Mercer, 2009)		
Negative attitude towards bf		(Dennis, 2002)	
Mother intended to breastfeed	(Meedya *et al.*, 2010)		
Decided to bf during or late in pregnancy		(Dennis, 2002)	
Low confidence in ability to bf		(Dennis, 2002)	

Table 1.6: Determinants of breastfeeding duration among Western mothers

Determinants	+ve association	-ve association
Socio-demographic		
Maternal age - older	(Callen & Pinelli, 2004; Thulier & Mercer, 2009)	
Maternal education level – Lower Higher High Paternal Education	 (Callen & Pinelli, 2004; Heck *et al.*, 2006; Thulier & Mercer, 2009) (Heck *et al.*, 2006)	(Chinebuah & Perez-Escamilla, 2001; Taveras *et al.*, 2003)
Marital status – married	(Callen & Pinelli, 2004; Thulier & Mercer, 2009)	
Geographical location - South USA		(Li *et al.*, 2005; Kogan *et al.*, 2008)
Employed full time		
Return Paid work/early return		(Thulier & Mercer, 2009)
Socioeconomic status - lower Higher		(Taveras *et al.*, 2003; Thulier & Mercer, 2009) (Li *et al.*, 2005)
Family income – higher	(Callen & Pinelli, 2004)	
Belong to ethnic minority Black		(Thulier & Mercer, 2009)

Hispanic Latina Asian	(Thulier & Mercer, 2009) (Heck *et al.*, 2006)	 (Ludvigsson, 2003) (Taveras *et al.*, 2003)
Biomedical Physical challenge of bf – women experiencing difficulties w/ BF at or before 4 wks postpartum (i.e mastitis, sore nipples, engorgement)		(Taveras *et al.*, 2003; Scott *et al.*, 2006b; Thulier & Mercer, 2009)
Infant health problems - spend time in SCN		(Thulier & Mercer, 2009)
Maternal obesity - maternal pre-pregnancy wt		(Amir & Donath, 2007; Thulier & Mercer, 2009) (Rasmussen *et al.*, 2002) (Li *et al.*, 2003)
Method of delivery - Caesarean		(Thulier & Mercer, 2009)
Parity - prior experience in bf	(Thulier & Mercer, 2009)	
Maternal smoking		(Scott & Binns, 1999; Horta *et al.*, 2001; Amir & Donath, 2002; Thulier & Mercer, 2009) **Short EBF** (Ludvigsson & Ludvigsson, 2005)
Hospital-related		
Received information before birth or in maternal ward	(Ludvigsson, 2003)	
Lack of skilled professional support		(Thulier & Mercer, 2009)
Use of Pacifier		(Howard *et al.*, 1999; Soares *et al.*, 2003; Ullah & Griffiths, 2003; Scott *et al.*, 2006b; Pincombe *et al.*,

		2008)
Received prelacteal feeds		**EBF** (Ludvigsson, 2003)
Not feeding on demand		(Pincombe *et al.*, 2008)
Psychosocial ***Social Support*** Father's role on bf decision -husband support		
Family support - father knowledge, attitude & support- or professional support	(Meedya *et al.*, 2010)	
Maternal grandmother & close friends	(Scott *et al.*, 2006b)	
High relationship distress - between couples		(Thulier & Mercer, 2009)
Attitude & intentions Maternal infant feeding positive attitude - Positive prenatal intention, beliefs, interest in bf & maternal confidence in ability to bf	Thulier & Mercer, 2009, Meedya *et al.*, 2010 (Dunn *et al.*, 2006)	
Postpartum Depression		(Dunn *et al.*, 2006)
Mother intended to bf	(Meedya *et al.*, 2010)	

1.2.2 Socio-demographic factors

Reviews & primary data

There has been a strong and consistent association between older maternal age and higher level of education and prevalence of breastfeeding but a less consistent association with marital and socioeconomic status (Scott & Binns, 1999). Many studies (Scott & Binns, 1999; Dennis, 2002; Thulier & Mercer, 2009) have consistently shown that younger mothers were less likely to initiate breastfeeding and more likely to have shorter breastfeeding duration than older mothers. A negative association with breastfeeding initiation and duration has been reported amongst women on lower income, belonging to an ethnic minority, unsupported and unemployed full time (Dennis, 2002). In a recent review, race, marital status, education, paid work and socioeconomic status were predictors of breastfeeding duration (Thulier & Mercer, 2009).

Low level of maternal education has been negatively associated with breastfeeding. A recent American study which applied a multivariate statistical analysis showed that breastfeeding cessation at 2 weeks was negatively associated with mothers of lower educational level (OR: 1.5; 95% CI: 1.2-1.9) (Taveras *et al.*, 2003). Similarly in Italy, a prospective study which also applied a multivariate analysis had reported that mothers of low level of education were associated with short duration (≤1 month) of breastfeeding (Breast feeding duration was defined as short (1 month); medium-short (>1– <3); medium (>3 – <6); medium-long (>6 – <9), and long (>9) (Bertini *et al.*, 2003).

Lower socio-economic status also has been associated with negative breastfeeding outcomes. In Italy, multivariate statistical analysis reported that mothers of low level of maternal occupation including housewives or blue collars workers in the commercial sector were associated with short breastfeeding duration (Bertini *et al.*, 2003). Breastfeeding discontinuation at both two and twelve weeks was higher among women who had lower household income in USA where twenty per cent of mothers with the lowest income discontinued by two weeks compared to nine per cent of mothers of the highest income level and fifty eight per cent of the lowest income level had discontinued by twelve weeks compared to twenty seven percent of highest income level (p<0.02) (Taveras *et al.*, 2003).

The mother's ethnic origin is one of the socio-demographic factors found to influence breastfeeding outcomes. For instance, in the USA, mothers from Asian race ethnicity were

more likely to discontinue breastfeeding by 2 weeks (OR: 2.6, 95% CI: 1.1-5.7) compared with white (non-Hispanic), black, Hispanic, multicultural white, or others (Taveras *et al.*, 2003). In Sweden, a study interviewed 518 Bolivian born mothers with infants less than or equal to 1 year of age and found that mothers of a Latin Ethnicity were more likely to have shorter duration of exclusive breastfeeding ($p<0.00091$) compared with native Swedish mothers (Ludvigsson, 2003).

Mothers who live in different geographic locations of the same country can have differences in their infant feeding practices influenced by background variances according to their living site. Again, breastfeeding behaviour surveillance in the US showed that the geographic location of mothers influenced breastfeeding initiation and duration as Western and North Western States had higher breastfeeding rates. The multivariate analysis showed that the adjusted odds of infants not being breastfed were 2.5 to 5.15 times greater in Southern States compared with Oregon (the reference State) (Kogan *et al.*, 2008).

1.2.3 Biomedical factors

Reviews & primary data

Only univariate analysis showed a strong association between breastfeeding and a number of biomedical factors including parity, method of delivery, and infant health (Scott & Binns, 1999). A comprehensive review of both quantitative and qualitative studies, Cochrane reviews and meta-analyses identified insufficient milk supply as the main reason given to stop breastfeeding. Infant health problems (admission to SCU) causing difficulties in breastfeeding, maternal obesity, problems with breastfeeding at or before four 4 weeks postpartum were all associated with an increased the likelihood of weaning before six months, and high parity was found to be associated with longer breastfeeding duration (Thulier & Mercer, 2009). Thulier and Mercer (2009) reported inconsistency in findings related to mode of delivery where some researchers reported that caesarean delivery is negatively associated with breastfeeding initiation and some reported no association between initiation and duration while others reported positive association with breastfeeding duration. On the other hand, a consistent independent association has been reported between maternal smoking habits and shorter breastfeeding duration (Scott & Binns, 1999; Thulier & Mercer, 2009).

Parity is a biomedical factor which was found to have an impact on the initiation and duration of breastfeeding. In Italy, primiparous mothers (1st parity) had shorter duration of

breastfeeding (< 3 months) (p<0.06) (Bertini *et al.*, 2003). A large longitudinal study (n=587) in Perth reported that introduction of a pacifier at or before 4 weeks of age to be independently negatively associated with the duration of any (HR1.92: 95% CI: 1.40-2.64) and full breastfeeding (HR1.92: 95% CI: 1.39-2.64) compared with infants who never used a pacifier (Scott *et al.*, 2006b). A longitudinal cohort of 250 newborns comparing pacifier users with non-pacifier users and its affect on weaning in one month found a negative association between using a pacifier and breastfeeding durations during the first six months (Soares *et al.*, 2003). Amongst infants who were still being breastfed (n=219 by the end of the first month of life, the incidence of weaning between months 1 and 6 was 22.4% for non-pacifier users and 50.8% for pacifier users and the difference was statistically significant (p<0.001) (Adjusted Incidence of Density Ratio IDR: 95% CI: 2.2; 1.3-3.8). Also, two third of pacifier users stopped being exclusively breastfed before the end of the second month compared with 45% non-pacifier users (p<0.001). In Adelaide, Australian women who used a pacifier (adjusted HR: 1.38; 95% CI: 0.96-1.98) or used a nipple shield (adjusted HR: 1.49; 95% CI: 0.92-2.40) prior to discharge, were at significantly greater risk of early weaning (Pincombe *et al.*, 2008). One recent study reported that infants who were offered prelacteal feed were more likely to have short duration of exclusive breastfeeding (HR:2.24; 95% CI:1.66-3.03) (Ludvigsson, 2003).

Experiencing breastfeeding problems during the early postpartum period can influence breastfeeding outcomes. Data from an American cohort study showed that early breastfeeding problems was negatively associated with breastfeeding duration as they were more likely to discontinue breastfeeding by two weeks postpartum (OR:1.5; 95% CI:1.1-1.97) (Taveras *et al.*, 2003). Evidence from a cohort study showed that infants of women who experienced breastfeeding difficulties at or before 4 wks postpartum were less likely to be fully breastfeeding or receiving any breast milk at different time points (Scott *et al.*, 2006b).

In the USA, a multiple Logistic Regression analysis of 124,151 mothers-infant pairs from the Paediatrics Nutrition Surveillance System & the Pregnancy Nutrition Surveillance System was used to identify the association between maternal obesity and breastfeeding duration among women who initiated breastfeeding (Li *et al.*, 2003). Obesity before pregnancy was independently negatively associated with breastfeeding duration. Breastfeeding lasted two weeks less in women who were obese before pregnancy than in

those who were of normal weight before pregnancy (Coefficient: -1.73 and $p<0.01$) for obese whose BMI was >29.0 kg/m^2.

Maternal smoking was reported in a number of systematic reviews (Scott & Binns, 1999; Amir & Donath, 2002; Thulier & Mercer, 2009) and a meta analyses (Horta *et al.*, 2001) to have a negative association with overall breastfeeding duration and one prospective cohort study found a negative association with exclusive breastfeeding duration (95% CI AOR: 2.00-2.82) (Ludvigsson & Ludvigsson, 2005).

1.2.4 Psycho-social factors

Reviews & primary data

Investigation of psychosocial factors revealed a strong positive association between fathers who prefer breastfeeding and the breastfeeding decisions of mothers (Scott & Binns, 1999). A positive association with breastfeeding duration has been shown between mothers who received support from their partner or a non-professional, such as relatives (Dennis, 2002). Thulier & Mercer (2009) also reported that family support and professional support positively influenced breastfeeding duration. A similar finding where social support had a strong association with breastfeeding duration was reported by Meedya and colleagues (Meedya *et al.*, 2010). Breastfeeding exclusively for longer duration was positively associated with receiving breastfeeding information from health care personnel before birth or on maternity wards (adjusted $p<0.0233$) (Ludvigsson, 2003). In contrast, a lack of accurate knowledge from hospital staff and false information given to mothers negatively influenced mother's breastfeeding outcomes (Dennis, 2002). He reported that women who decided to breastfeed during or late in pregnancy, had negative attitudes towards breastfeeding and had low confidence in their ability to breastfeed and were more likely to have shorter breastfeeding duration. Maternal intention, interest and confidence in breastfeeding was reported as a positive influence on breastfeeding duration in a recent review (Thulier & Mercer, 2009). Similarly, intended breastfeeding duration predicted the actual breastfeeding duration (Scott & Binns, 1999) and breastfeeding intention and breastfeeding self-efficacy positively influenced women's breastfeeding decisions (Meedya *et al.*, 2010) .

1.3 Determinants of breastfeeding initiation and duration in the Middle East

1.3.1 Overview

The purpose of this section of is to review the determinants of breastfeeding initiation and duration that have been reported for Middle Eastern women. A systematic search of the published peer-reviewed literature was undertaken using PUBMED and the Google Scholar search engines. "Grey literature" including Health Department reports was obtained from original country sources, the British Library and in the case of Kuwait; the MOH papers in both English and Arabic were considered. The Middle-Eastern countries (Figure2.1) included in the review were the six Persian Gulf States (Kuwait, Saudi Arabia, Qatar, Bahrain, UAE, Oman), and the main Middle-Eastern countries Egypt, Iran, Iraq, Turkey and Jordan, Lebanon, Yemen. No studies were found for Syria**.**

The extent of breastfeeding initiation and duration is dependent on a complex mix of influential factors associated with the mother, infant and the surrounding environments. This review classified all factors associated with breastfeeding as socio-demographic, biomedical, hospital-related or psychosocial factors. Search strategy use of terms included in the search were [Breastfeeding] AND [initiation OR duration] AND [determinants or predictors] AND [Middle East]; [Breastfeeding] AND [initiation OR duration] AND [determinants or predictors] AND [Country name]; [Breastfeeding] AND [initiation OR duration] AND [specific determinant – see list] AND [Middle East], [Breastfeeding] AND [initiation OR duration] AND [specific determinant – see list] AND [Country name].

List of specific determinants identified in review of Western studies:

1- **Socio-demographic characteristics** included maternal age, maternal and paternal level of education, maternal and paternal employment status (before birth and postpartum), mother's country of birth, maternal and paternal occupation, socioeconomic status, geographical location (rural vs. urban);

2- **Biomedical factors** included parity, infant gender, mode of delivery, admission to SCU, smoking, use of pacifier, time of first breastfeed, type of first feed;

3- **Hospital-related factors** included rooming-in, early infant-mother-contact, demand feeds, hospital staff advice, encouragement and breastfeeding promotion;

4- **Psychosocial factors** included received family & close relatives breastfeeding support (husband & maternal grandmother breastfeeding preference), received friends advice, mother attended antenatal classes for this or previous pregnancy, maternal grandmother breastfed at least one infant, time of breastfeeding intention.

This review included all available studies that identified factors that were found to be associated with breastfeeding initiation and duration. Any study whether it employed univariate or multivariate analyses were considered in this review on the basis that there is small number of available studies.

Figure 1.1: Middle Eastern countries with available data

1.3.2 Islamic recommendations

The recommendation of breastfeeding has been promoted since 1400 years ago in Islam through the Quran which is comparable with the most recent WHO breastfeeding and weaning recommendations. This emphasizes the importance of suckling and specified the appropriate length, if the mother chooses to breastfeed as two whole years. "The mothers shall suckle their infants for two whole years that is for those who wish to complete the suckling" (Surat El-Baqara, verse 233).

1.3.3 Transition period

Industrialization and socioeconomic changes which occur over time within countries may force various changes in lifestyles. The rapid accelerated phase of urbanization in Kuwait and other Gulf States, after discovering the oil in recent years, has inevitably brought about changes socially and environmentally among all nationalities living in these countries. Middle Eastern countries, such as Egypt and Turkey, interacted with Western civilization many years before Gulf States countries, therefore, the change and impact on infant feeding practices could be influenced ahead of time which may explain the differences in practices seen between some countries. This will be explored in Chapter 2.

1.3.4 Modernization and Development

The rapid transformation of the Gulf States in life style and in other aspects of living, as part of the discovery of oil, may have led to many adjustments and changes in various human behaviours including infant feeding patterns. A Saudi study found a negative association between modernization and rates of breastfeeding duration which the authors suggested was due to a higher economy, increased purchasing power, the rise in formula promotion and infant feeding promotions (Al-Shehri *et al.*, 1995). Whereas an earlier study had shown that the rapid growth and development of the Kingdom of Saudi Arabia had no association with breastfeeding duration (Anokute, 1988).

1.3.5 Possible effect of transition period on infant feeding practices

Recent studies in some Middle-Eastern countries have shown breastfeeding outcomes which are consistent with mothers from Western countries. A recent cross-sectional survey in Bahrain showed that the higher the level of education of the mother, the higher the rate of breastfeeding initiation (Al-Sairafi, 2002). Similarly, a recent cross sectional study in Iran reported that highly educated mothers had longer breastfeeding duration when compared with illiterate mothers (Hajian-Tilaki, 2005). These findings are consistent with evidence from Western countries where breastfeeding rates are higher among better educated women (Riva *et al.*, 1999; Lanting *et al.*, 2005; Heck *et al.*, 2006) and may indicate that a demographic transition in breastfeeding is occurring in Turkey and other Middle-eastern countries, similar to that witnessed in Western countries in the late 1970s and early 1980s (Hirschman & Butler, 1981; Rassin *et al.*, 1984; Ever-Hadani *et al.*, 1994).

1.3.6 Maternity Services in Kuwait

Government or private hospitals in Kuwait with maternity facilities and wards that delivers mothers of new babies provides services for expected mothers by a staff that are trained for that purpose. Pregnant mothers generally visit a gynaecologist of their choice either from governmental or private hospitals at different points of time from the beginning of their pregnancy until the day of delivery. Women have the choice of where they prefer to deliver their infant that is private or government sector. Kuwaiti mothers receive services free of charge in governmental hospitals or they can pay the charges at the private sector. While women from other nationalities can deliver their infants at the governmental hospitals yet they are charged for services provided. The maternity wards with trained health professional staff including nurses, paediatricians and gynaecologists deliver the care to expecting mothers. In hospital wards, the gynaecologists, paediatricians, nurses provide the postnatal support to all mothers who deliver in either governmental or private hospitals. Some hospitals have nutritionists who help inform mothers about various infant feeding issues. Antenatal education for expecting mothers in Kuwait is provided irregularly at a community level and not being maintained at a national level. The education is not being delivered as a compulsory service to all expecting mothers in Kuwait, thus attendance of these services when provided is limited to a small number of women.

Rates of types of births data lack accuracy because definite rates could be obtained neither from the maternity hospitals statistical records nor from the Ministry of planning database for the period from 2007 to 2010. Chapter two presents available data for breastfeeding rates in Kuwait. From the UNICEF data the number of baby friendly hospitals in Kuwait is very limited and the Baby Friendly accredited hospitals were only two and no data by UNICEF is available for recent years in Kuwait (UNICEF., March 2002). Normal post birth practices such as skin to skin and early infant-breast-contact are not being practised or promoted to every mother by hospital staffs in most governmental hospitals but recently some private hospitals are officially implementing baby friendly practices in their facilities. Postnatal contact between mother and infant rooming-in are also not being practiced in maternity hospitals to every mother that deliver her infant. Expressing breast milk is an optional act by mothers whilst in hospital. However, if the mother is intending to express her breast milk prior to discharge from hospital, in governmental hospitals, access to breast milk pumps is available but as a shared tool between mothers. Any mothers intend

to express their breast milk and also concerned about hygiene and purchase their own pumps for their personal use.

Women who have vaginal delivery receive health care from hospital staff for two days (48 hours) but those who delivery via caesarean section stay for 5 days and receive health care until discharged from hospital. The Ministry of Health was established in 1963. However, the history of healthcare in Kuwait is much older dating back from 1912, when officials developed medical services for the citizens and residents of the country. There were four participating hospitals in this study, three governmental hospitals and one private hospital. The government hospitals are Al Sabah (obstetrics) hospital for maternity, Al Adan and al Farwaniya hospital. The only private hospital is Al Salam hospital. The Ministry of Health in Kuwait monitors and regulates standards and fee structures of all private hospitals. The size of the private hospital compared with other government hospitals is relatively small and the number of women receiving maternity care is also small. There was difficulty encountered in the attempt to obtain data for the number of women delivering in each of the studied hospitals. The data was either hard to obtain or inaccurate.

Table 1.7: Determinants of breastfeeding initiation among Middle Eastern mothers

Determinants	+ve association	-ve association	No association
Socio-demographic			
Maternal age - older	(Al Bustan & Kohli, 1988; Al-Mazroui *et al.*, 1997)		(Al-Frayh, 1989; Sharief *et al.*, 2001)
Maternal education level - higher	**EBF (1 wk)** (Hakim & El-Ashmawy, 1992) **Ever BF** (Al-Sairafi, 2002)	(Al Bustan & Kohli, 1988; Kocturk, 1988b; Al-Frayh, 1989; Kayyali & Al-Tawil, 1989)	
Father literacy			(Al-Mazrou *et al.*, 1994)
Marital status – married			
Employment: Employed full time Maternal occupation		(Al Bustan & Kohli, 1988)	(Hizel *et al.*, 2006) (Kordy *et al.*, 1992)
Socioeconomic status - lower income			
Socioeconomic status - higher income		(Al Bustan & Kohli, 1988; Kayyali & Al-Tawil, 1989)	
Nationality -comparison	(Osman & El-Sabban, 1999)		
Belong to ethnic minority			
Biomedical			
Infant health problems spend time in SCU-long stays			(Al-Ayed & Qureshi, 1998)

Low Birth Weight (<2 kg)	(Al-Mazroui *et al.*, 1997)		
Maternal obesity - maternal pre-pregnancy wt		(Amir & Donath, 2007)-review	
Method of delivery - Caesarean		(Al-Mazroui *et al.*, 1997; Shawky & Abalkhail, 2003)	(Al-Ayed & Qureshi, 1998)
Complicated delivery-long labour		(Hossain *et al.*, 1995)	
Parity - multiparous mothers	(Shiva & Nasiri, 2003)		
Infants gender (male)			(Al Bustan & Kohli, 1988; Amine *et al.*, 1989; Al-Ayed & Qureshi, 1998)
Hospital-related Lack of knowledge in health care professionals/ inaccurate or inconsistent advice/ negative support		(Shawky & Abalkhail, 2003)	
Rooming-in	(Batal *et al.*, 2006)		
Early health professional advice & guidance	(Ogbeide *et al.*, 2004; Batal *et al.*, 2006)		
Use of formula in hospital		(Hossain *et al.*, 1995)	
The early use of bottle-feeding / indiscriminate use of prelacteal feeding		(Hossain *et al.*, 1991; Hossain *et al.*, 1994; Hossain *et al.*, 1995)	
Place of delivery Home Hospital	(JPFHS, 2003)		
Psychosocial ***Support:*** Father's role on bf decision -husband support	(Ogbeide *et al.*, 2004)		(Al-Ayed & Qureshi,

			1998)
Maternal BF knowledge	(Al-Mazroui *et al.*, 1997)		
Myths (formula is superior)			
Mother intended to breastfeed prenatally			(Goksen, 2002)

Table 1.8: Determinants of breastfeeding duration among Middle Eastern mothers

Determinants	+ve association	-ve association	No association
Socio-demographic Maternal age - older	(Tuncbilek *et al.*, 1982; Akin *et al.*, 1986b; Al Bustan & Kohli, 1988; Amine *et al.*, 1989; Al-Nasser *et al.*, 1991; Kordy *et al.*, 1992; Al-Shehri *et al.*, 1995; Batal *et al.*, 2006)		
Maternal education level - higher	(Sharief *et al.*, 2001) **(EBF = 6 mo)** (Batal *et al.*, 2006)	(El-Mougi *et al.*, 1981; Al Bustan & Kohli, 1988; Amine *et al.*, 1989; Al-Nasser *et al.*, 1991; Marandi *et al.*, 1993; Al-Mazrou *et al.*, 1994; Al-Shehri *et al.*, 1995; Osman & El-Sabban, 1999; Hajian-Tilaki, 2005)	(Al-Sairafi, 2002)
Father literacy	(Al-Shehri *et al.*, 1995)		
Marital status – married			

Employment: Employed full time		(Al-Shehri *et al.*, 1995; Musaiger & Abdulkhalek, 2000; Ertem *et al.*, 2001b; Sharief *et al.*, 2001; Hajian-Tilaki, 2005; Khassawneh *et al.*, 2006)	
Maternal occupation			
Socioeconomic status - lower income Socioeconomic status - higher income Unsupported financially		(Kocturk, 1988b; Amine *et al.*, 1989) (Al Bustan & Kohli, 1988; Marandi *et al.*, 1993)	
Maternity leave from work - longer leave	(Ertem *et al.*, 2001b)		
Geographical location - rural	(El-Mougi *et al.*, 1981; Musaiger, 1983; Tuncbilek *et al.*, 1983; Akin *et al.*, 1986a; Shahraban *et al.*, 1991; Al-Mazrou *et al.*, 1994; Al-Shehri *et al.*, 1995; Hajian-Tilaki, 2005; Batal *et al.*, 2006)	(Kocturk, 1986)	
Nationality -comparison	(Osman & El-Sabban, 1999)- Omani & UAE mothers		
Biomedical Physical challenge of bf - mastitis, sore nipples, engorgement			

Infant health problems spend time in SCU-long stays		(Kayyali & Al-Tawil, 1989)	
Low Birth Weight (<2 kg)		(Shiva & Nasiri, 2003)	
Maternal obesity - maternal pre-pregnancy wt			
Method of delivery - Caesarean		(Shawky & Abalkhail, 2003; Shiva & Nasiri, 2003; Ogbeide *et al.*, 2004; Khassawneh *et al.*, 2006)	
Complicated delivery-long labour		(El-Mougi *et al.*, 1981)	
Parity - multiparous mothers	(Hossain *et al.*, 1994; Batal *et al.*, 2006; Al-Hreashy *et al.*, 2008; Al-Sahab *et al.*, 2008)		
High order of children	(Tuncbilek *et al.*, 1983; Al Bustan & Kohli, 1988; Amine *et al.*, 1989; Marandi *et al.*, 1993; Hajian-Tilaki, 2005)		
Infants gender (male)	(Tuncbilek *et al.*, 1983; Akin *et al.*, 1986a)	(Al Bustan & Kohli, 1988; Amine *et al.*, 1989)	
Use of contraceptive method (yes)		(Shawky & Abalkhail, 2003; Ogbeide *et al.*, 2004; Alwelaie *et al.*, 2010)	
Milk insufficiency		(Kocturk, 1986; Amine *et al.*, 1989; Kayyali & Al-Tawil, 1989; Kordy *et al.*, 1992; Al-Mazrou *et al.*, 1994; Al-Shehri *et al.*, 1995; Afifi, 1996; Al-Ayed & Qureshi, 1998; Froozani *et al.*, 1999; Fida & Al-Aama, 2003; Ogbeide *et al.*, 2004)	

Hospital-related Lack of knowledge in health care professionals/ inaccurate or inconsistent advice/ negative support/weak ineffective health system		(Musaiger, 1983)	
Rooming-in			
Early health professional advice & guidance			
Gender of paediatrician (female)	(Al-Sahab *et al.*, 2008)		
Use of formula in hospital		(Alikasifoglu *et al.*, 2001; Shawky & Abalkhail, 2003; Ogbeide *et al.*, 2004)	
The early use of bottle-feeding / indiscriminate use of prelacteal feeding			
Early supplementary/ complementary feeding		(Marandi *et al.*, 1993; Alikasifoglu *et* 2001; Shawky & Abalkhail, 2003)	
Lack of antenatal/postnatal education		(Shawky & Abalkhail, 2003)	
Place of delivery- at home vs. hospital	(El-Mougi *et al.*, 1981)		
Psychosocial ***Support:*** Father's role on bf decision -husband support			
Support from non-professionals			
Maternal grandmother & close friends			
Attitude & intentions Maternal infant feeding positive attitude			
Negative attitude towards bf			

Maternal BF knowledge			
Myths (formula is superior)		(Musaiger, 1983)	
Mother intended to breastfeed prenatally			
Previous BF experience	(Alikasifoglu *et al.*, 2001)		
Decided to bf during or late in pregnancy			
Low confidence in ability to bf			
Religious motives	(Al Bustan & Kohli, 1988; Marandi *et al.*, 1993; Ogbeide *et al.*, 2004; Al-Sahab *et al.*, 2008)		
High level of stress		(Hajian-Tilaki, 2005)	

1.3.6 Socio-demographic Factors

1.3.6.1 Maternal age

Initiation

The age of the mother at the time of delivery is one of the major determinants of breastfeeding outcomes among Middle-Eastern women. An early study from Kuwait reported that older mothers (>29 years) were more likely to initiate breastfeeding (80%) than younger mothers (<20 years) (69%) (Al Bustan & Kohli, 1988). In a prospective cohort study in UAE, younger mothers (20-29 years) were significantly less likely to initiate breastfeeding on the day of delivery than older mothers (30-49 years) (Relative Risk: 2.06; 95% CI: 0.88-4.85) (p=0.04) (Al-Mazroui *et al.*, 1997). This is consistent with the evidence of a positive association between older mothers and increased initiation of breastfeeding in Western countries (Scott & Binns, 1999; Dennis, 2002; Callen & Pinelli, 2004).

Duration

In Kuwait, older mothers were found also to breastfeed for a longer duration than younger mothers in studies which employed univariate analyses (mean breastfeeding duration was 5.0 months for young mothers (<25 years) compared to 10.0 months for older mothers (≥ 25 years) (χ^2 = 79.1, d.f. 15, p=0.01) (Al Bustan & Kohli, 1988) and in another Kuwaiti study mean duration of breastfeeding for older mothers (35+ years) was 4.0 months compared with 2.2 months in younger mothers (≤20 years years) (Amine *et al.*, 1989). In Saudi Arabia, a significant difference was seen between the duration of breastfeeding among different age groups (p<0.01) as more older women (40 + years) were breastfeeding at twelve months compared with younger women (<19 years) (Al-Shehri *et al.*, 1995). In Lebanon, multivariate analyses was employed to control for possible confounders and showed that exclusive breastfeeding duration for the first six months of life was more common among older mothers (p=0.052) (Batal *et al.*, 2006). The probability of longer breastfeeding duration increases with age and the difference found was significant in Egypt ($p<0.007$), Jordan (p<0.027), Tunisia (p<0.024) and Yemen (p<0.029) indicating that older women breastfeed longer (Akin *et al.*, 1986b). In two Saudi studies which employed multiple regression analysis controlled for possible confounders (Tuncbilek *et al.*, 1983) and this association was still present in the final model that older mother was significantly associated with increased duration of breastfeeding (t-test= 4.459) (p=0.001) (Kordy *et al.*, 1992). The second study controlled for maternal education, parity and source of advice

and found similar result (p=0.032) (Al-Nasser *et al.*, 1991). Similarly, older mothers, especially those over 35 years, breastfed for longer durations in an early study in Turkey after controlling confounding factors (Tuncbilek *et al.*, 1983). These findings in the Middle East are consistent with finding in Western countries where older women were more likely to breastfeed longer (Callen & Pinelli, 2004; Thulier & Mercer, 2009).

Age of mother at the time of marriage had a significant association with length of breastfeeding in one Kuwaiti study (Al Bustan & Kohli, 1988) in which getting married at a younger age was associated with longer breastfeeding duration. In contrast, a small number studies using univariate analysis found no association between maternal age and length of duration in Saudi Arabia (Al-Frayh, 1989) and in UAE (Osman & El-Sabban, 1999).

1.3.6.2 Level of Education (Literacy vs. Illiteracy)

The education level of both the mother and the father has been investigated in many studies in the Gulf States and other Middle Eastern countries. However, there was much inconsistency in their findings. Unlike studies from Westernized countries, most studies of Middle Eastern women suggested that a higher level of maternal education is negatively associated with breastfeeding outcomes, particularly breastfeeding duration. In general, most uneducated women are non-workers; thus have a lower level of income to afford supplementary feeds, which may explain the higher rate of exclusive breastfeeding among this group of mothers. Since they are not employed, they have more time to spend with their infants which makes it easier to breastfeed exclusively. On the other hand, uneducated married mothers could be busier with household work and have more responsibilities in the house making them very busy too breastfeed.

Initiation

The proportion of Kuwaiti mothers who had schooling above secondary level (30%) were positively associated with initiating breastfeeding compared with uneducated mothers (14%) (Al Bustan & Kohli, 1988). Mothers who obtained higher education at university level and above were less likely to initiate breastfeeding than less educated mothers in Saudi Arabia (18% of university level were breastfeeding versus 70% of those with basic education) (Al-Frayh, 1989) and in Qatar (26% of university level were breastfeeding versus 56% those with normal education) (Kayyali & Al-Tawil, 1989). In contrast, in Egypt, educated mothers (84%) were more likely to initiate breastfeeding than uneducated

mothers (61%) (Hakim & El-Ashmawy, 1992). Also in Bahrain, the survey indicated that mothers with higher education (> high school) tend to have a higher breastfeeding rate 97.3% compared with those with educational levels less than or equal to high school 94%, but without stating statistical effect (p-value or 95% CI), it is assumed that the difference was significant (Al-Sairafi, 2002) which is similar to findings reported in Western mothers (Scott & Binns, 1999). In regards to father's level of education, the only study that has looked at this, showed that father's literacy had no effect on the percentage of Saudi children ever breastfed (Al-Mazrou *et al.*, 1994).

Exclusive breastfeeding

A study in Egypt reported that educated mothers were more likely to exclusively breastfeed their infants in the first week of life (Hakim & El-Ashmawy, 1992), whereas in Lebanon, less educated mothers 27.2%, were significantly more likely to exclusively breastfed their infants for at least 6 months compared with more educated ones 7.9% (p= 0.034), (OR: 2.2471, CI: 1.222-4.1312) (Batal *et al.*, 2006).

Duration

In contrast to Western studies, the majority of the Middle Eastern studies have shown a positive association between illiteracy of parents, especially mothers, and longer duration of breastfeeding. In Kuwait, the results indicate an inverse relationship between years of school and duration of breastfeeding as longer mean breastfeeding duration observed in illiterate mothers (13 months) compared with the university graduate mothers (4 months) (χ^2 =274.7, d.f.=20 , p<0.01) (Al Bustan & Kohli, 1988). A similar finding in Kuwait has shown that the mean breastfeeding duration was higher among illiterate mothers (9.51 months) compared with highly educated mothers (4.3 months) (Amine *et al.*, 1989). Highly educated mothers may have more demands on their time were breastfeeding for shorter periods of time, compared with less educated mothers in Egypt as those holding a university educational level had significantly shorter mean breastfeeding duration compared with breastfeeding duration in illiterate mothers (11.6 mo ± 8.9 versus 17.1mo ± 8.6, p<0.05) (El-Mougi *et al.*, 1981).

In Saudi Arabia, both maternal and paternal illiteracy were associated with longer mean breastfeeding duration than among parents with higher levels of education, where mean breastfeeding duration in illiterate mothers was 14 months versus 8 months in educated mothers (p<0.01), and 14 month among infants of illiterate fathers against 10 months of

educated fathers (p>0.05) (Al-Shehri *et al.*, 1995). Another multivariate analysis in Saudi study reported a significant association of maternal education and breastfeeding duration (p>0.005) where longer mean breastfeeding duration in months amongst illiterate mothers (11.9 ± 7.6) versus university educated mothers (7.4 ± 5.3) in Saudi Arabia (Al-Nasser *et al.*, 1991) and in UAE (p<0.05) (Osman & El-Sabban, 1999). After confounding factors were controlled for in a regression analyses, higher educational level was independently negatively associated with breastfeeding duration in Iran (Marandi *et al.*, 1993). In an Iranian cross-sectional study, the probability of continuing breastfeeding tended to be lower for illiterate mothers during the first six months of life. As indicated in the article, the Cox regression model analysis showed that higher education level of mothers (high school or higher) was associated with longer breastfeeding duration, but in the multivariate analysis table statistics was shown as: high school or higher (RR:0.77; 95 % CI 0.37-1.57) (Hajian-Tilaki, 2005). On the other hand, mean breastfeeding duration of mothers of illiterate husbands was about one months longer than those with literate fathers (15 months versus 12.1 months) in Saudi Arabia (Al-Mazrou *et al.*, 1994).

It can be argued that more educated mothers tend to wean their infants early either because they are still studying as this demands extra effort and time or they have a full time career, which keeps them away from home for longer hours. Although there is no evidence that they may be aware of the health benefits of breastfeeding, it is possible that their circumstances force them into using more convenient methods of feeding along with the help offered by close relatives and friends. Some of these studies are very old and it may be that they thought that breastfeeding was the modern method.

In contrast, a more recent UAE study has shown similar finding with Western women (Scott *et al.*, 1999) where lower level of maternal education was inversely associated with breastfeeding duration up to six months (p<0.01) (Sharief *et al.*, 2001). Also, no significant difference was reported between the different educational levels in respect to breastfeeding duration in a Bahraini national survey (Al-Sairafi, 2002).

1.3.6.3 Ethnicity/ Nationality

Few studies have reported the effect of nationality on breastfeeding outcomes in the Middle-East. However, different Middle-Eastern nationalities were compared in a single study carried out in the United Arab Emirates and showed that the mother's nationality had a significant impact on the duration of exclusive breastfeeding, as well as on the overall

duration of breastfeeding and age of weaning (Osman & El-Sabban, 1999). On average, mothers from UAE and Oman exclusively breastfed their infants for 12 months, Jordanian and Palestinian mothers for 9 months, Sudanese and Syrians for 6 months and Egyptians for 3 months ($p<0.01$).

1.3.6.4 Social/ Income Status

The source and type of family income influences the social status of families, where higher social status is associated with high income. The urbanization and discovery of oil in the Gulf area has led to a rise in economy and change in economic status of families. The change to modern life style in these areas could have played a role in infant feeding transition. An early study in Bahrain demonstrated that women from more affluent backgrounds were more likely to give their infants mixed feedings and less exclusive breastfeeding (Musaiger, 1983). Mothers from high income families were less likely to initiate breastfeeding in Kuwait and average breastfeeding duration of the ever breastfed infants was 8.8 months among low income mothers versus 5.6 months among high income families ($\chi^2=468$, d.f.=15, $p<0.01$) (Al Bustan & Kohli, 1988). In Qatar, incidence of ever breastfeeding was higher among mothers of lower income group (50%) compared with those of higher income (12%) (Kayyali & Al-Tawil, 1989). Similarly, the duration of breastfeeding was negatively associated with higher income and affluence in Kuwait (Amine *et al.*, 1989), in Turkey (Kocturk, 1988b) and in Iran (Marandi *et al.*, 1993).

1.3.6.5 Employment (working vs. non-working)

There are several issues common to all countries that prevent or help the maintenance of breastfeeding in relation to employment. For example maternity leave provision and providing circumstances which allow mother and infant contact during working hours and using a pump to express milk during working hours (Rea *et al.*, 1997). Middle Eastern countries differ in their laws for maternity leave and breastfeeding laws in the work place. In addition, the differences are also present within the one country such as in Kuwait, where maternity leave in the governmental sector is longer than that in the private sector. These issues can have an impact on breastfeeding outcomes and can influence breastfeeding either negatively or positively. Different rates of breastfeeding were observed in mothers according to their occupations. In Kuwait, Al Bustan and Kholi (1988) the proportion of mothers who never breastfed their infants at all was the highest among the senior professional (33%) compared with housewives (22%) and middle-level professionals (24%).

Duration

Most studies reported a negative association between maternal employment and duration of breastfeeding among women in Saudi Arabia (al-Shehri *et al.*, 1995), Bahrain (Musaiger & Abdulkhalek, 2000), UAE (Sharief *et al.*, 2001), Iran (Hajian-Tilaki, 2005) and Turkey (Khassawneh *et al.*, 2006). A longitudinal observational Turkish study found that duration of breastfeeding was shorter in working mothers (RR:3.89, 95% CI:1.42-10.65) compared with non-working mothers (Ertem *et al.*, 2001a). While a recent cross-sectional study in Turkey found that maternal occupation did not have a significant effect on supplementation (i.e. formula milk) time and found no association on breastfeeding duration (Hizel *et al.*, 2006).

Maternity leave

In regard to maternity leave, breastfeeding duration was associated with the number of months of post partum leave from work in one longitudinal observational study of Turkish women, where a mother with less than four months postpartum leave was at higher risk of shorter breastfeeding duration than mothers with more than four months leave (unadjusted RR:4.20: 95% CI:2.16-8.17) (Ertem *et al.*, 2001b).

1.3.6.6 Geographical location: (Rural vs. Urban)

Studies have reported differences in the rates of breastfeeding between women living in rural and urban communities in a number of countries. Urban and rural areas differ in the duration of breastfeeding, where mothers from rural areas have been found to breastfeed for longer than urban mothers in Egypt (Mean ±S.D 18.5±8.7 in rural versus Mean 8.0±6.6 in urban) (El-Mougi *et al.*, 1981), the UAE (Median duration 4.5 months in urban vs. 9 months in rural) (Shahraban *et al.*, 1991), and Iran (decreased risk of weaning by 25% (RR:0.75: 95% CI:0.51-1.11, p=0.15) (Hajian-Tilaki, 2005). In Lebanon, current residence was a significant determinant of breastfeeding duration for at least the first 6 months postpartum (Rural= 63.4% vs. Urban= 32.4%), (p=0.006) (Batal *et al.*, 2006). Similar findings were observed in studies of women from urban areas in Jordan (Akin *et al.*, 1986a) and Saudi Arabia (Al-Mazrou *et al.*, 1994; Al-Shehri *et al.*, 1995) who tend to have earlier breastfeeding cessation. In Saudi Arabia, the mean duration of breastfeeding in rural and urban Saudi areas was 14.2 and 9.6 months, respectively (Al-Nasser *et al.*, 1991) and in rural and urban Saudi areas was 13 and 11 months, respectively (Al-Shehri *et al.*, 1995). In Bahrain, women from rural areas had longer mean duration of breastfeeding (19.3 months)

compared with urban women (15.5 months) (Musaiger, 1983). An earlier Turkish study also showed that regional location had an effect on breastfeeding duration, where a gradual decline in breastfeeding duration was seen from Eastern Anatolia to the West of the country and from villages to the cities, but urban modern areas in Turkey practised shorter duration periods (Tuncbilek *et al.*, 1983). In contrast, an early Turkish study had shown women in rural areas, where 88% work in agricultural production, are away from their infants for longer hours than urbanized mothers which affected the breastfeeding duration for that particular population (Kocturk, 1986).

1.3.7 Biomedical factors

Various biomedical factors including parity, mode of delivery, contraceptive methods after birth, infant's health problems (admission to SCU and low birth weight), infant's gender, insufficient milk supply and maternal weight issues have been shown to have an effect on breastfeeding initiation and duration.

1.3.7.1 Parity

Most studies have reported a positive association between parity and breastfeeding rates. For example, an Iranian study reported that multi-parous women were more likely to have higher initiation rates in breastfeeding compared to first time mothers ($p<0.001$) in Iran (Shiva & Nasiri, 2003). In terms of overall breastfeeding duration, Egyptian mothers with previous living children were significantly more likely to breastfeed their infants at 24-35 weeks (OR: 6.53; 95% CI: 1.33-32.09) (Hossain *et al.*, 1994). Multiparous Lebanese women had a significantly longer mean duration of exclusive breastfeeding than primiparous women (mean 5.35+-1.83 months versus 4.88 +- 1.55, $p= 0.010$) (Batal *et al.*, 2006). Another recent study in Lebanon supported these results and showed that high parity (≥2 children) was significantly associated with higher breastfeeding rates at one and four months of age (Al-Sahab *et al.*, 2008). A positive relationship was found between Saudi mothers who have been through the experience of breastfeeding in the past and the rates of initiation and duration (Khattab, 2000).

A related issue studied by researchers from different Middle-Eastern countries was the order of the child in the family and its association with breastfeeding duration. Several studies have suggested that high order children born to older mothers, were more likely to be breastfed for longer in Turkey (Tuncbilek *et al.*, 1983), Kuwait (Al Bustan & Kohli, 1988; Amine *et al.*, 1989) and Iran (Marandi *et al.*, 1993; Hajian-Tilaki, 2005). In contrast,

in a Saudi study, the increased birth order of the child was significantly associated with a decreased duration of breastfeeding (Kordy *et al.*, 1992).

1.3.7.2 Mode of delivery (Obstetric Performance)

Numerous studies have shown a negative effect of caesarean section delivery and complicated vaginal deliveries on both the initiation and duration of breastfeeding. An uncomplicated vaginal delivery was significantly positively associated with breastfeeding initiation in the UAE, (RR: 2.42; 95% CI: 1.25-4.71) (Al-Mazroui *et al.*, 1997). Additionally, an Egyptian cohort study suggested that prolonged labour has a negative effect on initiating breastfeeding, which may be related to maternal and neonatal exhaustion (Hossain *et al.*, 1995). Also, caesarean section delivery was negatively associated with breastfeeding initiation (OR:1.9; 95% CI: 1.3, 2.8) in one Saudi Arabian study and placed mothers at higher risk of early breastfeeding cessation (Shawky & Abalkhail, 2003). Caesarean delivery was associated also with early use of bottle-feeding in Tehran and short breastfeeding duration (Shiva & Nasiri, 2003).

Egyptian mothers undergoing complicated deliveries involving either forceps and/or episiotomy were shown to have shorter breastfeeding duration in an early cross sectional study (El-Mougi *et al.*, 1981). Similarly, prenatal complications resulting in the need for mothers to deliver their infants through caesarean section appears to have a negative impact on the duration of breastfeeding in Saudi studies (Shawky & Abalkhail, 2003; Ogbeide *et al.*, 2004), in Iran (Shiva & Nasiri, 2003) and most recently among Turkish mothers (Khassawneh *et al.*, 2006). While no association was reported in one Saudi study between mode of delivery and breastfeeding initiation rates in urban Reyadh (Al-Ayed & Qureshi, 1998) the findings of the majority of studies suggest that mothers who had caesarean section delivery will need additional support and encouragement to commence and maintain breastfeeding.

1.3.7.3 Use of contraception after birth

Duration

Oral hormonal contraceptive use has been shown to be associated with shorter duration of breastfeeding. Mothers who use contraceptive methods, especially those containing estrogens, are concerned about contamination of their breast milk since studies have shown that the hormones may inhibit lactation by affecting milk production (Treffers, 1999). This has been shown through the negative effect on the duration of breastfeeding compared with

those who do not use contraceptive methods in a regression analysis in Iran (Marandi *et al.*, 1993) and in two studies in Saudi Arabia (HR:1.5; 95% CI: 1.1-2.2) (Shawky & Abalkhail, 2003) and (multivariate logistic regression model: χ^2 19.175; df=2; $p< 0.000$) (Ogbeide *et al.*, 2004). More women from urban areas reported contraceptive pill use, as one of the main reasons for breastfeeding cessation than women from rural areas (23% versus 0.9% respectively) in an Egyptian study (El-Mougi *et al.*, 1981), and in Saudi Arabia (19.0% and 7.2% respectively) (Al-Shehri *et al.*, 1995). Conversely in an early Turkish study, the belief in the contraceptive effect of breastfeeding lengthened the duration of breastfeeding among women having an unwanted child compared with women having a wanted child (Tuncbilek *et al.*, 1983).

1.3.7.4 Infant health problems

Admission to NICU

No association was found between admission to Neonatal Intensive Care Unit (NICU) for more than 24 hours and the rate of breastfeeding initiation in Saudi Arabia (Al-Ayed & Qureshi, 1998). However, in a cross sectional study, longer periods of stay in NICU was found to be negatively associated with breastfeeding duration in Qatar (Kayyali & Al-Tawil, 1989). In this study, none of the infants (n=340) discharged after more than three weeks was breastfeeding while seventy two per cent were still breastfeeding if admitted for less than one week.

Infant's Birth Weight

Infant weight at birth can have an effect on breastfeeding outcomes. Low birth weight infants could experience suckling problems and could be at risk of inadequate suckling (Herber-Jonat, 2007). As a consequence, weight gain problem may worry mothers leading to use of formula. Low infant birth weight (<2 Kg) has been reported as a risk factor for early termination of breastfeeding in an Iranian study (Shiva & Nasiri, 2003) while birth weight >2500 grams was found to be positively associated with rates of initiation in UAE (Al-Mazroui *et al.*, 1997).

1.3.7.5 Infant sex

Preferences of a particular gender can have an influence on breastfeeding choices in some cultures. A study in Jordan has shown a positive association between male infants and duration of breastfeeding (Akin *et al.*, 1986a). Similarly, an early Turkish study

(Tuncbilek *et al.*, 1983) also reported that having a male baby was positively associated with the duration of breastfeeding. In contrast, there was no association found between infant gender and rate of breastfeeding initiation in Saudi Arabia (al-Ayed & Qureshi, 1998) and for both initiation and duration in Kuwait (Al Bustan & Kohli, 1988; Amine *et al.*, 1989). Furthermore, no association was found between infant's sex and exclusive breastfeeding up to six months in a more recent Turkish study (Alikasifoglu *et al.*, 2001).

1.3.7.6 Obese mothers

The only Kuwaiti study investigated obesity with breastfeeding reported that it is a common practice among which obese mothers to have a longer breastfeeding duration, because many of them find it difficult to follow a weight loss diet, instead they breastfeed to burn extra calories (Amine *et al.*, 1989). This is inconsistent with many studies of Western women which have found a negative association between maternal weight (i.e. Pre-pregnancy BMI, obesity) and breastfeeding duration (Amir & Donath, 2007).

1.3.8 Health-service related factors

Hospital-related factors have been shown to have an association with breastfeeding behaviour and practices. These include place of delivery, early-mother-infant contact, rooming-in, demand feeds, prelacteal feeds, early introduction of supplementary feeds and health professional advice with breastfeeding initiation and duration. Most of these health-service related factors are similar to those recommended by the UNICEF Baby Friendly Hospital Initiative, for example demand feeds, rooming-in and receiving advice or encouragement from hospital-staff and professionals prior to discharge from hospital (UNICEF., 1991).

1.3.8 .1 Place of delivery

Whether mothers gave birth in hospital can have some impact on their future breastfeeding practices. An early Egyptian study has shown that mothers who delivered in hospitals were nursing for shorter duration compared with home deliveries (p>0.005) (El-Mougi *et al.*, 1981).

1.3.8.2 Rooming-in/ early-mother-infant contact

Rooming-in facilitates an early start and continuation of breastfeeding (Gonzales, 1990). Most recently in Lebanon, it has been shown that rooming-in during the first few hours

postpartum was positively associated with a higher initiation of breastfeeding (91.0 % mothers), as opposed to 73.2 % initiation rate of women from hospitals that did not allow rooming-in (Batal *et al.*, 2006).

1.3.8.3 Breastfeeding on demand/ Night feedings

Exercising on-demand feeding in early infancy has been shown to be positively associated with breastfeeding duration (Philipp & Radford, 2006) and the Baby Friendly Hospital Initiative recommends on-demand feeds to decrease the rates of early breastfeeding termination (Merten *et al.*, 2005). In an early Egyptian study, unrestricted infant 's night feedings was positively associated with breastfeeding duration (El-Mougi *et al.*, 1981). In a more recent study in Turkey, no positive association was found after controlling for confounding factors between feeding babies on demand and exclusive breastfeeding up to 4 months of age (Alikasifoglu *et al.*, 2001).

1.3.8.4 Prelacteal feeding / Supplementary/ Complementary feeding

Prelacteal feeds

There is an evidence that implementation of Baby Friendly Hospital initiative (BFHI) in maternity wards may improve breastfeeding practices globally (Wright *et al.*, 1985; Perez-Escamilla, 2007). The WHO and UNICEF joint initiative recommended the implementation of Ten Steps to Successful Breastfeeding (Table 1.9) (WHO, 1998). The Sixth step to successful breastfeeding states "Give newborn infants no food or drink other than breast milk, unless *medically* indicated.

Table 1.9: Ten Steps to Successful Breastfeeding (WHO, 1998)

Every facility providing maternity services and care for newborn infants should	
1	Have a written breastfeeding policy that is routinely communicated to all health care staff.
2	Train all health care staff in skills necessary to implement this policy.
3	Inform all pregnant women about the benefits and management of breastfeeding.
4	Help mothers initiate breastfeeding within half an hour of birth.
5	Show mothers how to breastfeed, and how to maintain lactation even if they should be separated from their infants.
6	Give newborn infants no food or drink other than breast milk, unless medically indicated.
7	Practise rooming-in - that is, allow mothers and infants to remain together - 24 hours a day.
8	Encourage breastfeeding on demand.
9	Give no artificial teats or pacifiers (also called dummies or soothers) to breastfeeding infants.
10	Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from the hospital or clinic

Early introduction of water and food to the infant can cause physiological changes in the breasts such as the reduction in the stimulation of the breasts, leading to reduction in milk supply and such practice has been shown to be a predisposing factor to early termination of breastfeeding (Howie *et al.*, 1981; Winikoff & Laukaran, 1989). The early use of bottle-feeding and indiscriminate use of prelacteal feeding has been found to be negatively associated with breastfeeding initiation in rural Egypt (Hossain *et al.*, 1991; Hossain *et al.*, 1994; Hossain *et al.*, 1995). Previous studies reported that the use of formula in the hospital is one the predominant factors negatively affecting the duration of exclusive breastfeeding in Turkey (Alikasifoglu *et al.*, 2001), in Saudi Arabia (Shawky & Abalkhail, 2003), (Ogbeide *et al.*, 2004).

Supplementary/ complementary feedings

It is logical that the promotion of bottle feeding and offering free samples of commercial ready-to-feed infant's formula prior to discharge would encourage many mothers to start to introduce formula and thus reduce rate of exclusive breastfeeding. In a univariate analysis, a study reported a decline in exclusive breastfeeding in hospitals and suggested that this may be attributed to the media-advertising and marketing of infant fomrula in UAE, Al Ain, especially the offering of free ready-to-use infant formula prior to hospital discharge (Osman & El-Sabban, 1999). The use or avoidance of infant formula had an association with duration of breastfeeding in Iran (Marandi *et al.*, 1993).

Their univariate analyses had shown that the earlier the introduction of infant formula, the shorter was the duration of breastfeeding. Early introduction of bottle feeding before discharge from hospital was a negative factor affecting breastfeeding duration in a Saudi study using multivariate analyses to control for confounders (χ^2=30.867,d.f. 2, p<0.001) (Ogbeide *et al.*, 2004). In Turkey, multiple Cox regression analysis has shown that shorter total duration of exclusive breastfeeding was strongly and negatively associated with receiving supplementary formula in the hospital (RR: 1.43; 95% CI: 1.08-1.89) (Alikasifoglu *et al.*, 2001).

1.3.8.5 Health professional advice/guidance

The mother's perception of the adequacy and amount of information they received during their hospital stay may affect their breastfeeding outcomes. Lack of antenatal and post-natal education had a negative impact on breastfeeding initiation among Saudi mothers (Shawky & Abalkhail, 2003), while, advice from hospital staff before discharge was

positively associated with breastfeeding initiation in another Saudi study (Ogbeide *et al.*, 2004). In Lebanon, mothers who received advice on breastfeeding initiation initiated breastfeeding within half an hour after birth as opposed to mothers who did not receive any advice who were less likely to initiate early (Batal *et al.*, 2006). In regards to breastfeeding duration, an earlier study showed that weak and ineffective health educational programs in Bahrain were associated with lower rates of breastfeeding duration (Musaiger, 1983).

1.3.9 Psychosocial factors

1.3.9.1 Social support- father's attitude

Social support from father or other family members can influence the mother's decisions regarding breastfeeding initiation or continuation. However, paternal attitudes towards infant feeding have not been studied in many Middle Eastern and only two studies reported father's support for breastfeeding. Saudi women in Al Kharj, a province in Reyadh, were more likely to initiate breastfeeding if their partners supported breastfeeding and encouraged them to initiate exclusive breastfeeding (Ogbeide *et al.*, 2004). In contrast, no association was found between the Saudi father's attitude towards breastfeeding and the rates of initiation in a previous study in the national capital Riyadh (Al-Ayed & Qureshi, 1998).

1.3.9.2 Gender of paediatrician

Owing to the cultural and traditional background of countries in the Middle-East, women would feel more comfortable when discussing infant feeding issues with a female than a male physician and to take advice which may have an impact on breastfeeding duration. A novel finding in a recent Lebanese study had shown a positive effect of female paediatrician on breastfeeding continuation until four months of age (OR: 1.49; 95% CI: 1.03-2.15) (Al-Sahab *et al.*, 2008).

1.3.9.3 Religious and cultural influences

Quran

In Islam, the Quran emphasizes the importance of suckling and specified the appropriate length, if the mother chooses to breastfeed as two whole years. "The mothers shall suckle their infants for two whole years, that is for who wish to complete the suckling" (*Surat El-Baqara, verse 233*). This breastfeeding principle promoted 1400 year ago through the Quran is similar to the most recent WHO breastfeeding and weaning recommendations.

Researchers studied the effect of this advice on the rates of breastfeeding duration. Two studies found that religious motives and mother's insistence on following these guidelines had a positive effect on the rates of duration in both Iran (Marandi *et al.*, 1993) and Saudi Arabia (Ogbeide *et al.*, 2004). A recent Lebanese study had shown that religion can play a role in breastfeeding decision and that the more religious the mother, the more she breastfed at 1 and 4 months (Al-Sahab *et al.*, 2008).

Islamic traditional dress

Some researchers have studied the impact of the level of religiosity on the breastfeeding patterns. One of the earlier Kuwaiti study found that mothers who are conservative and modest in their dress code, were more likely to initiate breastfeeding compared with modern women, which could be related to religious motives (Al Bustan & Kohli, 1988).

1.3.9.4 Breastfeeding confidence/ enjoyment/ satisfaction/stress

Attitudes and feelings of mothers towards breastfeeding play a role in affecting early termination of breastfeeding. A study in Northern Iran has shown that lactating women experiencing a high level of stress had a short breastfeeding duration (Hajian-Tilaki, 2005).

1.3.9.5 Breastfeeding knowledge and education

The level of information about breastfeeding and infant health may have an influence on the duration and initiation rates of breastfeeding. Maternal knowledge of the advantages of colostrum increased the rates of exclusive breastfeeding initiation in UAE (Al-Mazroui *et al.*, 1997). Mother's beliefs that bottle feeding is superior to breast milk and that breastfeeding can affect the figure causing sagging of the breast were significantly related to a reduction in duration rates among young Bahraini women (Musaiger, 1983). Educational programmes can guide mothers for example encourage early initiation and increases frequency of feeding on demand which may help to maintain the regularity of breastfeeding and to boost the confidence of mothers to breastfeed. The lack of antenatal and post-natal education has been negatively associated with shorter rates of durations among Saudi mothers (Shawky & Abalkhail, 2003). Studies have shown that breastfeeding knowledge positively influence breastfeeding outcomes (Hoyer & Horvat, 2000). However, although mothers recognize the importance of breastfeeding, they may not be keen enough to continue breastfeeding for a long duration due to other reasons. A Turkish cross-sectional study has shown that while most women in the study (60.6%)

were well educated about breastfeeding, they started on supplementation during the first three months of life (Hizel *et al.*, 2006).

1.3.9.6 Pre-natal breastfeeding intentions

A prospective cohort and follow-up study in Turkey has shown no association between intentions for breastfeeding duration and behaviour at either follow up time. Their test using the 'theory of reasoned action' showed that beliefs and attitudes regarding the duration of breastfeeding were not significantly related to the exclusive breastfeeding intentions or actual exclusive breastfeeding at assigned follow-up periods (Goksen, 2002).

1.3.9.7 Comfort with breastfeeding in Public

Breastfeeding in public has been of interest to many researchers in developed countries but no studies statistically analyzed the association between breastfeeding initiation and duration and breastfeeding in public as a psychosocial factor influencing rates of breastfeeding practices. However, a cross sectional observational study reported that Jordan had experienced a change in breastfeeding in public, as it is becoming increasingly unusual to see women breastfeeding in public possibly due to the decrease in illiteracy among Jordanians (Khassawneh *et al.*, 2006).

1.3.10 Other Isolated Factors

1.3.10.1 Seasonal differences

The effect of seasonality on breastfeeding outcomes has been studied in an early study. An Egyptian study on seasonal differences and its effect on exclusive breastfeeding had found a significant positive association between high rates of breastfeeding and hot weather compared with cold weather in the same geographic location (Serdula *et al.*, 1986).

1.3.11 Summary of review

This review identifies some consistent and inconsistent findings with Western studies. The main factors shown to be associated with breastfeeding outcomes were maternal age, level of maternal education, maternal employment, socio-economical status, parity, mode of delivery, milk insufficiency, prelacteal feeds and early use of supplementary feeds. Among the socio-demographic factors, the majority of studies have shown that older mothers were more likely to have higher initiation rates and longer breastfeeding duration than younger mothers, which is similar to recent studies in Western countries reporting

higher initiation rates (Scott & Binns, 1999; Dennis, 2002; Callen & Pinelli, 2004) and longer breastfeeding duration (Callen & Pinelli, 2004; Thulier & Mercer, 2009) in older mothers. In the Middle East, almost all studies have shown that high educational level in mothers was inversely associated with breastfeeding initiation and duration. This finding is inconsistent with Western studies where the highly educated mothers tend to have higher rates of breastfeeding initiation (Scott & Binns, 1999) and duration (Callen & Pinelli, 2004; Thulier & Mercer, 2009) than less educated mothers. Maternal employment has been reported to be negatively associated with breastfeeding duration but not many data was found on breastfeeding initiation. Similarly, among Western women, employment full time has been shown to have a negative effect on breastfeeding initiation (Dennis, 2002) and early return to paid work was inversely associated with breastfeeding duration (Thulier & Mercer, 2009). High social or income status was negatively associated with breastfeeding duration and initiation in a larger number of Middle-Eastern studies which is different to findings in Western countries where the higher the family income, the higher breastfeeding initiation rates and the longer breastfeeding duration (Callen & Pinelli, 2004).

The review indicated that for biomedical factors, parity was strongly associated with successful breastfeeding in a number of studies and it is consistent with a recent review on Western women where multiparous mothers who had prior experience in breastfeeding breastfed for longer duration (Thulier & Mercer, 2009). Additionally, complicated deliveries and caesarean sections were factors found to be negatively related to breastfeeding initiation and shorter breastfeeding duration. This observation is not consistently seen among Western women, nevertheless, one reviewer reported that caesarean section delivery negatively influenced breastfeeding duration among mothers (Thulier & Mercer, 2009). Many studies reported that perceived milk insufficiency was the most common reason given by mothers to justify early breastfeeding termination which also influenced actual breastfeeding duration negatively. A similar finding has been reported in a review of Western women (Thulier & Mercer, 2009). The use of prelacteal feeds and early introduction of supplementary feeds prior to hospital discharge is one of the hospital-related factors reported by a number of Middle Eastern studies. This practice was identified by studies from various Middle Eastern countries as a negative predictor of breastfeeding initiation and duration.

The relationships between breastfeeding outcomes in Middle-Eastern women and socio-demographic factors such as education, social class and of residence are consistent with the

patterns observed in developing countries where poorer, less well-educated women from rural communities are more likely to initiate breastfeeding and to breastfeed for longer compared to better educated, more affluent women in urban areas in Pakistan (Khan, 1991). Early termination of breastfeeding was observed to be higher amongst urban Mexican and Malaysian mothers (Dimond & Ashworth, 1987). Whereas in Western countries, it is older, better educated women and mothers with higher family incomes, who are more likely to breastfeed than women from more deprived backgrounds (Scott & Binns, 1999; Dennis, 2002). In considereing these differences it should be made clear that factors associated with low socioeconomic status maybe different in different cultures thus in Middle East illiteracy maybe due to lack of education due to geography rather than illiteracy in Western countries which is related to low economic status and disengagement from the education system. As in obesity maybe related to income in the Middle East but is marker of deprvation in Europe. However the relationship will differ between Middle Eastern countries as they enter different stages of transitions.

This review indicated that there are differences and similarities between determinants of breastfeeding initiation and duration amongst Middle Eastern and Western women. However, more recent studies showed a closer match to Western studies. This could be due to the transition period which was described earlier. The transition type and time may differ among countries in the Middle East where countries influenced by modernization observed the change in infant feeding practices earlier than less modern nations. This is discussed in the next chapter.

1.3.12 Limitations of previous Middle Eastern studies

There are a number of limitations with Middle Eastern studies reporting these data. In contrast, because Western studies were conducted in a more systematic approach, their available reviews can give a valid insight of determinants of breastfeeding. The way the studies were conducted in the Middle East was not of a high standard compared with studies conducted in Europe, USA and other Western countries which lead to difficulty in reading them and extracting similar data to compare with other Middle Eastern countries or other world countries.

- Almost all studies were of weak study design (i.e most are cross sectional not longitudinal) and most of them had a small sample size which may not be

representative of the whole population as most studies were single centre not multi-centre or studied either only rural areas or only urban areas.

- Most studies did not control for possible covariates or confounding factors (i.e. data were analyzed univariately not multivariately).
- Many studies relied on maternal recall which lacks accuracy of the exact infant feeding practices at the exact age of infant and introduces potential recall bias.
- Many studies did not use WHO definitions for breastfeeding as it was not standard in most studies (e.g. exclusive breastfeeding definition) which could be interpreted different than other studies making it incomparable due to the varied use of breastfeeding definitions.
- There were only a small number of recent studies conducted in the past five years and a limited number of studies in Kuwait which has periodic but not regular research on breastfeeding.
- Most studies were carried out a long time (between 5 – 10 years) before the actual publication data which leads to having old data while the date of publishing was recent.
- Many studies made claims of association between breastfeeding outcomes without providing evidence of effect size (i.e. OR, RR or % prevalence) or statistical significance (*p* values or 95% CI).

These limitations are also explored in the next chapter which a systematic review of the prevalence of breastfeeding in the Middle East. There is a lack of evidence from the Middle East when compared to Westernized countries which signifies the need for well designed studies and justifies the importance of carrying out Kuwait Infant Feeding Study as well as the need to similar quality studies in this region of the world.

Chapter 2 Review of breastfeeding prevalence in the Middle East

Chapter 2 Review of breastfeeding prevalence in the Middle East

2.1 Introduction

Breastfeeding practices that meet the WHO international recommendations play a vital role in dealing with three global problems: malnutrition, infections and closely spaced pregnancies. Infant health and well being are also closely associated with changes in breastfeeding habits (Annon., 1982). Knowledge and understanding of changes in the incidence and duration of breastfeeding across Middle Eastern countries may offer information about practices that encourage or discourage breastfeeding between and within countries. This comparative review examined the incidence and duration of breastfeeding in term infants across the Middle Eastern region. In Western countries, there have been a number of reviews of the incidence of breastfeeding and duration prevalence (Hendershot, 1984; Grummer-Strawn, 1996; Scott *et al.*, 1996; Yngve *et al.*, 2001; Callen & Pinelli, 2004; Bolling, 2006) that have examined trends in breastfeeding, whereas no comprehensive review comparing breastfeeding in the Middle East has been previously published in the English literature. This review will help identify methodological strengths and weaknesses of data collected in the Middle East. The available data highlight the difficulties in comparing studies that have been conducted using different sampling techniques and data collection and reporting methods. For this review it was important to locate all available information on infant feeding in the Middle East. As some data are not published in peer-reviewed journals, a broader search was required to identify sources such as government health surveys and annual/periodical official reports which may not appear in the Medline search.

Three phases have been reported for the changes in breastfeeding practices in western countries. The first was the traditional phase with high prevalence and duration of breastfeeding, There as then a transformation phase with the prevalence of breastfeeding falling and the duration becoming shorter and then finally a resurgence phase with rising prevalence and duration (Annon., 1982). Changes in the population characteristics such as during industrialization in the mid-eighteenth century and by the end of the first world war and also after increased availability of formula milks, have almost universally decreased breastfeeding duration which has then increased again as measures such as the baby friendly hospital initiative have been introduced (Fairbank *et al.*, 2000; Guise *et al.*, 2003; Pincombe *et al.*, 2008). However within some developing countries where these changes

are happening later, there is a more positive aspect in behavioural changes within subgroups, for example in some women now have wider gaps between each pregnancy, and have increased breastfeeding duration (Grummer-Strawn, 1996).

A comparison of breastfeeding duration rates at six months between UK and Sweden suggested that UK had lower rates (21%) compared with Sweden (42%) in 1995 (Yngve & Sjostrom, 2001b) and concluded that the much lower breastfeeding rates in the UK were likely to be due to a complex interaction of factors including lack of baby-friendly hospitals, lack of prenatal breastfeeding promotion and lactation management training of mothers and insufficient parental support. Breastfeeding rates have also increased in the UK after such initiatives have been made. Rates of breastfeeding at six months in the UK had increased in 2005 by 13% (34%) compared with 21% in 1995. Breastfeeding initiation increased from 68% in 1995 to 71% in 2000 to 78% in 2005 (Bolling, 2006).

One theory of change in infant feeding practices is that breastfeeding practices tend to be higher amongst privileged groups within countries and that developing countries seek a more 'modern, western' approach and thus move away from breastfeeding to use of formula milk. Another theory suggests that change in socioeconomic status due to industrialization causes altered life style such as women working full time with less time to breastfeed and increased income and improving educational level, reducing breastfeeding practices (Annon., 1982). Understanding the reasons behind decreases in breastfeeding incidence and prevalence during different phases assists in planning promotion and surveillance systems. An understanding of trends in breastfeeding practices may help identify events leading to increases and decreases in breastfeeding initiation and duration, which is the main purpose of this Middle Eastern review.

An alternative option for appraising observational studies is the use of STROBE checklists (Annon., 2010e). Other methods for assessing the quality of studies were reported in other systematic reviews (McInnes & Chambers, 2008; Ingram *et al.*, 2010). In the Ingram review, a tool was adapted to assess the risk of bias in both experimental and observational studies. The tool classified study quality into high, medium or low for selection, performance, measurement and attrition bias based on descriptions of the study design, execution and analysis. Whereas in Mclnnes review, the authors independently appraised each of the included papers using a tool developed from critical appraisal publications (McInnes & Chambers, 2008) and from previous work by the researchers.

The assessment of studies in the present systematic review was based on all available studies that were first categorized based on specific criteria that apply to most available Middle Eastern studies. Criteria were gathered in a table based on study design and then scored to a maximum of score of ten. The scoring of each category was discussed with three persons and a final scoring table was agreed on. All categories in the table were driven from the included studies. Because this review is the first of its kind in the Middle Eastern region, a new scoring system tool that is tailored based on the quality of available data was necessary.

2.2 Objective of study

The objective of this review was to identify and critique the research on infant feeding practices in the Middle Eastern region. Data on the prevalence of breastfeeding initiation, exclusive breastfeeding, and duration of breastfeeding were reviewed over the last three decades to see if it is possible to identify differences between countries and any changes over time.

2.3 Previous data

A review of research on the factors associated with the choice and duration of infant feeding in less-developed countries (Forman, 1984), included a section on a limited number of Middle Eastern studies, namely Jordan, Lebanon, Egypt and Kuwait. However, this review focused on the mother's perception of her infant feeding status rather than on the actual practice of infant feeding and therefore, rates of breastfeeding practices were not included. In addition, reviewed Middle Eastern studies were limited in the number of studies per country and included different types of studies which could not be easily compared.

The UNICEF report for exclusive breastfeeding in the developing world concluded that women from the East Asia/Pacific and Eastern/Southern Africa regions had the highest rates of exclusive breastfeeding in the first six months of life (43%, 41% respectively) (UNICEF., 2006), however the methods by which this data was obtained were not well explained and so cannot be critiqued. The lowest rates of exclusive breastfeeding were reported amongst women from Western/Central Africa and Central Eastern Europe/Commonwealth of Independent States (CEE/CIS) regions (20%, 22%) respectively.

Middle Eastern countries including North Africa fell in the lower range with only 29% of infants exclusively breastfed for the first six months of life. This was based on the latest available estimates for 111 countries during 1996-2004, but no further information was given in the report about how the data were collected and what countries were studied. The documented UNICEF data for the changes in breastfeeding practices over time which were reported for the developing world were estimates of breastfeeding trends based on a subset of 37 countries for which data were available. The report stated that there was an improvement from 30% to 38% of exclusive breastfeeding in the Middle East/North Africa between 1990 and 2004. This rate was given for the whole region and the studies included in the trends analysis were not specified.

2.4 Available data used in this study

The data found on breastfeeding practices in the following review were obtained from studies conducted in Middle Eastern countries. The studies included large surveys that gathered information on child health as well as small cross sectional studies which aimed to investigate breastfeeding rates, including breastfeeding initiation, duration, and/or prevalence at selected time points, and identify factors associated with initiation, early weaning and other breastfeeding practices. These studies collected data either from the hospital through face to face interview shortly after delivering the baby at the maternity wards or obtained data from medical records in clinics or hospitals or at the time when the mother takes the baby for vaccination. Some studies collected data from home visits interviewing women of child bearing age and those who had children in the past with a time period after birth of specified years of five or less based on each study's selection criteria. Few longitudinal studies were identified which followed up the mothers for a period of time after recruiting them prior to hospital discharge.

The following review will demonstrate the quantity and quality of the available data on infant feeding patterns in the Middle Eastern region to illustrate breastfeeding rates and where possible trends from earliest studies to the most recent. The first section of this chapter discusses the data sources and their limitations. The next section discusses the direction of the trends in breastfeeding from 1960 to date among the whole Middle Eastern region and within countries if data were obtained from well designed studies and if the data available in each country were sufficient.

2.5 Methodology

2.5.1 Identification of studies

The published literature was carefully searched for all reports of appropriate and relevant studies. The search of electronic databases included English language and selected non-English language sources (Arabic, Persian, and Turkish). The main search was performed through Pubmed online, Ovid Medline database and NHS e-library. Subscription was taken for Zetoc Alert for latest publications as it automatically sends emails listing the table of contents from particular journals and articles that match searches for keywords from article titles. Google scholar search engine was also checked for any National Surveys available online and these were then requested from the British Library. Some articles (n=3) have not been yet obtained after one year and were therefore not included. Unpublished available reports or surveys in Kuwait were requested and obtained from the Kuwaiti authorities by direct contact.

Keywords were chosen carefully to avoid missing any relevant studies and included "breastfeeding", "infant feeding", "duration", "initiation"; "exclusive breastfeeding", "breastfeeding and Middle East", "breastfeeding and Kuwait", "breastfeeding and Gulf States", "breastfeeding and each individual Gulf State". Identification of further studies was made through hand search of original articles and reviews on the subject found by electronic search. Gulf countries included Kuwait, Saudi Arabia, Bahrain, Qatar, Oman and United Arab Emirates. The rest of the Middle Eastern countries included Iraq, Iran, Egypt, Lebanon, Jordan and Turkey, Morocco, Libya, Yemen and Tunisia were searched using the same approach. The 1996 National Health Survey which was carried out in Kuwait was identified through hand search from a reference page of a Kuwaiti study. The other national surveys for each individual country were then searched through Google scholar.

2.5.2 Selection Criteria

Selecting the studies for inclusion in this review was based on whether the study reported on one or more of the relevant breastfeeding outcomes, including:

- Breastfeeding initiation
- Prevalence of exclusive and/or overall breastfeeding at selected time points
- Mean (or median) duration of breastfeeding.

Most countries did not have a routine serial data collection. Since few longitudinal studies were carried out in Middle Eastern countries, cross sectional studies were included.

Table 2.1: Characteristics of identified studies (n = 92)

Countries *(n=13)*	Total no. of included studies (incl. Surveys)	Type of study			Rejected studies
		Cross-sectional	Longitudinal follow-up	National survey	
Kuwait	7	4	---	3	---
Saudi Arabia	22	18	1	3	---
Oman	2	1	---	1	1
Qatar	2	1	---	1	1
UAE	5	2	2	1	1
Bahrain	4	3	---	1	---
Yemen	2	---	---	2	---
Iran	12	11	1	---	3
Iraq	2	2	---	---	2
Egypt	5	3	2	---	2
Lebanon	2	1	1	---	---
Jordan	4	2	---	2	1
Turkey	7	5	2	---	5
Total	**76**	53	9	14	**16**

2.5.3 Excluded studies

Sixteen studies were excluded for various reasons (Table 2.2). A study in Oman had no clear data on initiation and duration of breastfeeding but focused on food habits of mothers and their children (Musaiger, 1996). A study of Qatari women assessing the relationship between breastfeeding and the development of childhood asthma and allergic disease could not be obtained (Bener *et al.*, 2007). A study in the UAE of practices of infant-feeding and the influencing factors had a table for the rates of breastfeeding which was not found in the link and not clearly described in text (Osman & El-Sabban, 1999). A study in Iran was excluded because it was not clear how it was conducted (Polak *et al.*, 1964). Another study in Iran was excluded because only the abstract was available (n.b. ordered via ILL but could not be obtained within 1 year) (Ayat Elahi *et al.*, 2001). An Iranian study was excluded in the review because it was unavailable (n.b. ordered via ILL but could not be obtained within one year) (Ghaed Mohammadi *et al.*, 2004). One study in Jordan was excluded because figures were reported on current breastfeeding practices only and did not provide information on breastfeeding initiation rates (Khassawneh *et al.*, 2006). A study in Iraq was rejected because no clear breastfeeding figures were reported (Abdul Ameer *et al.*,

2008). A Turkish study was excluded because no clear breastfeeding results were given as only current breastfeeding practices at the time of the study reported) (Karacam, 2008). Other reasons for exclusion were breastfeeding and seasonal differences (Serdula *et al.*, 1986), evaluating the attitudes and beliefs of mothers on breastfeeding in Turkey (Hizel *et al.*, 2006), hospital practices and attitudes of doctors influencing breastfeeding (Kocturk, 1987), studying theory of behaviour and intentions (Goksen, 2002), knowledge of health care physicians about breastfeeding (Al-Zwaini *et al.*, 2008), health care personnel knowledge of breastfeeding (Yaman & Akcam, 2004), recovery of fertility during breastfeeding (Shaaban *et al.*, 1990).

Table 2.2: Characteristics of excluded studies (n=16)

Study (Author, year)	Country	Study design, purpose and/or reasons for exclusion
1- (Polak *et al.*, 1964)	**Iran**	Retrospective, longitudinal follow-up Aim to understand infant feeding habits in their centres Excluded because not clear how it was conducted & small sample size
2- (Ayat Elahi *et al.*, 2001)	**Iran**	Prospective, longitudinal follow-up Designed to investigate BF patterns Excluded because full test could not be obtained after one year search & not available by interlibrary loan
3- (Ghaed Mohammadi *et al.*, 2004)	**Iran**	Retrospective, cross sectional Aim to study rates of BF and factors associated w/ BF Not available after extensive search (1 year)
4- (Serdula *et al.*, 1986)	**Egypt**	Cross sectional survey To associate seasonal differences with BF practices
5- (Shaaban *et al.*, 1990)	**Egypt**	A longitudinal study To determine time that ovulation resumed after child birth
6- (Kocturk, 1987)	**Turkey**	Prospective, cross sectional To identify reasons for early complementation in low to middle socioeconomic areas
7- (Goksen, 2002)	**Turkey**	Prospective cohort follow-up Designed to test the basic assumptions underlying the theory of reasoned action for EBF behaviour
8- (Yaman & Akcam, 2004)	**Turkey**	Cross sectional To investigate knowledge & attitude level of health professionals, care workers & its influence on their own BF behaviour
9- (Hizel *et al.*, 2006)	**Turkey**	Cross sectional To identify infant feeding practices & to evaluate attitudes & beliefs of mothers on BF in Turkey No BF figures

10- (Karacam, 2008)	**Turkey**	Retrospective, cross sectional Designed to determine factors affecting EBF No clear BF results & only current results (at study time)
11- (Musaiger, 1996)	**Oman**	Retrospective, cross sectional Designed to determine the food habits of mothers & their children No BF initiation or duration data Small sample size
12- (Osman & El-Sabban, 1999)	**UAE**	Retrospective & current cross sectional Designed to study practices on infant feeding & the influencing factors BF rates not available
13- (Khassawneh *et al.*, 2006)	**Jordan**	Retrospective, cross sectional Designed to evaluate practices, knowledge & attitude to BF & to assess factors associated w/ BF Excluded because figures were reported on current BF practices only & did not provide information on BF initiation rate
14- (Bener *et al.*, 2007)	**Qatar**	Cross sectional Designed to assess the relationship between BF & the development of childhood asthma & allergic disease in Qatari children Not available after extensive search for 1 yr
15- (Al-Zwaini *et al.*, 2008)	**Iraq**	Cross sectional To assess knowledge & identify misperceptions about BF
16- (Abdul Ameer *et al.*, 2008)	**Iraq**	Retrospective cross sectional Designed to assess BF knowledge, attitudes & practices No clear BF figures reported

2.5.4 Included studies

The studies included in the review are summarised in (Table 2.4) based on:

(1) Study sample (sample size, maternal age, infants age, location and setting)
(2) Study type (design, data collection and sample selection)
(3) Breastfeeding outcomes (Duration of breastfeeding, exclusive and overall breastfeeding)
(4) Comments (Limitations, weaknesses , errors)

2.5.5 Assessing and reporting the quality of included studies

Once all relevant studies had been identified and each study assessed for inclusion eligibility the study quality was assessed for each outcome of interest and scored as described below. A systematic and standardised approach was used to appraise the studies. Studies identified by the search were assessed against criteria including details of breastfeeding and initiation and/or duration, study design, representativeness of sample and clear methodologies (Table 2.3).

2.5.6 Scoring of studies

Scoring of studies was needed to enable proper evaluation of available data and to help in deciding whether to include the low score studies in the reading of trends (in trying to detect a change within country). Other studies were searched for methods that other researchers used to score their reviewed studies to apply what relative to this review (Downs & Black, 1998; Riesenberg *et al.*, 2010). The scoring system for studies included in the review were discussed and agreed by three nutritionists using the criteria below and were evaluated based on a total score from 0.0 to 10.0 (Table 2.3).

The criteria included:

- Study design (max 2 points)
- Sample size (max 2 points)
- Representativeness of sample (max 2 points)
- Data collection methods (max 2 points)
- Breastfeeding definitions (max 1 point)
- Results (max 1 point)

Quality of studies

- **Low:** ≤ 4.0 points
- **Medium:** 4.5 - 7.5 points
- **High:** 8.0 -10.0 points

The maximum total score was set at 10.0 points based on the criteria described in Table 2.4. An approximate estimation was made to assess the quality of studies. Low scored

studies (i.e. low quality studies) were those that got less than or equal to 4.0 points, medium scored studies (medium quality studies) were those that got a score between 4.5-7.5 and high scored studies (high quality studies) were those that got 8.0 to 10.0 points. A threshold point was set to decide whether to include those studies that got lower than the threshold (4.0 points or less) in determining trends. These studies were included in the graphs to show the data exist but were not be given much consideration in determining any trends. A score of four was decided on as the threshold as studies scoring below this were those with small sample size (<300), sample not representative of the whole population of the country (i.e. either urban or rural), not using the WHO breastfeeding definitions, subject to recall bias (i.e. mother recall breastfeeding practices from the past 5 years) and sample were recruited from a single setting (Table 2.4), and were therefore unreliable.

Table 2.3: Scoring criteria for studies included in the review

	Scoring	Maximum Score
Study design		
Prospective & longitudinal with follow up	**+2**	**2**
Cross-sectional - Retrospective but within 2 yrs	**+1**	
Cross-sectional - Retrospective but within 5 yrs	**+0.5**	
Poor or no description	**+0**	
Sample size		
Sample size ≥ 2000	**+2**	**2**
Sample size ≥300-1999	**+1**	
Sample size < 300	**+0**	
Representativeness of sample		
Representative of country/Stratified cluster sampling	**+2**	**2**
Multi-centre- rural AND urban	**+1**	
Multi-centre- rural OR urban	**+0.5**	
Single centre or no description	**+0**	
Data collection methods		
Face to face interview	**+1**	**1**
Pre-tested validated questionnaire	**+1**	**1**
Poor or no description	**+0**	
Breastfeeding Definitions		
WHO definitions included	**+1**	**1**
Clear exclusivity definitions	**+0.5**	
Study's own BF definitions	**+0.5**	
No clear definitions/no definitions	**+0**	
Results		
Results clearly described*	**+1**	**1**
Results extrapolated from figures	**0.5**	
Results difficult to interpret	**0**	
Total		**10**

Results clearly described means that BF pattern were reported clearly (i.e. full BF, EBF, any BF, mixed BF, etc), also BF mean duration & EBF mean duration were well reported

2.6 Results

Assessment of the quality of studies using the scoring system described earlier was completed for all included studies. Based on the scoring system, all included studies were either of low or medium quality and scores ranged from 1.0 to 7.5. No studies received a score more than or equal to 8 (high quality). Out of the 76 studies, half (n=38) scored from 1.0 to 4.0 and considered low quality studies, and the other half of the studies scored from 4.5-7.5 considered medium quality studies (Table 2.4).

Table 2.4: Number of studies based on quality of scoring

Quality of study	Scores	No. of Studies	Total
Low (1- 4)	1.0	1	**38**
	1.5	0	
	2.0	8	
	2.5	4	
	3.0	10	
	3.5	8	
	4.0	7	
Medium (4.5 -7.5)	4.5	7	**38**
	5.0	5	
	5.5	3	
	6.0	5	
	6.5	11	
	7.0	5	
	7.5	2	
High (8 -10)	8.0	0	**0**
	8.5	0	
	9.0	0	
	9.5	0	
	10.0	0	
	Total	**76**	

2.6.1 Inclusion criteria for studies in trend analysis graphs

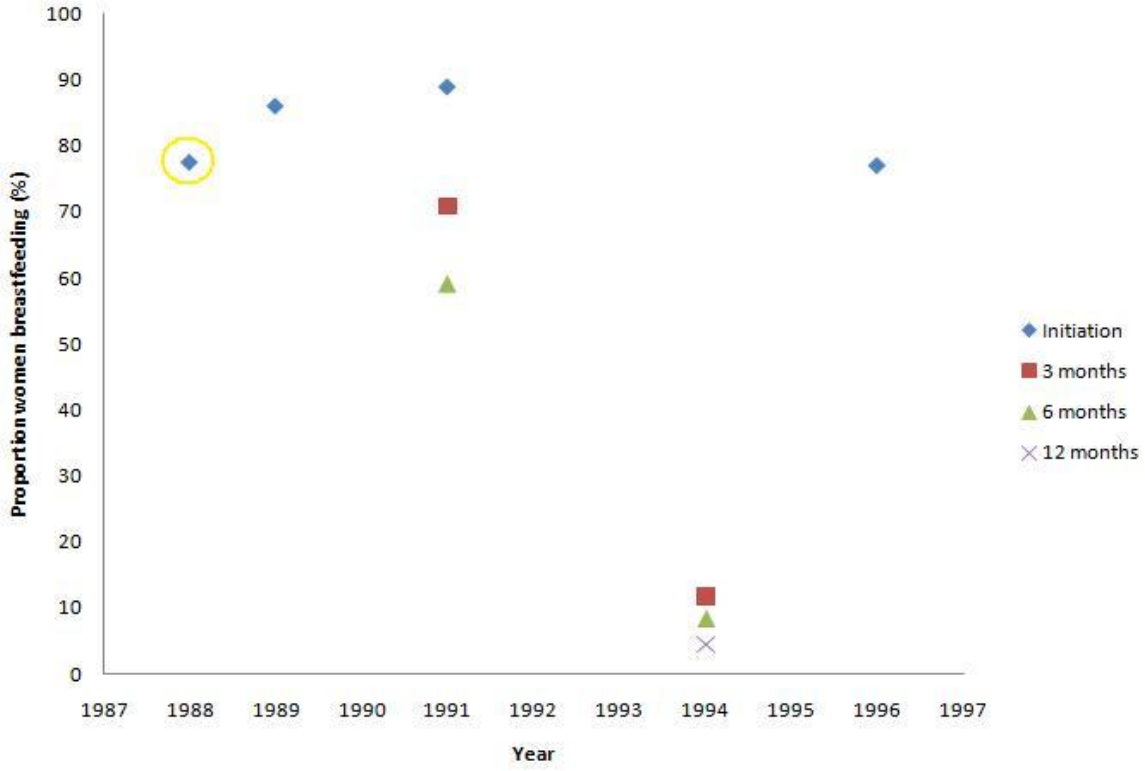
Only studies that reported any or all of the following breastfeeding data were included in the trend analysis. Middle Eastern countries with few studies and insufficient breastfeeding data were summarized in tables only. Breastfeeding data comprised of initiation rates (proportion ever breastfed) and any breastfeeding at 3, 6, 12 months. At least two studies with any of these breastfeeding outcomes were needed to include that country in the trends analysis. Only four countries had sufficient data for breastfeeding trends to be considered; Kuwait, Saudi Arabia, Iran and Turkey. Weak scored studies are highlighted in yellow circles in the graphs to distinguish them from the medium quality studies.

2.6.2 Kuwait

2.6.2.1 Initiation any breastfeeding

The prevalence of women who ever breastfed their infants after delivery was reported in a small number of cross sectional studies in Kuwait (n=5). Of these, only four provided easily interpretable data on breastfeeding initiation (from 1988-1996) and the earliest study was carried out in the late 1980's. Rates of breastfeeding initiation varied from 77.5 % to 88.9% while the scoring of these studies varied from (3.5-7.5). From this figure, there appears to be a decrease in breastfeeding initiation rates, if the earliest study with lowest score (3.5) (Al Bustan & Kohli, 1988) of an initiation rate of 77.5% is disregarded, given that it is below the threshold of 4.0. The other three studies were considered in the analysis because they scored higher (from 6.0-7.5) with initiation rates of 86% (score 6.5) (Amine *et al.*, 1989), 89% (score 6.0) (Al Rashoud & Farid, 1991), and 77% (score 7.5) (Al-Nesef *et al.*, 1996). Only one study (Amine *et al.*, 1989) and two surveys (Al Rashoud & Farid, 1991; Al-Nesef *et al.*, 1996) were considered to be nationally representative (Table 2.4.1 and Table 2.4.2). The incidence of breastfeeding fell by 11.9% from 1991 to 1996. It is unusual for large shifts in breastfeeding incidence to occur in the space of a few years. Given the relatively short time span between the earliest and latest reported data, it is unlikely that these differences represent national shifts in breastfeeding incidence but are more likely the result of differences in study design, sample size and characteristics and/or data collection methods. When comparing breastfeeding rates between populations, or trends within the same population over time, it is important to standardise for any demographic differences between the populations studied which may account for the difference seen (Hendershot, 1984). For example, the observed differences may be the result of differences in the socio-demographic characteristics of subjects, especially when a group who is more likely to initiate breastfeeding is over-represented in one study but under-represented in another study. Additionally, difference may be explained in part due to problems with maternal recall, as the national surveys for example, sampled women with children less than 5 years of age (Al-Nesef *et al.*, 1996). Similar observations were seen in the data for any breastfeeding at 3 months and six months. The two sets of data show a large difference in the breastfeeding rate which is also probably related to differences in study design.

Figure 2.1: Summary of estimates of breastfeeding in individual studies in Kuwait



Yellow circle denote study with low score

2.6.2.2 Any breastfeeding at 3, 6, 12 months

The prevalence of breastfeeding at three months of infant's age was reported in only two studies in 1991 and in 1994. The graph shows a sharp drop of huge proportion of women breastfeeding at three months rate from 70.9% (Al Rashoud & Farid, 1991) in 1991 to 11.7% (Annon., 1994) in 1994. This is so large a drop in such a short time that it is unlikely to be real. The two studies were of medium quality and both scored 6.0. Possible causes of these different rates could be related to differences in study design, for example, the study with the higher rate was a retrospective cross sectional of a large sample size (n=4175) recruited from homes. While the one with the lower score was a cross sectional study with a follow-up up to 12 months and had a smaller sample size (n=1399) recruited from health centres during vaccination visits. Similar findings were observed in rates of breastfeeding at six months to those seen in three months of infant's age. Only one study reported the proportion of women breastfeeding at one year in 1994 (4.5%), therefore, cannot observe changes in breastfeeding behaviours cannot be determined.

Table 2.5.1: Cross sectional studies from Kuwait (n=4)

	Author, Year	Sample & interview setting	Study design	Results		Comments ♦ Studies included in graph
1	**Al Bustan, 1988** ♦ **Carried out:** NA **"Socio-economic & demographic factors influencing BF among Kuwaiti women"** **Aim:** to study the socioeconomic & demographic factors influencing BF practices	**Sample:** 1,553 Kuwaiti women **Child age range:** NA **Maternal Age:** 25-35+ **Location:** Kuwait **Setting:** 25 offices, schools, clubs & clinics from each of the 4 governorate administrative districts.	Retrospective Cross sectional **Data collection:** Face to face interview **Sample selection:** through random numbers Kuwaiti married, with at least 1 child	**Ever BF** **Mean BF Duration**	73.5% 6.4 mo	Low score: • Cannot distinguish between EBF or Any BF • BF practices were analyzed through 2 indicators, via proportion of infants never BF at all & the mean Duration of BF for ever BF infants • Recall for only last child for BF to avoid recall bias but did not specify the age range of children included **Score: 3.5**
2	**Amine, 1989** ♦ **Carried out:** NA **"Infant feeding pattern & weaning practices in Kuwait"** **Aim:** to investigate current trends in infant feeding in Kuwait	**Sample:** 2,833 mothers **Child age range:** < 3 yrs **Maternal Age:** 20-35+ **Location:** Kuwait **Setting:** NA	Retrospective Cross Sectional **Data collection:** individualized interviews, survey of infant feeding pattern & weaning practices **Sample selection:** Multistage stratified sampling represent all socio-economic classes in Kuwait	**Ever BF** **Mean BF Duration**	86.0% 5.83 mo	• No clear definitions of BF if FBF or EBF • No indication to whether the BF data were practices before the survey or at the time of the survey • No setting description Yet, score is not low because of high sample size, representative sample & good sample selection method **Score: 6.5**
3	**Al-Awadi, 1997** **Carried out:** NA **"Recent trends in infant feeding patterns & weaning practices in Kuwait"** **Aim:** to investigate recent trends in infant feeding patterns & weaning practices in Kuwait	**Sample:** 782 mothers **Child age range:** <2 yrs **Maternal Age:** NA **Location:** 5 governorates Kuwait **Setting::** home	Retrospective Cross Sectional **Data collection:** face-to-face interview **Sample selection:** Multistage the number of infants in each governorates was used as a base of stratification	**Age of infant when stopped breastfeeding (mo)** <1 1-2 3-5 6-8 9+ **Mean BF Duration**	**% stopped** BF 20.0 23.8 15.6 19.6 20.9 4.9 mo	Used WHO BF definitions No data for ever BF Yet in the table 26.1% were described as infants who were BF at the time of the Data collection. But in the text it said EBF. So, there was no explaining whether there was FBF amongst the breastfed infants or at least to differentiate between the groups **Score 7.0**

4	**Al-Haifi, 2004** **Carried out:** Jan-Nov 2000 **"Feeding practices influence weight & Haemoglobin status in Kuwaiti infants"** **Aim:** to evaluate the influence of infant feeding practices & mothers education & occupation on HB levels & obesity among young children in Kuwait	**Sample:** 254 Kuwaiti mothers with children **Child age range:** 2-23 mo **Maternal age:** NA **Location:** 5 governorates **Setting:** Department of Food & Nutrition Administration at the MOH Kuwait	Retrospective Cross sectional **Data collection:** data used from records based on face to face interviews **Sample selection:** subject were screened & those pregnant or suffering from chronic diseases were excluded	**Age of infant when stopped Any BF (mo)** 2-5 6-11 12-23	**% stopped** BF 42.8 37.0 20.0	Low score: • Small sample size • Not reported whether BF was FBF or EBF (not well defined) • Single centre **Score 2.0**

Table 2.5.2: Published and unpublished Kuwaiti surveys (n=3)

no.	Author, Year	Sample & interview setting	Study design	Results		Comments ♦ Studies included in graph
1	**Al Rashoud, 1991** ♦ **Carried out:** 1991 **"Kuwait Child Health survey 1991"** The study was planned & executed by MOH, Kuwait as part of Gulf Child Health Survey programme (GCHS) **Aim of Chapter:** to examine prevalence & duration BF, pattern of feeding & supplementation & reasons for behaviours	**Sample**: 4,233 ever married <50yrs eligible but only 4,175 women interviewed 7,687 children **Child age range:** < 6 yrs (asked those women whom last live birth has occurred ≤5 yrs or before the survey) **Maternal age**: < 20- 49 yrs **Location:** 4 governorates, Capital, Hawalli, Ahmedi, Jahraa **Setting:** home	Cross sectional Retrospective & current **Data collection:** questionnaire face to face interview **Sample selection:** probability, stratified, multi-stage sample with equal probability of selection Sampling frame based on data collected on Kuwaiti households in the 1985 population census	**Ever BF** **Still BF (in all ages)** **Age of child (mo)** 0 1 2 3 4 5 6 7 8 9 10 11 12-23 24+ **Current Median BF duration** **Mean BF duration among those who had**	88.9 31.2 **Still BF** 88.9 83.7 62.5 70.9 46.4 58.0 59.1 48.9 52.5 60.6 47.5 45.5 31.4 3.8 9.1 mo 8.6 mo	Recall bias as they were asked about feeding practices ≤5 yrs preceding the survey 88.7% BF (amongst those with most recent live births) **Score: 6.0**

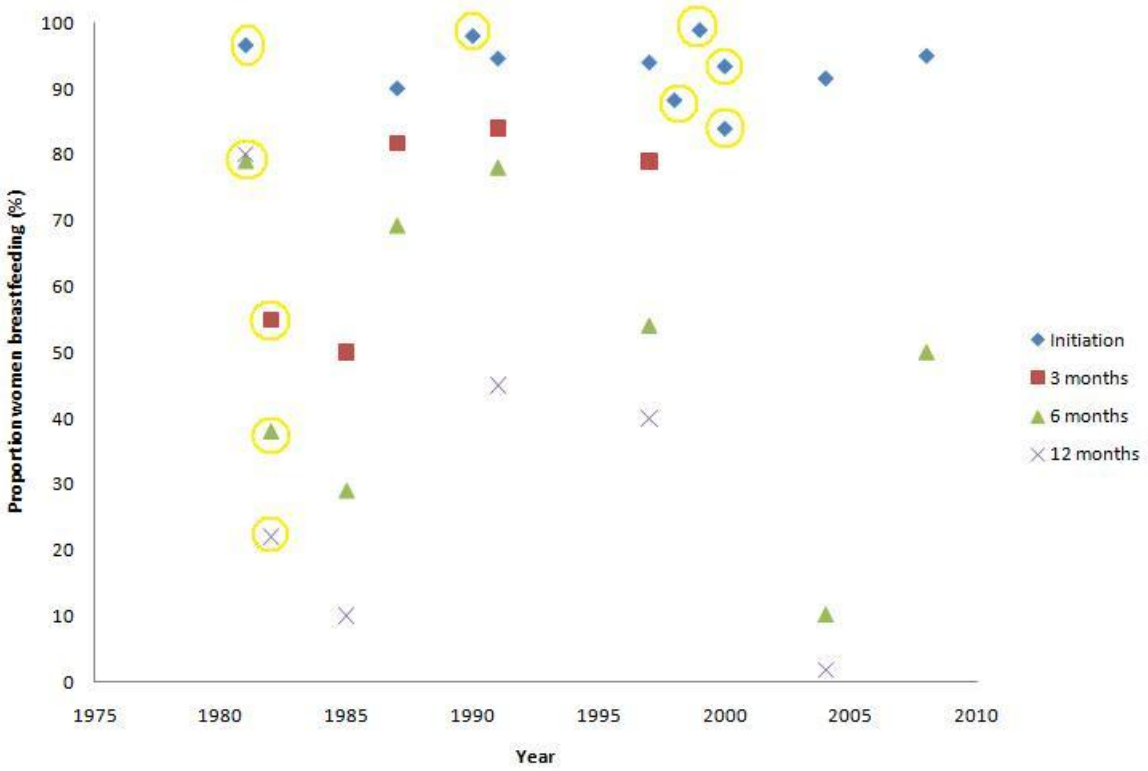
				stopped BF (by BF age)			
2	**Annon. (1994)** ♦ **Carried out:** December 1994 **Nutrition Surveillance of Kuwaiti Infants** (Project Preliminary Report) unpublished **Aim:** To test feasibility of establishing a "Nutrition Surveillance system" within the centres of the Preventative Health Department"	**Sample**: 1,399 enrolled but only 661 children in the report **Child age range:** at 3 mo **Maternal age:** 20-50+ **Location:** 5 governorates Capital, Hawalli, Farwania, Ahmedi & Jahra **Setting:** Health centres	Cross sectional Followed up at 4th, 5th, 6th & 12th mo **Data Collection**: Face to face Dietary data - infant feeding & weaning practices **Sample selection**: vaccination visits	**Age (mo)** 3 4 5 6 7 12	**BF** 11.7 8.7 9.0 8.3 6.6 4.5	**Mixed** 25.8 14.5 11.0 6.5 6.4 1.9	Longitudinal study **Score: 6.0**
3	**Al-Nesef, 1996** ♦ **Carried out: 1996** **Kuwait Family Health Survey, 1996 MOH, Kuwait** **Aim: NA**	**Sample**: 3,500 households-3,514 children **Child age range** < 5 yrs **Maternal age:** 15-49 yrs **Location**: 5 governorates Capital, Hawalli, Farwania, Ahmedi & Jahra **Setting:** Kuwaiti Households	Cross-sectional Retrospective **Data collection**: face-to-face field interview, survey on current or last feeding method **Sample selection:** ever married women under 50 yrs based on current civil registration records with a one-stage, stratified systematic random selection-prepared in cooperation with the United Nations Statistics Division	**Ever BF** **EBF** <4 mo **Complementary** 4-6 mo **Continued BF** 12-15 mo 20-23 mo **First BF (hr)** Within 1st hr 1-3 3-6 6+ **Mean BF duration**	77.0 12.0 26.0 21.0 9.0 4.5 10.4 10.5 51.2 5.3 mo		All children born in the 3 yrs preceding the survey were reported to have been Ever BF Results concerning BF (I) & (D) of BF were related to 2,132 children < 3 yrs Used WHO definitions **Score: 7.5**

2.6.3 Saudi Arabia

2.6.3.1 Initiation any breastfeeding

More studies have been conducted in the Kingdom of Saudi Arabia than in other country in the Gulf area. Breastfeeding initiation rates were reported in eleven different studies from 1981 to 2007 ranged (84% to 98.9%) (Fig 2.4.2; Tables 2.4.3, 2.4.4 and 2.4.5). Although the studies varied hugely in quality, there was no obvious sustained change in breastfeeding initiation rate over the last 25 years even after disregarding six studies with the low scores from analysis (≤ 4) (Haque, 1983; Madani *et al.*, 1994; Al-Ayed & Qureshi, 1998; Khattab, 2000; Al-Jassir *et al.*, 2004; Ogbeide *et al.*, 2004) and including only five studies with scores from 4.5-6.5 (Al-Mazrou *et al.*, 1995; Al-Shehri *et al.*, 1995; Shawky & Abalkhail, 2003; Al-Hreashy *et al.*, 2008; El Mouzan *et al.*, 2009).

Figure 2.2: Summary of breastfeeding rates in individual studies in Saudi Arabia



Yellow circles denote studies with low scores

2.6.3.2 Any breastfeeding at 3 months

The proportions of infants breastfed at three months was reported in five different studies (1982-1997) which scored ranging from 4.0 to 7.5. Only one study was disregarded from this analysis with a score of 4.0 (Elias, 1985). Although again it is difficult to compare the data due to differences in study design, for example, sample size and sample selection, it would appear that there was a substantial increase in the number of infants receiving breast milk at 3 months from the 1980's to the 1990's from 50% in 1985 to 97% in 1997 from studies with medium score (4.5-7.5) (Al-Sekait, 1988; Al-Mazrou *et al.*, 1994; Al-Shehri *et al.*, 1995; Shawky & Abalkhail, 2003) (Figure 2.4.2)**.** This increase has more evidence, in five studies not 2, and over a longer time frame than the apparent decrease in breastfeeding at 3 months seen in Kuwait over a short period of 3 years from 1991-1994. Thus although both sets of data are not reliable and should be viewed with caution, there is more support for an increase in breast feeding at 3 months in Saudi Arabia from 1985 to 1997.

2.6.3.3 Any breastfeeding at 6 months

Eight studies reported the percentage of mothers who were breastfeeding at six months. Two studies were disregarded for their low score (2.0 and 4.0) (Haque, 1983; Elias, 1985) and the remaining six studies scored from 4.5-7.5 (Al-Sekait, 1988; Al-Mazrou *et al.*, 1994; Al-Shehri *et al.*, 1995; Shawky & Abalkhail, 2003; Al-Hreashy *et al.*, 2008; El Mouzan *et al.*, 2009). There was a wide variation in the values (Figure 2.4.2) and no obvious sustained change in rates of any breastfeeding at 6 months.

2.6.3.4 Any breastfeeding at 12 months

The percentages of children who received any breastfeeding at 12 months were reported in six different retrospective cross sectional studies from 1991 to 2004 varied in scoring from 2.0 to 7.5. Two study with low scores were disregarded in the analysis (Haque, 1983; Elias, 1985). The remainder of studies scored from 4.0 to 7.5 (Al-Sekait, 1988; Al-Shehri *et al.*, 1995; Shawky & Abalkhail, 2003; El Mouzan *et al.*, 2009) and results of those studies were not similar and their wide variation in the rates may be related to again methodology design, data collection and sample selection (Figure 2.4.2).

Table 2.5.3: Cross sectional studies from Saudi Arabia (n=18)

	Author, Year	Sample & interview setting	Study design	Results	Comments
					♦ Studies included in graph
1	**Haque, 1983** ♦ **Carried out:** 1981 **"Feeding pattern of children under two years of age in Riyadh, Saudi Arabia"** **Aim:** to know the feeding patterns of babies whose illnesses could be directly or indirectly attributed to artificial feeding	**Group 1** **Sample:** 150 Saudi mothers **Child age range:** newborns (within 72 hrs of delivery) **Maternal age:** 15- 40 yrs **Location:** Riyadh (capital) **Setting:** Hospital	Cross sectional **Data collection:** Face to face interview with a standard questionnaire about their intentions with regards to infant feeding conducted within 72 hrs of delivery **Sample Selection:** not specified	**Group 1** Ever BF 96.6%	Low score: • small sample size • no sample selection details • Non-representative sample • Few BF data • Author stated**:** 83% had had some experience of BF (i.e. they were either themselves BF or had BF before which maybe implying that if they were breastfed then they are coming from a breastfeeding supportive environment. **Score 2.0**
2	**Haque, 1983** ♦ **Carried out:** 1981 **"Feeding pattern of children under two years of age in Riyadh, Saudi Arabia"** **Aim:** to know the feeding patterns of babies whose illnesses could be directly or indirectly attributed to artificial feeding	**Group 2** **Sample:** 250 mothers **Age range:** 1 mo-2 yrs **Maternal age:** 15- 40 yrs **Location:** Riyadh **Setting:** seen as an outpatient or admitted to hospital for care as in-patient	Cross sectional **Data collection:** interviewed by author in his clinic when they visited seeking care by face to face & same questionnaire **Sample selection:** non-random Sample from women attending the hospital over a certain period of time	**Group 2** **Age (mo)** Prev % **Totally BF** At 1 27.0 At 6 7.0 At 12 3.0 **Any BF** At 1 69.0 At 6 79.0 At 12 80.0 **Mean BF Duration** 6.0 mo	Low score: • Small sample size • Non-representative sample • No WHO definitions given to totally breastfed (as EBF or FBF) • Results unclear **Score: 2.0**

3	**Elias, 1985** ♦ **Carried out:** 1982 **"A survey of place of delivery, modes of milk feeding & immunization in a primary health care centre in Saudi Arabia"** **Aim:** to study place of delivery, modes of milk feeding & immunization	**Sample:** 510 mothers **Age range:** 0-12 mo **Maternal age:** NA **Location:** Saudi Arabia **Setting:** primary health care centre	Cross sectional **Data collection:** face to face interview, questionnaire & other data from registration by clerk **Sample selection:** each patient was registered on arrival	**Age (mo)** **BF** 1 mo 3mo 6mo 12 mo	Prev % 68.0 55.0 38.0 22.0	Low score: • No definitions for BF or exclusivity of BF • Not reported whether BF was inclusive of water • Single centre **Score: 4.0**
4	**Anokute, 1988** **Carried out:** Jan 1985 & May 1986 **"Infant feeding in King Khalid University Hospital"** **Aim:** to examine the pattern of infant feeding practices	**Sample:** 765 subjects **Child age range:** 0-13 mo **Maternal age:** > 15 yrs **Location:** Riyadh **Setting:** Paediatric Clinics of King Khalid University	Cross Sectional study of current & past practices **Data collection:** Survey-questionnaire Multi nationalities- Saudis, Egyptian, Syrian, Palestinian, Sudanese **Sample selection:** NA	**Age (mo)** **BF** 6-12 up to 18 **Age solids started (mo)** 0-6 7-12 13-18	Prev % 51.7 21.0 27.5 51.7 20.8	Low score: • No WHO definitions • Complete BF not defined • Sample selection not described Prospective & retrospective because they asked the women at the time of study who were currently BF or FF to recall their BF practices **Score: 2.0**
5	**Serenius, 1988** **Carried out:** 1979-1981 **"Patterns of BF & weaning in Saudi Arabia"** **Aim:** to compare four studies according to their feeding patterns & weaning practices in different geographic locations	**Sample:** Socio-Economic groups R - Rural 830 UL - Urban low 266 UA - Urban average 874 UP - Urban Privileged 226 **Child age range:** 1-24 mo **Maternal age:** (>23-<31) **Location:** Urban & rural **Setting:** well baby clinic	Cross-sectional study of current & past practices **Data collection:** Face to face interviews 4 separate studies of 2 yrs collection Retrospective data & actual data available from medical records **Sample selection:** Random	**BF** **R** **Age (mo)** 1 3 6 9 12 **Median BF duration** **UL** **Age (mo)** 1 3	 Prev % 90.0 90.0 85.0 80.0 67.0 17.8 mo Prev % 85.0 68.0	**Score: 5.0**

				6 55.0 9 51.0 12 33.0 **Median BF duration** 10.8 mo **UA** **Age (mo)** Prev % 1 85.0 3 74.0 6 56.0 9 44.0 12 19.0 **Median BF duration** 7.5 mo **UP** **Age (mo)** Prev % 1 76.0 3 42.0 6 22.0 9 15.0 12 11.0 **Median BF duration** 2.1 mo	
6	**Al-Frayh, 1989** **Carried out:** NA **"Current trends in infant feeding in Saudi Society"** **Aim:** to investigate current BF practices among representative sample of Saudi women	**Sample:** 4,769 infants **Child age range:** NA **Maternal age:** -20-35+ **Location:** Urban Riyadh **Setting:** homes	Cross-Sectional study of current & past practices **Data collection:** Community Field survey-home interviews of a representative sample of mothers **Sample selection:** random	Only this data were available: Of the infants, 82.7% were EBF in only the 1st mo of life	Low score: • No definitions of BF provided • No figure for Ever bf • Short paper- lack of details & proper description • Not giving maternal age accurately The Sample which was selected for the study was giving mixed feeds of both breast milk & formula at the time of the study **Score 3.0**

7	**Al Nasser, 199** **Carried out:** 1987-1988 **"A retrospective study of factors affecting BF practices in a rural community of Saudi Arabia"** **Aim:** To assess the average duration of BF & the effect of some factors	**Sample:** 923 women **Child age range:** NA **Maternal age:** 15-50 yrs **Location:** Rural areas of Tehama **Setting:** home	Cross Sectional study of past practices **Data collection:** attendance record from primary health care centre the traced women to their homes & face to face interviewed BF Duration data collected for the last child **Sample selection:** from attendance list - random	**Mean BF duration** **Median BF duration**	11.2 mo 10.0 mo	Low score: • No child age range provided • There was no data on actual feeding methods recalls but data on attitudes or preference of feeding method only • BF duration data provided were hard to interpret for each child age **Score: 2.5**
8	**Kordy. 1992** **Carried out:** NA **"Factors affecting the duration of BF in a rural population of Saudi Arabia"** **Aim:** to demonstrate the factors influencing BF Duration	**Sample:** 476 infants & children 274 mothers **Child age range:** < 3 yrs **Maternal age:** mean 32 yrs **Location:** Al Jamoom, rural area in Western Region of SA **Setting:** homes in village	Cross-sectional study of current & past practices **Data collection:** face to face interview **Sample selection:** standard cluster sampling technique	**BF Duration** > 1 yr **BF by age (mo)** < 3 3-5 6-11 12-17 18-23 24+ **Mean Duration BF**	57.0% **% stopped BF** 11.9 9.2 20.8 26.2 13.8 18.1 14.61 mo	Low score: • Non-representative sample **Score: 3.5**
9	**Madani, 1994 ♦** **Carried out:** Jan-Apr 1990 **"Lactation amenorrhea in Saudi Women"** **Aim:** to investigate some aspects of BF-lactation amenorrhea, the avg. interval between pregnancies, & the extent of	**Sample:** 1,019 women **Child age range:** 1 wk- 12 mo **Maternal age:** 16-40 yrs **Location:** Taif area **Setting:** 9 primary health care	Cross sectional of past practices **Data collection:** questionnaire-face to face interview- Data were gathered as part of a larger study of BF & fertility in Saudi women	**Ever BF** At birth	98.0%	Low score: • No information given to age children who were breastfed • No other BF data At the time of interview**:** 55.1% had lactation amenorrhea which means they were still BF

	knowledge that an avg. Saudi woman has about BF	centres covering urban, semi-urban, rural areas	**Sample selection:** eligible subject were Saudi women came with infants for vaccination & had delivered between 1 wk & 12 mo prior to study			**Score: 3.5**
10	**Al-Shehri, 1995** ♦ **Carried out:** 1991 **"Overview on BF patterns in Saudi Arabia"** **Aim:** to investigate child feeding Patterns & other MCH issues	**Sample:** 4,773 (current BF practices) 6,308 children Target population was the last live birth born within 5 yrs preceding the date of the interview **Child Age range:** NA **Maternal age:** <19-40+ **Location:** All regions of the Kingdom (urban & rural) **Setting:** Health Centres, Households	Cross sectional study of current & past practices **Data collection:** face-to-face interview **Sample selection:** randomly selected through multi stage cluster sampling technique	**Ever BF** **Current BF status (still BF)** **Age (mo)** 1 2 3 4 5 6 7 8 9 10 11 12+ 24+ **Mean BF Duration** Urban Rural	94.6% % 93.0 89.0 84.0 83.0 80.0 78.0 84.0 63.0 62.0 56.0 59.0 45.0 53.0 11.0 mo 13.0 mo	No clear BF definitions Based on past 5 yrs practices subject to recall bias But score was not low because: High sample size Multi centre Sample representative Result well presented **Score: 6.5**

11	**Al Ayed, 1998** ♦ **Carried out:** NA **"BF practices in Urban Riyadh"** **Aim:** to assess the latest trend of infant feeding practices in an urban population & to compare present trend & their significance with previous rates	**Sample:** 347 mother-infant pairs **Child age range:** ≤12 mo **Maternal age:** NA **Location:** Urban Riyadh City **Setting:** Well baby clinic of King Khalid University Hospital	Cross Sectional study of current & past practices **Data collection:** face-to-face interview on type of feeding given to infants to assess the current trends & compare them with previous ones **Sample selection:** Random	**Ever BF** **Age (mo) current** ≤ 1 ≤ 3 ≤ 6 ≤ 9 ≤ 12 >12 **EBF (mo)** at 3 at 6 > 12	88.3% **FBF%** 26.5 32.4 22.1 20.0 17.3 0.0 32.4 22.1 0.0	**Mixed%** 61.8 49.3 29.5 33.3 17.3 0.0	Low score: • No mean BF Duration • Although maternal age was studied but was not reported anywhere in paper because it was described in the methods only as the data were collected • Single centre • Non-representative sample None of the children >12 mo of age were receiving breastfeeds **Score: 3.0**
12	**Khattab, 2000** ♦ **Carried out:** NA **"Cross-sectional study of a child health care programme at one family practice centre in SA"** **Aim:** the primary aim is to evaluate child health care program implemented in a family practice centre & to investigate determinants that might be related to mother's knowledge & practice of BF	**Sample:** 100 women **Child age range:** <2 yrs **Maternal age:** 18-40 yrs **Location:** Urban-Abha City **Setting:** Immunization Clinic-Shamsan Primary Health Care Centre, attending a well baby clinic	Cross sectional study of current and past practices **Data collection:** Self administered Questionnaire **Sample selection:** Random	**Ever BF** **Mean BF Duration**	84.0% 10.7 mo		Low score • small sample size • non-representative sample • single centre **Score: 2.0**
13	**Shawky, 2003** ♦ **Carried out:** Mar-Jun 1997 **"Maternal factors associated with the duration of BF in Jeddah, Saudi Arabia"** **Aim:** to document the recent BF trend in Jeddah during the 1st yr of infants life & identify maternal risk factors that could be related to BF cessation	**Sample:** 400 mothers **Child age range:** ≤ 12 mo **Maternal age:** <16-30+ **Location:** Jeddah city, KSA **Setting:** 6 primary health care centres	Cross Sectional of current & past practices **Data collection:** a structured questionnaire-face-to-face interview **Sample selection:** Simple random sampling method	**Ever BF** **Age (mo)** At birth 1 3 6 12 **Median BF duration**	Prev % 94.0 92.8 79.0 54.0 40.0 6.0 mo		Low score: • non-representative sample • small sample size **Score: 4.5**

14	**Fida, 2003** **Carried out:** Oct 2001- Sep 2002 **"Patterns of infant feeding at a university hospital in Western Saudi Arabia"** **Aim:** to analyze the pattern of BF in mothers, identify causes of failure to BF, initiate & sustain BF practices	**Sample:** 128 mothers of infants **Child age range:** <12 mo **Maternal age:** <20-36+ **Location:** Jeddah city, KSA **Setting:** King Abdul-Aziz University Hospital-during routine visits at the Well Baby clinic Women who came with their infants for vaccination & had delivered for the last 12 mo	Cross Sectional **Data collection:** face to face interviews – questionnaire **Sample selection:** non random (Consecutive Sample of women attending a clinic over a certain period)	**BF** **Age (mo)** 1-2.9 3-5.9 6-8.9 ≥ 9	Prev % 88.0 90.0 72.0 60.0	Low score • BF Definitions poorly defined as no indication to whether the BF was exclusive, FBF or partial BF • Small sample size • Non-representative sample • Single centre Women were asked about the type of feeding method they are giving to their infant at the time of the study & BF Duration **Score: 2.0**
15	**Ogbeide, 2004** ♦ **Carried out:** Nov 2000-Feb 2001 **"BF in Saudi Arabian community"** **Aim:** to study BF prevalence, influencing factors & demographic characteristics of BF in general population	**Sample:** 704 mothers **Child age range:** Mean age of last child was 15.7 +-14.6 (.05-48 mo) **Maternal age:** 16-46 yrs **Location:** KSA **Setting:** AlKharj Health Centre (clinics)	Cross-Sectional of current & past practices **Date collection:** face to face interview - questionnaire **Sample selection:** random selection of mothers of childbearing age	**Ever BF** **First BF** 1-3 hrs	93.4% 81.3%	Low score: • No BF definitions given • No reporting of BF Duration data • Child age of sample was not clearly specified **Score: 2.0**
16	**Al-Jassir, 2004** ♦ **Carried out:** Sep 1999- Sep 2000 **"Surveillance of infant feeding practices in Riyadh City"** **Aim:** to summarize the nutritional status & feeding practices of infants & children < 5 yrs	**Sample:** 21,507 Infant **Child age range:** < 5 yrs **Maternal age:** NA **Location:** Riyadh City, KSA **Setting:** Primary health care centres	Cross Sectional of current & past practices **Data collection:** data recorded at routine clinic visits surveillance data from clinic visits at 10 primary care units for routine care & vaccination **Sample selection:** random systematic sampling	**Ever BF** **BF > 6 mo** (Excluded < 6 mo) **BF > 12 mo** **Mean BF Duration**	98.9% 52.7% 30.8% 6.5 mo	Low score: • Non-representative sample • No maternal age • Recall bias for 5 yrs This paper is derived from the 1st annual report of the PNSS (as a brief report) **Score: 4.0**

17	**Al- Shoshan, 2007** **Carried out:** N "Factors affecting mother's choices & decisions related to BF practices & weaning habits" **Aim:** to investigate the actual practice of mothers in respect to infant feeding & weaning practices & to examine factors affecting mothers choice & decisions	**Sample:** 1,791 Saudi mothers **Child age range:** newborns **Maternal age:** mean 27 yrs (≤20 - >36) **Location:** Riyadh **Setting:** 4 maternity hospitals	Cross Sectional of current & past practices **Data collection:** face to face interview- structured & pre-tested questionnaire for those admitted for delivery **Sample selection:** random	**EBF at Birth** **First BF** Within 1st hr of birth **Mean BF Duration**	74.4% 42.0% 11.10 mo	Low score: • Non-representative sample • 25.6 % were mixed feeding or only bottle feeding, so not specified how many were mixed only **Score: 3.5**
18	**Al-Hreashy, 2008** ♦ **Carried out:** NA **"Patterns of BF practice during the first 6 months of life"** **Aim:** to assess BF prevalence during the 1st 6 mo of life	**Sample:** 578 infants **Child age range:** 0-6 mo **Maternal age:** mean 29.4 yrs (≤20-≥40) **Location:** Riyadh, KSA **Setting:** primary care centres & well baby clinic of the hospital for the 6 mo vaccination	Cross Sectional of current & past practices **Data collection:** face to face interview **Sample selection:** random	**Ever BF** **BF Duration** at 6 mo	95.0% 50.0%	Used WHO definitions **Score: 5.5**

Table 2.5.4: Prospective studies from Saudi Arabia (n=1)

	Author, Year	Sample & interview setting	Study design	Results			Comments
							♦ Studies included in graph
1	**Al- Sekait, 1988** ♦ **Carried out:** 1985-1987 **"A study of the factors influencing BF patterns in Saudi Arabia"** **Aim:** to determine the prevalence of BF & factors influencing the feeding practices	**Sample :**2,010 mothers **Child age range:** newborns **Maternal age:** 15-45+ **Location:** Saudi Arabia **Setting:** homes	Prospective 2 yrs FU **Data collection:** face to face interview at hospital then visited at home for interview every mo until 2 yrs of age **Sample selection:** random multi stage cluster sample	**EBF at birth** **Age (mo)** At birth At 3 At 6 At 9 At 12 **Median age of introduction of solid foods**	90.0% Prev % **Full BF** 90.0 50.0 29.0 14.0 10.0 11.0 mo	 Prev % **Mixed** 1.5 36.0 39.0 42.0 31.0	No exact percentages given so it was calculated using a ruler Figures for BF were reported at each age but not specified whether EBF or FBF, therefore considered as Any BF **Score: 7.5**

Table 2.5.5: Published surveys from Saudi Arabia (n=3)

Author, Year	Sample & interview setting	Study design	Results		Comments
					♦ Studies included in graph
Al-Mazrou, Y. 1987 ♦ **Carried out:** 1987 **Saudi Arabia Child Health Survey, 1991** The study was planned & executed by MOH, Kuwait as part of Gulf Child Health Survey programme (GCHS) **Aim of chapter:** to examine prevalence & duration BF, pattern of feeding & supplementation & reasons for behaviours	**Sample**: 8,482 women interviewed 13,332 children **Child age range:** < 5 yrs **Maternal age:** <49 yrs **Location:** Saudi Arabia **Setting:** home	Cross sectional Retrospective & current **Data collection:** questionnaire face to face interview **Sample selection:** probability, stratified, multi-stage sample with equal probability of selection	**Ever BF** **Still BF (in all ages)** **Still BF by Age (mo)** 0 1 2 3 4 5 6 7 8 9 10 11 12-23 24+ **Mean BF duration**	90.1 41.5 90.2 90.1 87.4 81.8 78.2 70.5 69.2 64.0 65.3 60.8 61.5 53.9 44.2 5.7 13.0 mo	Percentage of the last live births, in the 5 yrs before survey who were still BF according to age of child **Score: 6.5**

2	**Al Mazrou, 1994** **Carried out:** 1987 **"Breastfeeding & weaning practices in Saudi Arabia"** **Aim:** to establish baseline data about feeding practice on a nationwide basis in SA	**Sample:** 8,566 households 6,131 **Child age range:** ≤ 5 yrs **Maternal age:** NA **Location:** Riyadh & 2 rural areas outside Riyadh **Setting:** home	Cross Sectional, Retrospective **Data collection:** A National Child Health Survey-A pre-designed field tested questionnaire related to BF, supplementary food, & weaning food and other. Mobile interviews for households **Sample selection:** A stratified multi-stage sampling & the Sample design separated the population by urban & rural areas. Mothers had at least one live birth 5 yrs or less before the survey.	**Duration of BF in different age groups of infants & children who were still being BF** **Age (mo)** <6 6-11 13-24 >24 **BF patterns in infants & children** ≤1 2-3 4-5 6-7 8-9 10-12 12-23	 82.4 62.6 44.2 5.7 **Breast only** 36.0 37.0 33.0 33.0 35.0 32.0 34.0	 **Mixed** 40.0 56.0 54.0 55.0 57.0 54.0 58.0	Low score: • No WHO BF definitions • Recall bias of 5 years • No maternal age • The 12 month is not mentioned anywhere in the paper for still BF • Breast only is not exclusive here as they may have given their infants some solids Strange to see children of 12-23 months were still on breast feed only. Which means solid or formula milk were not yet introduced? not sure here **Score: 4.5**
3	**El Mouzan, 2009 ♦** **Carried out:** 2004-2005 **Trends in infant nutrition in Saudi Arabia: compliance with WHO recommendation** **Aim:** to evaluate trends in infant nutrition in Saudi Arabia & the degree of compliance w/ WHO recommendations	**Sample**: 5,339 children **Child age range:** < 3 yrs **Maternal age:** NA **Location:** Saudi Arabia **Setting:** Households	Cross sectional Retrospective- cross sectional Nationwide nutritional survey **Data Collection**: Face to face interview-validated questionnaire **Sample selection**: Multistage probability sampling procedure	**Ever BF** **BF by age (mo)** Birth 1 2 4 6 12 **First BF (hrs)** <1 1-3 4-6 >6	91.6 88.6 49.0 36.1 20.5 10.2 1.8 23.2 27.3 21.4 28.1		Used WHO definitions No Maternal age Recall bias 3 yrs **Score: 6.5**

Table 2.5.6: Cross sectional studies from Oman (n=1)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Mohamed, 2004** **Carried out:** Feb-May 1998 **"Socioeconomic predictors of unconstrained child growth in Muscat, Oman"** **Aim:** to examine socioeconomic, demographic, behavioural (feeding practices) factors associated with unconstrained growth among children	**Rapid survey:** **Sample:** 3,409 children **Child age range:** 28-34 mo **Maternal age:** NA **Location:** Muscat Oman **Setting:** Hospitals	Cross Sectional **Data collection:** a standardized questionnaire face to face interview-available data from 2 surveys previously conducted by Ministry of Health in collaboration with the United Nations children's Fund + a rapid surveys of children born in 1995 at Royal & Khoula delivery hospitals **Sample selection:** NA	**1st 4 mo** EBF Predominant BF **12 mo** Any BF **Mean BF Duration**	22.0% 59.0% 78.0 18.0 mo	Low score: • No Maternal age • No sample selection description EBF for the 1st 4 mo of life was reported by 22% of interviewed mothers while 59% BF predominantly for the same period of time **Score: 4.5**

Table 2.5.7: Published surveys from Oman (n=1)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Suleiman, 1992** **Carried out:** 1992 **Oman Child Health Survey, 1992** The study was planned & executed by MOH, Kuwait as part of Gulf Child Health Survey programme (GCHS) **Aim of chapter:** to examine prevalence & duration BF, pattern of feeding & supplementation & reasons for behaviours	**Sample**: 3,555 women interviewed 6,886 children **Child age range:** < 6 yrs (asked those women whom last live birth has occurred ≤ 5 yrs before the survey) **Maternal age:** <49 yrs **Location:** Oman **Setting:** home	Cross sectional Retrospective & current **Data collection:** questionnaire face to face interview **Sample selection:** probability, stratified, multi-stage sample with equal probability of selection	**Ever BF** **Still BF (in all ages)** **Still BF by Age** (mo) <1 1 2 3 4 5 6 7 8 9 10 11 12 18 24	98.0 59.0 100.0 98.9 100.0 97.6 92.5 94.4 93.4 89.0 84.8 90.9 76.7 77.0 76.5 50.0 25.0	Percentage of the last live births, in the 5 yrs before survey who were still BF according to age of child **Score: 6.5**

First BF		
Immediate after birth	89.0	
1st day	3.0	
2nd day	3.0	
3rd day	3.0	
4th day or more	2.0	
Mean BF duration	15.9 mo	

Table 2.5.8: Cross sectional studies from Qatar (n=1)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Kayali, 1989** **Carried out:** Feb1988- Aug 1988 **"BF practices in Qatar"** **Aim:** to see whether the socioeconomic status is associated with infant feeding practices	**Sample:** 182 Qatari mothers 158 women from other Arabic countries **Child age range:** NA **Maternal age:** NA **Location:** Capital City, Doha **Setting:** Outpatient clinic during neonatal visit (Women's Hospital of the Hamad Medical Corporation)	Cross Sectional of current and past practices **Data collection:** Self-administered questionnaire **Sample selection:** random	**From birth** BF Initiation EBF Mixed	% 87.0 32.0 55.0	Low score: • Little & poor information • Small sample size • Non-representative sample • Single centre **Score: 1.0**

Table 2.5.9: Published surveys from Qatar (n= 1)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Salman, 1991** **Carried out:** 1991 **"Qatar Child Health Survey 1991"** The study was planned & executed by MOH, Kuwait as part of Gulf Child Health Survey programme (GCHS)	**Sample**: 3,918 women interviewed 4,901 children **Child age range:** < 6 yrs (asked those women whom last live birth has occurred ≤5 yrs before the survey) **Maternal age:** <50 yrs **Location:** Qatar	Cross sectional Retrospective & current **Data collection:** questionnaire face to face interview **Sample selection:** probability, stratified, multi-stage sample w/ equal probability of selection	**Ever BF** **Still BF (in all ages)** **Age of child (mo)** <1 1 2 3 4 5 6	89.0 29.1 93.8 88.9 79.2 72.7 66.7 53.1 47.6	% weaned < 3 mo =19% in all births 50% weaned before 6 mo Definition of only BF is not necessarily EBF **Score: 6.5**

	Aim of chapter: to examine prevalence & duration BF, pattern of feeding & supplementation & reasons for behaviours	**Setting:** home	7 8 9 10 11 12-23 24+	51.3 52.6 50.8 44.8 43.5 25.0 3.6	
			Age (mo) 0-1 2-3 4-5 6-7 8-9 10-11 12 +	**Any** 96.0 91.0 88.0 81.0 93.0 91.0 89.0	**only Breast** 44.0 39.0 26.0 27.0 27.0 19.0 22.0

Table 2.5.10: Cross sectional studies from UAE (n=2)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Shahraban, 1991** **Carried out:** March- May 1988 **"Patterns of BF & weaning in the United Arab Emirates"** **Aim:** to investigate the rate of BF & feeding patterns	**Sample:** 286 mothers **Child age range:** 0-23 mo **Maternal age:** NA **Location:** Urban Dubai & 1 Rural area **Setting:** Maternity & Child health centre for check up & vaccinations	Cross Sectional of current and past practices **Data collection:** face-to-face interview **Sample Selection:** random **Geographic locations based on the socioeconomic level:** **UH** – Urban High (n=92) **UA** – Urban Average (n=108) **R** – Rural (n=86)	**Overall BF%** **UH** **Age (mo)** 0-2 3-5 6-8 9-11 12-17 **UA** **Age (mo)** 0-2 3-5 6-8 9-11 12-17 **R** **Age (mo)** 0-2 3-5	**EBF only%** 68.0 48.0 12.0 20.0 5.0 80.0 48.0 38.0 25.0 18.0 91.0 71.0	7.0 19.0 12.0 7.0 5.0 7.0 11.0 19.0 19.0 17.0 33.0 6.0	Low score: • Small sample size • No definition for BF (full or mixed) • Single centre **Score: 4.0**

				6-8	36.0	18.0	
				9-11	27.0	18.0	
				12-17	63.0	18.0	
				Median BF Duration			
				Urban High	4 mo		
				Urban Average	5 mo		
				Rural	5 mo		
2	**Radwan, 2009** **Carried out:** NA **"BF & lactational amenorrhea in the United Arab Emirates"** **Aim:** to investigate the relation of BF & weaning practices with the duration of lactational amenorrhea among BF mothers	**Sample:** 593 Emirati women **Child age range:** <2 yrs **Maternal age:** <25->36 yrs **Location:** Abu Dhabi, Dubai, & Al Ain **Setting:** MCH centres for vaccination	Cross Sectional as part of a larger study of BF & weaning practices in UAE **Data collection:** face to face interview- pre-tested questionnaire **Sample selection:** convenience sample met inclusion criteria Any mother who had children <2yrs was interviewed until the required number of subjects were obtained	**Ever BF** **Mean BF Duration**	76.0% 8.6 mo		BF well defined **Score: 7.0**

Table 2.5.11: Prospective studies from UAE (n=2)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Al Mazroui, 1997** **Carried out:** 24 June – 24 July 1995 **"BF & supplemental feeding for neonates in Al-Ain, United Arab emirates"** **Aim:** to determine the factors affecting BF initiation	**Sample:** 221 newborns **Child age range:** neonates **Maternal age:** <20-49 yrs **Location:** UAE **Setting:** postnatal wards, Tawam & Al Ain Hospital	Prospective Cohort **Data collection:** face to face interview - 4 wks follow up period by weekly telephone interview following discharge **Sample selection:** random	**At 4 wks** EBF **First BF** Day 1 Day 2	% 4.0 51.0 35.0	Low score: • Small sample size • short period of FU 93% completed the FU at 4 wks • Only reported percentages of mothers who initiated BF at day1 & day2 postpartum **Score: 3.0**

2	**Sharief, 2001** **Carried out:** Dec 1999 **"BF patterns in Fujaira, UAE"** **Aim:** to establish whether the rising standard of living had affected the rate of initiation & continuation of BF since earlier studies	**Sample:** 130 mothers delivered in Dec 1999 **Child age range:** newborns **Maternal age:** mean 27 yrs **Location:** UAE **Setting:** Fujairah maternity hospital	Prospective cohort study **Data collection:** face to face interview & telephone FU at 2 & 6 mo postpartum **Sample selection:** non-random selection was based on their delivery time	**Ever BF** **BF prevalence** **Age (mo)** 2 6	83.2% 72.6 46.9	Low score: • Small sample size • Combined categories of "Exclusive BF" & "predominant BF" into the category BF • Single Centre Continuation at 2 mo is 72.6% & rate of BF at 6 mo is 46.9 mo **Score: 3.0**

Table 2.5.12: Published surveys from UAE (n=1)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Al-Muhaideb, 1991** **Carried out:** 1991 **United Arab Emirates Child Health Survey,** The study was planned & executed by MOH, Kuwait as part of Gulf Child Health Survey programme (GCHS) **Aim of chapter:** to examine prevalence & duration BF, pattern of feeding & supplementation & reasons for behaviours	**Sample**: 4,832 women interviewed 7,878 children **Child age range:** < 6 yrs (asked those women whom last live birth has occurred ≤ 5 yrs before the survey) **Maternal age:** < 50 yrs **Location:** UAE **Setting:** home	Cross sectional Retrospective & current **Data collection:** face to face interview questionnaire **Sample selection:** probability, stratified, multi-stage sample with equal probability of selection	**Ever BF** **Still BF (in all ages)** **Age of child (mo)** 0 1 2 3 4 5 6 7 8 9 10 11 12-23 24+ **Mean BF duration among those who had stopped BF**	88.0 32.8 **Still BF** 93.3 84.9 80.7 75.4 70.5 64.6 58.6 55.0 56.3 52.7 44.1 34.4 25.9 1.7 9.0 mo	Retrospective over ≤ 5 yrs BF not defined **Score: 5.5**

Table 2.5.13: Cross sectional studies from Bahrain (n=3)

	Author, Year	Sample & interview setting	Study design	Results				Comments
1	**Musaiger, 1983** **Carried out:** NA **"Food Habits in Bahrain: Infant's feeding habits"** **Aim:** to survey infant feeding habits	**Sample:** 310 households **Child age range:** 0 - >24 mo **Maternal age:** NA **Location:** 8 regions of Bahrain Urban (258) & rural (52) **Setting:** mother's homes	Cross Sectional **Data collection:** face to face interviews **Sample selection:** random sample selection of households	**BF Duration (mo)** <3 3-6 6-9 9-12 **Mean BF Duration** Urban Rural	**Urban %** 1.9 4.3 10.9 8.1 11.6 15.5mo 19.3mo	**Rural%** 1.9 5.8	**Total%** 3.5 9.4 7.1 10.7	This study compared the knowledge & food practices of housewives in urban & rural areas of Bahrain **Score: 6.0**
2	**Musaiger, 2000** **Carried out:** April 1999 **"BF & weaning practices in Bahrain: The role of mothers Education"** **Aim:** to find out the current practices of BF & weaning, the impact of maternal education on these practices, & the change in some BF practices during 1980-1999	**Sample:** 200 Bahraini Mothers **Child age range:** < 2 yrs **Maternal age:** 18-47 yrs **Location:** Bahrain **Setting:** health centres	Cross sectional **Data collection:** face to face interview **Sample selection:** NA	**Current BF** **First BF** 1st hr 1-6 hrs > 6 hrs	72.0% 39.8 39.3 20.9			Low score: • Small sample size • No sample selection description 39.0 % gave food during the 1st 3 days postpartum **Score: 2.0**
3	**Al-Sairafi, M. 2002** **Carried out:** Feb- Sep 2002 **"Breasfeeding patterns & practices in the Kingdom of Bahrain"** **Aim:** to examine BF patterns & practices	**Sample:** 408 infants & children **Child age range:** ≤ 2 yrs **Maternal age:** 18- 45 yrs **Location:** 4 health regions **Setting:** all 19 health centres of Bahrain	Cross sectional survey **Data collection:** face to face interview questionnaire **Sample selection:** NA	**Ever BF** **Mean BF duration**	95.1% 7.6 mo			WHO BF definitions used **Score: 6.0**

Table 2.5.14: Published surveys from Bahrain (n=1)

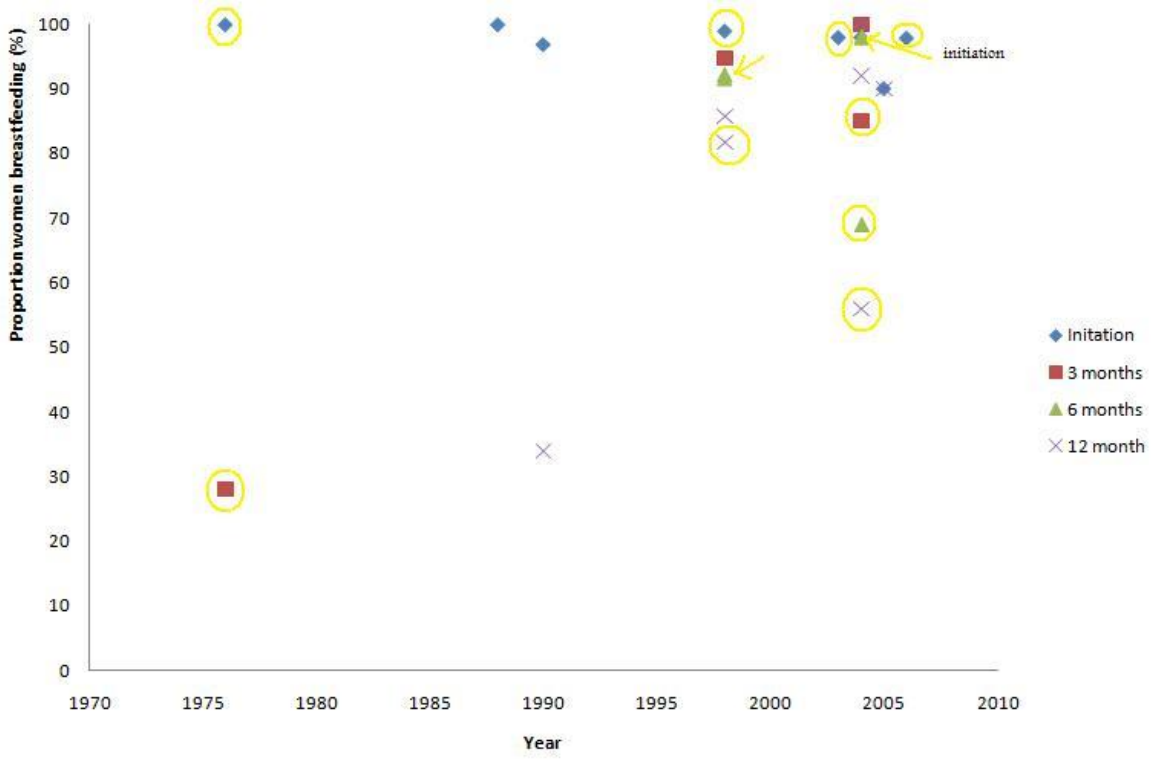
	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Yacoub, I. 1989** **Carried out:** 1989 **Bahrain Child Health Survey, 1989** The study was planned & executed by MOH, Kuwait as part of Gulf Child Health Survey programme (GCHS) **Aim of chapter:** to examine prevalence & duration BF, pattern of feeding & supplementation & reasons for behaviours	**Sample**: 25,716 population interviewed 3,668 children **Child age range:** < 6 yrs **Maternal age:** <50 yrs **Location:** Bahrain **Setting:** home	Cross sectional Retrospective **Data collection:** face to face interview questionnaire **Sample selection:** probability, stratified, multi-stage sample with equal probability of selection	**Ever BF** **Still BF(in all ages)** **Still BF by Age (mo)** 2 3 4 5 6 7 8 9 10 11 12-23 24+ **Mean BF duration**	96.7 30.8 38.9 35.6 31.9 33.3 40.0 26.3 33.3 25.0 36.8 30.5 29.9 30.0 11.1 mo	Percentages of the last live births, in the 5 yrs before survey who were still BF according to age of child **Score: 6.5**

2.6.3 Iran

2.6.3.1 Initiation any breastfeeding

A greater number of studies were conducted in Iran compared to most Middle Eastern countries except for Saudi Arabia and scoring of these studies ranging from 2.5-7.0. Ten studies reported breastfeeding initiation after birth in Iran. High rates were observed in the percentage of Iranian mothers breastfeeding after birth compared with other Middle Eastern countries ranging from 90- 100 % in all studies regardless of their scores. However, scores of six studies were low (2.4-4.0), therefore valid analysis of only four studies which scored from 4.5 to 7.0. The usable data indicated no real change in the initial breastfeeding rates; 100% in 1988 (Froozani *et al.*, 1992) scored 7.0, 97% in 1990 (Marandi *et al.*, 1993) scored 4.5, 100% in 2004 (Koosha *et al.*, 2008) scored 5.0 and 90% in 2005 (Olang *et al.*, 2009) scored 6.5.

Figure 2.3: Summary of breastfeeding rates in individual studies in Iran



Yellow circles denote studies with low scores

2.6.3.2 Any breastfeeding at 3 months

The proportion of women breastfeeding at three months was reported in only four studies of which two studies scored low and two studies scored medium. The first study (Schoenborn, 1976) reported a very low rate of 28%, but because this study score was low (2.5), this rate cannot be considered reliable along with another low score study carried out in 2004 with a rate of 85% (Roudbari *et al.*, 2009). With the remaining two studies (scores 5.0 and 6.0), breastfeeding rates at three months was 95% in 1998 (Hajian-Tilaki, 2005) and 100% in 2004 (Koosha *et al.*, 2008). Due to a lack of reliable data, trend analysis was not feasible.

2.6.3.3 Any breastfeeding at 6 months

Five studies reported data on rates of breastfeeding at six months from 1998 to 2004 but three studies with low scores of 2.5, 3 and 4 were disregarded in the analysis. With only two studies remaining that were carried out in 1998 with a score of 6.0 and a rate of 92% (Hajian-Tilaki, 2005) and in 2004 with a score of 5.0 and a rate of 98% (Koosha *et al.*, 2008), it is again difficult to find a trend of breastfeeding at six months.

2.6.3.4 Any breastfeeding at 12 months

Seven studies reported prevalence of any breastfeeding at 12 months but three studies scored low and were disregarded. The remaining studies scored from 4.5 to 6.5 and their rates at one year varied considerably. In 1990 a 4.5 score-study reported a rate of 34% of infants were still breastfeeding at 12 months (Marandi *et al.*, 1993) and a much higher rate (85.5%) was reported after eight years in a 6.0 score-study (Hajian-Tilaki, 2005) then six years later a 5.0 score-study reported a rate of 100% (Koosha *et al.*, 2008) and another study the following year with a score of 6.5 and a rate of 90% (Olang *et al.*, 2009). Observed variation in the rates may be related to differences in study design (Table 2.4.15 and 2.4.16).

Table 2.5.15: Cross sectional studies of Iran (n=11)

	Author, Year	Sample & interview setting	Study design	Results		Comments
						♦ Studies included in graph
1	**Schoenborn, 1976** ♦ **Carried out:** NA **"BF as a contraceptive Method among a low income group of Tehrani women"** **Aim:** to describe the BF & contraceptive practices	**Sample:** 95 women **Child age range:** NA **Maternal age:** < 40 yrs **Location:** Tehran **Setting:** Health Centres	Cross Sectional **Data collection:** face to face interview- questionnaire **Sample Selection:** random married, Tehrani mothers had at least 1 child	**Ever BF** 100.0% **BF Duration (mo)** **% stopped BF** 3 28.0 4-6 18.0 7-12 26.0 13-24 m 28.0 **Mean BF Duration** 10.5 mo		Low score: • Small sample size • No BF definitions • Child age range not specified • Single centre Current = currently among sample **Score: 2.5**
2	**Malekafzali, 1988** **Carried out:** NA **"A survey of BF in the Islamic Republic of Iran"** **Aim:** to study mother's behaviours in relation to BF as a baseline before the campaign	**Sample:** 42, 176 children **Child age range:** 12-23 mo **Maternal age:** NA **Location:** several areas in Iran **Setting:** Urban (n=10,240) & Rural (10,794) **3 urban groups:** 1-HP**:** High prevalence of BF 2-MP**:** Moderate prev. of BF 3-LP**:** Low prev. of BF **3 Rural areas:** 1-Area I 2-Area II 3-Area III	Cross Sectional **Data collection:** face to face interview **Sample Selection:** Selected by systematic sampling proportional to the size of the population.	**BF Duration** **% stopped BF** **≤4 mo** HP 17.0 MP 22.0 LP 28.0 AI 11.0 AII 17.0 AIII 22.0 **4-7 mo** HP 10.0 MP 12.0 LP 14.0 AI 6.0 AII 8.0 AIII 12.0		Between 51%-68% mothers have BF their infants for at least 1 yr Only data available for BF Duration Included never BF with < 4 mo **Score: 7.0**

3	**Froozani, 1992** ♦ **Carried out:** Summer 1988 **"Duration & causes of cessation of BF in working mothers in Ghazvin, Iran"** **Aim:** to determine duration & reasons for termination of BF in working mothers	**Sample:** 259 working mothers who terminated BF & at least have a living child aged 3 yrs or younger **Age range:** 0-36 m **Maternal age:** NA **Location:** Ghazvin city. **Setting:** at their working place	Cross Sectional **Data collection:** face to face interview- questionnaire **Sample Selection:** NA	**Ever BF** **BF Duration (mo)** 0-6 7-12 13-18 18+ **First BF** 7-24 hrs	100.0% **% stopped BF** 41.7 28.6 11.2 17.8 68.2	Low score: • Only data available for initiation of BF • Non-representative sample Non-working mothers not included • Sample selection not described • No maternal age The % for BF Duration were calculated from raw data available from the table included in the paper (correlation between the mean duration of BF and reasons for BF cessation) Time of introducing breast milk ranged from 0-99 hours from birth **Score: 2.5**
4	**Marandi, 1993** ♦ **Carried out:** 20 Jan -20 Feb 1990 **"The reasons for early weaning among mothers in Tehran"** **Aim:** to investigate why mothers in Tehran wean their children early	**Sample:** 900 mothers **Child age range:** 24 - 30 mo **Maternal age:** <20- >35 **Location:** 20 municipal districts of Tehran **Setting:** wards (hospital deliveries)	Cross Sectional **Data collection:** face to face interview **Sample Selection:** systematic randomized sampling method	**Ever BF** **Median BF duration** **Mean BF duration**	96.9% 16 mo 14 mo	**Score: 4.5**
5	**Shiva, 2003** ♦ **Carried out:** NA **"A study of feeding patterns in young infants"** **Aim:** to study feeding patterns in infants < 6 mo	**Sample:** 451 mothers **Child age range:** 6-18 mo **Maternal age:** NA **Location:** North Tehran, Urban **Setting:** Hospital for routine check-up & vaccination	Cross Sectional **Data collection:** face to face interview **Sample Selection:** non-random	**Ever BF** **At 6 mo** FBF Mixed Formula	98.0 83.1 6.4 10.4	Low score: • No definitions for BF Unlike other studies here less use of mixed feedings at 6m **Score: 4.0**

6	**Hajian-Tilaki, 2005** ♦ **Carried out:** 1998 **"Factors associated with the pattern of BF in the north of Iran"** **Aim:** to determine the pattern of BF & to assess its determinants	**Sample:** 600 pairs of mothers & infants **Child age range:** 12-24 mo **Maternal age:** <20- ≥ 40 yrs **Location:** North Iran (rural & urban areas of Babool) **Setting:** Hospital	Cross-sectional Population-based study **Data collection:** face to face interviews **Sample Selection:** Cluster sampling technique selected randomly using systematic sampling technique	**BF Duration (mo)** 1 97.3 97.7 97.5 3 94.3 95.0 94.7 6 92.0 92.3 92.2 12 86.3 85.3 85.8 15 63.3 70.6 66.9 18 37.7 40.1 38.9 24 2.0 5.7 3.8	No results shown on the mean duration Good definition of BF BF Duration for both urban & rural area & their total were calculated from raw data **Score: 6.0**
7	**Tabatabaei, 2005** ♦ **Carried out:** 1998-2002 **"Initiation & continuation of BF & its associated factors in children"** **Aim:** to estimate BF continuation & its associated factors	**Sample:** 2,007 children **Child age range:** 2-6 yrs **Maternal age:** < 18- > 35 yrs **Location:** South East Iran , Zahedan **Setting:** Health centres	Cross sectional Based on data of Urban health centres **Data collection:** existing data from health records **Sample Selection:** multi stage sampling method – random	**BF Initiation** 99.0% **BF Prevalence (mo)** 6 91.6 12 81.7 18 54.5 24 2.0 **Mean BF Duration** among children 2-6 yrs born 1996-2000: 1996 17.9 mo 1997 18.6 mo 1998 18.0 mo 1999 18.2 mo 2000 17.5 mo **Overll Mean BF duration** 18.09 mo	**Score: 4.0**

8	**Koosha, 2008** ♦ **Carried out:** May 2004- Feb 2005 **"BF patterns & factors determining exclusive BF"** **Aim:** to investigate BF patterns, & to determine factors associated with EBF	**Sample:** 650 infants **Child age range:** < 1 yr **Maternal age:** mean 26.9 yrs **Location:** Zanjan city, Iran **Setting:** Health centre of community Oriented Medical Education for routine check up & immunization	Cross sectional **Data collection:** face to face interview- pre-structured questionnaire **Sample selection:** N/A	**Ever BF** 100.0% **BF age (mo)** 0 100.0 1 98.0 2 96.0 3 100.0 4 98.0 5 100.0 6 98.0 7 98.0 8 96.0 9 96.0 10 94.0 11 96.0 12 100.0 **EBF age (mo)** 0 82.0 1 44.0 2 42.0 3 44.0 4 44.0 5 44.0 6 2.0	Reported only EBF BF well defined BF is universal BF was maintained at high level as > 92% BF for the 1st 12 mo of life **Prelacteal feeds** 18.0% During 1st 5 days (water, dextrose water, juice) **Score: 5.0**
9	**Roudbari, 2009** ♦ **Carried out:** 2004-2005 **"Factors associated with BF patterns in women who recourse to health centres in Zahedan, Iran"** **Aim:** to survey the patterns & period of BF & its associated factors in women	**Sample:** 450 mothers **Child age range:** < 3 yrs **Maternal age:** mean 25 yrs (<18- ≥36) **Location:** Zahedan city, Iran **Setting:** 5 health centres	Cross sectional **Data collection:** face to face interview- questionnaire **Sample selection:** random	**EBF** At birth 98.0 At 1 m 92.0 **BF** **Age** 3 m 85.0 6 m 69.0 12 m 56.0 24 m 8.0 **Median BF Duration** range 0-27mo 15 mo	Low score: • Small sample size • No clear definitions of BF as if it was FBF or mixed • Non-representative sample • Recall bias (3 yrs) **Score: 3.0**

10	**Fallahzadeh, 2009** ♦ **Carried out:** Sep- 2006 **"BF history & overweight in 11 to 13 year old children in Iran"** **Aim:** to investigate the relationship between BF history & risk of overweight in pre-adolescent children	**Sample:** 800 parents 400 boys-400 girls **Child age range:** 11-13 yrs **Maternal age:** mean 36 yrs **Location:** Yazd, Iran **Setting:** mother invited to schools	Cross sectional **Data collection:** face to face interview **Sample Selection:** two-stage cluster sampling method –student were randomly elected	**Ever BF** **BF Duration** 1-11.9 12-23.9 24+ **Mean BF Duration BF children**	97.9% **% stopped BF** 20.4 64.5 13.0 19.3 mo		Low score: • Only 2 BF questions**:** 1- whether child was ever BF (yes/no) 2- If yes, for how long? (BF duration) • Non-representative sample • Single centre • Maternal recall subject to bias since they are recalling > 11-13 yrs at the time of the study No time of solid introduction was asked therefore the exclusivity of BF can be unclear. **Score: 3.0**
11	**Olang, 2009** ♦ **Carried out:** 2005-2006 **"BF in Iran: Prevalence, duration, & current recommendations"** **Aim:** investigating prevalence of duration & promotion of BF status w/ respect to BFH & comparison between European countries	**Sample:** 63,071infants **Child age range:** <24 mo **Maternal age:** NA **Location:** all 30 urban & rural provinces in Iran **Setting:** maternity wards, clinics & health centres for vaccination or general health visits	Cross sectional **Data collection:** face to face interview, questionnaire to mothers **Sample Selection:** multi stage sampling method w/ 3 kinds of sampling 1- Random cluster sampling 2- Convenience sampling 3- Random systematic sampling	**Ever BF** **Age(mo)** At 4 At 6 At 12 At 24	90.0% **Any BF** ---- ---- 90.0 57.0	**EBF** 57.0 28.0 -- --	BF well defined For EBF rates only those who are < 6 mo were included BF rates were studied, using the Integrated Monitoring Evaluation System Survey (IMES) which collects data regarding the content & consequences of provision & delivery health services for promoting health in the country **Score: 6.5**

Table 2.5.16: Cohort longitudinal study of Iran (n=1)

	Author, Year	Sample & interview setting	Study design	Results	Comments
					♦ Studies included in graph
1	**Rakhshani, 2009** ♦ **Carried out:** 2004 **"Continuation of BF: In this a problem in Southeast Iran"** **Aim:** to evaluate duration of BF & its associated factors	**Sample:** 1,264 Iranian children **Child age range:** < 3yrs **Maternal age:** 13-50 yrs **Location:** Zabol district South East Iran **Setting:** Health centres	Historical cohort **Data collection:** data from valid records (health files) **Sample Selection:** multi-stage cluster sample method (random)	**BF Initiation** At birth 100.0% **BF Prevalence (mo)** At 6 98.0 At 12 92.0 At 18 76.0 At 24 0.97 **Mean EBF duration** 5.6 mo **Mean BF duration** 20.8 mo	**Score: 5.5**

Table 2.5.17: Cross sectional studies of Egypt (n=3)

	Author, Year	Sample & interview setting	Study design	Results	Comments
1	**Lebshtein, 1976** **Carried out:** NA **"The Extent of breast & bottle feeding of children in Cairo & its effect on their growth"** **Aim:** to study the extent of BF, bottle feeding & weaning attitudes	**Sample:** 424 working & non-working mothers **Child age range:** 0-24 mo **Maternal age:** NA **Location:** Boulak district in Cairo, Egypt **Setting:** NA	Cross Sectional **Data collection:** Survey face to face interview **Sample Selection:** random sample classified as 250 nonworking & 174 working	**Feeding method at study time** **Age (mo)** / **BF** / **Mixed** 0-3 17.5 3.8 6 13.0 4.0 12 9.9 4.2 18 5.1 2.1 24 3.3 0.5	Low score: • No definition provided for (BF only) so cannot specify whether it was EBF or FBF • Non representative sample • No setting info • No maternal age BF in this table is for BF only The paper separate the results of BF for working mothers & non-working so the rate was calculated from there and averaged out to get the percentage for BF & mixed **Score: 4.0**

2	**El Mouji, 1981** **Carried out:** NA **"Social & medical factors affecting the duration of BF in Egypt"** **Aim:** to clarify the role of medical & social factors that may affect duration of BF	**Sample:** 504 mother child pairs **Child age range:** NA **Maternal age:** NA **Location:** urban & rural **Setting:** village, hospital & clinics **TR:** Traditional Rural (n=104) **UP:** Urban Poor (n=300) **UE:** Urban Elite (n=100)	Cross Sectional **Data collection:** face to face interview **Sample Selection:** random	**Mean BF Duration** TR UP UE	**mo** 18.5 16.4 8.0	The Sample were chosen from the children who were weaned 2 yrs prior to study **Score: 4.0**
3	**Kamel, 1997** **Carried out:** 1 Apr- 31 Dec1995 **"Current status of BF in Alexandria governorate: community-based study"** **Aim:** to provide baseline data for various indicators measuring BF & bottle feeding	**Sample:** 1,080 children **Child age range:** < 24 mo **Maternal age:** NA **Location:** Alexandria **Setting:** Homes	Cross sectional Current practices A household 24-hrs dietary survey **Data collection:** face to face interview 24 hrs preceding survey **Sample Selection:** standard cluster sampling technique	**BF practices** **< 4 mo** EBF Predominant BF **1 yr BF Duration** **Age (mo)** 12 - <16 **2 yrs BF Duration** **Age (mo)** 20 - <24	% 42.2 21.1 64.4 33.9	**Score: 5.0**

Table 2.5.18: Prospective studies of Egypt (n=2)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Hakim, 1992** **Carried out:** NA **"BF patterns in a rural village in Giza, Egypt"** **Aim:** To study infant feeding patterns during the neonatal period & the EBF & partial BF period	**Sample:** 250 women **Child age range:** (newborns) 1wk & FU for 1 yr **Maternal age:** NA **Location:** Rural Giza **Setting:** maternal & child health clinic & village	Prospective longitudinal **Data collection:** face to face interview **Sample Selection:** non-random	**Early suckling of colostrums** **EBF Duration** At 1st wk 2 mo 3 mo 4 mo 5 mo 6 mo 7 mo After 7 mo	68.8% 51.2 50.0 42.4 38.8 34.4 28.8 18.4 0.0	Low score: • Small sample size • No BF definitions • Non-representative sample **Score: 4.5**

2-a	**Hossain, 1994** **Carried out:** Oct 1987- Sep 1988 Enrolment period **"BF in Egypt"** **Aim:** to estimate the prevalence & identify the correlates of overall BF & exclusive BF in different periods during infancy	**Sample:** 300 pairs of neonates & mothers (152 singleton neonates) **Child age range: newborns & FU to 47 weeks** **Maternal age:** NA **Location:** Rural Bilbeis, Shargeya Governorate, Egypt **Setting:** Hospital & homes	Prospective longitudinal cohort **Data collection:** face to face interviews followed up twice weekly for recalls on feedings **Sample selection:** systematic recruitment of eligible subjects	**BF Initiation** **BF Duration (wks)** 0-11 12-23 24-35 36-47	100% 100.0 98.0 94.0 89.0	20.0 7.0 1.0 0.0	Low score: • Small sample size • Non-representative sample All 152 were BF for some duration **Score: 4.5**
2-b	**Hossain 1995** **Carried out:** 1987-1989 **"The timing of BF initiation & its correlates in a cohort of rural Egyptian Infants"** **Aim:** to study timing of BF initiation & its correlate	**Sample:** 150 neonates **Child age range:** neonates FU during 1987 – 1989 **Maternal age:** NA **Location:** 4 village in rural Bilbeis, Shargeya Governorate, Egypt **Setting:** households	Cohort longitudinal **Data collection:** recruited & followed prospectively (Baseline data were collected from 4th day postpartum then follow up interviews to obtain data on infant feeding twice weekly) **Sample Selection:** non random	**BF Initiation** **First BF** <2 hrs	100% 36.0		

Table 2.5.19: Cross sectional studies from Jordan (n=2)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Mubaideen, 2006** **Carried out:** 15 Jul-15 Aug 2003 **"BF patterns in selected antenatal care clinics in Jordan"** **Aim:** to describe the current situation concerning BF pattern	**Sample:** 600 mothers **Child age range:** > 6 mo- 6 yrs (mothers w/ at least 2 live births within the 5 yrs preceding interview) **Maternal age:** NA **Location:** Amman, Irbid, Al Karak governorates **Setting:** antenatal care clinics	Cross Sectional **Data collection:** close-ended Questionnaire interviewer administered (face to face) **Sample selection:** random	**Ever BF** **Still BF** **Age (mo)** 6 12 18 24 **Introduction of solids** **By Age (mo)** <6 6-11 12-17 18-23 24+ **Median BF duration**	92.3% 72.3 52.0 26.0 11.0 20.0 20.4 26.0 15.0 11.0 12.4 mo	BF introduction data extrapolated from time of 1st BF **Score: 3.5**
2	**Oweis, 2009** **Carried out:** Feb -end April 2005 **"BF practices among Jordanian women"** **Aim:** to explore Jordanian women's BF beliefs & practices including exclusive BF	**Sample:** 200 Jordanian mothers **Child age range:** ≤ 6 mo **Maternal age:** 16-45 yrs **Location:** Irbid **Setting:** 3 primary health care centres	Cross-sectional , current practices **Data collection:** face to face interview **Sample selection:** convenience sample	**First BF** After birth 2hr after birth >2hr 2nd day 3rd day Do not know **Total** **EBF** At birth	% 49.5 24.5 5.5 6.0 1.5 1.0 **88.0** 77.0	Based on maternal recalls Data on BF initiation was not clearly given but was calculated from the total number of the first BF question. **Score: 3.0**

Table 2.5.20: Published surveys from Jordan (n=2)

	Author, Year	Sample & interview setting	Study design	Results			Comments
1	**JPFHS 1997** **Department of Statistics, Dec 1998** **Carried out:** Jun-Oct 1997 **Jordan:** **"Population & Family Health Survey 1997"** **Aim:** To specifically provide information on fertility, family planning, & infant & child mortality. Information on BF, maternal child health care & nutritional status & sample characteristics were also collected	**Sample:** 7,335 households & 5,548 ever married women interviewed **Child age range:** <5 yrs **Maternal age:** 15-49 yrs **Location:** Jordan **Setting:** homes	Cross sectional Retrospective **Data collection:** a household questionnaire- face to face interview **Sample selection:** A two-stage sampling procedure	**Ever BF** **First BF** Within 1 hr In the 1st 24 hrs **Age (mo)** <2 2-3 4-5 6-7 8-9 10-11 12-13 14-15 16-17 18-19 20-21 22-23 24-25 **Median duration** Any BF EBF FBF	95.0 30.0 75.0 **Any BF** 95.6 94.9 87.8 77.4 65.8 60.2 49.4 34.7 29.3 26.8 13.3 11.3 7.1 **mo** 11.9 0.5 0.5	 **EBF** 20.2 10.9 4.1 0.6 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Authors stated that the results of 1997 are similar to those of the 1990 survey BF status refers to 24 hrs preceding the survey Study's own BF definitions **Score: 7.0**

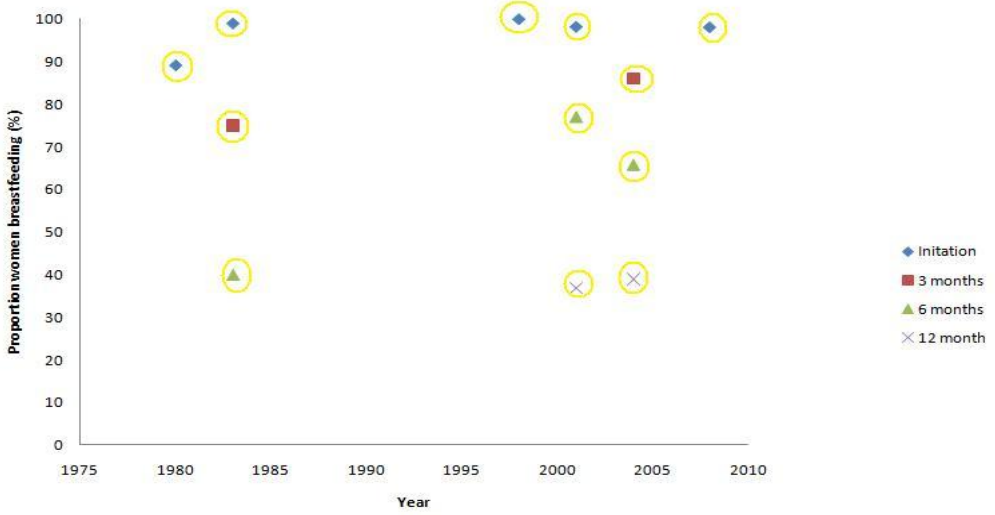
2	**JPFHS 2002 Department of statistics, June 2003** **Carried out: 2002** **Jordan: "Population & Family Health Survey 2002"** **Aim:** to specifically provide information on fertility, family planning, & infant & child mortality. Information on BF, maternal child health care & nutritional status & sample characteristics were also collected	**Sample:** 7,825 households & 6,006 ever married women interviewed **Child age range:** <5 yrs **Maternal age:** 15-49 yrs **Location:** Jordan **Setting:** homes	Cross sectional Retrospective **Data collection:** household questionnaire- face to face interview **Sample selection:** A two-stage sampling procedure	**Ever BF** **Prelacteal feeds** **First BF** Within 1 hr Within a day **Age (mo)** <2 2-3 4-5 6-7 8-9 10-11 12-15 16-19 20-23 24-27	94.0 61.0 60.0 93.0 **Any BF** 92.5 90.0 78.5 79.8 73.2 62.4 51.1 33.4 12.4 3.9	 **EBF** 54.8 26.1 3.2 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Reported that figure of Ever BF is similar to 1997 survey **Score: 6.5**

2.6.4 Turkey

2.6.4.1 Initiation any breastfeeding

Five studies reported breastfeeding initiation rates among Turkish women. Two studies carried out in the eighties, one in the late nineties and three between 2000 and 2008. Two studies were prospective longitudinal observational studies but scores were low for both due to small sample size, non-representative sample and single centre. The remaining three studies were retrospective cross sectional. Rates of breastfeeding initiation varied from 89% to 100% and scoring in all studies were in the low range between 2.5 to 3.5. Since all available studies scored low, the increase or decrease changes in rates of ever breastfeeding cannot be trustworthy.

Figure 2.4: Summary of breastfeeding rates in individual studies in Turkey



Yellow circles denote studies with low scores

2.6.4.2 Any breastfeeding at 3, 6 and 12 months

Only two studies reported breastfeeding rates at three months of 75% (Kocturk, 1988b) and 86% (Camurdan *et al.*, 2008) showing an increase from 1983 to 2004 by an estimate of eleven per cent. Only three studies reported prevalence of breastfeeding at six months postpartum and varied in rates started from 40% in 1983 rising to 77% in 2001 and then decreasing to 65.7% in 2004. Rates in proportion of women breastfeeding at 12 months were almost similar in rates of 36.9% in 2001 and 39% in 2004 in the two studies with these data. Again, we cannot rely on these data for many reasons including the low scoring of the available studies, the few number of studies with breastfeeding data (i.e. not carried out in a regular and yearly basis), and because these studies are not similar to each other (i.e. not systematically conducted, different design and sample etc).

Table 2.5.21: Cross sectional studies from Turkey (n=5)

	Author, Year	Sample & interview setting	Study design	Results			Comments
							♦ Studies included in graph
1	**Tuncbilek1983** ♦ **Carried out:** 1980-1983 **"BF in Turkey: The demographic & socio-economic aspects & relationship with infant/child mortality"** **Aim:** to study variables affecting BF, how is compares w/ BF in certain countries & the relationship between infant/child mortality & BF	**Sample:** 4,431 ever married women **Child age range:** BF children born within 3 yrs prior to the date of the survey **Maternal age:** 15-49 yrs **Location:** National **Setting:** households	Cross sectional **Data collection:** Turkish Fertility Survey Part of an international study of 44 countries **Sample Selection:** selected nationwide by the sampling method used by TFS	**Ever BF** **Mean BF Duration**	89.1% 11.91 mo		No specific data on BF duration or child age group **Score: 5.0**
2	**Kocturk,1986** **Carried out:** Sep 1982- May 1983 **"Events leading to the decision to introduce complementary feeding to the breast among a group of women in Istanbul"** **Aim:** to obtain a general quantitative overview on existing BF patterns in an urban area of Turkey	**Sample:** 269 mothers-infants pairs **Child age range:** 0-12 mo **Maternal age:** 17-32 yrs **Location:** 3 districts of Istanbul **Setting:** health centres, home visits	Cross sectional **Data collection:** face to face interview **Sample selection:** random	**Feeding patterns by age groups** **Age (mo)** 0-1 3 6 9 12	% **EBF** 49.0 23.0 10.0 4.0 1.0	% **Mixed** 34.0 51.0 57.0 60.0 62.0	2 studies in this paper Study 1 (n=269) Study 2 (n=24) Prospective Aim: to observe situations which lead mothers to decide to introduce complementary feeding to the breast - not included in results **Score: 3.5**

3	**Kocturk,1986** ♦ **Carried out:** 1983-83 **"BF among Turkish mothers living in suburbs of Istanbul & Stockholm- a comparison"** **Aim:** to present finding from a study on infant feeding practices	**Sample:** mother infant pairs (n=96) **Child age range:** 0-12 mo **Maternal age :** NA **Location :** Istanbul **Setting:** local child health centre	Cross Sectional **Data collection:** face to face interview **Sample Selection:** random	**Age** Birth 29 days 3 mo 6 mo 9mo	**Total BF%** 99.0 75.0 40.0 18.0 10.0	**Partial BF%** 0.0 19.0 53.0 74.0 81.0	Low score: • Small Sample size • No definition for total BF • Non-representative sample • No Maternal age • Poor sample selection description **Score: 3.0**
4	**Camurdan, 2007** ♦ **Carried out:** 1 Jan -31 Dec 2004 **" How to achieve long-term BF: factors associated with early discontinuation"** **Aim:** to evaluate the factors associated with discontinuation of BF before 12 mo	**Sample:** 1,230 children **Child age range:** 1-36 mo **Maternal age:** mean 30 yrs **Location:** Ankara, Turkey **Setting:** Gazi University hospital	Cross-sectional **Data collection:** self-administered questionnaire **Sample selection:** Mothers who discontinued BF at least 15 days before the last visit	**Still BF At (mo)** 1 3 6 12 18 24 **Mean BF Duration** **Median BF Duration**	% 95.3 86.0 65.7 39.0 14.3 4.0 11.0 mo 10.0 mo		Low score: • Single centre • Non-representative sample • Recall bias **Score: 2.5**
5	**Yesidal, 2008** ♦ **Carried out:** NA **"BF practices in Duzce, Turkey"** **Aim:** to assess BF practices using standardized BF indicators & to determine causes of early discontinuation	**Sample:** 158 children **Child age range:** 0-24 mo **Maternal age:** NA **Location:** Duzce, Turkey **Setting:** Home visits	Cross-sectional **Data collection:** face to face interview-questionnaire **Sample selection:** stratified by urban & rural areas Used a simple random digit table	**Ever BF** **Current BF** **Age (mo)** <2 (n= 14) 2-3 (n=14) 4-5(n=17) 6-7(n=15) 8-9(n=13) 10-11(n=12) 12-15(n=28) 16-19 (n=24) 20-24(n=21)	98.1% **Any BF** 92.9 100 100 100 100 100 96.4 100 95.2	 **EBF** 42.9 7.1 17.6 6.7 23.1 16.7 14.3 29.2 9.5	Low score: • Small sample size • No maternal age • Single centre • Non-representative sample - 22.4% of children <6 mo (n=46) were EBF - BF definitions given **Score: 3.5**

Table 2.5.22: Prospective studies from Turkey (n=2)

	Author, Year	Sample & interview setting	Study design	Results			Comments ♦ studies included in graph
1	**Ertem, 2001** ♦ **Carried out:** NA **"Socioeconomic ally advantages infants attending a university well-child clinic in Ankara: are they BF optimally?"** **Aim:** rates of initiation & duration & correlates of BF by mothers living in a socioeconomic ally advantaged urban environment determine	**Sample:** 295 mothers, 227 valid data of infants **Child age range:** newborns **Maternal age:** mean 28 yrs **Location:** Ankara University, urban middle class population **Setting:** well-child care unit	Prospective longitudinal 12 mo FU observational study **Data collection:** a structured interview at each of 1,2,3,4,5,6,9, & 12 mo **Sample Selection:** not specified but when infant was 1 yr old their data were requested from clinic Only eligible children were enrolled at the time of the study	**Ever BF** **Current feeding** **Age (mo)** At 1 At 4 At 6 At 12	98.2% **BF** 97.9 90.1 76.9 36.9	 **EBF** 89.8 59.3 2.0 -----	Low score: • Small sample size • Non-representative sample • Sample selection not specified • Single centre Mothers were informed about the purpose of the study when their baby was 12 mo old to avoid affecting their feeding method **Score: 3.0**
2	**Alikasifoglu, 2001**♦ **Carried out:** Jun 1998- Dec1998 **"Factors influencing the duration of exclusive BF in a group of Turkish women"** **Aim:** to identify factors associated w/ BF Duration	**Sample:** 91 mothers **Child age range:** newborns **Maternal age:** 20-42 yrs **Location:** Istanbul Turkey **Setting:** well-child unit	Prospective longitudinal study **Data collection:** questionnaire **Sample selection:** healthy term infants met eligibility criteria at time of study	**Ever BF** **Any BF** At 4 mo **EBF** **Age (mo)** By 1 By 4	100.0% 100.0% 64.0 54.0		Low score: • Small sample size • Single centre • Non-representative sample **Score: 3.0**

Table 2.5.23: Cross sectional studies from Lebanon (n=1)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Batal, 2005** **Carried out:** over 10 mo (NA) **"BF & feeding practices of infants in a developing country a national survey in Lebanon"** **Aim:** to explore demographic, socioeconomic & other fundamental issues associated w/ initiation & duration of BF	**Sample:** 830 mother-infants pairs **Child age range:** 1-5 yrs **Maternal age:** mean 30 yrs **Location:** 6 provinces in Lebanon **Setting:** health centres	Cross sectional **Data collection:** face to face interview-questionnaire **Sample Selection:** Two stage sampling was conducted to select participants, random	**Ever BF** **Time First BF** Few hrs of birth Within half an hr Few days after birth **BF Duration (mo)** At 1 At 4 At 6	95.4% 55.9 18.3 21.2 **EBF** 52.4 23.4 10.1	Used WHO definitions Representative sample **Score: 5.0**

Table 2.5.24: Prospective studies from Lebanon (n=1)

	Author, Year	Sample & interview setting	Study design	Results		Comments
1	**Al-Sahab, 2008** **Carried out:** Aug 2001- Feb 2002 **"Predictors of BF in a developing country: results of a prospective cohort study"** **Aim:** to assess the prevalence of BF at 1 mo & 4 mo of infant age	**Sample:** 1,320 healthy infants **Child age range:** 0-2 mo **Maternal age:** <25->35 yrs **Location:** Beirut, Lebanon & its suburb **Setting:** clinics & dispensaries of 117 paediatricians	Prospective cohort study 1 yr FU **Data collection:** infant data from paediatrician or parents using 2 questionnaires FU by phone interviews 5 times (0-2 mo, 3-4 mo, 5-7 mo , 8-10 mo, & 11-13 mo) **Sample selection:** not specified how, but reported inclusion criteria when recruited	**BF Prevalence At each age group (mo)** 1 4 6 12	**FBF** 56.3 24.7 18.8 6.7	Used data from the 1st yr of life FU study. FBF adopted in this study**:** infant received only breast milk without the supplementation of any non-human milk No consideration about the intake of solid foods was made in the author's definition **Score: 6.5**

Table 2.5.25: Cross sectional studies of Iraq (n=2)

	Author, Year	Sample & interview setting:	Study design	Results		Comments
1	**Mahmood, 1987** **Carried out:** Oct 1983-May 1984 **"Feeding & nutritional status among infants in Basrah City, Iraq: A cross sectional study"** **Aim:** to describe infant feeding practices & to investigate relationship between these feeding practices & nutritional status of children	**Sample:** 772 infants **Child age range:** 0-11 mo **Maternal age:** NA **Location:** Basra City **Setting::** Maternal & child health clinics	Cross Sectional- part of larger study on impact of infant feeding on the risk of severe diarrhoea **Data collection:** face to face interview using a pre-coded questionnaire **Sample Selection:** systematic random sample Infants visiting health centre	**Ever BF**	91.3%	From Figure .2. EBF declined sharply during the 1st 6 mo of life but percentages are not given clearly Data collected in Arabic **Score: 4.5**
2	**Benyamen, 1998** **Carried out:** Apr-May 1994 **"Feeding patterns in the first two years of life in Basra, Iraq"** **Aim:** to study prevalence & duration of BF, weaning practices	**Sample:** 694 children **Child age range:** 12-24 mo **Maternal age:** NA **Location:** Basra **Setting:** health centres for routine vaccinations	Cross Sectional **Data collection:** face to face interview- standard questionnaire **Sample Selection:** NA	**Ever BF** **EBF** At wk 1 At 1 yr **Mixed** At 1 wk At 1 yr	95.0% 91.0 52.0 4.0 13.0	Low score: • Confusion between EBF & introduction of solids so was EBF regarded as what milk was given or else. Not clearly reported. Also, mentioned that 5.8% of mothers did not introduce solid foods until after age 8 mo which means that the rest did introduce solids before that age and clarifies that the EBF did not mean what it should mean • Not reliable & not clear data • Reported exclusive BF at 1 yr (doubtful) **Score: 3.5**

Table 2.5.26: Published surveys from Yemen (n=2)

	Author, Year	Sample & interview setting	Study design	Results			Comments
1	**World Fertility Survey YARFS 1979** **Carried out:** 1979 **"Yemen Arab Republic Fertility Survey , 1979"** **Aim:** to obtain data on fertility, mortality, migration & other related factors	**Sample**: 2605 ever married women **Child age range**: last live birth, at least child survived for at least 1 yr **Maternal age:** < 50 yrs **Location:** Yemen **Setting:** households	Cross sectional Retrospective **Data collection:** questionnaire face to face interview intended for use on ever-married women in the childbearing yrs **Sample selection:** self-weighing stratified cluster sampling- random selection of sub-clusters	**Ever BF** **BF duration (mo)** 1 2 3 4 5 6 7 8 9 **Mean duration** **Median duration**	94.7 **Any** 94.7 94.0 86.6 83.2 80.1 76.4 73.1 71.0 68.8 **BF** 13.5 12.6	**Full** 94.7 90.4 81.1 74.5 68.2 63.0 52.7 45.6 39.3 **FBF** 7.2 6.4	**Score: 7.0**
2	**Goldberg, 1983** **Carried out:** 1979 **"Contraception, Marital, fertility, & BF in the Yemen Arab Republic"** **Aim:** to analyze some recent data relating to fertility, contraception, BF & child mortality	**Sample:** Sub-Sample 302 women with pre-school children 1,917 women interviewed 3,245 selected children **Child age range:** 3-59 mo **Maternal age:** NA **Location:** 7 of 10 governorates **Setting:** households	Current - Cross Sectional Part of a national survey **Data collection:** Survey data -face to face interview **Sample Selection:** Household selected for the sample only if they contained ≥ children between 3-59 mo Data from the Yemen Arab Republic National Nutrition Survey 1979	**BF initiation** **Sana** **Rural** **Average*** **BF duration (still being BF)** **Sana** At 6 m At 12 m At 24 m **Rural** At 6 m At 12 m At 24 m	 93.0 96.0 94.5 51.0 24.0 4.0 76.0 55.0 18.0		Significant chance of recall bias due to long recall period for some mothers These % remained constant with 5 yrs preceding survey Current BF status was used instead of use of retrospective data to examine length of BF to eliminate severe recall errors Average*: of Sana & rural **Score: 6.5**

2.6.5 Initial breastfeeding in countries with not enough data for trends

There were breastfeeding data from eighteen studies with medium score (4.5-7.0) carried out in nine Middle Eastern countries. Unlike Kuwait, Saudi Arabia, Iran and Turkey, these countries have only few studies (≤ 3) each and it is not possible to view a trend in breastfeeding initiation or prevalence at 3, 6 and 12 months (Table 2.6). Studies were carried out from 1983 to 2008 and rates of breastfeeding initiation ranged from 76% to 100%. Where there is more than one study in each country the rate looks steady, however in UAE there is a big drop over 17 years from 88% to 76% which may suggest a real decrease perhaps due to westernization. Comparable data on any breastfeeding at 3, 6 and 12 months were very limited in these countries, thus were not possible to analyze in this review.

Table 2.6: Proportion of infants ever breastfed and scores of studies

Studies (n=18)	Score	Initiation any BF %	Carried-out	Author, year
Oman (n=2)	4.5	--	1998	(Mohamed *et al.*, 2004)
	6.5	98.0	1992	(Sulaiman *et al.*, 1992)
Qatar (n=1)	6.5	89.0	1991	(Salman *et al.*, 1991)
UAE (n=2)	7.0	76.0	2008	(Radwan *et al.*, 2009)
	5.5	88.0	1991	(Al-Muhaideb *et al.*, 1991)
Bahrain (n=3)	6.0	--	1982	(Musaiger, 1983)
	6.0	95.0	2002	(Al-Sairafi, 2002)
	6.5	96.7	1989	(Yacoub *et al.*, 1989)
Egypt (n=3)	5.0	--	1995	(Kamel *et al.*, 1997)
	4.5	--	NA	(Hakim & El-Ashmawy, 1992)
	4.5	100.0	1988	(Hossain *et al.*, 1994)
Jordan (n=2)	7.0	95.0	1997	(Annon., 1998)
	6.5	94.0	2002	(Annon., 2003)
Lebanon (n=2)	5.0	95.4	2004	(Batal & Boulghaurjian, 2005)
	6.5	--	2002	(Al-Sahab *et al.*, 2008)
Iraq (n=1)	4.5	91.3	1983	(Mahmood & Feachem, 1987)
Yemen (n=2)	7.0	94.7	1979	(Annon., 1979)
	6.5	94.5	1979	(Goldberg, 1983)

2.6.6 Recent rates of breastfeeding initiation comparison between countries

Nine recent studies were carried out during the period from 2001 to 2007 from six Middle Eastern countries, Saudi Arabia (n=2), UAE (n=1), Bahrain (n=1), Iran (n=3), Jordan (1) and Lebanon (n=1), which reported breastfeeding initiation data. Only medium quality studies were included in the comparison. Three studies carried out in 2002 in Bahrain (scored 6.0) (Al-Sairafi, 2002), Jordan (scored 6.5) (Annon., 2003) and Lebanon (scored 5.0) (Batal & Boulghaurjian, 2005) reported similar breastfeeding initiation rates of 95 %, 94% and 95% respectively. Studies from Saudi Arabia and Iran carried out in 2004 and 2005 reported breastfeeding initiation of 91% in Saudi Arabia (scored 6.5) (El Mouzan *et al.*, 2009) and 100% in two studies in Iran (scored 5.0 and 5.5) (Koosha *et al.*, 2008; Rakhshani & Mohammadi, 2009), respectively, indicating higher rates of initial breastfeeding in Iran than Saudi Arabia. There were three studies reporting breastfeeding initiation in year 2006 of 95% in Saudi Arabia (scored 5.5) (Al-Hreashy *et al.*, 2008), 76% in UAE (Radwan *et al.*, 2009) (scores 7.0) and 90% in Iran (scored 6.5) (Olang *et al.*, 2009). As above, it appears that the UAE had apparent lower rates of breastfeeding initiation compared with the rest of Middle Eastern countries. The rest of the Middle Eastern countries all have higher breastfeeding rates.

Exclusive breastfeeding data

Exclusive breastfeeding data were reported in 22 studies with scores that varied from 3.0 to 7.5. Twelve studies scored low and ten studies gained medium scores and therefore those of medium quality were used in the analysis as more reliable. Four studies reported exclusive breastfeeding at birth in the Middle East but only two studies got medium scores. A high rate of exclusive breastfeeding at birth of 90% was reported in Saudi Arabia in 1985 (Al-Sekait, 1988) (score 7.5) and in a lower rate in Iran of 82% in 2004 (Koosha *et al.*, 2008) (score 5.0). Six studies reported rates of exclusive breastfeeding at four weeks yet only two of these were of medium quality (both scored 5.0) and reported rates of 44% in Iran (Koosha *et al.*, 2008) in 2004 and 52% in Lebanon (Batal & Boulghaurjian, 2005). At six months, rates of exclusive breastfeeding were reported in seven studies of which only three were of medium quality. Two Iranian studies reported only 2% of infants were being breastfed at six months (Koosha *et al.*, 2008) in 2004 and 28% in 2005 (Olang *et al.*, 2009) whereas in Lebanon the rate was 10% of exclusive breastfeeding at six months

(Batal & Boulghaurjian, 2005). The limited data in exclusive breastfeeding made it difficult to confirm a trend, thus comparison was impractical.

2.7 Discussion

2.7.1 Methodological limitations

The principal sources of data on trends of breastfeeding practice in the Middle East are national surveys and published scientific articles on infant feeding studies. The strengths and weaknesses of these data sources are discussed in this section. Because none of the data sources are methodologically perfect, all conclusions based on them must be interpreted with caution. The information collected showed that interpretation of the data on breastfeeding prevalence and duration collected at the national or regional level within Middle Eastern countries is difficult, since this data is not collected in every country or is gathered under different criteria. There were various differences in the parameters of infant feeding outcomes in most of the studies. Many studies had weak designs; mostly cross sectional; they rarely followed up mothers for a long period of time. Since a large number of studies scored below 4, these studies were discarded from analysis of trends and because none of the studies were high quality, medium quality studies were used to give a rough estimate of any existing trends. Additionally, there is a lack of sufficient quality studies per decade in Kuwait and in all other Middle Eastern countries except in countries such as Iran (n=12) and Saudi Arabia (n=22). **S**tudies for Kuwait were inconsistent in reporting breastfeeding outcomes; therefore, it is difficult to estimate changes in breastfeeding practices over time.

2.7.2 Strengths and limitations of national surveys

The strengths of the national surveys over other data sources for describing trends in breastfeeding are that first they are based on large nationally representative samples. Therefore, they may be used to estimate statistics for national population of childbearing age women. Secondly, because surveys obtain information about breastfeeding for all of the live births of the women in the samples, they include most infants during a large span of years. So, when a woman was included in the sample, breastfeeding information was given for all of her infants who were either born at home or at hospital. A major limitation of the breastfeeding data from surveys is their dependence on the recall of the mother. Mothers who breastfed an infant who was born several years before the interview for a only a short time may not remember this when asked and even when the infant was

breastfed for a longer duration recently, the mother may not recall accurately the exact duration. There were some issues in estimating accurate prevalence of breastfeeding in the six Child Health Surveys (GES Surveys) (Al Mazrou & Farid, 1987; Yacoub *et al.*, 1989; Al-Muhaideb *et al.*, 1991; Al Rashoud & Farid, 1991; Salman *et al.*, 1991; Sulaiman *et al.*, 1992). Estimating the average duration of breastfeeding from open interval data will be subject to bias. Longer open intervals disproportionately include women with long duration of breastfeeding and giving an overestimation of the rate. A mean duration may be estimated from the months breastfed among children who are already weaned and this causes an underestimation of the time for which infants are breastfed as those who were weaned would disproportionately represent short breastfeeding durations.

2.7.3 Infant feeding studies (cross-sectional)

Many infant feeding studies provide statistics on breastfeeding trends and other infant feeding practices. Mainly, they describe populations in hospital (hospital births) or clinics (i.e. vaccination visits) or local communities (i.e. rural or urban) of the studied country. The advantage of the studies that use data from hospital records or at the time of discharge is the accuracy of the their data on breastfeeding because the data were obtained at the time to which they refer so there was no recall issue and also that they were obtained from the hospital personnel. But these studies lack any information on the duration of breastfeeding. Another disadvantage of these studies includes omission of births that did not occur in the hospital and the exclusion of other hospitals when collecting the sample.

It was hard to critically evaluate and compare breastfeeding trends both within and between countries because of the limitations and flaws of the available studies. The most reliable data that could be used for showing the trend was the initiation rates but there was difficulty in making an overview of the trend in breastfeeding duration in due to limitations in study design. The main limitation was that most studies were cross-sectional and therefore presented point prevalence. Point prevalence at the time of the cross-sectional study was given for age groups of children leading preventing identification of the true prevalence of children being breastfed to a certain age. Another limitation which was observed when looking at these studies was the use of precise and consistent definitions of breastfeeding terms especially with regard to exclusive breastfeeding. It was difficult to know what the author meant by exclusive breastfeeding if not defined in the paper. The lack of consistent breastfeeding terms and definitions cause difficulties in interpreting the study itself or most importantly comparing it with other studies. This was caused by the

use of definitions other than those defined by the WHO during data collection. Another issue worth discussing was that the samples in these studies were often not representative of the general population, using a convenience sample, for example those mothers who were often attending hospital clinics, which mean that infants may be sick and they have stopped may have stopped breastfeeding or be on mixed feeding because of the child's illness. Another crucial problem was that different methodology for studies available made it difficult to compare results across countries and also within countries to identify trends in breastfeeding for an individual study. Because the data were cross-sectional, they did not always use the same age groupings to report point prevalence, so only in cases when the actual numbers of infants being breastfed in each age group was given the cumulative prevalence could be calculated and that was not the case in almost all of the available studies. It should be noted that in some cases of strong study design, such as prospective follow up studies, the score was low based on criteria described in Table 2.3 due to for example small and non-representative sample size conducted in single centre. Whereas in the case of weakly designed studies that got a higher score, this was due to high sample size, representative of the whole population and carried out in multi centres.

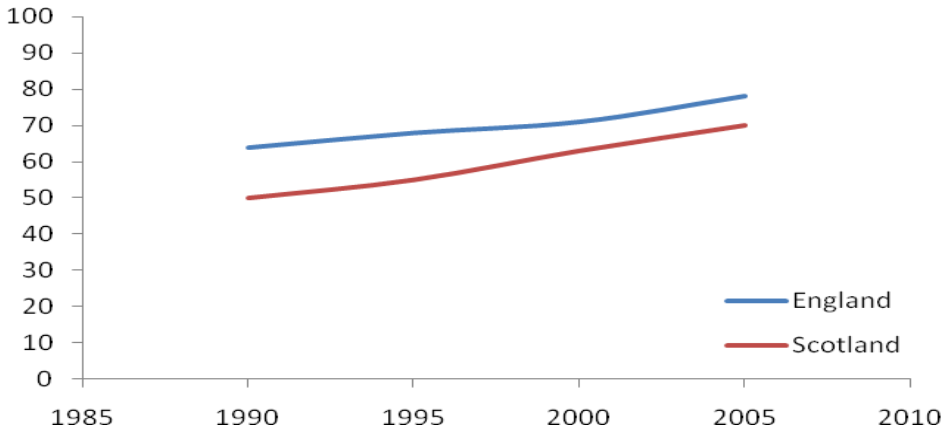
2.7.4 Differences between Middle Eastern and Western studies

In chapter one, the factors influencing breastfeeding were discussed, however most studies have been conducted in Western countries and may not relate to the Middle East. Trends in breastfeeding in the Middle East may also differ from Western countries as industrialization and other events occur at different times and there may be wide differences also between individual countries in the Middle East. Data collection from the sample is another difference where in Western studies this was done and reported in a more consistent manner across studies than in the Middle Eastern studies. Published articles in the Middle East clearly vary in the way they are written and in the reporting of prevalence. For example, there is an inconsistency in the reporting of ever breastfeeding and clear breastfeeding duration among women depending on their child age (i.e. not clear whether the duration is at the time of the study was based on child age at the time of the study or was a recall by the mother).

While some studies reported data on breastfeeding prevalence they did not distinguish between exclusive breastfeeding and any breastfeeding. Unlike recent Western studies, most Middle Eastern studies lacked the use of a WHO breastfeeding definition which will negatively affect the interpretation of data and leads to difficulty in comparing with other

studies or to picture change overtime because of uncertainty of breastfeeding outcome described. An example of a good surveillance system exists in the United Kingdom as breastfeeding practices have been well recorded since 1975 and were documented in the five yearly Infant Feeding Survey (IFS) (Bolling, 2006). The IFS showed the change in breastfeeding behaviours among women in the UK from 1990-2005 years. The availability of this valuable information made it possible to view the trends in both breastfeeding initiation and duration. The lack of breastfeeding monitoring practices in Kuwait and other Middle Eastern countries has led to difficulty in obtaining an overall picture about the change of breastfeeding whether positive or negative.

Figure 2.5: Trends in initial breastfeeding rate from 1990-2005 in England and Scotland (Bolling, 2006)



2.7.5 Summary

2.7.5.1 Accuracy of data

In summary, the data from different Middle Eastern countries are difficult to compare because of large variation in:

- The breastfeeding indicators (Exclusive breastfeeding, percentage children breastfeeding, ever (initial) breastfeeding, never breastfed etc),
- Poor definitions used (some used WHO definitions and others used study's own definitions),
- Data collection (standardized pre-tested questionnaires, some face to face interview and some self-administered questionnaire),
- The definitions for indicators of breastfeeding duration (breastfed at x months, breastfed from x to x months, breastfeeding based on child age at the time of study, mean breastfeeding duration and median breastfeeding duration),

- Sample sizes and sample selection (in some studies only local data are collected (i.e. urban or rural), in others the data are from representative samples, in yet others from national health statistics covering the whole population (i.e. urban and rural) etc),
- Study setting (single-centre or multi centre)
- Child age range (recall bias from 2 years or up to five years etc),
- The data are not always regularly reported (i.e. yearly or every five year etc).

Since a large proportion of breastfeeding data in the Middle East refers to all breastfeeding, i.e. not only exclusive breastfeeding but also partial breastfeeding (including formula, or other fluids such as herbal water, sugar water etc), this led to difficulty in assessing to what extent the current recommendations for exclusive breastfeeding are met. More precision and consistency in defining the various modes of breastfeeding are needed (Persson, 1985; WHO, 1991; Cattaneo *et al.*, 2000). There is a need to implement the set of indicators for assessing breastfeeding practices issued by WHO in future studies (WHO, 1991). However, although the accuracy and comparability of collected data in the Middle East are doubtful and difficult to interpret, they can be used as rough estimate for tracing prevalence and trends of breastfeeding in Middle Eastern countries, and therefore act as baseline data for future research in this region.

2.7.5.2 Exclusive breastfeeding

Ten studies reported data on exclusive breastfeeding in some of their studies including Kuwait, Saudi Arabia, Oman, Qatar, UAE, Iran, Iraq, Egypt, Jordan and Turkey, but the definition for exclusive breastfeeding varies (i.e. infants received water was considered as exclusive breastfeeding), the measure of outcome differs (i.e. Exclusive breastfeeding at different ages in most studies such as at birth, at one month etc), and study design differs (i.e. low score or medium score) in each case.

2.7.5.3 Initiation and duration of breastfeeding

More data was gathered on initial breastfeeding but few studies covered total duration of exclusive or partial breastfeeding. Some studies reported breastfeeding duration based on the child's age at the time of the study while others asked the mothers for their breastfeeding practice during the past five years of a living child.

2.7.5.4 Secular trends

Only in those countries where data is collected in a consistent manner, is it possible to find an increase or decrease or constant trends (i.e. IFS in England and Abbot in USA). Figure 2.5 shows breastfeeding trends of initial breastfeeding rates between UK and Scotland. The comparison is possible because there is similar type of collected data from 1995 to 2005, the curve is going in one direction and not scattered such as the case discussed earlier in Saudi Arabia, hence, it was difficult to see a trend (Figure 2.2).

It is hard to draw conclusion of trends in the Middle East because of the:

- Limited numbers of studies conducted during each decade in most Middle Eastern countries.
- Studies were different within countries or in the whole region (differences in design, how data were collected, sample selection, and location of area etc).
- In some cases, studies were conducted in the same year showing a huge difference in the rates of breastfeeding but when looking at the sample size we also see a huge difference (i.e. thousands of mothers compared to hundreds) which may lead to high confidence intervals therefore not a significant difference.
- We cannot compare dissimilar studies within countries
- More than six studies (Anokute, 1988; Al-Frayh, 1989; Al Nasir, 1991; Kordy *et al.*, 1992; Al-Mazrou *et al.*, 1994; Fida & Al-Aama, 2003; Al-Shoshan, 2007) in Saudi Arabia reported breastfeeding data, but did not give extra information to compare and contrast with the rest of the studies.
- Lack of representativeness of sample: for example a study reported breastfeeding duration at 3,6 and 12 months but compared with rural and urban areas and not for the general population (Serenius, 1988).
- Low quality of available data (low scoring)
- Use of breastfeeding definitions is not similar in most studies

2.8 Conclusion

The lack of breastfeeding prevalence data in the Middle Eastern region signifies the need to examine and monitor differences in incidence and duration prevalence of breastfeeding in and between Middle Eastern countries. In Western developed countries, the trends of

breastfeeding have been more systematically documented in recent literature, whereas in the Middle Eastern region there is a clear lack of recent and reliable trends data. Knowledge of differences in breastfeeding rates over time enables us to gain information about certain events encouraging breastfeeding practices, including baby friendly hospital practices or breastfeeding promotional campaigns positively influenced breastfeeding at a particular period of time in a particular community or on a national level.

Methodological problems within the studies led to difficulties in a conducting systematic review to look at trends in breastfeeding within country and across the Middle Eastern region, therefore the original purpose of this review to review trends in the Middle East was not possible. Future researchers must consider avoidance of these limitations and flaws when planning and carrying out infant feeding studies. This review clearly demonstrates the lack of adequate longitudinal cohort evidence to understand the current breastfeeding practices as to whether women are meeting the international recommendations for the optimal duration of breastfeeding during infancy. Thus, well-designed longitudinal studies conducted on a regular basis are needed to provide precise and efficient data sets for public health officials and decision makers in the country. While health professionals may play an imperative role in increasing incidence of breastfeeding by encouraging breastfeeding in hospitals; politicians, the developers of health policy in creating social, economic and cultural environments that promote breastfeeding are also highly significant in the establishment of regular monitoring systems enabling comparability of data within and between countries. Efficient and valid surveillance systems, comparable across the Middle East, using common definitions, methodology and similar indicators of all breastfeeding outcomes need to be developed.

Chapter 3 The Kuwait Infant Feeding Study (KIFS 2007-2008): Methodology & Baseline Characteristics

Chapter 3 Kuwait Infant Feeding Study (KIFS 2007-2008): Methodology & Baseline Characteristics

3.1 Introduction

3.1.1 Justification and importance of the study

Investigation of breastfeeding in the Middle-East has been inadequate for several decades and the majority of earlier breastfeeding research suffers from many flaws, primarily in methodological design. Most studies previously conducted in Middle Eastern countries had insufficient sample size, were of cross sectional design which cannot accurately reflect how duration of breastfeeding has changed over time, and used univariate analytical techniques, which do not control for other potential confounding factors. As discussed in the previous chapter recent available epidemiological data on breastfeeding practices are too limited to draw conclusions on recent trends. Since most studies were retrospective in nature, recall bias is one of the major limitations resulting in unreliable statistics (i.e. reliance on maternal recall of infant feeding events).

The longitudinal Kuwait Infant Feeding Study (KIFS) has been designed to overcome most of these methodological limitations and will help to identify possible determinants of breastfeeding outcomes amongst a large multi-national, mixed socio-economic class population residing in key areas of Kuwait. The planning of breastfeeding promotion interventions requires further investigation of the current infant feeding practices in Kuwait and the factors influencing mothers' choices. This study will assist in identifying those subgroups of the population who are least likely to initiate breastfeeding and most likely to terminate breastfeeding during early infancy, thus allowing future breastfeeding promotion interventions to be targeted at the most vulnerable groups.

3.1.2 Objectives of the study

(1) To describe current infant feeding practices in Kuwait with respect to the:
   - Initiation of breastfeeding;
   - Duration of breastfeeding up to 6 months;

(2) To identify socio-demographic, biomedical and psychosocial factors associated with breastfeeding initiation and duration among Kuwaiti mothers.

(3) To make recommendations for the development of health promotion programs based on the findings of this study.

3.1.3 Benefit of the study

This study can help on a national level to identify reasons for early cessation of overall breastfeeding and short duration of exclusive breastfeeding practice. The information obtained from both the baseline questionnaire and follow up questionnaires will inform policy makers to establish new strategies in the hospital such as those implemented in the Baby Friendly Hospital Initiative, especially during the early postpartum period. The data will also inform the design of the Ministry of Health's, Department of Breastfeeding Promotion prenatal breastfeeding promotion campaigns and strategies.

3.2 The State of Kuwait

Before describing the methodology of the KIFS it is important to provide a brief overview of relevant aspects of Kuwaiti life and culture.

3.2.1 Overview

Kuwait is a small urban State located in the Middle East, bordering the Persian Gulf, between Iraq and Saudi Arabia with a total land area of 17,820 sq km. Kuwait is divided into 6 administrative divisions or muhafazat (governorates): Al Ahmadi, Al 'Asimah, Al Farwaniyah, Al Jahra', Hawalli and Mubarak Al Kabir (see map below for location and size of each governorate). Petroleum is the main source of national income. Per Capita income is high and education and health care is free for all Kuwaiti nationals.

Figure 3.1: Map of the State of Kuwait

According to the July 2008 estimation, the total population was 2,596,799, which includes 1,291,354 non-nationals. Ethnic groups living in Kuwait are Kuwaiti 45%, other Arab 35%, South Asian 9%, Iranian 4%, other 7%. Arabic is the official language while English is widely spoken. Many Arabians from nearby countries who reside in Kuwait took up residence in Kuwait due to the affluence brought by oil production after the 1940s. Total fertility rate was 2.8 children born per woman and the birth rate in 2008 was 21.9 births per 1,000 populations. The population of Kuwaiti nationality is young, with around 41% below 15 years of age. Total infant mortality rate is low being 9.22 deaths per 1,000 live births. The literacy rate is estimated to be 93.3% of the total population according to the 2005 census. School life expectancy (primary to tertiary education) was 13 years for females in 2006 (CIA, 2009).

3.2.2 Situation after liberation of Kuwait

After the liberation of Kuwait from the Iraqi invasion in 1991, the Kuwaiti Government undertook a serious effort to reduce the expatriate population. Kuwait still has a sizable Iranian and Indian population. On the other hand, the economic crisis worldwide, which also included Kuwait, led many non-residents to go back to their countries but the number remained high compared with the Kuwaiti population.

3.2.3 Aspects of life in Kuwait

Family

In contrast to Westerners, a basic cultural aspect in Arab life is that they are extended-family-oriented and much of their time is spent visiting their family members' homes. Therefore, extended families live together for several reasons, including necessity caused by limited housing space and saving rental expenses, as well as for socialization of future generations with their grandparents and other members of the family and to sustain familial and cultural traditions. In such an environment, when a mother needs to breastfeed her infant, she usually does so in front of other female relatives such as her own mother, grandmother, sisters, cousins, aunties and in-laws. However, women may be embarrassed to breastfeed in front of a male relative such as their father, brother, or uncle.

Dress code

Segregation of the sexes is a fact of life in most homes in Kuwait even in relatively liberal and cosmopolitan Kuwait. Some women wear the *Hijab* (head scarf covering the hair) and

many older women wear the *Abaya* (a head-to-toe silky black cloak). When in public many local women cover their clothing with an *Abaya*. Bedouin women may also wear a *Burga* (a short black veil that covers the entire face). It is convenient for women to wear the Abaya when they want to breastfeed their infants whenever they are out of the house or even when visiting someone else's house. The Abaya is worn mostly by older women but there are a number of young women who wear the Abaya when they go to places of worship (mosque or religious schools) as almost all women wear the Abaya when they go to mosques. Infants and toddlers are allowed inside the mosque at all times and men and women are segregated inside the mosque so a mother is able to comfortably breastfeed.

Life Style

The change from a generally active to a sedentary lifestyle occurred rapidly with industrialization and urbanization, especially with the arrival of the oil industry in the past century, and habits of nutrition have changed to accommodate the present environment including the use of formula milk. Before the period of oil discovery in Kuwait and the importing of infant formula (1940-1950), mothers had no other option feeding except breastfeeding. If a mother was not able to breastfeed for some reason, a wet nurse or another breastfeeding woman (e.g. female relative) would be found to help her with breastfeeding.

In Kuwait, the maid has become part of the Kuwaiti family life as nearly all Kuwaiti households have at least one maid, especially if they have a large villa, to help the mother with the household chores as well as baby sitting infants and toddlers in many cases. The Kuwaiti family is responsible to feed and accommodate the maid in the house as a member of the family. However, the way the Kuwaiti society has become dependent on maids for raising their children may certainly have not only social consequences but also nutritional ones. Currently, in some cases, the children have interactions with the maid more than their mothers, especially for feeding, cleaning, and comforting of the child. The nutritional effect starts when the baby is born and when the mother comes back home from hospital and starts to depend on the maid whenever she is busy. However, not all non-Kuwaiti national mothers have a maid because they live mostly in flats which are smaller, and having a maid is a costly burden on the family who has come to Kuwait to make a living for a couple of years before returning to their home. The employment of maids from the Far East including the Philippines, India, Indonesia and Sri Lanka has been a great benefit to many mothers, yet has also generated social and psychological side effects. Younger

generations of mothers are depending on the maids to take care of the infants, especially those women who do not have a family member who may be able to help the mother during the postpartum period, so they can go back to work, study or as a luxury to spend time socializing. While the maid can help the mother with the household work, she also takes care of the baby while the mother is at work by giving the baby a meal of formula milk during working hours. The dependence on the maid can lead to an increase of the use of formula and then shorter duration of breastfeeding.

Women's role

Younger generations of Kuwaiti women have been accorded more freedom than their mothers. While their mothers in the past played a much more dominant role inside the home than outside, the new generation now are more free to pursue outside interests, including careers, business, and shopping. In Kuwait, women drive cars, join men in university classrooms, share business space with them and hold positions of responsibility in the government. More recently in 2005, women were granted the right to vote and to be elected to government.

Religion

Women do have their own choice of infant feeding method and men can only encourage them to breastfeed but cannot force them to do so. According to Islamic teachings, a woman should be paid if her husband wants her to breastfeed and if she asks for a pay as stated in the Quran

> *"Mothers shall suckle their children for two whole years; (that is) for those who wish to complete the suckling. The duty of feeding and clothing nursing mothers in a seemly manner is upon the father of the child. No-one should be charged beyond his capacity. A mother should not be made to suffer because of her child, nor should he to whom the child is born (be made to suffer) because of his child. And on the (father's) heir is incumbent the like of that (which was incumbent on the father). If they desire to wean the child by mutual consent and (after) consultation, it is no sin for them; and if ye wish to give your children out to nurse, it is no sin for you, provide that ye pay what is due from you in kindness. Observe your duty to Allah, and know that Allah is Seer of what ye do" (Albaqara, pg.233)*

3.3 Methodology of the Kuwait Infant Feeding Study

This longitudinal study of infant feeding patterns among women in Kuwait recruited over the period of October 2007 to September 2008. Mothers were recruited from three main governmental hospitals (Maternity, Al-Addan and Al Farwania), located in different areas of Kuwait, as well as one private hospital located in Bnaid al Gar area which is near Kuwait City targeting various residences from many areas around Kuwait City. Mothers were alerted to the study *via* posters (Appendix 4) on the notice boards of the antenatal outpatient clinic waiting room as well as on the delivery wards in each participating hospital. Within 72 hours of delivery, mothers were visited in the postnatal ward and given verbal and written information (Appendix 1) explaining the aims of the study and were personally invited by the researcher to participate. Mothers who agreed to join the study were interviewed face to face to complete a baseline questionnaire to determine breastfeeding initiation rates prior to discharge from hospital. All participants, whether still breastfeeding or formula feeding, were followed up by telephone interview at 6, 12, 18 and 26 postpartum to determine the rates of breastfeeding duration and the age of introducing solid foods. Data were collected using questionnaires previously used in similarly designed studies and modified to meet the needs of this study.

3.3.1 Development of survey instruments

The structured baseline and follow-up questionnaires used in this study were adapted from questionnaires used in the first Perth Infant Feeding Study (PIFS I) conducted in Perth, Australia from September 1992 to April 1993 that have been previously published (Scott *et al.*, 1997; Binns & Scott, 2002b). These questionnaires have since been used in other Australian studies (Scott *et al.*, 2001) and translated from English into a variety of languages for use in similar studies of infant feeding practices in China and Kenya (Lakati *et al.*, 2002; Xu *et al.*, 2007). Use of these existing questionnaires which have been shown to have good face and content validity in a variety of settings allowed data collected from this study to be directly related to data from these other studies.

All the PIFS questions were reviewed and their use in this study justified on the basis of the literature review of those factors suspected to be associated with breastfeeding initiation and duration among group of mother worldwide. The baseline questionnaire used in this study (Appendix 5.1) was a 13 page structured questionnaire, consisting of 73 questions and took approximately 30-45 minutes to complete. The questionnaire contained

both closed- and open-ended items generated from the PIFS questionnaire modified to suit the Middle Eastern and Kuwaiti cultural background. The closed-ended items were prospectively recorded and common responses to the open-ended items were grouped and coded retrospectively. Questions from the original PIFS questionnaire that were not useful were omitted to reduce respondent burden, as were questions that were not applicable to the Middle East. Specific changes made to the questionnaire included the omission of a question related to alcohol intake because Muslim women may be offended as alcohol is religiously forbidden. Similarly, a question related to the marital status of the mother was removed because it is illegal for unmarried mothers to deliver in hospital as the law prohibits admission to maternity hospital without providing a marriage certificate. Choosing to breast-feed as part of a religious belief was added to the list of reasons for breastfeeding because religion plays a major role in many practices and behaviours in this society.

The baseline questionnaire was designed to identify infants' feeding practices prior to discharge from hospital. Other data were collected to identify variables which may be associated with breastfeeding initiation and duration and could be categorized as:

- Socio-demographic factors (e.g. maternal age, education, occupation, ethnicity, partner's occupation)
- Psychosocial factors (e.g. maternal attitudes and beliefs, knowledge, influence of significant others, social support)
- Bio-medical factors (e.g. method of delivery, parity, smoking practices, BMI)
- Hospital practices (e.g. early mother-infant contact, demand feeding, rooming-in, staff advice)

The original PIFS baseline questionnaire was self-completed by mothers and therefore had been reviewed by a literacy expert to ensure that it was easy to complete and unambiguous. The KIFS version of the baseline questionnaire (Appendix 5.1) was pre-tested on a group of 25 new mothers who were recruited from both the government maternity hospital and Al Salam private hospital. The mothers were interviewed personally and were asked to make comments about clarity of wording, ease of completion and understanding of the questionnaire. A few minor wording changes were made to the questionnaire based on the comments given.

Mothers who participated in the study were sufficiently fluent in either Arabic or English to be able to read, understand and complete the questionnaire in the event that a mother wanted to self-complete the questionnaire. Those mothers unable to read the questionnaire were invited to complete the questionnaire through face-to-face interview conducted by the researcher prior to discharge from hospital. However, all subjects opted to complete the questionnaire through a face to face interview due to the lack of familiarity with the research process in the Kuwaiti community. From the perspective of the researcher this had the added advantage of ensuring that the questionnaire was fully completed and each question was accurately understood by all participants.

The Follow-up questionnaire (Appendix 5.3) was a 32 page structured questionnaire, consisting of 72 questions. This questionnaire included questions to find current feeding practices, the type of effort and struggle with lactation, the time of breastfeeding cessation and what caused the termination of breastfeeding. Since the mothers were interviewed via telephone, the questions were short and simple to ensure proper understanding. Each telephone interview took 10-30 minutes, however in many cases the length of time varied in cases when mothers were either busy or asked to be phoned back at another time. Only self-reported breastfeeding behaviour was reported and no advice was provided by the researcher at the time of follow up calls to avoid influencing the mother's feeding practices.

Both questionnaires were translated into Arabic (Appendix 5.2 and Appendix 5.4) by the researcher and then back translated by a second person proficient in both English and Arabic, whose field of knowledge was unrelated to this study, to ensure proper understanding of the meaning of each question had been retained after translation. The design of the baseline and follow-up questionnaire were formatted to be easy to read and understand by both interviewer and participants.

A careful and thorough translation of both questionnaires was completed and finalized. They were then compared to the original English version to avoid possible misinterpretation or misleading from the intended meaning of each question. There were some minor and simple changes in areas of the questionnaire where those changes would not conflict with ethical issues. For example, the guide that helps participants answering the questionnaire was slightly modified in which infant nutrition-related questions replaced the general questions to avoid confusion. Unexpected printing errors occurred after printing all baseline questionnaires causing a delay in the intended start of the study.

3.3.2 Ethical Considerations

The study design and questionnaires met the standards set by, and was approved by, the Human Ethics Committee of University of Glasgow, the College of Medicine of Kuwait University, and those requirements applied by the Ministry of Health in Kuwait for all hospitals taking part in the study. Participation in this study was voluntary and women were advised that they could withdraw from the study at any time point, without being penalized or feeling obliged to finish the study. Women were also informed that whether they chose to participate or not would not affect the type of treatment or care they and their newborn would receive prior to and following discharge from the hospital. Mothers were provided with a verbal and written detailed description of the study and were given an opportunity to make any queries. They signed a consent form at the time they were recruited and they were given a copy of the signed consent form (Appendix 3).

The results of the study were treated with confidentiality and anonymity of participant's data was respected throughout the study period. Each mother had a unique identification number (ID) on their baseline and follow up questionnaire. The participant's name and contacts numbers were required for the telephone interviews and linked with their ID number but these details were stored separate from their questionnaires and the study results are presented as grouped data.

3.3.3 Data collection

3.3.3.1 Recruitment of sample

The study sample was recruited over the period October 2007 to September 2008, from 3 large government maternity hospitals and 1 large private hospital. Since Kuwait is divided into governorates, women delivering in the 4 hospitals were representative of all socioeconomic classes in Kuwait because they were generated from major areas in five main governorates. The large government hospital is located in Al Shuwaikh area and the other two government hospitals were located in Al-Addan and al-Farwania area. The largest maternity hospital in Kuwait was chosen in the study because it delivers mothers who reside in many areas around the country and services both Kuwaiti and non-Kuwaiti nationals. The private hospital is located in an area near Kuwait City serving mothers from all areas in Kuwait.

For each participating hospital a meeting with the hospital manager was made prior to recruitment to offer detailed study information as well as to provide them with the official letters of permission from the Ministry of Health. The head nurse and the nursing staff in each of the wards were introduced to the researcher for cooperation in the study. A permit letter for hospital entrance security check points was obtained to enter the hospital's main door and the maternity wards. Attractive study posters were hung on the wall in each designated ward to introduce the mothers to the study in all participating hospitals (Appendix 4)

Mothers were recruited on a weekly basis and the aim for each week was to recruit approximately 20 women, to achieve the target sample size of 500 within the 6 months of the project allocated to the recruitment phase. The primary reason for having a weekly recruitment cap of 20 women was so the single researcher could manage both the recruitment of subjects and the scheduled follow-up interviews. As the recruitment was undertaken by one researcher, it was not logistically feasible to visit all hospitals in one week. Instead during each month of the six months of recruitment, each of the three governmental hospitals and the private hospital were visited for one full week of each month in rotation.

Mothers delivering in the participating hospitals who met the eligibility criteria were visited within 72 hours postpartum during the allocated recruitment week. Recruitment was non-randomised and mothers were recruited by the researcher consecutively until the weekly recruitment cap of 20 was reached. The experience of the Perth Infant Feeding Survey (Scott *et al.*, 1996) indicates that face-to-face recruitment by the researcher from the maternity wards is an effective means of achieving a high response rate, which was also seen in this study with 85% of mothers who were approached agreeing to participate in the study.

Inclusion criteria

- Delivery of a healthy singleton (included infants admitted to a Special Care Nursery for minor illnesses or observation).
- Gestational age ≥ 36 weeks.
- Mother was able to read or understand Arabic or English.

Exclusion Criteria

- Infant illness requiring admission to the Neonatal Intensive Care Unit.
- Gestational age < 36 weeks.
- Mother was unable to speak or read English or Arabic.
- Mother suffered a serious physical or emotional illness that made her participation inadvisable.

The mothers in all hospitals were visited in the morning from 8:00 AM until 1:30 PM. Hospital visiting hours were restricted in the governmental hospitals to the afternoon period which helped to have a quiet environment while interviewing cases during the morning time. Those women meeting the inclusion criteria were invited to participate in this infant feeding study. They were provided with a written and verbal description of the purpose of the study and what their participation would involve. This included completion of a baseline questionnaire (either by self-completion or face-to-face interview) before leaving the hospital. They were also advised that they would be interviewed by telephone every six weeks until their infant was 6 months old. It was made clear to all subjects that anonymity and privacy of any information obtained from mothers or from their medical record was fully protected, as all personal information was kept confidential at all times. When mothers were formally recruited, they were assigned a unique ID number and were asked to sign a consent form and provide their names, address, and all available phone numbers for follow-up interviews. The baseline interview started immediately after the mother signed the consent form and in all case took the form of an interviewer administered survey at the request of the mother.

In the case where women declined to participate in the study, they were asked to give some basic demographic information, for example age, educational level, method of feeding, and parity. They were informed about the importance of providing this information so that the researcher could confirm that the participants were representative of the population from which they are drawn. The right of non-participants to not provide this information was respected.

During the time of the baseline recruitment the overall impression about the mothers was that they were friendly when approached and introduced to the study. They showed a

positive attitude and enthusiasm towards responding to questions regarding the health and nutrition of their newborn.

3.3.3.2 Sample size calculation

The study aimed to recruit 500 mothers delivering healthy singleton babies. A sample size of 400 would have sufficient power (0.88) with an alpha of 0.04 to detect a difference in proportions of 58% versus 42% for any dichotomous socio-demographic or biomedical factor investigated. A target of 500 was set to allow for loss to follow-up over the 6 months follow-up period for each individual subjects. Due to problems experienced during recruitment, the study sample was 373 mothers by the end of 6 months recruitment period. A post hoc sample calculation indicated that a sample size of 384 would be sufficient to estimate a breastfeeding initiation rate of 90% (3% confidence interval) with 95% confidence. Therefore this study with a final sample size of 373 was sufficient to estimate the true initiation rate in this population of women with a high level of precision.

3.3.3.3 Problems experienced with sample recruitment

In this study, all baseline questionnaires were completed by face to face interview. Therefore, the time was limited each day to be able to accomplish the targeted weekly sample number. In Kuwait, a self administered questionnaire was difficult to obtain especially from the participants who underwent a Caesarean delivery and due to the length of the questionnaire. There was reluctance in some cases to provide more than one telephone number as they provided only the mobile phone and not the home number which reduced the number of chances of reaching the participants.

3.3.3.4 Follow-up Interviews

All participating mothers were contacted by telephone at 6, 12, 18 and 26 weeks postpartum. Prior to discharge women were asked about the most convenient time during the day to be contacted when they returned home. Also at the first phone interview women were asked to identify a time of day for conducting future phone interviews that best suited them and their infant. In case a call was made at an inconvenient time, the mother was asked politely to give a more convenient time to complete the rest of the questionnaire. Interviews were conducted as quickly as possible to avoid causing any irritation to the mothers (approximately 10 to 30 minutes). The time spent on each interview varied depending on whether mothers had experienced problems with breastfeeding and/or had

changed feeding methods, and their general willingness to have discussion at the time of call. Women were contacted within three to four days of the scheduled day and at least 5 attempts, at different times of the day and early evening, were made to contact any "hard to reach" mothers before they were considered to be 'lost-to follow-up' from the study.

All follow-up interviews were conducted by the principal investigator. It was ensured that no advice about breastfeeding was given to mothers during the course of the interviews to prevent influencing the mother's feeding practices and choices, and to record her self-reported behaviour only.

3.3.3.5 Problems experienced with Follow-up interviews

There were some difficulties encountered during the period of follow-up data collection. During the summer season, the climate (45-50 degrees Celsius) forces people to take an afternoon nap after coming back from work. Since an afternoon break was a necessity for most individuals living in that region, it was considered inappropriate to make phone calls during that time. The timing for telephone calls was limited to 10:00 am-1:00 pm and again from 6:00pm-9:00 pm. Both working mothers and housewives are busy at certain hours (1:00 pm-3:00 pm) preparing the lunch meal for their family. During school days, mothers who have other school children were busy in helping their children do their home-work or meeting their needs besides taking care of their newborn which will all affect the calling time for the researcher. It is worth mentioning that in Kuwait, it is very uncommon to phone homes during early morning, late afternoon and late evenings, as it is considered discourteous and inconsiderate of others' privacy.

At some stage of the follow up period, Kuwait encountered a period of unexpected national elections. As part of the election campaign from April 18th-May 18ths 2008, their campaign calls started to take part on a national level which included all Kuwaiti women. Many Kuwaiti KIFS mothers may possibly avoid answering the telephone calls on the assumption that it was from those election staff. This caused some delay in achieving the targeted follow up calls. In some cases mothers answered calls but they asked to call again and then avoid answering as an indirect way of indicating that they were not interested in completing the study or did not want to be bothered However, a number of mothers were very friendly and kind when they actually answered the telephone and remembered who was calling them. The weekend was a very busy time for most families because they were

engaged in family activities and socializing, which is a tradition of both Kuwaiti and other Arab's nationalities residing in Kuwait.

One of the important issues that may have affected the number of women interviewed in the follow-up was that that these calls were all conducted in person by the principal researcher. A major obstacle was the short time limit available to accomplish the required number of telephone calls causing some delay in the timing of interviews to a week instead of three days as intended.

3.4 Statistical analyses of data

Data were analysed using the Statistical Package for Social Sciences (SPSS 16.0 for Windows) (released 15 November 2007) following coding and data entry. Frequencies were run to identify any obvious coding and data entry errors (e.g. out of range responses). Plausibility checks were conducted to identify inconsistent data which were compared with the original questionnaire and data were cleaned appropriately.

As a preliminary investigation of the data, contingency tables of breastfeeding versus explanatory factors were made along with univariate logistic regression analysis. Multivariate logistic regression analysis was employed to determine which individual variables could best predict the chosen method of feeding. All variables reported in the literature to be associated with the decision to breast-feed and measured in this study were included in the full model. The full model was reduced using the backward stepwise procedure and the fitness of the model was assessed at every step to avoid dropping non-significant variables that affected the model fitness. All variables in the final model were variables for which, when excluded, the change in deviance compared with the corresponding chi-square test statistic on the relevant degrees of freedom was significant.

Survival analysis was used to examine the duration of breastfeeding as it provides a good understanding of breastfeeding behaviour over time (Norusis, 1993). This type of analysis is used due to the presence of censored data. The term 'censored data' refers to data from those cases where there was no discontinuation of breastfeeding either by the end of the study period (26 weeks) or by the time the subject dropped out of the study. Advantages of this method of analysis are that it allows for the adjustment for effects of covariates as well as loss to follow-up. That is, it uses all variable data and therefore is a more powerful statistical technique than single point prevalence.

The effect of individual variables on the duration of breastfeeding was initially evaluated using Kaplan-Meier estimate of survival and the log-rank test was use to assess the equality of the survival curves. Survival plots based on Kaplan-Meier survival estimates were used to illustrate the duration of the breastfeeding period. Variables reported in the literature to have an effect on the duration of breastfeeding were investigated using Cox's proportional hazards model. This model allows joint estimation of the effects of independent variables on the risk of cessation of breastfeeding and can be used to analyze data that contain censored observation (Norusis, 1993).

Variables reported in the literature to be associated with breastfeeding duration were included in the full model which was then reduced using the backward stepwise procedure. The fitness of the model was assessed by SPSS software at every step to avoid dropping non-significant variables that affected the model fitness. All variables in the final model were variables for which when excluded, the change in deviance compared with the corresponding statistics on the relevant degrees of freedom was significant.

3.5 Limitations of the study

There are a number of limitations to this study that should be acknowledged. Firstly, the sample size is relatively small and this is reflected in the wide confidence intervals around some of the adjusted odds ratios reported. This suggests that more data should be collected before a more definitive statement can be made regarding some of the associations reported in subsequent chapters. Secondly, while there was no significant difference in age, level of education and method of feeding between participants and those women who declined to participate, the proportion of women who had undergone a Caesarean section in this study is three times that of the national average. The average length of post-partum stay for Kuwaiti public hospitals is a maximum of 2 nights for uncomplicated deliveries and 5 nights for a caesarean section. While every attempt was made to recruit mothers within 72 hours, and in most cases 48 hours, of delivery, women who had undergone a caesarean section had a greater chance of being recruited because of their extended hospital stay. Finally, with the data collection methodology employed it was not possible to ascertain the true method of feeding at discharge. Women were surveyed within 72 hours of delivery, so for those women who delivered vaginally the method of feeding at the time of completing the survey is likely to be the same as the method at discharge but for women who had delivered by caesarean section it probably reflects the feeding method 48 hours prior to discharge and hence may have been subject to change. However, data collected in

the 6 week follow-up survey confirmed that 97% of women who were breastfeeding at the time of completing the baseline questionnaire left hospital breastfeeding, indicating that this were a reliable definition of breastfeeding at discharge. The remaining 3% of women identified as breastfeeding at discharge were lost to follow-up and we were unable to confirm at the 6 week interview if they actually left hospital breastfeeding. Despite these limitations, this is the first reported longitudinal study of its kind in Kuwait and the results reported here are generally consistent with the findings of other studies of Middle Eastern women and/or Western women and can be used to inform future breastfeeding promotion interventions in Kuwait.

3.6 Sample Characteristics

A total of 439 women were invited to participate in the study and 373 mothers completed the baseline questionnaire while in hospital, giving a response rate of 85%. This was a non-consecutive sample with each hospital being visited 1 week out 4 over the recruitment period. The participating hospitals were unwilling to provide information on the number of deliveries for each hospital for the individual recruitment weeks, therefore it is not possible to estimate the total number of women delivering during the recruitment period that were eligible to participate in the study

The characteristics of participants are presented in table 3.1. The maternal age of the sample ranged from 17-47 years, with an average of 29.16 years (SD= 6.6 years). Most women had 12 or more years of school (66%) and for 30% of mothers interviewed this was their first child. The average BMI was 26.9 and most women (57.4 %) had a pre pregnancy BMI of $\geq$ 25kg/m^2 (i.e. overweight or obese). Just over one third of women (37%) had delivered by caesarean section which was notably higher than the 11.5 % reported for Kuwaiti women in general (Al-Nesef *et al.*, 1996). Just over half (52.3%) of the infants were male and 20.4% of infants spent some time in the special care nursery (*n*=76).

Table 3.1: Socio-demographic and biomedical characteristics of participants (n=373)

Mother's Characteristics	N	%
Maternal Age		
<25 yrs	82	22
25-34 yrs	240	64.3
≥35 yrs	51	13.7
Maternal Education		
< 12 yrs	127	34
≥ 12 yrs	246	66
Country of Mother's birth		
Kuwait	196	52.5
Other Gulf States	13	3.5
Other Arabian countries	123	33
Other Islamic countries	10	2.7
Other world countries	31	8.3
Mother's living area (Kuwaiti governorates)		
Hawalli	186	49.9
Farwaniya	96	25.7
Mubarak al Kabeer	34	9.1
Kuwait City	27	7.2
Ahmadi	15	4.0
Jahraa	15	4.0
Father's occupation		
Managers & professionals	97	26.0
sales & clerical	115	30.8
Uskilled occupations	157	42.1
no job	4	1.1
Employment plan for the next 6 months		
Stay at home with the baby	207	55.5
Work full time	20	5.4
Work part time	113	30.3
Study full time	7	1.9
Study part time	6	1.6
Undecided	20	5.4
Parity		
Primiparous	112	30.0
Multiparous	261	70.0
Vaginal delivery		
Yes	235	63.0
No	138	37.0
BMI		
≤25	159	42.6
>25	214	57.4
Infants Characteristics		
Gender		
Male	195	52.3
Female	178	47.7
Spent time in SCN		
Yes	76	20.4
No	297	79.6

3.7 Comparison of participants and non-participants

Those mothers declining to participate in the study were asked three short questions related to their socio-demographic status and chosen method of feeding to allow comparison with the study sample. There were no significant differences between participants and those declining to participate with respect to age, level of education and chosen method of feeding at discharge (table 3.2), suggesting that the sample was representative of the population from which it was drawn.

Table 3.2: Demographic characteristics of participants and non-participants

	Participants (n=373) (%)	**Non-Participants** (n=66) (%)	**Chi-square & P-Value**
Age of mother			
<25 yrs	22.0	22.7	$\chi^2$4.413 df 2
25-34	64.3	72.7	*P*=.110
≥35	13.7	4.5	
Years of education			
<12 years	34.0	24.2	$\chi^2$2.455 df 1
≥12 years	66.0	75.8	*P*= .117
Feeding method at discharge			
Formula-fed			
Breast-fed	15.3	16.7	χ^2.447 df 2
Combination	29.8	25.8	*P*=.800
	55.0	57.6	

A total of 80 women (21.45%) dropped out of the study at some stage prior to completing the final follow-up interview at 26 weeks. Of these 70 (87.5%) completed the baseline questionnaire but did not participate in any follow-up interviews. Table 3.3 shows that there were no significant differences in the demographic characteristics of completers and non-completers for up to six months.

Table 3.3: Demographic characteristics of completers and non-completers

	Completers (n=293) (%)	Non-completers (n=80) (%)	Chi-square & P-Value
Age of mother			
<25 yrs	22.2	21.3	$\chi^2$0.185 df 2
25-34	63.8	66.3	*P*=0.912
≥35	14.0	12.5	
Years of education			
<12 years	33.8	35.0	$\chi^2$0.073 df 1
≥12 years	66.2	65.0	*P*= 0.839
Feeding method at discharge			
Formula-fed	15.4	15.0	χ^2 0.007 df 2
Breast-fed	29.7	30.0	*P*=0.996
Combination	54.9	55.0	
Parity			
Primiparous	29.7	31.3	$\chi^2$0.041 df 1
Multiparous	70.3	68.8	*P*=0.996

Chapter 4 Early post-partum breastfeeding practices in Kuwait

Chapter 4 Breastfeeding initiation in Kuwait

4.1 Introduction

4.1.1 Background

There is an ever increasing volume of evidence highlighting the importance of breastfeeding in infancy and later life (Turck, 2005; Horta *et al.*, 2007a; Ip *et al.*, 2007). International recommendations promote exclusive breastfeeding as the optimal method of infant feeding for the first six months of life (WHO, 2003). Observation of breastfeeding practices in women is important to identify those population groups least likely to breastfeed and to identify and understand their reasons for not breastfeeding. The identification of the determinants of breastfeeding practices will inform the design of targeted interventions to promote breastfeeding (Newton, 2004) and the formulation of national public health policy.

Despite the large amount of evidence that breastfeeding reduces the risk of diseases in infancy and later life, efforts to promote breastfeeding have been limited and irregular in Kuwait. As previously mentioned in chapter 2, breastfeeding practices have not been routinely studied in Kuwait or with a standardized approach. No major studies have been conducted since 1989 when a large cross sectional survey reported an initiation rate of any breastfeeding of 86% and rate of exclusive breastfeeding of 60.6% (Amine *et al.*, 1989). The proportion of children breastfeeding at six months in Kuwait is well below international targets ranging from 35% to 44% (Al Bustan & Kohli, 1988; Al Rashoud & Farid, 1991).

Among other factors, socio-demographic variables play an important role in influencing breastfeeding practices. In Western countries, recent studies have shown an association between maternal age and level of education with breastfeeding initiation and duration where older and highly educated mothers were more likely to initiate breastfeeding (Scott & Binns, 1999; Dennis, 2002; Callen & Pinelli, 2004) and were more likely to have longer breastfeeding duration (Callen & Pinelli, 2004; Thulier & Mercer, 2009).

4.1.2 Overview of results

This chapter identifies the early post-partum breastfeeding practices of women in Kuwait (Table 4.1). Firstly, it identifies the incidence of breastfeeding, which in this study includes those women who initiated breastfeeding in hospital and a small number of women

identified in the first follow-up interview who initiated breastfeeding after discharge from hospital. As the definition of the incidence of breastfeeding initiation includes those children who received breast milk on at least one occasion, it can overestimate the number of women breastfeeding in the early post-partum period. For this reason the rates of *any* and *exclusive* breastfeeding at discharge from hospital are also provided in this chapter as these are better indicators of breastfeeding practices in the early post partum period and reflect the proportion of women who ceased breastfeeding in the early postpartum period. This type of information is valuable information to the country of Kuwait as well as to the region of the Middle East. The rates of breastfeeding which have not been studied longitudinally previously or on a large scale as in this study will provide the baseline data for future infant feeding research and evaluation of future breastfeeding promotion interventions.

The hospital-related practices section of this chapter highlights infant feeding practices which are related to hospitals and the hospital staff (Section 4.3). The purpose of collecting this type of information will give an insight of the level of support and help received by mothers prior to discharge. Internationally, BFHI has been shown to have a positive influence on new mothers in terms of increasing the breastfeeding initiation rates of and encouraging mothers to breastfeed for longer duration (Kramer *et al.*, 2001; Hofvander, 2005; Merten *et al.*, 2005; Perez-Escamilla, 2007). A measure of the degree to which hospitals in Kuwait practice the 10 Steps to Successful Breastfeeding can be used by the Ministry of Health in Kuwait to determine the need for, and to plan for, future hospital-based breastfeeding promotion interventions.

The final results presented in this chapter identify, using univariate logistic regression, the socio-demographic, biomedical and psychosocial determinants of breastfeeding initiation (Table 4.2) and *any* (Table 4.3) and *exclusive* (Table 4.4) breastfeeding at discharge. Finally, the factors that are independently associated with breastfeeding initiation and breastfeeding at discharge (both *any* and *exclusive*) are presented in Table 4.5.

Initiation and duration of breastfeeding need to be studied as separate outcomes as it is unlikely that events that occur after the birth of the child will influence the initiation of breastfeeding but may influence the duration. For example the breastfeeding supportive environment can affect the length of time the mother breastfeed after leaving hospital.

It is important to measure these and other factors reported to be associated with breastfeeding (reviewed in Chapter 1) in the Middle East region to help understand the area better and to give an insight to the current infant feeding practices. Cultural differences may have an impact on breastfeeding and one cannot assume that those factors that are associated with breastfeeding amongst Western women are the same as those for Middle Eastern women.

4.2 Initiation of breastfeeding and related practices

In total 92.5% of mother initiated breastfeeding, including 84.4% who initiated whilst in hospital and 8.1% who initiated after discharge from hospital. However, at discharge from hospital, 84.8% of participants were breastfeeding their infants, with less than one third of mothers (29.8%) fully breastfeeding their infants (Table 4.1). Prelacteal feeding was the norm (81.8%) with less than 1 in 5 infants (18.2%) receiving colostrum as their first feed. Only 10.5% of infants had been exclusively breastfed since birth, the remainder of breastfed infants having received prelacteal feeds of either infant formula (76.4%) or glucose water (4.6%) and/or supplementary feeds of infant formula at some time during their hospital stay.

Table 4.1: Infant feeding practices

Feeding practices	***n***	**%**	**95% CI**
Initiated breastfeeding	345	92.5	89.8 – 95.2
Feeding method at discharge			
Fully breastfed	111	29.8	25.2 – 34.4
(Exclusively breastfed since birth)	*(39)*	*(10.5)*	*(7.4 – 13.6)*
Partially breastfed	205	55.0	50.0 – 60.0
Fully formula fed	57	15.2	11.6 – 19.0
Received prelacteal feed	305	81.8	77.0 – 85.0

[a] Includes those infants who were ever breastfed on at least one occasion

4.2.1 Timing of first breastfeed

Of the mothers who attempted to breastfeed in hospital, only 2 mothers (0.7%) put their baby to the breast within one hour after birth, 24.3% first put their baby to the breast within 6 hours of delivery, 20.4% between 6 and 24 hours, with the majority of women (55.3%) delaying their first attempt to breastfeed until 24 hours or more after delivery.

4.3 Hospital practices related to breastfeeding success

A number of hospital-related practices recommended in the BFHI 10 Steps to Successful Breastfeeding were investigated at baseline. Only half of the mothers (50.9%) had their baby room-in with them for 24 hours. While the majority of mothers (69.7%) were breastfeeding on demand, very few women (8.3%) reported actually being encouraged by hospital staff to demand feed. Consequently, most mothers (87.1%) reported dissatisfaction regarding the hospital's recommendations on how often to breastfeed their newborns.

While 81.8% of infants had received prelacteal feeds, more than one third of mothers (38.3%) reported that they did not give permission to hospital staff, or that they were not asked for their permission, to give the infant a prelacteal feed. This indicates that in some

instances hospital staff are not consulting a mother and/or encouraging her to breastfeed her infant, before giving her infant a prelacteal feed.

When mothers were asked if they had received enough breastfeeding help or information from hospital staff while in hospital, the majority of participants 89.8% reported that they did not receive any help or information. A very small proportion of women (10.2 %) reported that they had received some information and help regarding breastfeeding, with even fewer women (4%) reporting that they had received individual consultation with any staff member regarding infant feeding or had received a demonstration on breastfeeding postpartum (n=3). Only 8.6% of mothers said that they received pamphlets about breastfeeding. Women were unlikely to have received any breastfeeding advice from health professionals prior to delivery as very few women had attended any type of antenatal classes for this pregnancy (5.1%) or any previous pregnancies (3.2%).

When mothers were asked (prompted) to justify their motives to initiate breastfeeding, the majority of mothers reported that breast milk is better for the baby (92%), breast-milk is best baby food because God created it (88%), and breastfeeding is the right thing to do (85%). More than half of the mothers considered breastfeeding a more convenient method of feeding their infant (62%) In addition, half of the mothers believed that breast milk helps minimize colic problems, while forty four per cent of mothers gave a reason that breast milk help prevents allergies and forty three per cent believed that breastfeeding makes them emotionally close to their baby. Almost one third of the mothers (28%) cited

that breast-fed infants are more intelligent than formula fed infants. Immunity in colostrum to prevent disease was the most other reasons (unprompted) given by over 37% of mothers. Out of the 15% of mothers who were only formula feeding at discharge from hospital, 10% were formula feeding because they will return to work soon after birth, 6% believed that bottle feeding is easier, and 2% reported insufficiency of breast milk.

Mothers who were breastfeeding but then changed to formula feeding were also asked to give reasons for the change of feeding method. Most reasons cited by mothers were breast milk insufficiency (30%), mother's health did not permit her to breastfeed (6%), baby gets too little milk or too slow (4%), infant is not hungry because it was given formula by nurse without mother's knowledge (4%), breastfeeding is too stressful (3%) and baby has problem suckling (2%).

4.4 Iowa Infant Feeding Attitude Scale (IIFAS)

Data from attitude responses were tested for normality using P-P plots to ensure that data was normally distributed. An independent T-test was used for analyzing the data because it was normally distributed. Despite Iowa scale having good internal reliability and it has shown to be predictive of infant feeding practices. The aims of using Iowa Scale for first time in this study were to confirm similar findings with Western countries (De la Mora *et al.*, 1999). The Iowa Infant Feeding Attitude Scale, which has previously been validated and has never been administered in the Middle East to date, was used to measure the attitudes towards breastfeeding in this population. In this study, the IIFAS was found to have no inter-country effects on the attitude towards infant feeding, with no significant association with the attitude and practices of any breastfeeding. Fifty seven mothers not any breastfeeding and their mean was 69.0526, and 316 mothers were any breastfeeding with the mean of 69.0538 and a p-value of 0.999. There was no overall difference between breastfeeding mothers and formula feeding mothers in their individual attitudes towards. There was no significant difference between primiparous and multiparous mothers in their attitude towards breastfeeding and their actual feeding practices with the mean of 69.339 and 68.931 respectively and a p-value of 0.492. Similarly, in maternal education, as there was no significant difference between less educated and more educated mothers with the mean of 69.228 and 68.963 respectively and a p-value of 0.644. The Cronbach's alpha which measures internal reliability and should be above 0.7, but in this study the score was 0.491. Iowa scale was used previously in many Western countries and it was valid, however, in this study, the score shows low reliability of this type of test on this type of

population which is not a good measure of reliable attitude in Kuwait. Possible reasons could be related to translation of the questions which may affect the meaning understood by mothers of each specific question. The attitude of people in Kuwait towards research may differ from the attitude in other world countries. For all the above reasons, it is not recommended to use this indicator and more work needed to be done on this "scale" because it should be piloted, tested or a new population-specific scale should be developed or modified for Kuwait according to specific criteria based on a standard guidelines for this population. In Western women, the IIFAS has been useful but for Middle-eastern women (women living in Kuwait), it did not have good results, so we need to improve it and develop it to suit Middle Eastern culture.

4.5 Determinants of breastfeeding initiation in Kuwait

4.5.1 Univariate analysis

Table 4.2 lists a variety of socio-demographic, biomedical and psychosocial factors that might be expected to have an influence on breastfeeding initiation and tables 4.3 and 4.4 list those factors associated with any breastfeeding or exclusive breastfeeding at hospital discharge, respectively. The univariate odds ratios indicate the likelihood of a mother either initiating breastfeeding or breastfeeding at discharge from hospital. In this study, no association was found between initiating breastfeeding or breastfeeding at discharge (any or exclusive) and any of the socio-demographic factors investigated including maternal age, education, employment and country of origin. Among the biomedical factors, no association was observed with parity but there was a negative association between mode of delivery and breastfeeding at discharge. Women who had a caesarean section delivery were significantly less likely to be breastfeeding at discharge than women who had delivered vaginally (any breastfeeding; OR: 0.55; 95% CI: 0.31-0.98; exclusively breastfeeding OR: 0.17; 95% CI: 0.06-0.49). Also, women whose infant had not been admitted to the Special Care Nursery (SCN) for short-term observation after delivery were significantly more likely to have initiated breastfeeding (OR: 0.55; 95% CI: 0.31-0.98) and to be breastfeeding at discharge (any breastfeeding; OR 2.77, 95% CI: 1.50-5.10); exclusively breastfeeding (OR: 5.26; 95% CI: 1.24-22.36) than those admitted to the SCN. No association was found with any of the psychosocial factors investigated and either the initiation of breastfeeding or breastfeeding at discharge.

Table 4.2: Percentage and univariate odds ratios (95% confidence intervals) for Initiation of breastfeeding (n=373)

	Breastfeeding initiation		**OR**	**95% CI**
	Yes (%)	*No (%)*		
Sociodemographic				
Mother's age (years):				
<25	90.2	9.8	1.72	0.60-.4.92
25-34	89.2	10.8	1.53	0.65-3.61
≥ 35 (ref)	84.3	15.7	1.00	
Mother Education (years of schooling):				
<12	87.4	12.6	1.00	
≥12	89.4	10.6	1.22	0.63-2.37
Mother's country of birth:				
Kuwait & Gulf States (ref)	84.7	15.3	1.00	
Other Arabic countries	93.5	6.5	**2.60**	**1.16-5.84**
Other world countries	95.1	4.9	3.53	0.81-15.33
Mother employed/studying part- or full-time at 6 months before birth				
Yes	87.5	12.5	1.00	
No	89.7	10.3	1.24	0.65-2.36
Mother intended to be employed/studying part- or full time at 6 months postpartum				
Yes (ref)	87.7	12.3	1.00	
No	89.4	10.6	1.18	0.61-2.29
Don't know yet/undecided	90.0	10.0	1.27	0.27-5.92
Mother's occupation:				
Managers & professionals (ref)	92.6	7.4	1.00	
Sales & clericals	86.7	13.3	0.52	0.19-1.45
Unskilled occupations	90.6	9.4	0.78	0.19-3.21
House wives	87.2	12.8	0.55	0.23-1.34
Father's occupation:				
Managers & professionals (ref)	90.7	9.3	1.00	
Sales & clericals	85.2	14.8	3.26	0.31-34.69
Unskilled occupations	90.4	9.6	1.92	0.19-19.57
No jobs	75.0	25.0	3.16	0.31-32.27
Location:				
Hawalli	91.4	8.6	2.50	0.99-6.31
Farwania	86.5	13.5	1.50	0.57-3.95
Mubarak Al Kabeer & Ahmedi	89.8	10.5	2.07	0.62-6.90
Kuwait City & Jahraa (ref)	81.0	19.0	1.00	
Biomedical				
Parity:				
Primiparous	87.5	12.5	1.00	
Multiparous	89.3	10.7	1.19	0.60-2.36
Vaginal Delivery:				
Yes	90.2	9.8	1.00	
No	86.2	13.8	0.70	0.36-1.30
Infant admitted to SCN:				
Yes	87.9	21.1	1.00	
No	91.2	8.8	**2.78**	**1.40-5.50**
Psychosocial				
Mother attended antenatal classes for this or previous pregnancy:				
Yes	93.5	6.5	1.00	
No	88.3	11.7	0.52	0.12-2.27
Father prefers breastfeeding				
Yes	90.0	10.0	1.00	
No or ambivalent	83.6	16.4	0.57	0.27-1.17
Maternal grandmother prefers breastfeeding				
Yes	88.8	11.2	1.00	
No or ambivalent	88.6	11.4	0.98	0.33-2.93
Maternal grandmother breastfed at least one infant				
Yes	95.0	5.0	1.00	
No or don't know	88.4	11.6	0.40	0.05-3.07
Infant feeding decision made before pregnancy				
Yes	88.5	11.5	1.00	
No	89.7	10.3	1.13	0.52-2.47

OR, Odds ratio

Table 4.3: Number (percentage) and univariate odds ratios (95% confidence intervals) for any breastfeeding at discharge from hospital (n=373)

	Any Breastfeeding at discharge		**OR**	**95% CI**
	Yes (%)	*No (%)*		
Sociodemographic				
Mother's age (years):				
<25	71 (86.6)	11 (13.4)	1.00	
25-34	204 (85.0)	36 (15.0)	1.57	0.62-4.02
≥ 35	41 (80.4)	10 (19.6)	1.38	0.64-3.00
Mother Education (years of schooling):				
<12	106 (83.5)	21 (16.5)	1.00	
≥12	210 (85.4)	36 (14.6)	1.60	0.64-2.08
Mother's country of birth:				
Kuwait & Gulf States	172 (82.3)	37 (17.7)	1.00	
Other Arabic countries	109 (88.6)	14 (11.4)	1.67	0.87-3.24
Other world countries	35 (85.4)	6 (14.6)	1.25	0.49-3.200
Mother employed/studying part- or full-time at 6 months before birth				
Yes	132 (82.5)	28 (17.5)	1.00	
No	184 (86.4)	29 (13.6)	1.35	0.76-2.37
Mother intended to be employed/studying part- or full time at 6 months postpartum				
Yes	119 (81.5)	27 (18.5)	1.00	
No	179 (86.5)	28 (13.5)	0.69	0.39-1.23
Don't know yet/undecided	18 (90.0)	2 (10.0)	0.31	0.31-6.40
Mother's occupation:				
Managers & professionals	83 (88.3)	11 (11.7)	1.00	
Sales & clericals	62 (82.7)	13 (17.3)	0.63	0.26-1.50
Unskilled occupations	26 (81.2)	6 (18.8)	0.57	0.19-1.70
House wives	145 (84.3)	27 (15.7)	0.71	0.34-1.51
Father's occupation:				
Managers & professionals	85 (87.6)	12 (12.4)	1.00	
Sales & clericals	93 (80.9)	22 (19.1)	2.36	0.23-24.58
Unskilled occupations	135 (75.0)	22 (14.0)	1.41	0.14-14.2
No jobs	3 (75.0)	1 (25.0)	2.04	0.20-20.56
Location:				
Hawalli	163 (87.6)	23 (12.4)	2.51	1.11-5.68
Farwania	80 (83.3)	16 (16.7)	1.77	0.74-4.24
Mubarak Al Kabeer & Ahmedi	42 (85.7)	7 (14.3)	2.13	0.74-6.12
Kuwait City & Jahraa	31 (73.8)	11 (26.2)	1.00	
Biomedical				
Parity:				
Primiparous	92 (82.1)	20 (17.9)	1.00	
Multiparous	224 (85.8)	37 (14.2)	1.32	0.72-2.39
Vaginal Delivery:				
Yes	206 (87.7)	29 (12.3)	1.00	
No	110 (79.7)	28 (20.3)	**0.55**	**0.31-0.98**
Infant admitted to SCN:				
Yes	55 (72.4)	21 (27.6)	1.00	
No	261 (87.9)	36 (12.1)	**2.77**	**1.50-5.10**
Psychosocial				
Mother attended antenatal classes for this or previous pregnancy:				
Yes	29 (93.5)	2 (6.5)	1.00	
No	287 (83.9)	55 (16.1)	0.36	0.08-1.55
Father prefers breastfeeding				
Yes	259 (86.3)	41 (13.7)	1.00	
No or ambivalent	57 (78.1)	16 (21.9)	0.56	0.30-1.07
Maternal grandmother prefers breastfeeding				
Yes	286 (84.6)	52 (15.4)	1.00	
No or ambivalent	30 (85.7)	5 (14.3)	1.09	0.40-2.94
Maternal grandmother breastfed at least one infant				
Yes	297 (84.1)	56 (15.9)	1.00	
No or don't know	19 (95.0)	1 (5.0)	0.28	0.04-2.13
Infant feeding decision made before pregnancy				
Yes	241 (84.3)	45 (15.7)	1.00	
No	75 (86.2)	12 (13.8)	1.17	0.59-2.32

OR, Odds ratio

Table 4.4: Number (percentage) and univariate odds ratios (95% confidence intervals) for exclusive breastfeeding at discharge from hospital (n=373)

	Exclusive Breastfeeding at discharge		**OR**	**95% CI**
	Yes (%)	*No (%)*		
Sociodemographic				
Mother's age (years):				
<25	8 (9.8)	74 (90.2)	1.00	
25-34	25 (10.4)	215 (89.6)	1.08	0.46-2.49
≥ 35	6 (11.8)	45 (88.2)	1.23	0.40-3.79
Mother Education (years of schooling):				
<12	12 (9.4)	115 (90.6)	1.00	
≥12	27 (11.0)	219 (89.0)	1.18	0.58-2.42
Mother's country of birth:				
Kuwait & Gulf States	16 (7.7)	193 (92.3)	1.00	
Other Arabic countries	19 (15.4)	104 (84.6)	**2.20**	**1.09-4.47**
Other world countries	4 (9.8)	37 (90.2)	1.30	0.41-4.12
Mother employed/studying part- or full-time at 6 months before birth				
Yes	15 (9.4)	145 (90.6)	1.00	
No	24 (11.3)	109 (88.7)	1.23	0.62-2.42
Mother intended to be employed/studying part- or full time at 6 months postpartum				
Yes	16 (11.0)	130 (98.0)	1.00	
No	22 (10.6)	185 (98.4)	1.03	0.52-3.47
Don't know yet/undecided	1 (5.0)	19 (95.0)	0.44	0.06-3.47
Mother's occupation:				
Managers & professionals	11(11.7)	83 (88.3)	1.00	
Sales & clericals	5 (6.7)	70 (93.3)	0.54	0.18-1.63
Unskilled occupations	4 (12.5)	28 (87.5)	1.08	0.32-3.65
House wives	19 (11.0)	153 (89.0)	0.94	0.43-2.06
Father's occupation:				
Managers & professionals	12 (12.4)	85 (87.6)	1.00	
Sales & clericals	12 (10.4)	103 (89.6)	0.82	0.35-1.93
Unskilled occupations	14 (8.9)	143 (91.1)	0.70	0.31-1.57
No jobs	1 (25.0)	3 (75.0)	2.361	0.23-24.57
Location:				
Hawalli	157 (84.4)	29 (15.6)	3.69	0.85-16.14
Farwania	91 (94.8)	5 (5.2)	1.10	0.20-5.90
Mubarak Al Kabeer & Ahmedi	3 (6.1)	46 (93.9)	1.30	0.21-8.20
Kuwait City & Jahraa	2 (4.8)	40 (95.2)	1.00	
Biomedical				
Parity:				
Primiparous	8 (7.1)	104 (92.9)	1.00	
Multiparous	31 (11.9)	230 (88.1)	1.75	0.78-3.94
Vaginal Delivery:				
Yes	35 (14.9)	200 (85.1)	1.00	
No	4 (2.9)	134 (87.1)	**0.17**	**0.06-.49**
Infant admitted to SCN:				
Yes	2 (2.6)	74 (97.4)	1.00	
No	37 (12.5)	260 (87.5)	**5.26**	**1.24-22.36**
Psychosocial				
Mother attended antenatal classes for this or previous pregnancy:				
Yes	6 (19.4)	25 (80.6)	1.00	
No	33 (9.6)	309 (90.4)	0.44	0.17-1.16
Father prefers breastfeeding				
Yes	35 (11.7)	265 (88.3)	1.00	
No or ambivalent	4 (5.5)	69 (94.5)	0.44	0.15-1.28
Maternal grandmother prefers breastfeeding				
Yes	36 (10.7)	302 (89.3)	1.00	
No or ambivalent	3 (8.6)	32 (91.4)	0.79	0.23-2.70
Maternal grandmother breastfed at least one infant				
Yes	36 (10.2)	317 (89.8)	1.00	
No or don't know	3 (15.0)	17 (85.0)	0.64	0.18-2.30
Infant feeding decision made before pregnancy				
Yes	27 (9.4)	259 (90.6)	1.00	
No	12 (13.8)	75 (86.2)	1.53	0.74-3.17

OR, Odds ratio

4.5.2 Multivariate Analysis

Understanding the factors associated with the initiation of breastfeeding was enhanced by modelling all of the factors identified in table 4.2 using multivariate logistic regression. Those factors that were independently associated with initiating breastfeeding and breastfeeding at discharge (both any and exclusive breastfeeding) are presented in Table 4.5. After potential confounding factors were controlled for, infants who were delivered by caesarean section were less likely to be exclusively breastfed at discharge from hospital (adjOR 0.15; 95% CI 0.05-0.43). Mothers whose infants had not been admitted to SCN were significantly more likely to have initiated breastfeeding (adjOR 5.67; 95% CI 2.49-12.95) and to be exclusively breastfeeding (adjOR 4.23; 95% CI 0.98-18.34) or feeding their infants any breast milk at discharge from hospital (adjOR 2.85; 95% CI 1.52-5.33). Women who perceived that their husband either preferred formula feeding or was ambivalent about how she would feed their infant were less likely to be breastfeeding at discharge than those whose husband preferred breastfeeding (adjOR 0.49; 95% CI 0.25-0.96). Mothers originally from other Arab countries were found to be more likely to initiate breastfeeding (adjOR 3.47; 95% CI 1.12-10.80) and to be exclusively breastfeeding at discharge (adjOR 3.12; 95% CI 1.46-6.66) than mothers from Kuwait and other Gulf States.

Table 4.5: Factors independently associated with initiation of breastfeeding at discharge after adjustment for potential confounders [a] (n=373)

Variables	*n*	Ever initiated breastfeeding		Any Breastfeeding at discharge from Hospital up to 6 wks		Exclusive Breastfeeding at discharge from Hospital	
		Adj.OR[b]	CI 95%	Adj.OR	CI 95%	Adj.OR	CI 95%
Biomedical							
Method of Delivery							
Vaginal (ref)	235	NS		1.00		1.00	
Cesarean section	138			0.60	0.33-1.06	0.15	0.05-0.43
Infant admitted to SCN							
Yes (ref)	76	1.00		1.00		1.00	
No	297	5.67	2.49-12.95	2.84	1.52-5.33	4.23	0.98-18.34
Psychosocial							
Father prefers breastfeeding							
Yes (ref)	300	NS		1.00		NS	
No or ambivalent	73			0.49	0.25-0.96		
Sociodemgraphical							
Country of mother's birth							
Kuwait & Gulf countries (ref)	209	1.00				1.00	
Other Arab countries	123	3.47	1.12-10.80	NS		3.12	1.46-6.66
Other world countries	41	1.38	0.38-8.82			1.49	0.45-4.93
Mother attended classes for this or for previous pregnancy							
Yes (ref)	31	NS		NS		1.00	
No	342					0.36	0.13-1.04

[a]Non-significant variables were maternal grandmother preference of breastfeeding, when the feeding decision was made, previous employment status, future, employment intentions, numbers of schooling years, whether maternal grandmother breastfed any of her children, father's occupation, parity, maternal age, mother's occupation, attendance at antenatal classes, father prefers breastfeeding, and vaginal delivery.

[b]All variables in the final model were variables for which when excluded the change deviance compared with the corresponding χ^2 test statistic on the relevant degrees of freedom was significant.

4.6 Discussion

The initiation rate of 92.5% (95% CI: 89.8-95.2) reported in our study was significantly higher than the rate of 86% (95% CI: 84.7-87.3) reported for Kuwait in 1989 (Amine *et al.*, 1989) and comparable to recent breastfeeding initiation rates for other Middle Eastern countries (Chapter 2) which have been reported as 100% in Iran (Fallahzadeh *et al.*, 2009), 95.4% in Egypt (Akin *et al.*, 1986b), 89.1% to 98.2% in Turkey (Tuncbilek *et al.*, 1983; Ertem *et al.*, 2001a), 95.4% in Lebanon (Batal & Boulghaurjian, 2005), 91.3% to 95% in Iraq (Mahmood & Feachem, 1987; Banyamen & Hassan, 1998), and 91.1% in Tunisia (Akin *et al.*, 1986b). Nevertheless, while this study revealed that the majority of women in Kuwait initiated breastfeeding, less than one-third of infants were fully breastfed and the use of prelacteal feeds was very common. Subsequently only one in ten infants had been exclusively breastfed since birth.

There is evidence that the implementation of the Baby Friendly Hospital Initiative (BFHI) in maternity hospitals improves breastfeeding practices (Wright *et al.*, 1985; Hofvander, 2005; Perez-Escamilla, 2007). None of the hospitals in this study were BFHI accredited at the time of the study and it is clear from the results of this study that two of the BFHI Ten Steps to Successful Breastfeeding i.e. "*Help mothers initiate breastfeeding within half an hour of birth*" and "*Give newborn infants no food or drink other than breast milk, unless medically indicated"*, were clearly not practiced in the participating hospitals. In addition, the majority of women had not attempted to breastfeed until 24 or more hours after birth, contributing to the high incidence of prelacteal feeding. Furthermore, almost one half of mothers did not practice 24 hour rooming-in, while the vast majority of women were not encouraged to demand feed their infants and most women were dissatisfied with the amount of breastfeeding support and advice that they were offered whilst in hospital.

The number of BFHI accredited hospitals in Middle Eastern countries (standardised / 100,000 women of childbearing age) as at 2002 is summarized in table 4.6. The figures shown in table below might explain, in part, differences in breastfeeding rates between the Middle Eastern countries. It is clear from the findings of our study that the 10 Steps to Successful Breastfeeding are not being practiced in Kuwait maternity units and that the Kuwait Ministry of Health would do well to encourage, or better still, require that all hospitals with maternity units work to achieve BFHI accreditation.

Table 4.6: Comparison of the number of BFHI accredited hospitals in Middle Eastern countries standardised by the number of live births.

Country	Births (1000)	BFHI accredited hospitals	BFHI hospitals/ 1000 births
Oman	68	51	0.750
Bahrain	12	6	0.500
Lebanon	63	21	0.333
Iran	1405	376	0.268
Eygpt	2006	122	0.061
Turkey	1433	83	0.058
U.A.E.	77	4	0.052
Kuwait	**59**	**2**	**0.034**
Iraq	871	24	0.028
Syria	544	13	0.024
Jordan	172	3	0.017
Saudi Arabia	506	2	0.004
Qatar	13	0	0.000

Data Sources: (Annon., 2010c), (UNICEF., March 2002), (WHO, 2010a)

The practice of delayed breastfeeding initiation deprives infants of the benefits of colostrum (Uruakpa, 2002) and delaying initiation beyond 2 hours postpartum has been associated with shorter breastfeeding duration (Nakao *et al.*, 2008). The practice has been reported in Kuwait where only 4.5% of infants were breastfed within one hour of birth (Al-Nesef *et al.*, 1996) and in other Middle Eastern countries; for example, only 6% of mothers in an Iranian study (Marandi *et al.*, 1993) breastfed within 5 hours of delivery, while in an Egyptian study (El-Mougi *et al.*, 1981) most women (71.6%) gave the first breastfeed after more than 36 hours after delivery. Similarly, only 10% of Turkish mothers breastfed their infants within the first hour of birth with most women (90%) initiating breastfeeding after the first two days of birth (Ergenekon-Ozelci *et al.*, 2006).

As a consequence high rates of prelacteal feeding have been reported among populations of Middle Eastern women. While lower rates than this study were reported in a Lebanese study (Batal & Boulghaurjian, 2005) where 49% of women offered prelacteal feeds, 61.0% in a Jordanian survey (Annon., 2003) and 60.2% in an Iraqi study (Abdul Ameer *et al.*, 2008), prelacteal feeding was almost universal in an Iranian study (Froozani, 1992) where 96.1% of mothers gave sugar water as the first feed after birth. Reported rates of prelacteal feeding in Egypt ranged from 48.8% (Hakim & El-Ashmawy, 1992) to as high as 97.6% (El-Mougi *et al.*, 1981). In addition to prelacteal feeding, mixed feeding during the hospital stay was common in this study and is a practice which has been shown consistently to be negatively associated with the initiation of breastfeeding in Egypt (Hossain *et al.*, 1991; Hossain *et al.*, 1994; Hossain *et al.*, 1995) and the duration of

exclusive breastfeeding in Turkey (Alikasifoglu *et al.*, 2001), Saudi Arabia (Shawky & Abalkhail, 2003; Ogbeide *et al.*, 2004) and Western countries (Blomquist *et al.*, 1994; Hornell *et al.*, 2001a; Hornell *et al.*, 2001b).

High rates of delayed breastfeeding initiation and prelacteal feeding in various Muslim cultures are related to the traditional beliefs held by women that colostrum should not be fed to the infant because it is of limited nutritional value or might harm the infant (Gatrad & Sheikh, 2001). For instance, Pakistani (Khadduri *et al.*, 2008), Somali (Steinman *et al.*, 2009) and Turkish (Ergenekon-Ozelci *et al.*, 2006) women reportedly believe colostrum to be dirty, stale milk that has been stored in the breast for 9 months. Similarly, Gambian women (Semega-Janneh *et al.*, 2001) believe that colostrum is "hot milk" which could give their baby stomach-ache and diarrhoea, while some Pakistani women (Khadduri *et al.*, 2008) believe that colostrum might even kill their infant. Similarly, a recent study of Lebanese women identified a number of cultural beliefs that might discourage women from breastfeeding including having "bad milk" and the ability to transmit maternal abdominal cramps to infants through breastfeeding (Osman *et al.*, 2009). These beliefs, while more common in less literate women (Ergenekon-Ozelci *et al.*, 2006), are firmly entrenched and often reinforced by religious leaders (Ergenekon-Ozelci *et al.*, 2006) and elders, both female and male (Semega-Janneh *et al.*, 2001) and supported by traditional birthing assistants (Semega-Janneh *et al.*, 2001) and family members (Osman *et al.*, 2009).

As this study did not expressly ask women about their beliefs related to the value of colostrum it is not known if this negative view of colostrum is prevalent amongst Kuwaiti women and can help explain the high rates of delayed breastfeeding and prelacteal feeding observed. The reasons for the high prevalence of these practices amongst Kuwaiti and the associated beliefs and attitudes warrant further investigation of both mothers, grandmothers and health professionals and are probably best studied using qualitative research methodologies which are better suited to eliciting information on sensitive issues than the quantitative methodology employed in this study.

The current study failed to find an association between breastfeeding initiation or prevalence at discharge and a variety of socio-demographic factors that have been reported to be associated with breastfeeding initiation in other studies of Middle Eastern women. For instance, no positive association was found between maternal age and breastfeeding initiation previously reported in an earlier study in Kuwait (Al Bustan & Kohli, 1988) and

in other studies of Middle Eastern women in the United Arab Emirates (UAE) (Al-Mazroui *et al.*, 1997; Osman & El-Sabban, 1999) and Saudi Arabia (Khattab, 2000). Similarly, no association was found for breastfeeding initiation with level of maternal education, whereas an earlier study in Kuwait (Al Bustan & Kohli, 1988) and studies conducted in Lebanon (Batal *et al.*, 2006), Saudi Arabia (Al-Frayh, 1989) and Qatar (Kayyali & Al-Tawil, 1989) all reported an inverse association between maternal level of education and the initiation of breastfeeding. Conversely, a study in Egypt reported that educated mothers were more likely to initiate breastfeeding earlier and to exclusively breastfeed their infants in the first week of life than less educated women (Hakim & El-Ashmawy, 1992), which is consistent with most studies from Western countries (Scott & Binns, 1999).

Of interest in this study was the finding that non-Kuwaiti mothers who were from other Arab countries were more likely than Kuwaiti-born women to initiate breastfeeding and to exclusively breastfeed their infants. It is unclear why this should be the case as the reported rates of breastfeeding initiation in other Middle Eastern countries are similar to those reported for this study, so this association does not reflect necessarily a cultural difference in breastfeeding initiation rates. However, the majority of women from other Arab countries living in Kuwait have accompanied their husbands who are generally working in Kuwait on temporary visas as semi-skilled workers. As such these women are likely to be less well educated than Kuwaiti born women. As stated previously, an inverse association between maternal level of education and the initiation of breastfeeding has been reported for women from Lebanon (Batal *et al.*, 2006), Saudi Arabia (Al-Frayh, 1989) and Qatar (Kayyali & Al-Tawil, 1989).

A number of biomedical factors were investigated that other studies had shown to be associated with the initiation of breastfeeding. Consistent with other studies of Middle Eastern women in the UAE (Al-Mazroui *et al.*, 1997) and Saudi Arabia (Shawky & Abalkhail, 2003), we found that women who had delivered by caesarean section were less likely to be exclusively breastfeeding at discharge. Newborns are often taken to a nursery following a caesarean section delivery to allow the mother to rest after her operation, making it difficult for her to establish breastfeeding and increasing the likelihood of the infant receiving prelacteal and supplementary formula feeds. This negative association has been reported also in a studies of Western (Scott & Binns, 1999) and Chinese women (Qiu *et al.*, 2009), and having delivered by caesarean section has been associated with the

delayed onset of lactation (Scott *et al.*, 2007). We also found that admission of an infant to the SCN was negatively associated with the initiation of breastfeeding and the likelihood of a mother exclusively breastfeeding at discharge from hospital, a finding that has been reported also in studies of Western women (Scott *et al.*, 2006a).

Social support from a woman's partner or other family members has been shown to affect the mother's decision to initiate breastfeeding and we found a significant independent association between the husband's preference for breastfeeding and breastfeeding at discharge. Two studies of women in Saudi Arabia have investigated the influence of paternal attitudes on breast feeding outcome with one finding that mothers were more likely to initiate breastfeeding if their partners supported breastfeeding and encouraged them to initiate exclusive breastfeeding (Ogbeide *et al.*, 2004), whereas the second study found no association between the Saudi father's attitude towards breastfeeding and breastfeeding initiation (Al-Ayed & Qureshi, 1998). The degree to which a woman's partner will influence her decision to breastfeed varies according to the woman's age, social class and cultural or ethnic background (Matich & Sims, 1992). For instance Anglo-American women identified their husband as being their major source of support regarding infant feeding decision and less often turned to their mother. On the other hand, women of Latin American origin were more likely to consult their mother on infant feeding matters, although husbands were responsible for most other family decisions (Bryant, 1982). Studies of Muslim women have highlighted the importance of grandmothers both in providing practical support and as major influences on infant feeding decisions (Ergenekon-Ozelci *et al.*, 2006; Khadduri *et al.*, 2008).

The majority of mothers in this study reported that breast milk is better for the baby. There was a similar finding in one Jordanian study where high percentage of mothers (77%) reported "Breastfeeding is better for the baby's health" as the main reason for participating in full breastfeeding in Jordan (Khassawneh *et al.*, 2006) and ninety three per cent in Maldives (Abdulraheem & Binns, 2007). One third of mothers who altered from breastfeeding to formula feeding justified their change as milk insufficiency. A number of Middle Eastern studies documented milk insufficiency as the most cited reason for early breastfeeding cessation as reported by 53% mothers in Turkey (Kocturk, 1986), 52% in Saudi Arabia (Al-Ayed & Qureshi, 1998), 74% in Egypt (Hossain *et al.*, 1991), 39% in Iran (Marandi *et al.*, 1993), 33% in UAE (Al-Mazroui *et al.*, 1997) and 33% in Jordan

(Khassawneh *et al.*, 2006). Similar findings were observed in Western countries where 30% of mothers reported diminishing milk supply (Arthur *et al.*, 2003).

4.7 Conclusion

Although the initiation of breastfeeding is almost universal amongst women in Kuwait, few women fully breastfeed their infants. The reasons for the high use of prelacteal and supplementary formula feeds warrant further investigation. Hospital policies and staff training are needed to help mothers initiate breastfeeding within a half-hour of birth and to discourage the early introduction and unnecessary use of infant formula in hospital, in order to support the establishment of exclusive breastfeeding among mothers in Kuwait. Governmental health services need to emphasize and support the importance of regular training programs to all hospital staff, especially those involved in antenatal clinics and maternity wards, as they can influence the early infant feeding practices among the new generation of mothers. As a first step, a Health Ministry policy mandating that all government-funded hospitals follows the Ten Steps to Successful Breastfeeding and attain Baby Friendly Hospital Initiative accreditation would do much to promote and establish successful exclusive breastfeeding amongst Kuwaiti women.

Chapter 5 Determinants of breastfeeding duration

Chapter 5 Determinants of breastfeeding duration

5.1 Introduction

5.1.1 Background

The WHO recommends that infants should be exclusively breastfed for the first six months of life, a global recommendation to protect and improve the health of the public from infancy and into later life (WHO, 2003). This study has shown however, that in Kuwait the majority of newborns do not benefit from exclusive breastfeeding as a consequence of the delayed initiation of breastfeeding and the subsequent high use of prelacteal feeds and supplementary formula whilst in hospital (Chapter 4).

Breastfeeding duration can be influenced by a complex mix of factors which are documented in the literature as socio-demographic, biomedical, health-care attributes, psychosocial factors, community attributes, and public policy factors (Yngve & Sjostrom, 2001a). Those factors associated with breastfeeding duration in Middle Eastern countries have been reviewed previously in Chapter 1 and are summarised in Table 5.1 and 5.2.

5.1.2 Overview of results

In this chapter the prevalence of breastfeeding at selected time-points from hospital discharge to 26 weeks is presented in Table 5.3. Univariate survival analysis is used to identify the socio-demographic (Section 5.3.1), biomedical (Section 5.3.2), hospital practices (section 5.3.3) and psychosocial (Section 5.3.4) factors associated with breastfeeding duration. Finally those factors that are independently associated with breastfeeding duration are presented in Table 5.4.

Table 5.1: Socio-demographic and biomedical factors associated with longer breastfeeding duration

Maternal age	
Older	(Akin *et al.*, 1986b; Al Bustan & Kohli, 1988; Amine *et al.*, 1989; Al-Nasser *et al.*, 1991; Kordy *et al.*, 1992; Al-Shehri *et al.*, 1995; Batal *et al.*, 2006)
Level of maternal education	
Higher level	(Anokute, 1988; Osman & El-Sabban, 1999; Roudbari *et al.*, 2009)
Lower level	(Rakhshani & Mohammadi, 2009); (Hajian-Tilaki, 2005); Al Bustan & Kohli 1988; (Al-Jassir *et al.*, 2004); Amine *et al.*, 1989; Al-Shehri *et al.*, 1995; Al-Mazrou *et al.*, 1994
Multiparity	(Shiva & Nasiri, 2003); (Batal *et al.*, 2006); (Al-Sahab *et al.*, 2008); (Rakhshani & Mohammadi, 2009); (Amine *et al.*, 1989); (Hajian-Tilaki, 2005)
Previous successful breastfeeding experience	(Alikasifoglu *et al.*, 2001); (Khattab, 2000)

Table 5.2: Factors negatively associated with breastfeeding duration

Higher social or income status	Al Bustan & Kohli 1988;Kayyali & Al-Tawil, 1989
Maternal employment	Al Bustan & Kohli, 1988;Kayyali & Al-Tawil, 1989;Al-Shehri *et al.*, 1995;Musaiger & Abdulkhalek, 2000;Sharief *et al.*, 2001; Hajian-Tilaki, 2005;Khassawneh *et al.*, 2006
Caesarean delivery	Shawky & Abalkhail, 2003;Shiva & Nasiri, 2003;Ogbeide *et al.*, 2004; Khassawneh *et al.*, 2006
Length of stay in NICU	Kayyali & Al-Tawil, 1989
Use of prelacteal feeds	Marandi *et al.*, 1993
Use of infant formula in hospital	Alikasifoglu *et al.*, 2001;Shawky & Abalkhail, 2003; Ogbeide *et al.*, 2004

Kuwaiti infant feeding studies or national surveys have not been routinely conducted, thus it is difficult to assess a secular trend in breastfeeding duration. However, on the basis of available data the mean duration of overall breastfeeding appears to have declined steadily from somewhere between 6.4 months (Al Bustan & Kohli, 1988) and

5.83 months (Amine *et al.*, 1989) in the late 1980s to between 5.3 (MOH, 1996) and 4.9 months (Al-Awadi & Amine, 1997) in the late 1990s. No more recent data on mean breastfeeding duration was found following an extensive review of the literature (Chapter 2). Regular breastfeeding surveillance is essential to be able to determine to what extent national breastfeeding targets are being met and how breastfeeding practices are changing over time. An insufficient amount of breastfeeding surveillance data over the past forty years is available for Kuwait and research on current infant feeding practices is needed. It is important to recognize factors that influence women's potential to breastfeed for the recommended duration so that women who are least likely to initiate breastfeeding or to breastfeed for the recommended duration can be targeted in breastfeeding promotion and education programmes.

While many surveys on infant feeding practices have been carried out in the Middle East, the determinant variables included have not been constant across the surveys or through the years. Similarly, the outcome variables have been inconsistently measured with many studies either failing to provide a clear definition of breastfeeding (e.g. whether exclusive, full or any) or using alternative definitions to those recommended by the WHO. Inconsistencies in the way in which both exposure and outcome variables are measured makes comparison of studies both within and between countries difficult, if not impossible.

Unlike Western countries, the trends of breastfeeding in the Middle East have not been well studied, recorded and monitored properly over the years (Chapter 2). There is a lack of baseline breastfeeding practices information and its change over time in most Middle Eastern countries as well as in Kuwait. The trends in breastfeeding initiation and duration cannot be monitored unless there is accurate baseline information to form the basis of any future research. These types of data are best collected from a longitudinal observational study to examine breastfeeding prevalence over time. The purpose of this study was to report the prevalence of breastfeeding up till 6 months of age and to determine the factors associated with duration of any, and full breastfeeding up to six months post partum among women in Kuwait.

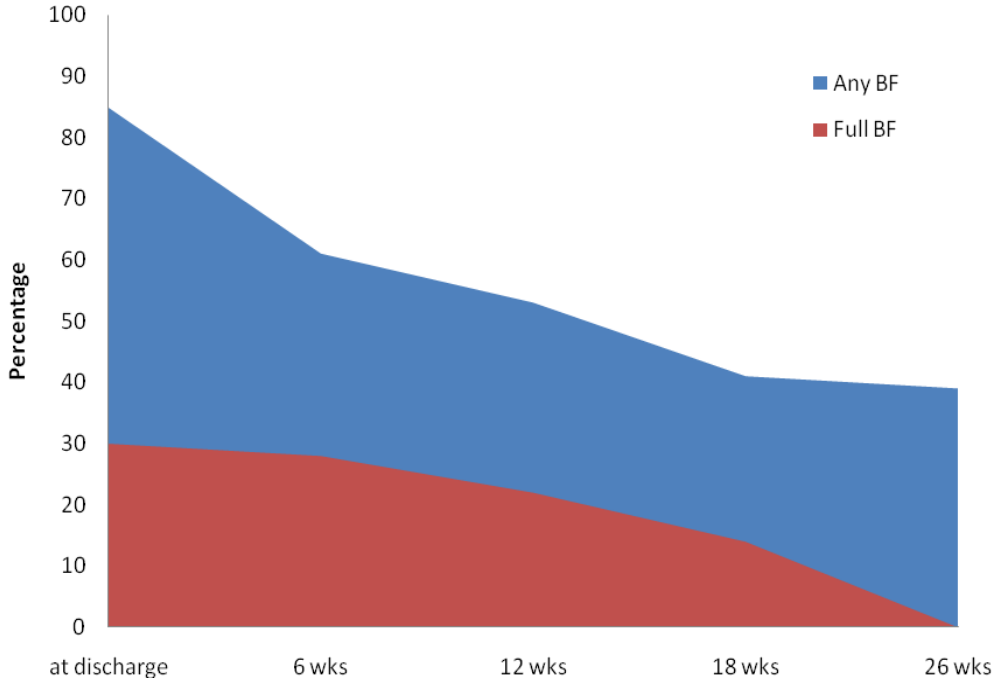
5.2 Breastfeeding duration

As reported in Chapter 4, 85% of women left the hospital breastfeeding, with only 10.5% of infants being exclusively breastfed. The majority of women were partially breastfeeding (55%), with only 30% of mothers fully breastfeeding. Prelacteal feeding was the norm (81.8%). At six months of age, thirty nine percent of mothers were still feeding their infant any breast milk and none of the women were fully or exclusively breastfeeding (Table 5.3). The median duration of any breastfeeding duration was (13.9 weeks). Figure 5.1 illustrates the decline in any and full breastfeeding over the six month period.

Table 5.3: Prevalence (percentage and 95% CI) of breastfeeding from hospital discharge to 26 weeks

	Any BF	Full BF	Exclusive BF
At discharge	84.8 (81.2-88.4)	30 (25.2-34.4)	10 (7.4-13.6)
6 weeks	61 (55.5-65.5)	28 (22.9-33.1)	4 (1.8-6.2)
12 weeks	53 (47.3-58.7)	22 (17.3-26.7)	2 (0.7-4.1
18 week	41 (35.4-46.6)	14 (10.0-18.0)	1 (0.0-2.6)
26 weeks	39 (33.4-44.6)	0	0

Figure 5.1: Any breastfeeding duration compared to full breastfeeding duration



5.3 Factors associated with breastfeeding duration-Univariate Analyses

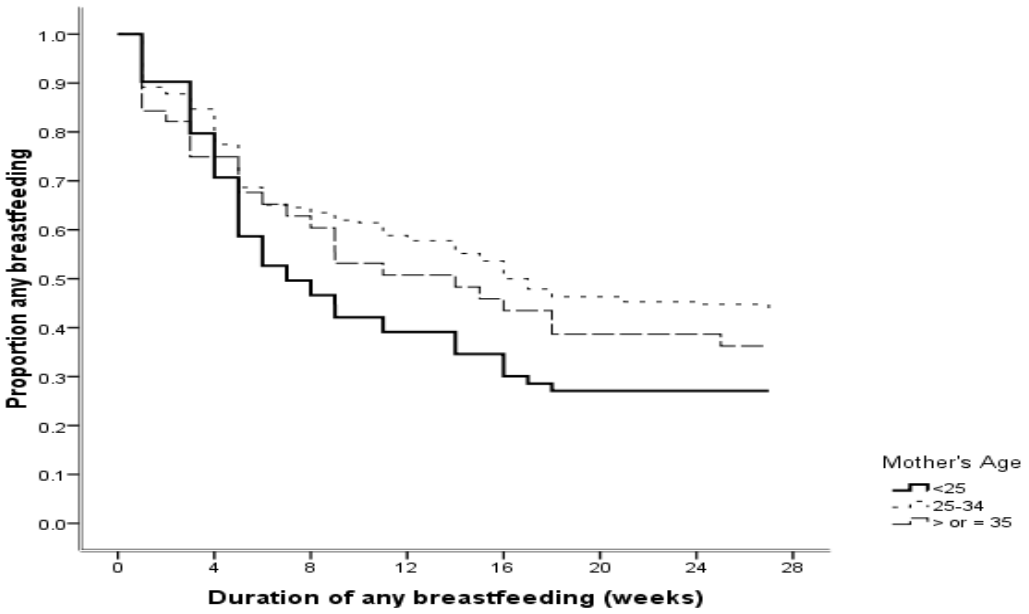
Survival analysis was used to examine the duration of breastfeeding as it provides a good understanding of breastfeeding behaviour over time. This type of analysis was used due to the presence of censored data from those cases who were still breastfeeding at the end of the study (26 weeks) or at the time they dropped out of the study. Survival plots based on Kaplan Meier estimates were used to illustrate the duration of breastfeeding and the log rank test was used to assess the equality of the survival curves and identify which factors were univariately associated with breastfeeding duration.

5.3.1 Association between socio-demographic factors & any breastfeeding duration

5.3.1.1 Maternal age

There was a significant association between maternal age and the duration of any breastfeeding (Log rank χ^2 6.766 df 2 p<0.034) (Figure 5.2). At six months, 27% of mothers less than 25 years old # were still breastfeeding compared to 44% of 25-34 years old and 36% of 35 years or older. Mothers aged less than 25 years were significantly less likely to be breastfeeding at six months compared with mothers aged 25-34 years of age (Log rank χ^2 6.566 df 1 p<0.01).

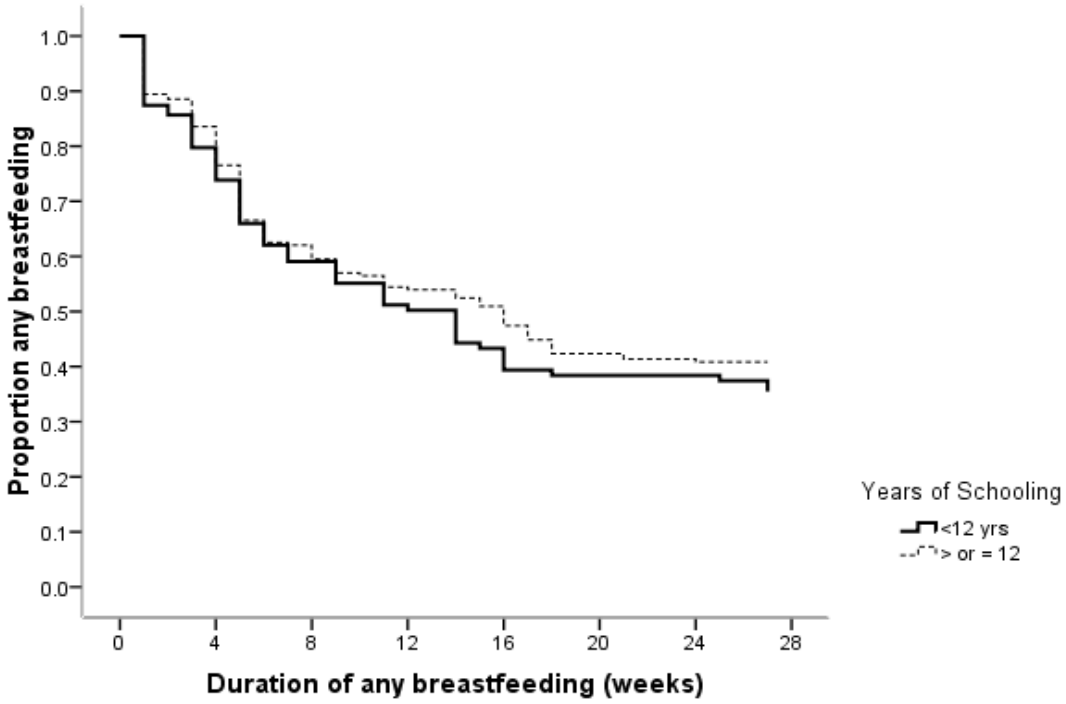
Figure 5.2: Association between maternal age and any breastfeeding duration



5.3.1.2 Level of maternal education

More mothers (41 %) with 12 or more years of education were still breastfeeding at six months compared to 35% of those who had less than 12 years of education. This difference however was not statistically significant (Log rank χ^2 0.708 df 1 p=0.400) (Figure 5.3).

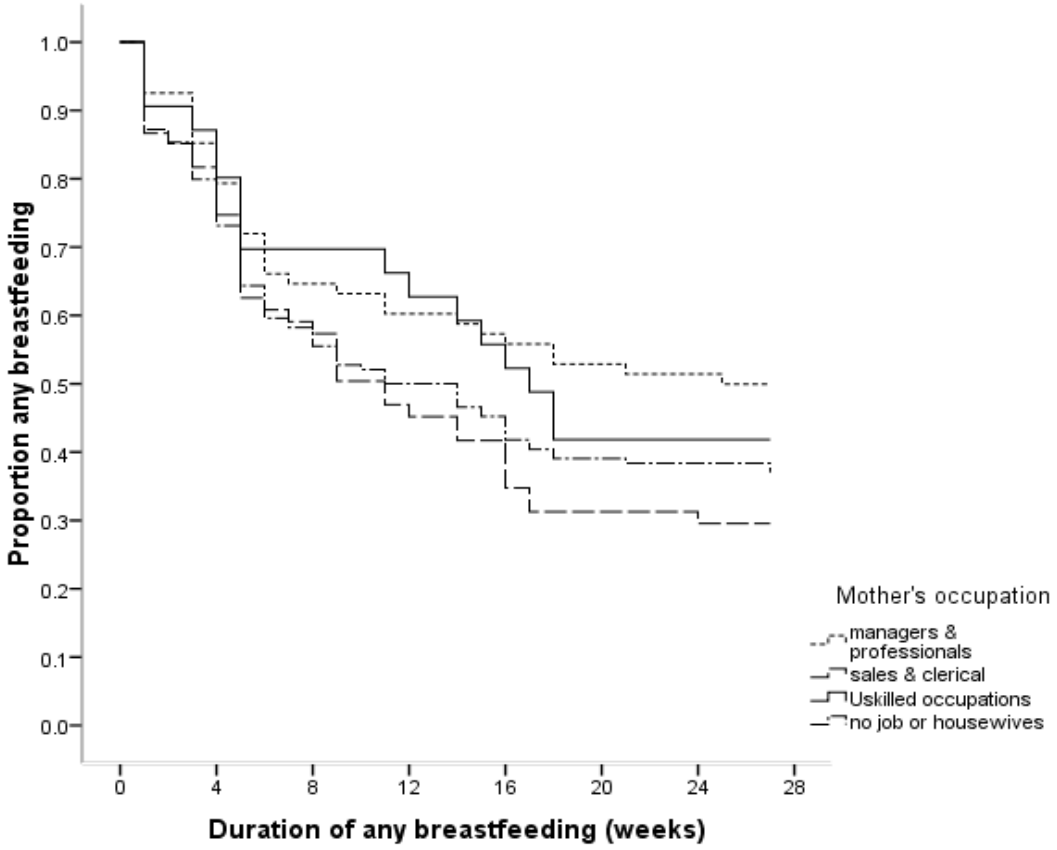
Figure 5.3: Association between maternal level of education and any breastfeeding duration



5.3.1.3 Mother's occupation

More women with managerial and professional jobs were still breastfeeding at six months (50%), compared to those in unskilled occupations (42%), housewives or unemployed women (37%) and sales & clerical (30%). This difference however, was not statistically different (Log rank χ^2 5.958 df 3 p=0.114) (Figure 5.4).

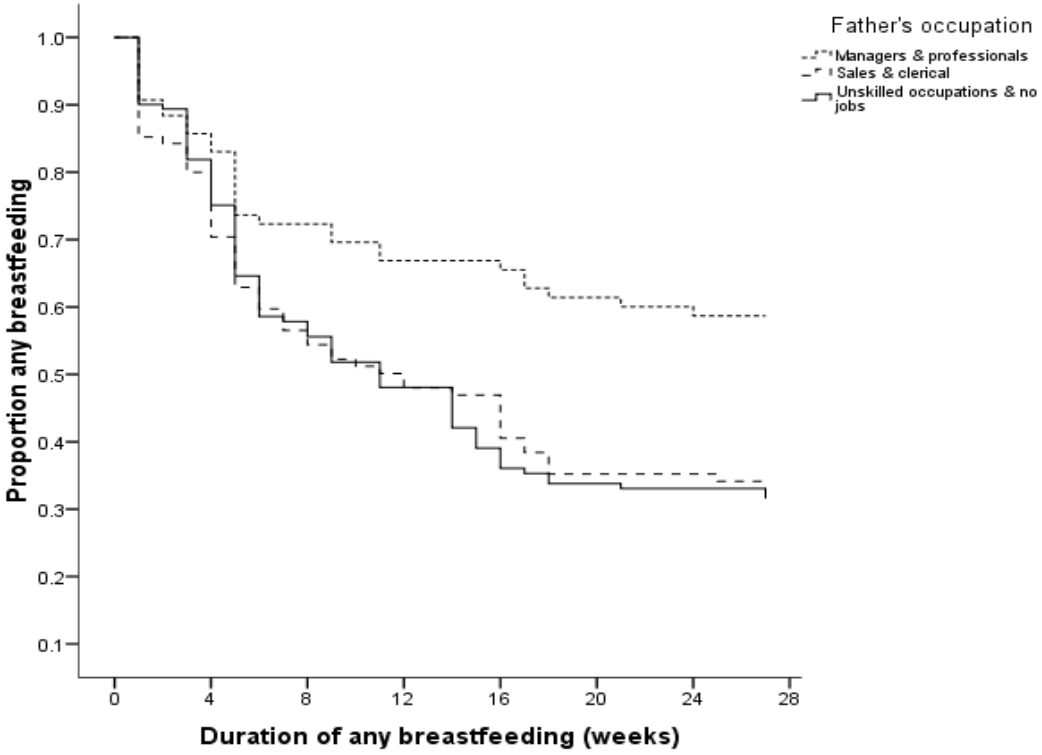
Figure 5.4: Association between mother's occupation and any breastfeeding duration



5.3.1.4 Father's occupation

Father's occupation had significant association with any breastfeeding duration (Log rank χ^2 20.449 df 3 p=0.001) (Figure 5.5). The pairwise test showed that women whose husbands worked as managers or in professional occupations were significantly more likely to have longer breastfeeding duration than those of sales and clerical occupations (p=0.002) or of unskilled jobs (p=0.001). Mothers whose husband had managerial or professional occupations (59%), sales or clerical jobs (39%), unskilled occupations & those few with no jobs (32%) were breastfeeding at 26 weeks.

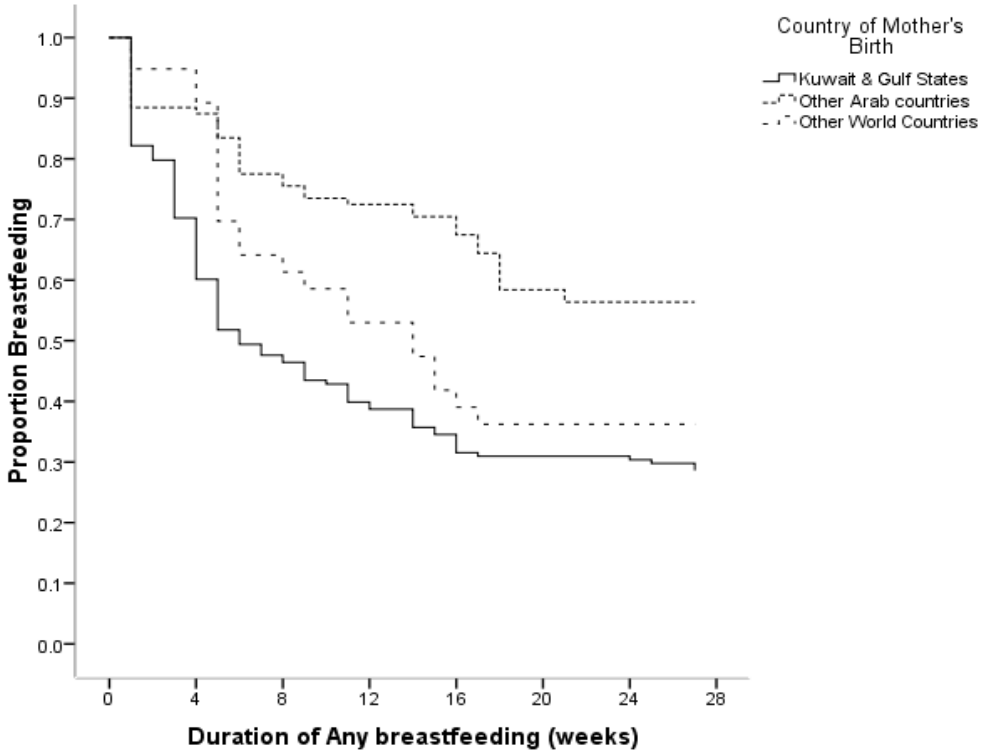
Figure 5.5: Association between father's occupation and any breastfeeding duration



5.3.1.5 Mother's country of birth

Duration of any breastfeeding was significantly associated with mother's country of birth (Log rank χ^2 27.429 df 2 p=0.001) (Figure 5.6). There was a significant difference in duration of breastfeeding between the groups of mothers. Women from other Arab countries were significantly more likely to breastfeed for longer duration than women from Kuwait and other Gulf States (p<0.001) but not significantly different from those of other world countries (p= 0.155). At 26 weeks postpartum (56%) of women from other Arab countries were breastfeeding compared with (29%) of Kuwaiti women and (36%) of women from other world countries.

Figure 5.6: Association between mother's country of birth and any breastfeeding duration

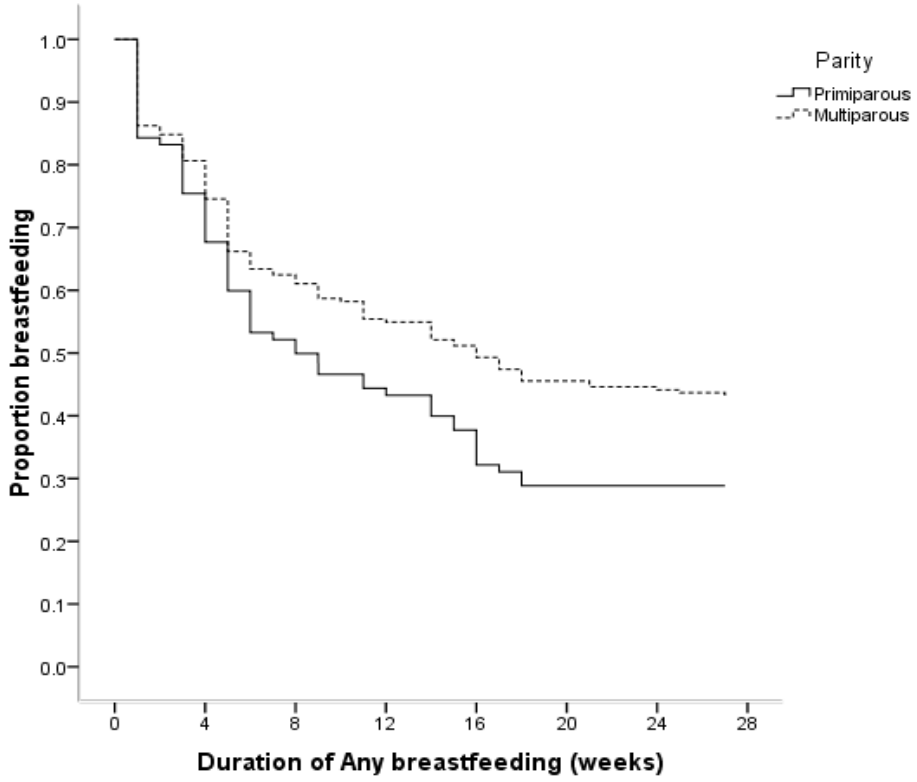


5.3.2. Association between biomedical factors & any breastfeeding duration

5.3.2.1 Parity

There was a significant association between parity in mothers and any breastfeeding duration (Log rank χ^2 5.918 df 1 p=0.015) (Figure 5.7). First time mothers (primiparous) were significantly less likely (29%) to be breastfeeding at 26 weeks compared with 43% of women with more than one child (multiparous).

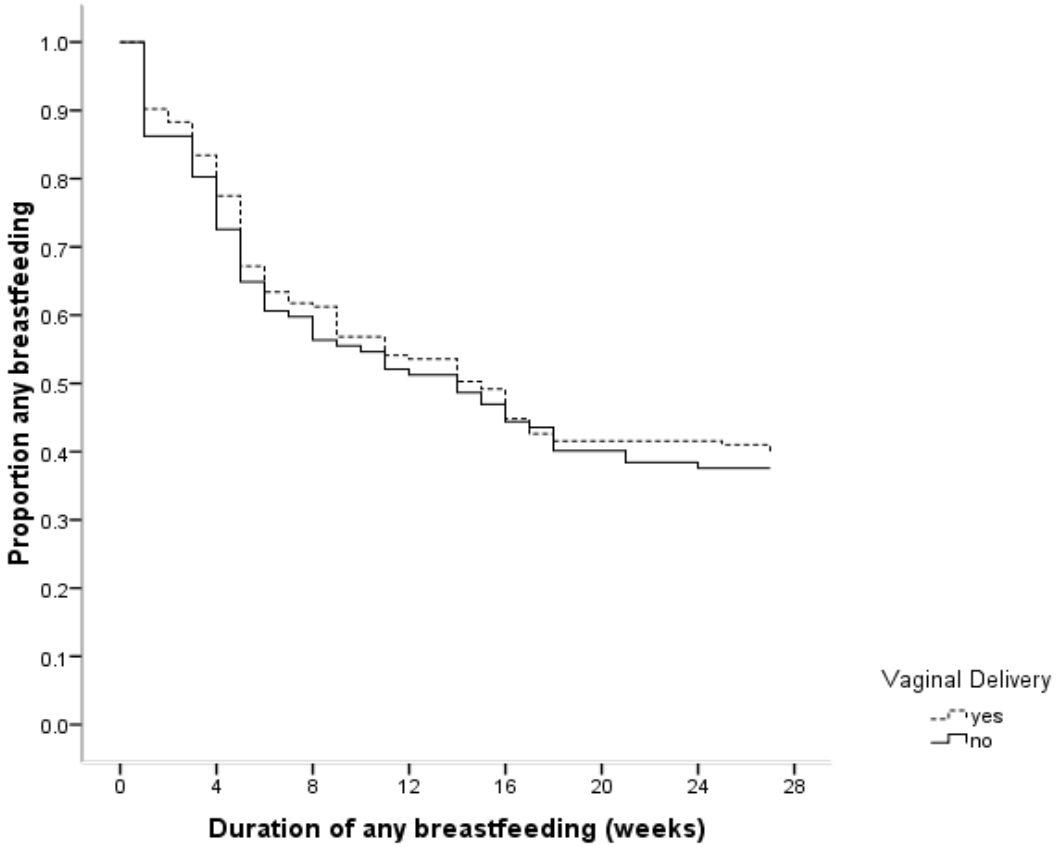
Figure 5.7: Association between parity and any breastfeeding duration



5.3.2.2 Method of delivery

The method of delivery had no association with any breastfeeding duration (Log rank χ^2 0.392 df 1 p=0.531) (Figure 5.8). A similar proportion of mothers who had had a vaginal delivery (40%) were breastfeeding at 26 weeks compared with women who had undergone a caesarean section (38%).

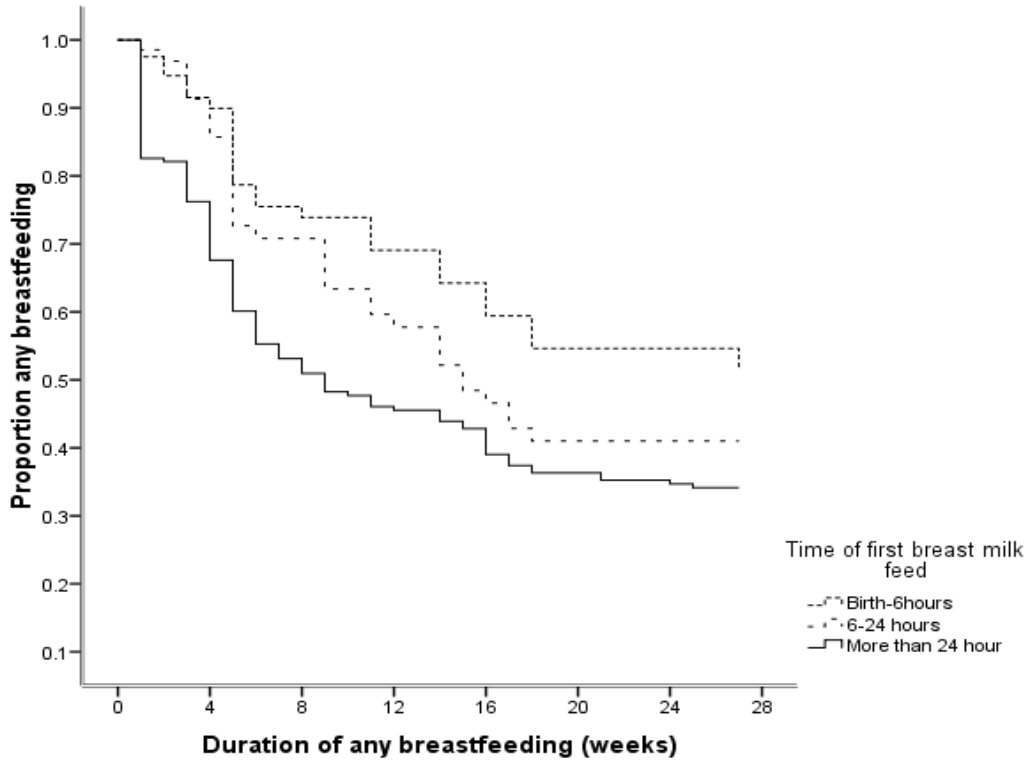
Figure 5.8: Association between method of delivery and any breastfeeding duration



5.3.2.3 Early infant-to-breast contact (Time of first feed)

There was a significant association between time of first breastfeed and any breastfeeding duration (Log rank χ^2 11.864 df 2 p=0.003) (Figure 5.9). More women (51%) who had put their infants to their breast within 6 hours of delivery were still breastfeeding at 26 weeks than women who had delayed infant-to-breast contact to more than 24 hours post delivery (34%), or who gave breast milk between 6-24 hours (41%). Women who initiated breastfeeding more than 24 hours post delivery were more likely to have discontinued breastfeeding at any time before 6 months compared with women who initiated breastfeeding within the first 6 hours post delivery (Log rank χ^2 10.332 df 1 p=0.001).

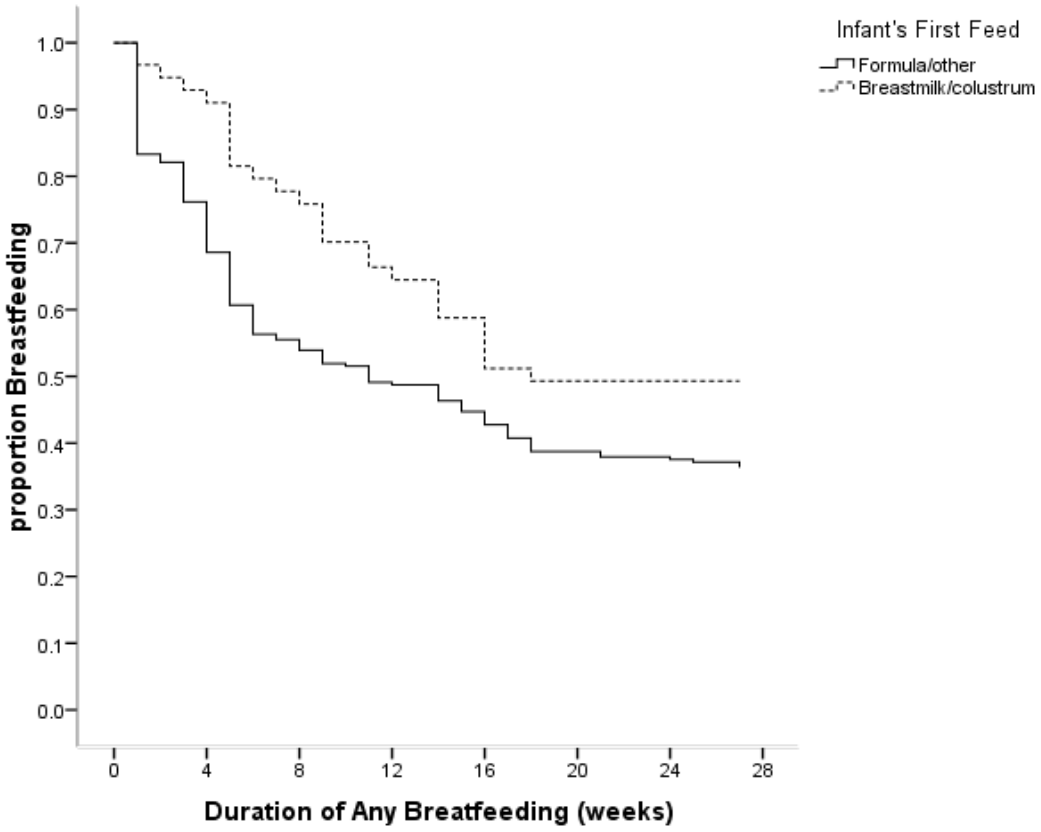
Figure 5.9: Association between time of first breastfeed and any breastfeeding duration



5.3.2.4 Infant's first feed

There was a significant association between infant's first feed postpartum and the duration of any breastfeeding (Log rank χ^2 5.057 df 1 p=0.025) (Figure 5.10). More women who had given their infants breast milk or colostrum (49%) were still offering their infants any breast milk at 26 weeks compared to mothers who had given prelacteal feeds of formula or other fluids (37%).

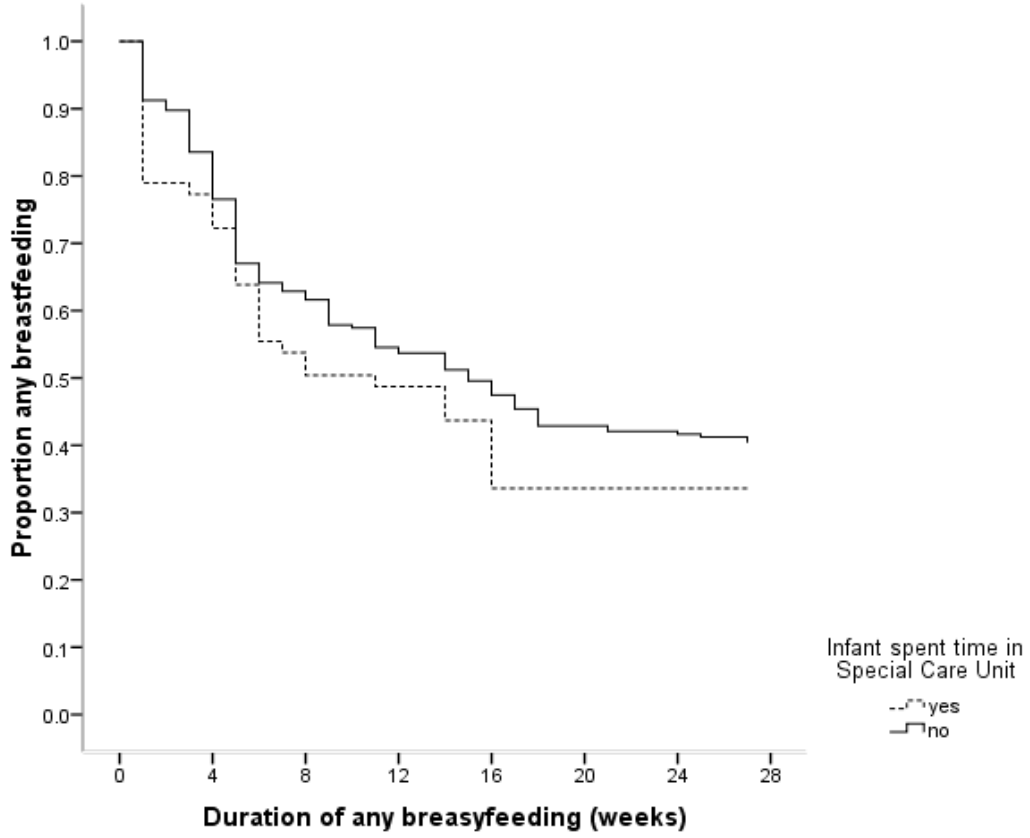
Figure 5.10: Association between infant's first feed and any breastfeeding duration



5.3.2.5 Infant health prior to discharge

Whether or not an infant had been admitted to the Special Care Nursery (SCN) was used as a proxy for infant health in the early postpartum period. There was no association between any breastfeeding duration and admission to the SCN (Log rank χ^2 2.206 df 1 p=0.138) (Figure 5.11). At six months, 34% of infants who had been admitted to the SCN were being breastfed compared with 40% of those who had not been admitted to the SCN.

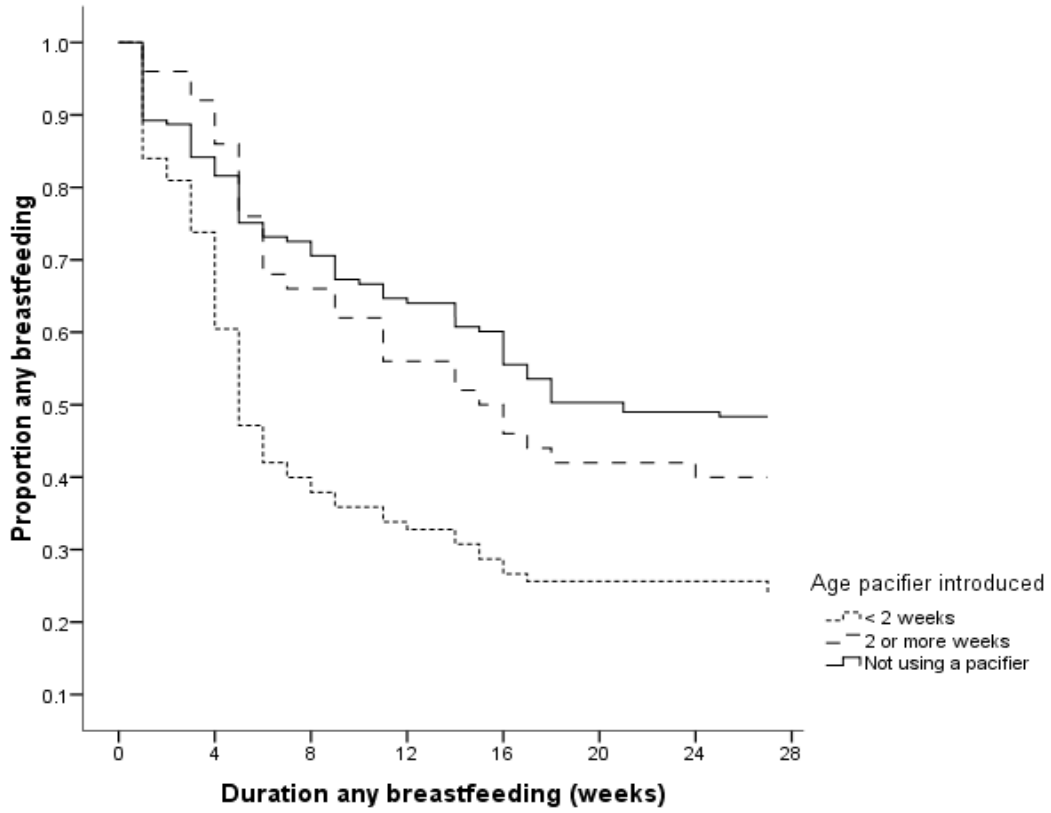
Figure 5.11: Association between Infant's health prior to discharge and any breastfeeding duration



5.3.2.6 Age of introducing a pacifier

There was a significant association between age of introducing a pacifier and any breastfeeding duration (Log rank χ^2 23.120 df 2 p<0.001) (Figure 5.12). Women who introduced a pacifier at an early stage of infant's life (before 2 weeks) were more likely to have short breastfeeding duration than those who introduced at 2 weeks or more (p= 0.007) and than those who were not using a pacifier at 26 weeks (p< 0.001). Only 24% of mothers who introduced a pacifier from birth to less than two weeks were still breastfeeding at 26 weeks compared with those who introduced a pacifier after two weeks or more (40%), and those who never used a pacifier (48%).

Figure 5.12: Association between age of introducing a pacifier and any breastfeeding duration

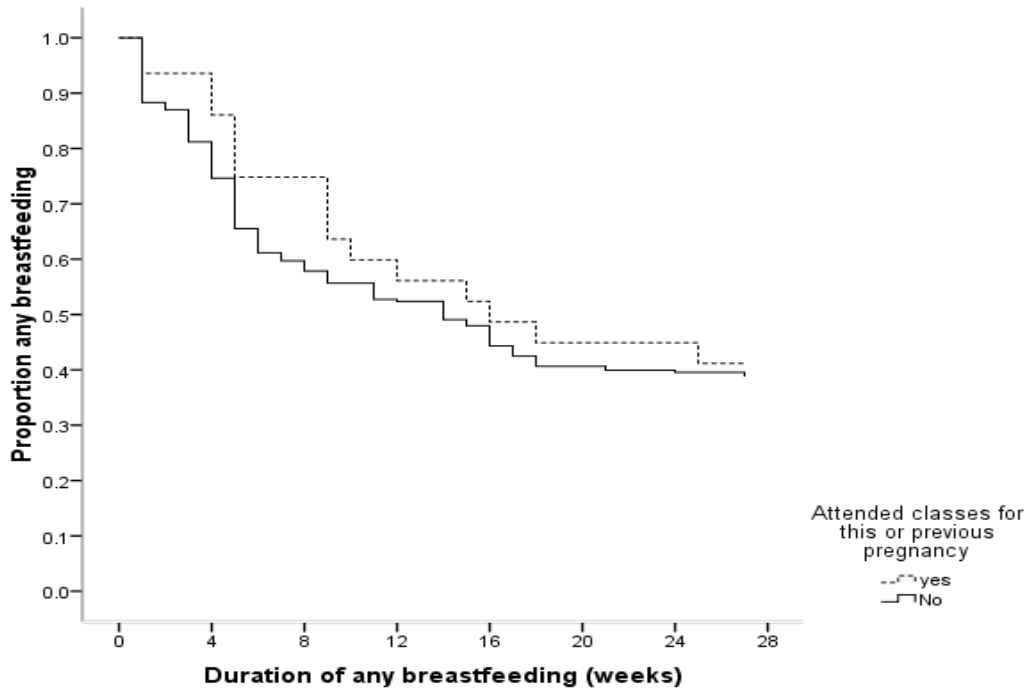


5.3.3 Association between hospital practices & any breastfeeding duration

5.3.3.1 Attendance of antenatal classes

There was no association between mother's attendance at antenatal classes and any breastfeeding duration (Log rank χ^2 0.351 df 1 p= 0.554) (Figure 5.13). A similar proportion of women, who had attended antenatal classes for this, or a previous pregnancy, were still breastfeeding at 26 weeks, compared with women who had never attended antenatal classes (39% versus 41%). However, there were only 8% of mothers who attended classes for this or for previous pregnancy and the rest of the women (91%) did not attend any classes. Therefore, if small sample size it may not be powered to detect a difference.

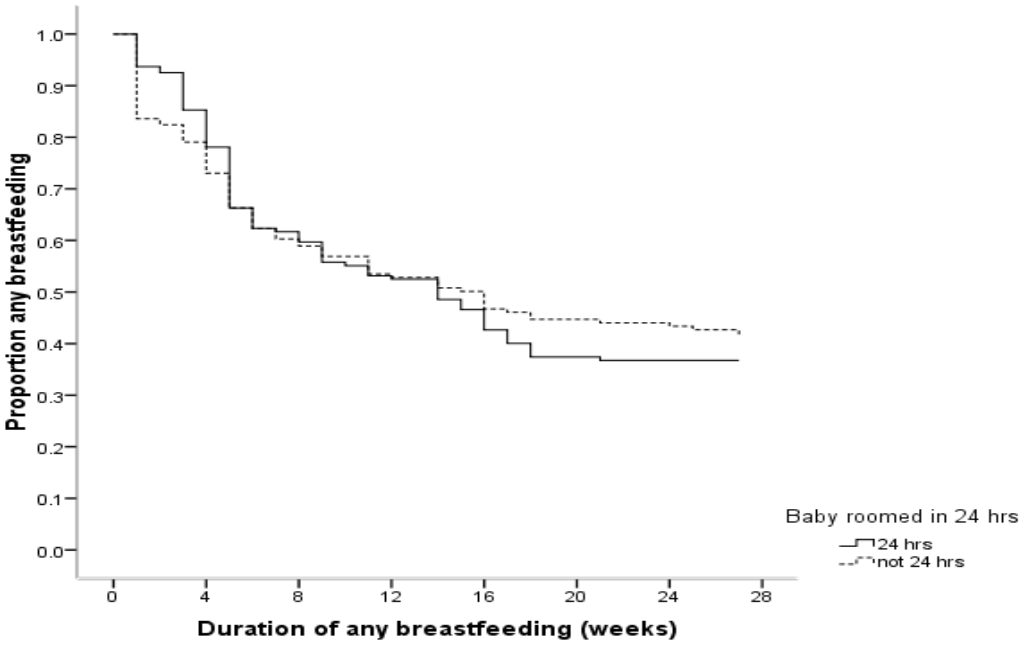
Figure 5.13: Association between attendance of antenatal classes and any breastfeeding duration



5.3.3.2 Rooming-in

The practice of rooming-in prior to discharge from hospital was not associated with any breastfeeding duration (Log rank χ^2 0.054 df 1 p= 0.817). At 26 weeks 37% of women who had roomed-in were breastfeeding compared with 41% of women who had not roomed-in with their infants (Figure 5.14).

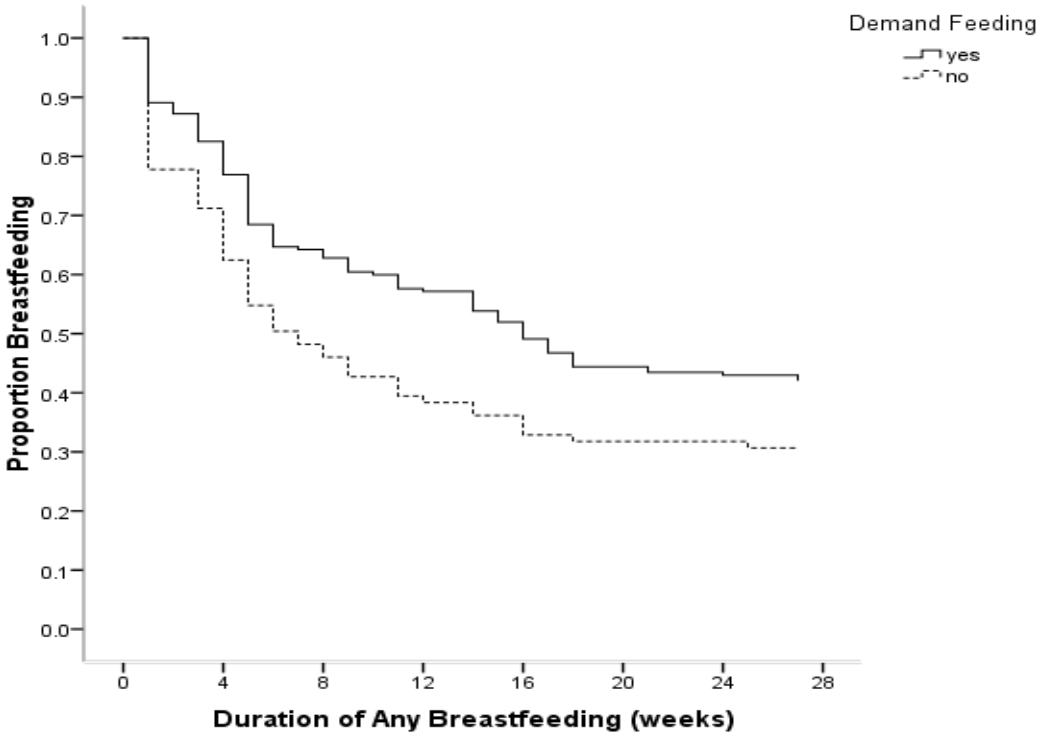
Figure 5.14: Association between rooming-in and any breastfeeding duration



5.3.3.3 Demand feeding

Whether or not a woman was feeding on demand at discharge was significantly associated with duration of any breastfeeding (Log rank χ^2 7.180 df 1 p=0.007) (Figure 5.15). More women who breastfed on demand (42%) were still breastfeeding at 26 weeks compared with (31%) of women who were not breastfeeding on demand.

Figure 5.15: Association between demand feeding and any breastfeeding duration

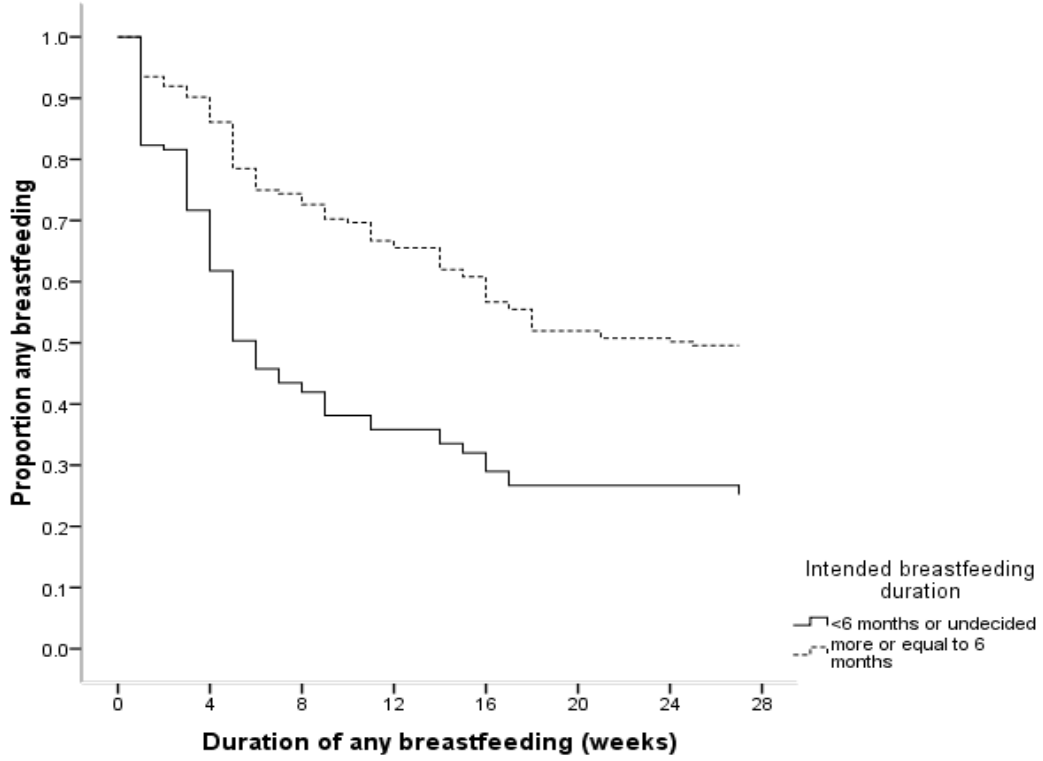


5.3.4 Association between psychosocial factors & any breastfeeding duration

5.3.4.1 Intended breastfeeding duration

Maternal intention of breastfeeding duration showed a significant association with actual duration of any breastfeeding (Log rank χ^2 29.275 df 1 p<0.001) (Figure 5.16). The numbers of mothers who intended to breastfeed for 6 months or more and were still breastfeeding at six month was double (50%) those who reported that they were intending to breastfeed for less than 6 months or were not decided (25%).

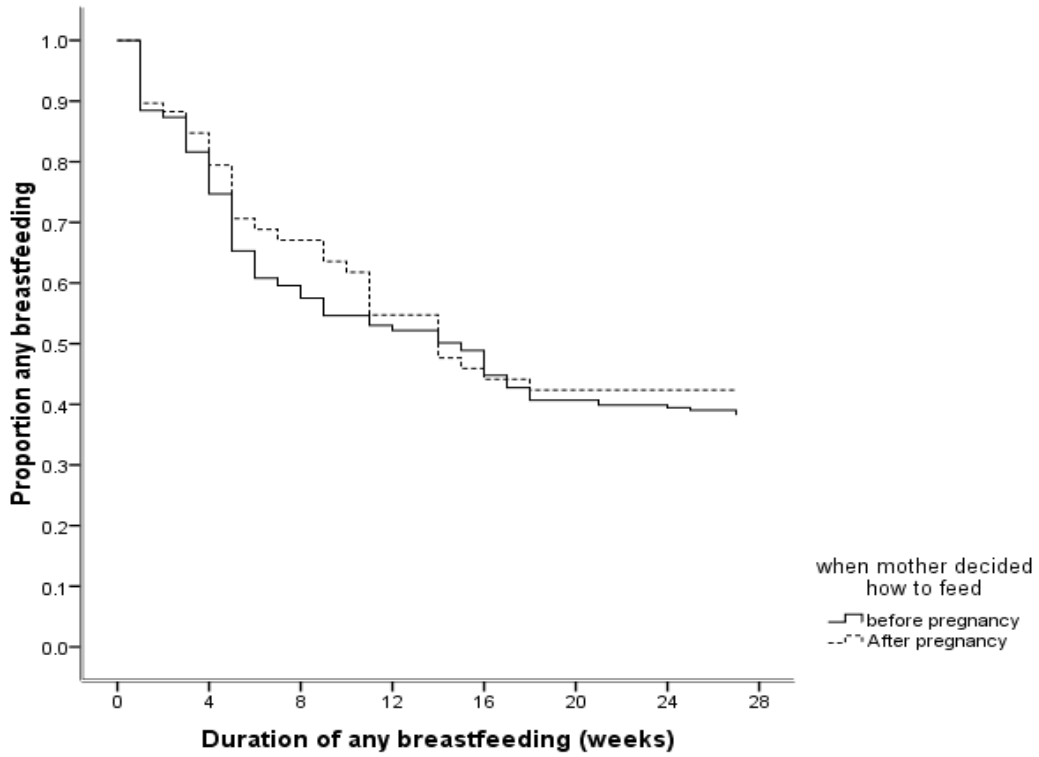
Figure 5.16: Association between intended breastfeeding duration and any breastfeeding duration



5.3.4.2 Timing of breastfeeding decision

There was no significant association between the timing of infant's feeding decision made by the mother and any breastfeeding duration (Log rank χ^2 0.348 df 1 p=0.555) (Figure 5.17). Just over one third (38%) of mothers who decided before pregnancy were still breastfeeding at 6 months compared to (42%) of mothers who decided after delivery.

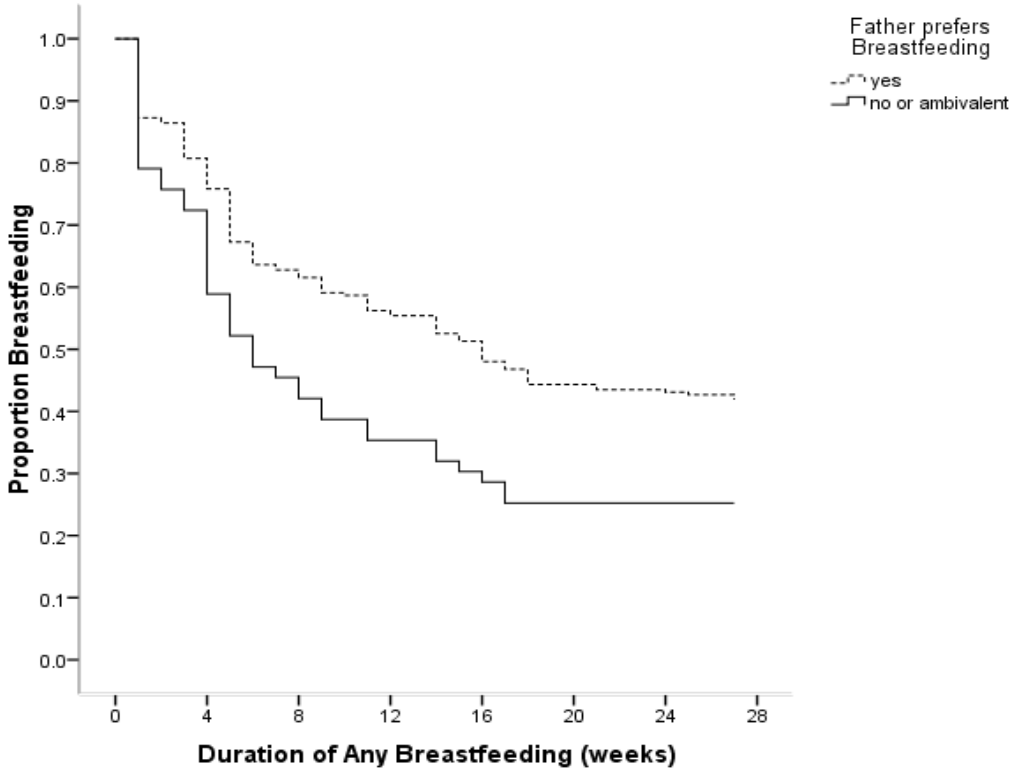
Figure 5.17: Association between timing of breastfeeding decision and any breastfeeding duration



5.3.4.3 Father's attitude towards breastfeeding

There was a significant association between father's attitude towards breastfeeding and any breastfeeding duration (Log rank χ^2 9.160 df 1 p=0.002) (Figure 5.18). More infants whose father preferred breastfeeding were still breastfed at six months compared to those whose father did not prefer breastfeeding or were ambivalent towards it (42% versus 25%).

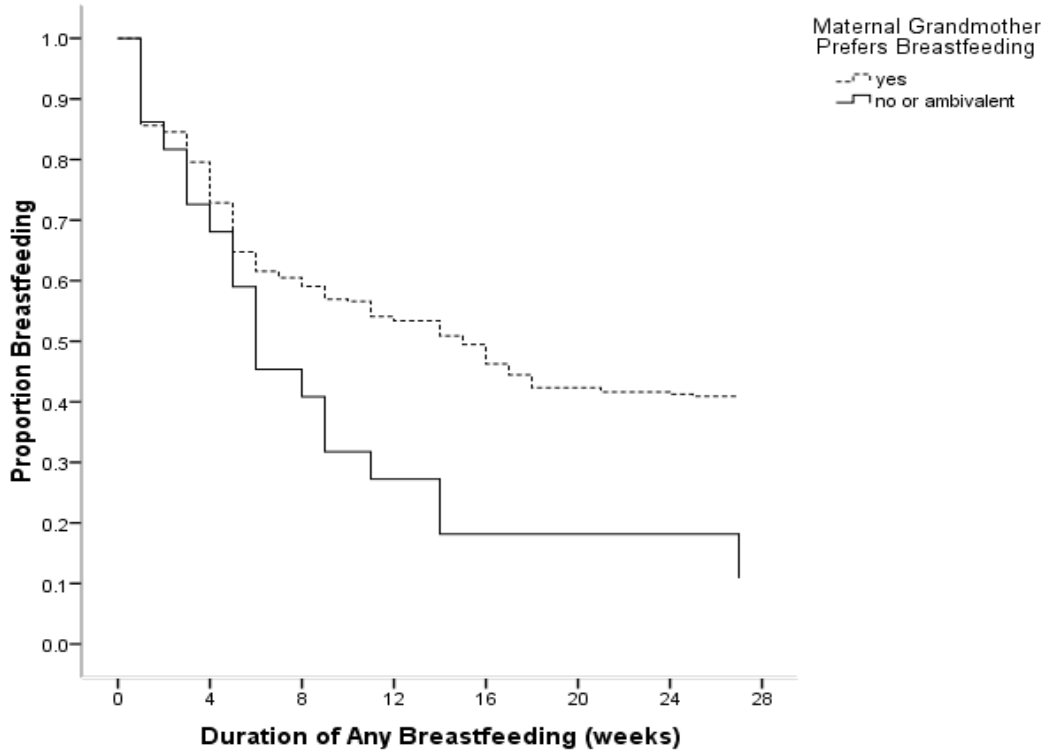
Figure 5.18: Association between father's attitude towards breastfeeding and any breastfeeding duration



5.3.4.4 Maternal grandmother's attitude towards breastfeeding

There was significant association with maternal grandmother's attitude towards breastfeeding and any breastfeeding duration (Log rank χ^2 6.327 df 1 p=0.012). More women whose own mother (i.e. their infant's maternal grandmother) had a breastfeeding preference were still breastfeeding at six months of age compared to those whose mother preferred bottle feeding or were ambivalent about how they fed their infants (41% versus 11%) (Figure 5.19).

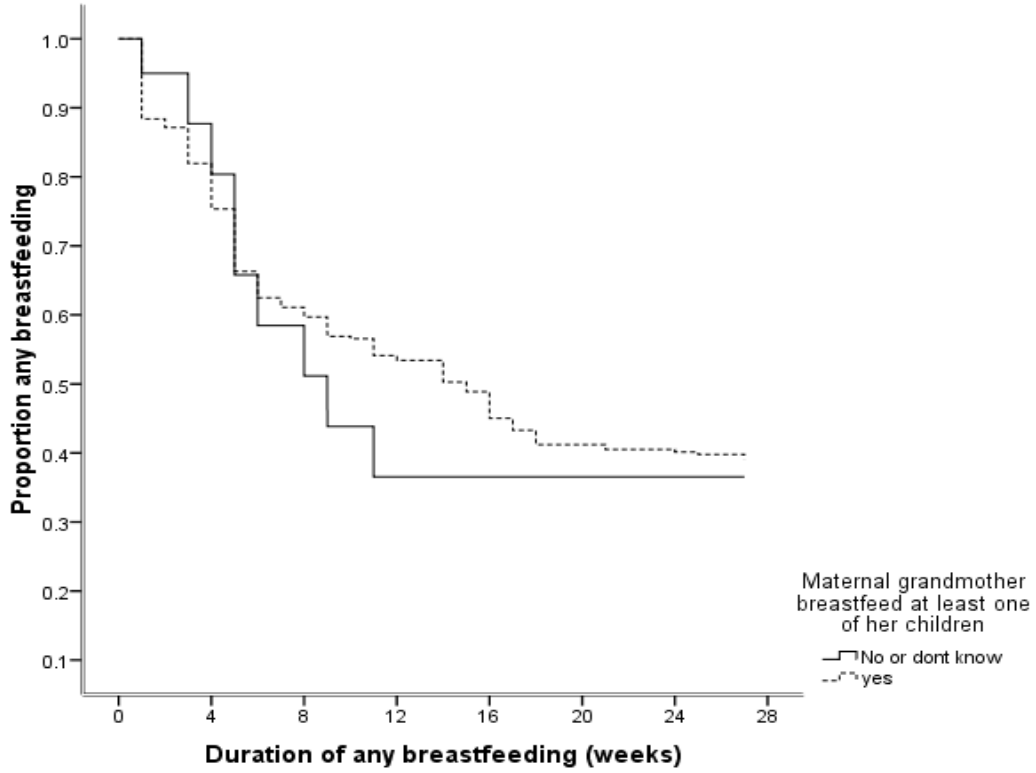
Figure 5.19: Association between maternal grandmother's attitude towards breastfeeding and any breastfeeding duration



5.3.4.5 Maternal grandmother had breast-fed any of her children

There was no significant association between maternal grandmother having breastfed any of her own children and any breastfeeding duration (Log rank χ^2 0.14 df 1 p= 0.906) (Figure 5.20). A similar proportion of women whose own mother breastfed any of her children were still breastfeeding at week 26 (39%) compared with those whose mother did not breastfeeding any of her children (37%).

Figure 5.20: Association between maternal grandmothers had breastfed any of her children and any breastfeeding duration

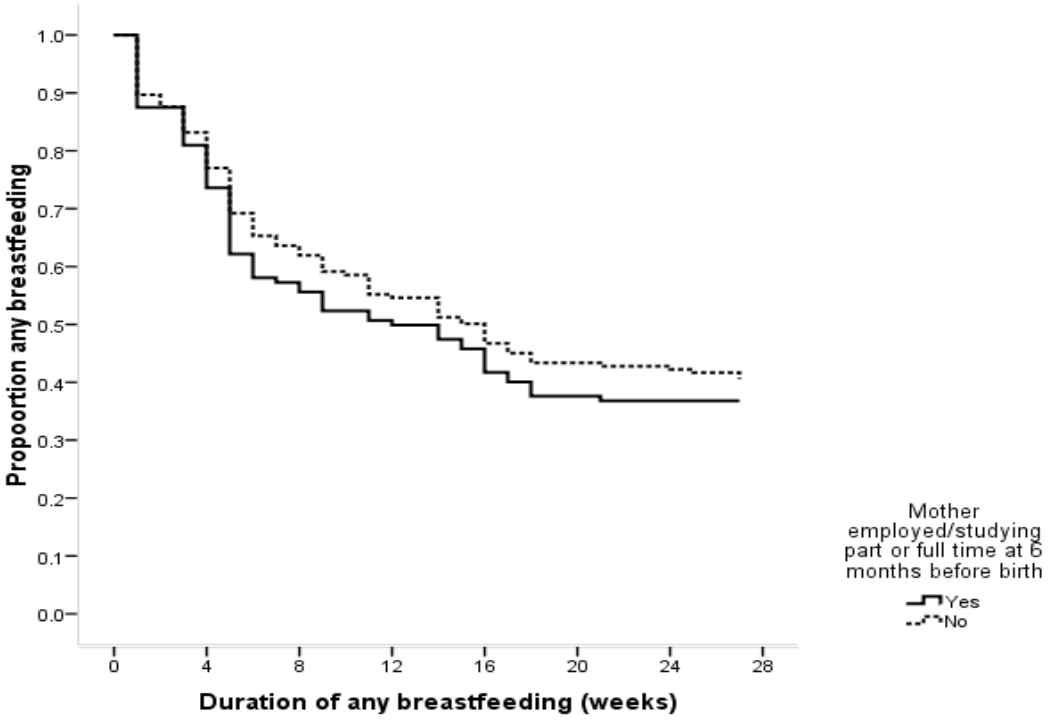


5.3.4.6 Maternal employment status

a- Past employment status

There was no significant association between past employment status of mother and any breastfeeding duration (Log rank χ^2 0.796 df 1 p=0.372). The percentage of mothers who were employed before pregnancy and were still breastfeeding at week 26 was 37% and 41% of those who were not employed before delivery were still breastfeeding at the same point of time (Figure 5.21).

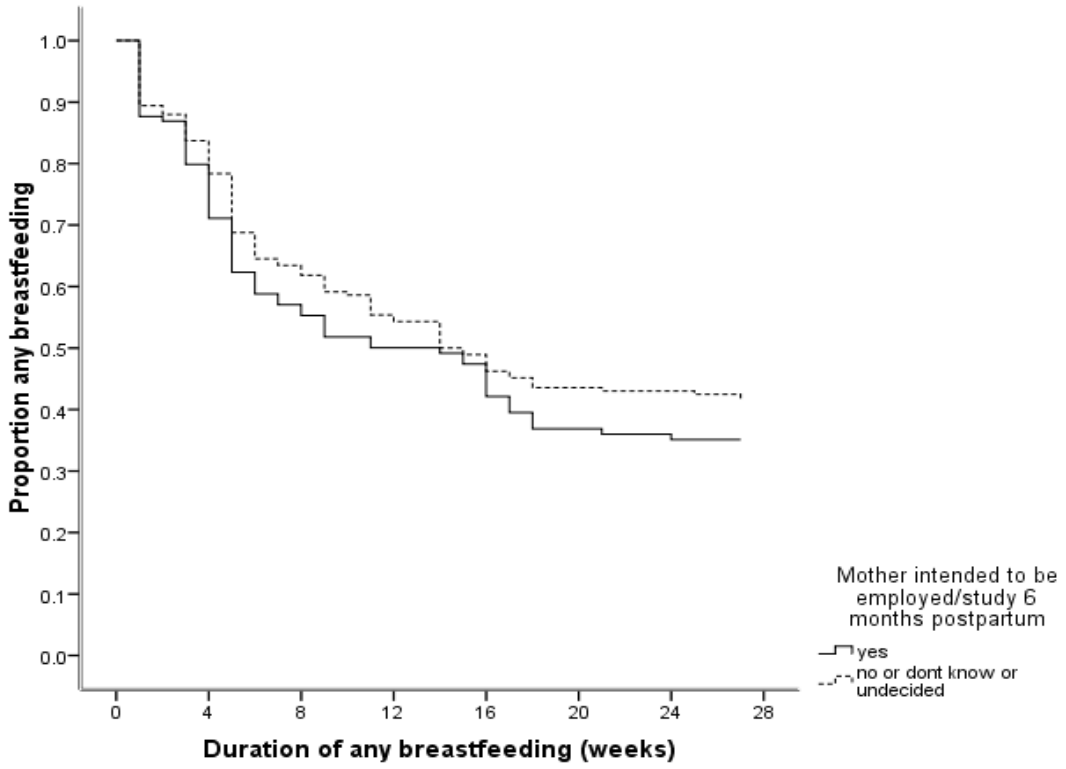
Figure 5.21: Association between past employment status and any breastfeeding duration



b- Future employment intentions

Mother's intentions for future employment was significantly associated with any breastfeeding duration (Log rank χ^2 7.989 df 2 p=0.018) (Figure 5.22). Just over one third (35%) of those who intended to work or study after delivery were still breastfeeding at six months and compared with 41% of those who did not plan to return to work or study or were undecided.

Figure 5.22: Association between employment status postpartum and any breastfeeding duration



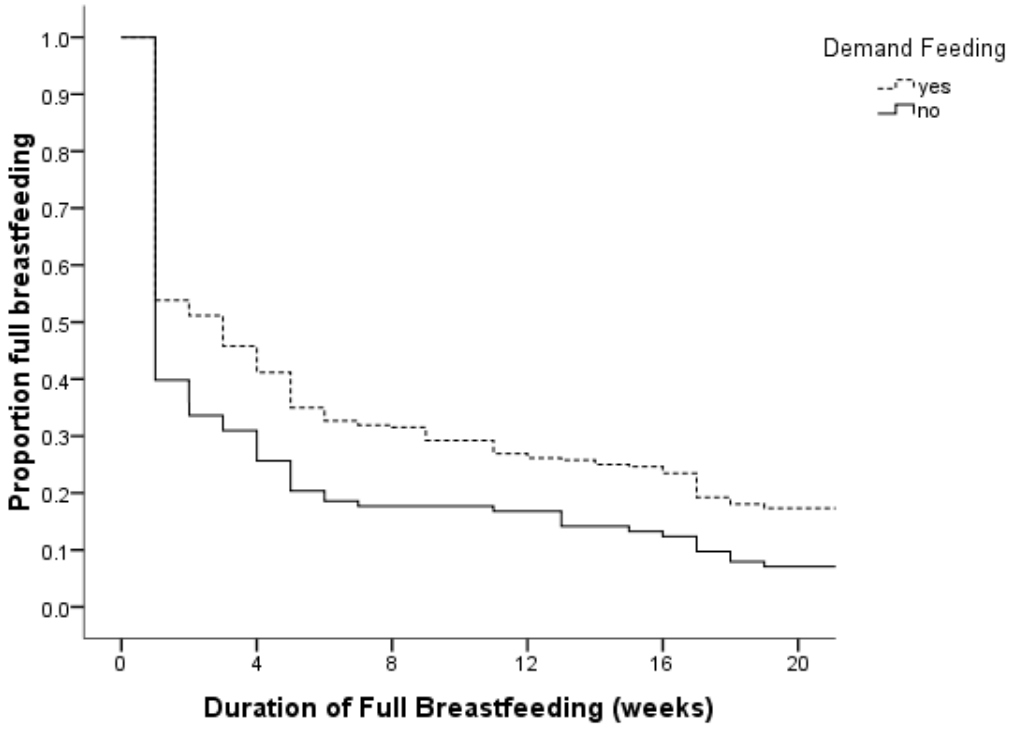
5.3.5 Association between full breastfeeding duration & selected factors

A similar analysis was performed investigating the determinants of the duration of full breastfeeding. As no women were fully breastfeeding at 26 weeks, the proportion of women fully breastfeeding at 18 weeks were compared. Only those factors for which a significant association was found are presented. There were too few women who exclusively breastfeeding to warrant a statistical analysis investigating the determinants of exclusive breastfeeding.

5.3.5.1 Demand Feeding

A significant association was found between demand feeding in hospital and duration of full breastfeeding (Log rank χ^2 6.846 df 1 p=0.009) (Figure 5.23). Seventeen percent of mothers who were demand feeding their infants fully breastfed their infants at week 18 compared to 9% of those who fed according to a schedule.

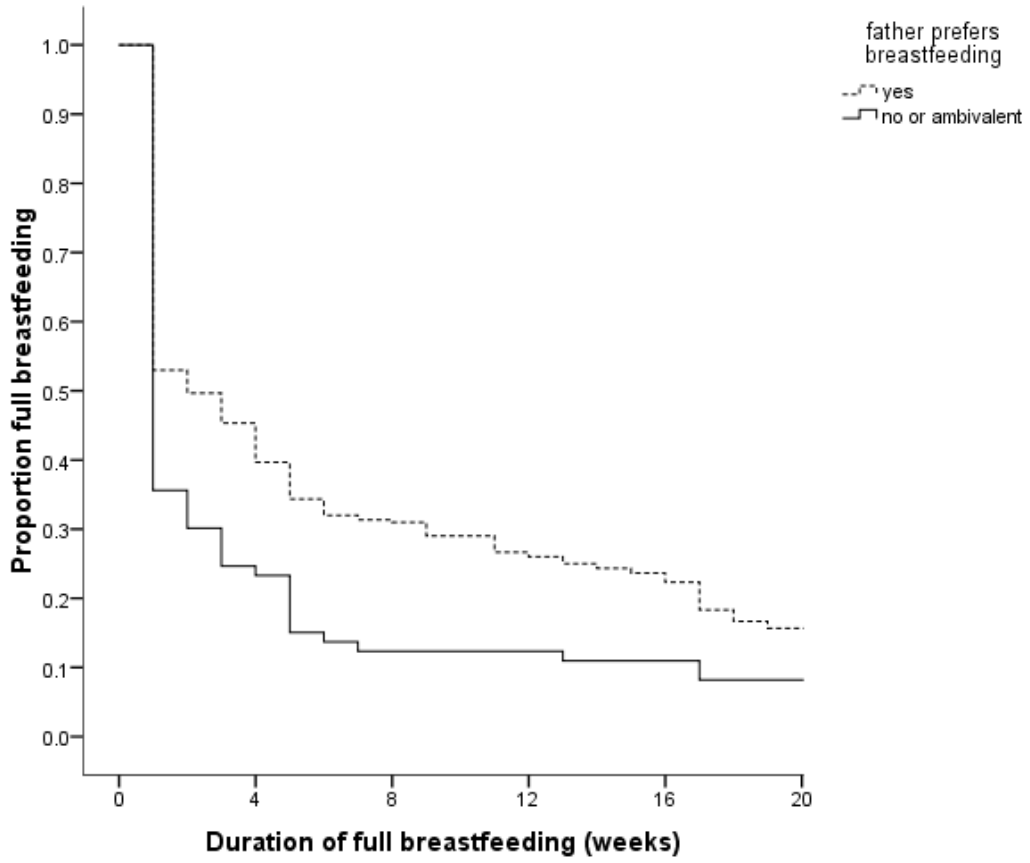
Figure 5.23: Association between demand feeding and full breastfeeding duration



5.3.5.2 Father's preference of breastfeeding

Father's preferred method of feeding, as reported by his wife, had a significant association on fully breastfeeding duration (Log rank χ^2 11.994 df 1 p<0.001) (Figure 5.24). The proportion of women who perceived their partner to have an apparent preference for breastfeeding and were fully breastfeeding at 26 weeks was double that of women who thought that their husbands either preferred bottle feeding or were ambivalent about how they fed their infants (16% versus 8%).

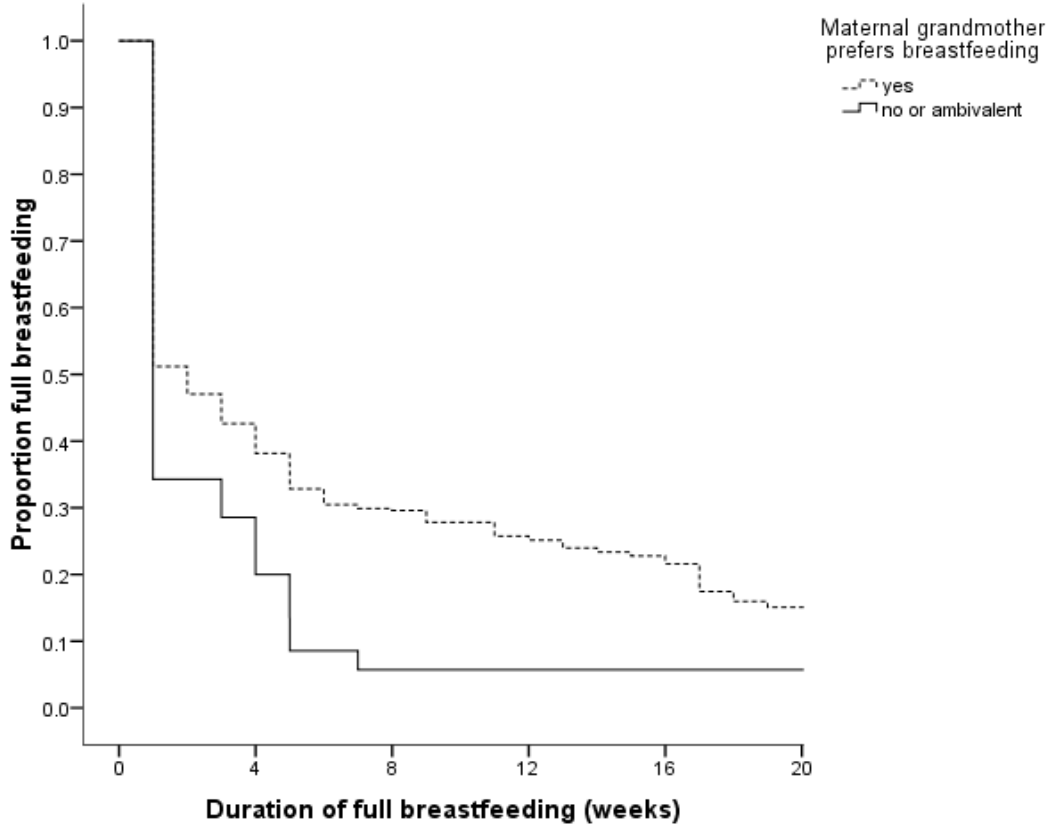
Figure 5.24: Association between father's preference of feeding and full breastfeeding duration



5.3.5.3 Maternal grandmother's preference for breastfeeding

There was a significant association with whether or not a woman perceived her own mother to prefer breastfeeding (Log rank χ^2 5.917 df 1 p=0.015) (Figure 5.25). At week 18, more women who perceived their own mother preferred breastfeeding (15%) were still fully breastfeeding compared with women who perceived their mothers to prefer bottle-feeding or to be ambivalent about how they fed their newborn (6%).

Figure 5.25: Association between maternal grandmother preference of feeding and full breastfeeding duration



5.4 Factors associated with breastfeeding duration

5.4.1 Multivariate Analyses

A multivariate Cox regression analysis was performed to identify those factors independently associated with the risk of the cessation of breastfeeding at any time up to 26 weeks. Variables reported in the literature to be associated with breastfeeding duration were included in the full model which was then reduced using the backward stepwise procedure. After adjusting for potential confounders a number of socio-demographic, biomedical, and hospital related factors and one psychosocial factor were found to have a significant association with the cessation of any breastfeeding (Table 5.2).

Women originating from other Arabic countries were at lower risk (adjHR 0.51; 95% CI 0.36-0.73) of having shorter duration of *any* breastfeeding than women from Kuwait and other Gulf States. Mothers whose husband worked in sales and clerical jobs (adjHR 1.57; 95% CI 1.02-2.42) or unskilled jobs (adjHR 1.66, 95% CI 1.09-2.53) were at higher risk of shorter duration of any breastfeeding than the reference group which are husbands employed in managerial and professional careers. Mothers who did not intend to be employed/ studying part or full time at six months postpartum had longer any breastfeeding duration (adjHR 0.68; 95% CI 0.50-0.93) than those who intended to be employed.

Pacifier introduction was negatively associated with breastfeeding duration as those mothers who introduced the pacifier before 2 weeks were more likely to have shorter duration of any breastfeeding (adjHR 1.77; 95% CI 1.28-2.44) compared with those women whose infant was not using a pacifier at 26 weeks. Early infant-breast-contact was significantly associated with breastfeeding where women who delayed the contact to 6 to 24 hours or to more than 24 hours had higher risk of shorter any breastfeeding duration (adjHR 1.40; 95% CI 1.40-3.16). Mothers whose maternal grandmother did not prefer breastfeeding or were ambivalent about it had earlier breastfeeding cessation (adjHR 1.97; 95% CI 1.20-3.22) than the reference group.

Table 5.4: Factors associated with shorter breastfeeding duration after adjustment for potential confounders * (n=331)

Variable	*n*	Any BF		Full BF	
		Adj. HR	CI 95%	Adj. HR	CI 95%
Sociodemography					
Country of Mother's Birth					
Kuwait & Gulf States (Ref)	177	1.00		1.00	
Other Arabic Countries	115	0.51	0.36-0.73	0.64	0.50-0.83
Other world countries	39	0.64	0.40-1.03	0.84	0.58-0.98
Father's occupation:					
Managers & professionals (ref)	88	1.00		NS	
Sales & clericals	98	1.57	1.02-2.42		
Unskilled occupations	142	1.66	1.09-2.53		
No jobs	3	3.92	1.30-11.90		
Mother intended to be employed/studying part- or full time at 6 months postpartum	128	1.00		1.00	
Yes (ref)	185	0.68	0.50-0.93	0.78	0.62-0.99
No	18	1.28	0.72-2.29	0.28	0.78-2.12
Don't know yet/undecided					
Biomedical					
Had breastfeeding problems before 6 wks	145	1.00		NS	
Yes (ref)	186	1.39	1.03-1.88		
No					
Age of infant when pacifier was introduced	84	1.77	1.28-2.44	NS	
< 2wks	48	1.06	0.69-1.62		
≥2 wks	199	1.00			
Never used a pacifier (ref)					
Hospital Practices					
Early infant-to-breast contact					
Birth-6 hrs (ref)	79	1.00		NS	
6-24 hrs	67	1.62	0.97-2.70		
More than 24 hrs	185	1.40	1.40-3.16		
Infant demand feeding					
Yes (ref)	238	NS		1.00	
No	93			1.25	0.98-1.60
Psychosocial					
Maternal grandmother prefers breastfeeding	300	1.00		NS	
Yes (ref)	31	1.97	1.20-3.22		
No or ambivalent					

*Insignificant variables included in the full models: maternal age, years of schooling, mother's occupation, mother employment status before birth, parity, vaginal delivery, gender, infants spent time in special care Nursery (SCN), type of infants first feed, intended pregnancy, attended pregnancy classes, Iowa score, pre-pregnancy BMI, rooming-in and demand feeding

The only factors which remained in the model and were associated with the cessation of *full* breastfeeding before 26 weeks were mother's country of origin and mother intended be employed or studying part or full time at 6 months postpartum. Again, mothers who came from other Arab countries (adjHR 0.64, 95% CI 0.50-0.83) or those who came from other world countries (adjHR 0.84, 95% CI 0.58-0.98) were less likely to discontinue full breastfeeding than those from Kuwait or other Gulf States. Mothers who

did not intend to be employed or to be studying part or full time at six months postpartum were less likely to discontinue full breastfeeding (adjHR 0.78, 95% CI 0.62-0.99) than those who intended to return to work or study.

5.5 Discussion

The WHO recommends that infants should initiate breastfeeding within the first hour of life and to be exclusively breastfed for the first six months, that is the infant receives only breast milk without any additional food or drink, not even water (WHO, 2003). However, in this study only 10% of infants had been exclusively breastfed since birth at the time of discharge from hospital, the majority having received prelacteal and/or supplementary feeds (81%) whilst in hospital. Only 4% of infants were still exclusively breastfed at six weeks of age. The duration of any breastfeeding was also relatively short with only 39% of infants still receiving breast milk up to six months. As this study followed only women to 26 weeks mean duration could not be estimated however, the median breastfeeding duration was short with 50% of infants not receiving any breast milk after 13.9 weeks.

The prevalence of 39% (95% CI 33.4-44.6) of women breastfeeding at six months in Kuwait identified in this study is significantly lower than the 59.1% (95% CI 57.6-60.6) previously reported in the early 1990s (Al Rashoud & Farid, 1991). It is also lower than recently reported rates for most other Middle Eastern countries. Iran has one of the highest rates of breastfeeding at 6 months with most recent studies reporting between 92% and 98% of infants still being breastfed at this age (Hajian-Tilaki, 2005; Tabatabaei *et al.*, 2005; Koosha *et al.*, 2008; Rakhshani & Mohammadi, 2009). In Jordan approximately 75% of infants are still being breastfed at 6 months (JPFHS, 2003; Mubaideen, 2004) and in Turkey between 65 and 77% of infants continue to be breastfed at this age (Ertem *et al.*, 2001a; Camurdan *et al.*, 2008). The only Middle Eastern country with recently reported prevalence rates lower than those reported here was Lebanon where between 10 and 20% of children are still breastfed at 6 months of age (Batal & Boulghaurjian, 2005; Al-Sahab *et al.*, 2008).

5.5.1 Socio-demographic factors

Numerous studies worldwide have reported data on breastfeeding duration and associated determinants. Previous studies in the Middle East have consistently shown a

positive association between socio-demographic factors such as older maternal age (Tuncbilek *et al.*, 1983; Akin *et al.*, 1986a; Al Bustan & Kohli, 1988; Al-Mazroui *et al.*, 1997), and lower level of maternal education (Al Bustan & Kohli, 1988; Anokute, 1988; Amine *et al.*, 1989; Al-Nasser *et al.*, 1991; Kordy *et al.*, 1992; Al-Shehri *et al.*, 1995; Batal *et al.*, 2006). While in Western countries positive associations were observed with older maternal age in studies carried out in USA (Kuan *et al.*, 1999), Australia (Scott & Binns, 1999), Canada (Evers *et al.*, 1998; Dubois & Girard, 2003), breastfeeding duration was positively associated with higher level of maternal education in these women (Scott *et al.*, 1999; Susin *et al.*, 1999; Bertini *et al.*, 2003; Taveras *et al.*, 2003; Hass, 2006). In this exploration of breastfeeding duration however, with the exception of mother's country of origin (associated with duration of any and full breastfeeding), father's occupation (associated with any breastfeeding duration) and whether a mother intended to return to work or study within 6 months postpartum, we found no independent association between the likelihood of discontinuing breastfeeding by six months and any of the other socio-demographic factors investigated such as maternal age and level of maternal education and mother's occupation.

Studies worldwide have reported an association between different ethnicity within countries and breastfeeding duration (Ludvigsson, 2003; Taveras *et al.*, 2003). One Middle Eastern study previously reported a significant difference in the duration of exclusive breastfeeding between the different nationalities in the UAE of which the Omani and UAE mothers had the longest duration compared to mothers originally from Jordan, Egypt, Syria, Sudan and Palestine (Osman & El-Sabban, 1999). A cross sectional study in Egypt found significant differences in the duration of breastfeeding and the mother's origin, where mothers from traditional rural areas experienced the longest duration compared to the other groups who lived in urban areas (El-Mougi *et al.*, 1981). This study found significant differences between mother's country of origin and any and full breastfeeding duration. The mothers from other Arab countries were more likely to have longer any and full breastfeeding duration compared with mothers from Kuwait or the Gulf States countries. A recent study in Kuwait reported that Kuwaiti mothers use bottle feeding more than the non-Kuwaiti mothers (Al Fadli *et al.*, 2006) which is consistent with our findings. Al Fadli et al (2006) proposed that such practice could be explained by the lifestyle changes that occurred in Kuwait due to oil revenue and through using modern technology similar to what happened in Western developed countries in the 1960s and 1970s.

There are a number of possible reasons to explain our finding that mothers from other Arab countries breastfed for longer than Kuwaiti mothers. Firstly, mothers from other Arab nationalities who are residing in Kuwait are coming to Kuwait temporarily from countries such as Syria, Egypt and Lebanon to make a living through their husbands and are most likely from poor rural areas. These mothers believe breastfeeding to be a natural behaviour having grown up with and being surrounded by breastfeeding role models including their mothers, aunts and sisters. Also the mothers from these countries are less likely to be employed since they come to Kuwait temporarily with their husband who is working on a fixed-term contract of certain years. Therefore they would be more likely to stay home with their infant instead of having their own mother or a maid to care for the baby and give formula during working hours. Additionally, mothers from other Arab nationalities may be depending on one source of income and this can influence the likelihood of breastfeeding due to the economic costs associated with formula feeding. Moreover, non-Kuwaitis have less social life compared with Kuwaiti mothers because the latter have their other relatives with whom they always offering help and assistance with the newborn.

The other socio-demographic factor that was found to be associated with any breastfeeding was father's occupation where mothers whose husbands worked in sales and clerical positions or unskilled occupations were at higher risk of early discontinuation of any breastfeeding compared with managerial and professional careers. Generally, families whose father is working in lower- paid occupations such as sales and unskilled jobs are those who are categorized as low socio-economic status, and previous studies reported a negative association between breastfeeding duration and low socioeconomic status among Western women (Taveras *et al.*, 2003; Thulier & Mercer, 2009) and amongst Middle Eastern women (Kocturk, 1988a; Marandi *et al.*, 1993).

Maternal employment is one of the social variables that may negatively affect the success of breastfeeding. This negative association between early return to work and breastfeeding duration has been reported in numerous studies of women in the Middle East (Al-Shehri *et al.*, 1995; Musaiger & Abdulkhalek, 2000; Ertem *et al.*, 2001b; Sharief *et al.*, 2001; Hajian-Tilaki, 2005; Khassawneh *et al.*, 2006; Al-Hreashy *et al.*, 2008), and also in Western countries. Studies in the UK (Hawkins *et al.*, 2007) and the USA (Taveras *et al.*, 2003; Berger, 2005) have shown that mothers who return to work

soon after delivery discontinue breastfeeding earlier. Similarly, two recent Australian studies have shown that mothers who return to work before 6 months were less likely to be fully breastfeeding at six months and less likely to be still breastfeeding at 12 months (Scott *et al.*, 2006b; Cooklin *et al.*, 2008). The results of these previous studies are consistent with this study which showed that women who did not intend to return to work or study part or full time at six months postpartum were more likely to have longer any breastfeeding duration than women who had a prior intention to work postpartum.

5.5.2 Biomedical factors

The use of a pacifier before two weeks of age was found to be independently negatively associated with any breastfeeding duration which is consistent with the international literature, but this was the first study to investigate this association among Middle Eastern women. Similarly, previous observational studies have shown a negative association between use of pacifier before 4 weeks of age and being less likely to breastfeed at different time points (Scott *et al.*, 2006b) and shorter duration of full and overall breastfeeding (Howard *et al.*, 1999). Not giving a pacifier at hospital is one of the "Baby friendly" practices that was associated with longer breastfeeding duration in the USA (DiGirolamo *et al.*, 2008). Numerous studies concluded that introducing a pacifier before 10 weeks caused high risk of the cessation of full breastfeeding by six months of age (Clements *et al.*, 1997; Aarts *et al.*, 1999; Howard *et al.*, 1999; Binns & Scott, 2002a) and a negative impact on the overall duration of breastfeeding. The possible mechanism for this association is still unknown (Soares *et al.*, 2003), however some authors suggested mechanisms related to reduction of the number of times the infant suckles per day leading to less stimulation of the breast and less milk production (Aarts *et al.*, 1999; Howard *et al.*, 1999; Vogel *et al.*, 2001; Binns & Scott, 2002a). Nipple confusion is believed to cause difficulty in obtaining milk from the breast because the infant cannot distinguish between the two different suckling techniques of pacifier and breast (Neifert *et al.*, 1995)

This study failed to find an association between breastfeeding duration and a number of biomedical factors previously reported to be associated with breastfeeding duration. For instance, previous Middle Eastern studies had shown a negative association between caesarean delivery and breastfeeding duration (Hossain *et al.*, 1995; Dennis, 2003; Shawky & Abalkhail, 2003; Shiva & Nasiri, 2003; Ogbeide *et al.*, 2004; Khassawneh *et al.*, 2006). This study however, did not find an association between length of breastfeeding and mode of delivery which is similar to other infant feeding research

(Scott *et al.*, 2001; DiGirolamo *et al.*, 2008). Similarly, numerous studies have demonstrated an adverse effect of maternal smoking on breastfeeding duration (Amir & Donath, 2002). However, in this study, maternal smoking was practiced by only 2.0% during pregnancy and by 3.0% before pregnancy among this group of mothers, therefore analysis was not practical.

High pre-pregnancy BMI has been associated with shorter duration of breastfeeding (Linne, 2004; Baker *et al.*, 2007). In the US, obesity before pregnancy had a negative effect on breastfeeding duration where breastfeeding lasted 2 weeks less in women who were obese before pregnancy than normal weight women (Li *et al.*, 2003). However, a positive association was found between obese mothers and longer breastfeeding duration in an earlier study in Kuwait (Amine *et al.*, 1989) but there was no association found in this study between pre-pregnancy BMI and breastfeeding duration.

Although the univariate analysis found a significant association between parity and any breastfeeding duration with multiparous mothers being less likely to terminate breastfeeding at any time before six months than primiparous mothers, after controlling for confounders, the association did not remain significant. A number of Western studies failed to show a significant association between high parity and breastfeeding duration (Hill *et al.*, 1997; Adams *et al.*, 2001). Among studies of Western countries the association is less consistent (Scott & Binns, 1999) with, for example, one recent study reporting that mothers who had prior breastfeeding experience had longer duration at six weeks postpartum (Hass & Howard, 2006). However, the finding of this current study is inconsistent with results for other Middle Eastern studies (Bertini *et al.*, 2003; Shiva & Nasiri, 2003; Simard *et al.*, 2005; Batal *et al.*, 2006; Al-Hreashy *et al.*, 2008; Al-Sahab *et al.*, 2008) which reported a positive association between multiparity and breastfeeding duration This could be explained that mothers who had more children may have more experience in breastfeeding leading to more confidence in handling the infant than the first time mothers who may experience more frustration and fear of failure.

5.5.3 Hospital-related factors

This study failed to show any independent association between duration of breastfeeding and 24 hours rooming-in. However, after adjusting for potential confounding factors, other hospital practices including early infant-to-breast contact was independently positively associated with *any* breastfeeding and demand feeding was independently

positively associated with *full* breastfeeding duration. Time of first breastfeeding as well as frequency of breastfeeding on day two are positively associated with milk volume on day 5 (Wambach *et al.*, 2005). Delay of introducing breast milk (more than 6 hours after birth) to the infant has shown a negative association with breastfeeding duration (Chaves *et al.*, 2007; Nakao *et al.*, 2008). Whereas, early breastfeeding initiation (within six hours of birth) was associated with longer duration of breastfeeding in Egypt (Hossain *et al.*, 1995). Early-infant-breast contact is an important act to start the establishment of breastfeeding successfully.

This study showed a positive association between demand feeding and duration of any breastfeeding. Similarly a prospective study has shown that Australian infants who were not breastfed on demand were less likely to be breastfed at six months (Pincombe *et al.*, 2008). Two main hormones are needed to produce milk, Prolactin and Oxytocin. The hormone oxytocin which promotes the "oxytocin reflex mechanism" or "milk ejection reflex" increases when there is skin-to-skin-contact and through suckling (WHO, 2009). The full scale milk production begins within 24-48 hours of giving birth, a period called "Lactogenesis" in which the hormone prolactin is released to help in this process (Riordan & Countryman, 1980). Then, the pituitary gland hormone signals the body to make a large amount of milk and body is ready for lactation, while extra blood pumps into "alveoli" making the breast full, firm, with an abundance of milk. The underlying mechanism which explains regulation of the rate of milk synthesis process is FIL (Feedback Inhibitor of Lactation) which is an active whey protein that inhibits milk secretion as alveoli become distended and milk is not removed. Its concentration increases with longer periods of milk accumulation, down regulating milk production in a chemical feedback loop (Veldhuizen-Staas, 2007). Hence, frequent, on-demand breastfeeding is necessary to aid the establishment of successful breastfeeding. Therefore, there is a need for awareness among mothers about this physiological mechanism that increases milk production through frequent suckling on the breast.

This study investigated the impact of type of first feed on breastfeeding duration and a statistically significant negative association was found with the use of prelacteal feeds in the univariate analysis, but this did not remain significant when potential confounders were controlled for. However, other studies had reported shorter breastfeeding duration to be independently significantly associated with the use of prelacteal feeds (Froozani,

1992; Ludvigsson, 2003). Formula feeding prior to lactogenesis is associated with a significant delay of onset of milk production signifying the importance of milk removal in increasing the efficiency of milk secretion (Wambach *et al.*, 2005). Early introduction of supplementary formula has been associated also with early discontinuation of breastfeeding in many studies (Marandi *et al.*, 1993; Blomquist *et al.*, 1994; Michaelsen *et al.*, 1994; Alikasifoglu *et al.*, 2001; Al-Hreashy *et al.*, 2008).

5.5.4 Psychosocial Factors

Prenatal maternal intention is one of the psychological factors found to influence breastfeeding duration. Consistent evidence in a review of the literature revealed that intended duration is a strong determinant of actual duration (Scott & Binns, 1999). In an Australian study identifying the determinants of breastfeeding at six months postpartum, prenatal maternal intention and being keen to breastfeed were found to have a positive impact on breastfeeding success (Forster *et al.*, 2006) and that shorter intended breastfeeding duration was negatively associated with early breastfeeding termination (DiGirolamo *et al.*, 2005; Chaves *et al.*, 2007; Wilhelm *et al.*, 2008). In contrast, this study has shown that having a prior intention regarding breastfeeding duration of more or equal to six months was not associated with any breastfeeding duration.

The support received from significant others may affect the breastfeeding practices of mothers. After controlling for potentially confounding factors, positive maternal grandmother preference towards breastfeeding was independently positively associated with breastfeeding duration. Consistently higher breastfeeding rates were reported in an Australian study in women who perceived their own mother to prefer breastfeeding (Scott *et al.*, 2006b). Studies of Muslim women have highlighted the importance of grandmothers both in providing practical support and as major influences on infant feeding decisions (Khadduri et al, 2008 and Ergenekon-Ozelci et al. 2006). Advice received from their mother and mother-in-law can have both a negative and positive affect on a woman's breastfeeding practices. For instance, breastfeeding is promoted in the Quran (*Al Baqara, 233*) and by elders as the desired way to feed an infant and the mean duration of breastfeeding is longer in most Muslim countries than in Western countries (Chapter 2). Although women of non-Kuwaiti origin residing in Kuwait may not be receiving similar close-relative support because they live in another country, they tend to be keener about breastfeeding their infants because they may be spending more time with their family compared with Kuwaiti women who have more familial support from extended family

members. Also, Kuwaiti mothers are receiving support and advice from various family members to give mixed feeding instead of exclusive breastfeeding because they associate the health of the baby with the weight of the infant as the heavier the baby the healthier he or she is. Many Kuwaiti mothers encourage extra top up with formula feeding to ensure the baby is satiated and to stop hunger cry. Possible reason is the influence of husbands of non-Kuwaiti women as it may play a role in higher rates of breastfeeding among Arab nationalities.

On the other hand, the high rates of delayed breastfeeding initiation and prelacteal feeding are related to the traditional beliefs held by women from various Muslim cultures that colostrum should not be fed to the infant because it is of limited nutritional value or might harm the infant (Gatrad & Sheikh, 2001). These beliefs, while more common in less literate women, (Ergenekon-Ozelci *et al.*, 2006) are firmly entrenched and reinforced by religious leaders (Ergenekon-Ozelci *et al.*, 2006) and elders, both female and male (Semega-Janneh *et al.*, 2001). However, we do not knowledge if this is the case in Kuwait since no studies reported data on beliefs among women in Kuwait.

A woman's breastfeeding decision has been shown consistently in Western studies to be influenced by her partner's preference for breastfeeding (Scott & Binns, 1999). Positive paternal attitudes have been shown to have a positive impact on breastfeeding duration in an Australian study where mothers who perceived their husband or partner to support breastfeeding were less likely to have early breastfeeding cessation (Scott *et al.*, 2006b). Similarly, a study in the USA indicated that having a supportive father to the breastfeeding decision was associated with successful breastfeeding (Kuan *et al.*, 1999). In our study, only the univariate analysis had shown the same finding as infants whose father preferred breastfeeding were more likely to receive any breastfeeding at six months. When confounding factors were controlled for, the association did not remain significant. Nevetheless, there is some evidence from Middle Eastern studies that support from a woman's husband is important for breastfeeding success. A study of women in Saudi Arabia has investigated the influence of paternal attitudes on breast feeding outcome and found that mothers were more likely to initiate breastfeeding if their partners supported breastfeeding and encouraged them to initiate exclusive breastfeeding (Ogbeide *et al.*, 2004) but no studies reported association with breastfeeding duration. A Turkish intervention study indicated that the antenatal

education programmes for husbands can have positive effects on their reproductive health knowledge, attitudes and behaviours. Women whose husbands attended these classes reported that their husbands became more supportive and communicative (Turan *et al.*, 2001).

5.6 Limiations related to results

Some of the results of this study maybe related to some of this study's limitations discussed earlier. Firstly, the proportion of women who had undergone caesarean section in this study is three times that of the national average thus women who had undergone caesarean section stay in hospital longer than those who had vaginal delivery (5 nights versus 2 nights, respectively). While every attempt was made to recruit mothers within 72 hours and in most cases 48 hours, of delivery, women who had undergone a caesarean section had a greater chance of being recruited because of their extended hospital stay. Implications for this issue in recruitment is the possibility of influencing or increasing the number of women who had partially breastfed their infants especially those infants spent more time in the nursery and being cared for by the nurses to allow mothers to rest after surgery. This may have led to bias in the selection of sample; hence, recruitment in postnatal wards should take more efforts into recruiting all types of delivery equally.

Secondly, the effect of sample attrition in this longitudinal study may have an effect on the results of duration data since the study started with a total of 373 women at discharge then the proportion of women that was followed up at six weeks decreased to 293. An implication of sample attrition in follow-up may affected the results related to association between breastfeeding and other factors studied. While the direction of results whether positive or negative is clear, the less the number of drop-out in this study, the more powerful the interpretation and final conclusion of the follow-up data will be.

5.7 Conclusion

In conclusion, the results of this study revealed that exclusive breastfeeding duration was shorter than the international WHO recommendation with no infants being either exclusively or fully breastfed at six months of life. Furthermore, only 4 in 10 infants were receiving any breast milk at this age. Interventions are needed to raise awareness of women about the benefits of continued breastfeeding and to educate them about the importance of

early infant to breast contact. Health care professionals in maternity wards can be involved in introducing mothers to successful suckling techniques soon after birth. Health campaigns are needed to alert women to the negative consequences of early pacifier use on breastfeeding duration. The role of family members, particularly maternal grandmothers, should not to be underestimated in planning breastfeeding interventions. Community-based interventions are needed to support women to breastfeed and to provide a supportive environment. Close family members, especially husbands and maternal grandmothers, should be targeted in these interventions to ensure higher rates of exclusive breastfeeding and prolonged duration. Population-based educational programs providing accurate health and nutritional information to improve duration of exclusive and overall breastfeeding are essential key elements for public health policy makers.

Chapter 6 Conclusions & Recommendations

Chapter 6 Conclusions & Recommendations

6.1 Overview

The Kuwait Infant Feeding Study is the first longitudinal study of infant feeding practice in Kuwait. The study aimed to identify contemporary breastfeeding practices and to understand the determinants of breastfeeding initiation and duration for mothers of healthy newborns living in this country. It provides useful baseline data for public health practitioners in Kuwait for conducting further research and implementing breastfeeding promotion interventions. The results should assist practitioners to identify the groups of women who are at higher risk of not breastfeeding while in hospital or those at risk of terminating breastfeeding early.

The limitations of this study can be taken into account to improve the design of future studies. For instance, the small sample size was due to the fact that this study was carried out by one person, therefore additional staff can help in recruiting more women and avoiding drop-out rate during the follow up period. Another issue that needs to be taken into account in future studies is to separate mothers from different hospitals to help identify and analyze practices of the sample taken from every hospital individually. In this study, it was not possible to identify sample from each individual hospital because data for each mother were inserted into the database as a whole. Thus, comparison of infant feeding practice from each individual health centre was not possible for analysis.

The proportion of women who had undergone a caesarean section in this study is three times that of the national average. The average length of post-partum stay for Kuwaiti public hospitals is a maximum of 2 nights for uncomplicated deliveries and 5 nights for a caesarean section. While every attempt was made to recruit mothers within 72 hours , and in most cases 48 hours, of delivery, women who had undergone a caesarean section had a greater chance of being recruited because of their extended hospital stay. This issue could be avoided in the future by including all the mothers with all types of delivery or women who are discharged earlier could be possibly recruited from home. This will ensure including mothers who had undergone all types of deliveries in the assessment of breastfeeding behaviours.

Additionally, with the data collection methodology employed, it was not possible to ascertain the true method of feeding at discharge. Women were surveyed within 72 hours of delivery, so for those women who delivered vaginally the method of feeding at the time of completing the survey is likely to be the same as the method at discharge, however for women who had delivered by caesarean section it probably reflects the feeding method 48 hours prior to discharge and hence may have been subject to change. However, data collected in the 6 week follow-up survey confirmed that 97% of women who were breastfeeding at the time of completing the baseline questionnaire left hospital breastfeeding, indicating that this was a reliable definition of breastfeeding at discharge. The remaining 3% of women identified as breastfeeding at discharge were lost to follow-up and we were unable to confirm at the 6 week interview if they actually left hospital breastfeeding.

Despite these limitations, this is the first reported longitudinal study of its kind in Kuwait and the results reported here are generally consistent with the findings of other studies of Middle Eastern women and/or Western women and can be used to inform future breastfeeding promotion interventions in Kuwait.

Recommendations for improvement of future studies

1- Consider longitudinal studies with 12 months follow-up to measure age of introduction of solid foods and its effect on breastfeeding duration

2- Recruit a larger sample size to allow for high sample drop-out rates

3- Decrease the chance of drop-out rate by assigning a larger number of research staff for face-to-face recruitment and follow-up interviews

4- Ensure the sample from each studied hospital is coded separately to enable analysis and comparison of all hospitals from all different areas.

5- Focus equally on private hospital as well as on government hospitals

6- Ensure that the sample is representative of the whole population by including all major hospitals in Kuwait

6.2 Key Findings

6.2.1 Prelacteal Feeding

Despite the high rate of breastfeeding initiation (92.5%) observed in this study, the majority of women (55%) did not initiated breastfeeding until after 24 hours, contributing

to a high rate (81.8%) of prelacteal feeds and probable low rates of colostrum feeds. The delay of breastfeeding initiation deprives infants of the important benefits of colostrum as well as affecting the ability of women to successfully establish breastfeeding. Delay of first breastfeed has been reported in a number of Middle Eastern studies where only five per cent of infants were breastfed within the first hour of birth in Kuwait (Al-Nesef *et al.*, 1996), six per cent in Iran (Marandi *et al.*, 1993), ten per cent in Egypt (Hakim & El-Ashmawy, 1992), ten percent in Turkey (Yesildal *et al.*, 2008), twenty three per cent in Saudi Arabia (El Mouzan *et al.*, 2009) and forty per cent in Jordan (JPFHS, 2003).

A consequence of delayed breastfeeding initiation is the introduction of prelacteal feeds and high rates of prelacteal feeds have been reported amongst women in Egypt (60%) (Hossain *et al.*, 1991), Lebanon (49%) (Batal et al., 2006) Iraq (60%) (Abdul Ameer *et al.*, 2008) and Jordan (61%) (JPFHS, 2003). In addition to infant formula, other prelacteal feeds commonly given to Middle Eastern infants include sweetened (sugar) water, orange blossom water, herbal teas, tea and/or water.

Colostrum is negatively perceived and seen as harmful in a number of Muslim cultures, for example, women believe that it is a "bad milk", "dark milk", "hot milk", and "causes stomach ache and should be thrown away" amongst Gambian, Turkish, Pakistani and Somali women (Semega-Janneh *et al.*, 2001; Ergenekon-Ozelci *et al.*, 2006; Khadduri *et al.*, 2008; Steinman *et al.*, 2009). In Turkey, one third of women in a large study (n=1767) held traditional beliefs about colostrum that it should not be given to the newborn but did not discuss why they have this belief (Hizel *et al.*, 2006). A number of reasons were given by mothers for not giving colostrum to their newborn in a qualitative Turkish study (n=450) (Ergenekon-Ozelci *et al.*, 2006). Thirty nine per cent cited "They had no white milk" so they squeezed their breast to get rid of this first milk until white milk is produced, twenty four per cent believe that first milk is produced within the first three days of birth and cited "First milk is dirty, looks like pus", fourteen per cent cited "everybody say it should not be given" and eleven per cent reported that "baby did not like it" because they think it causes stomachache. Women in these cultures reported negative beliefs about colostrum preventing their infants from receiving it soon after birth.

We are unable to say with certainty if such negative cultural beliefs persist among women living in Kuwait as mothers in this study were not specifically questioned about their colostrum-related beliefs. However, the high rates of delayed breastfeeding and prelacteal

feeds would suggest that women either hold negative beliefs about colostrum and/or are not aware of the importance of feeding their infants this precious first milk. Furthermore, the high rates of prelacteal feeding in hospital suggests that health workers either overtly or tacitly support these beliefs and are not encouraging women to put their infants to the breast within one hour of delivery.

Based on the KIFS observations, further qualitative studies exploring the high rate of delayed initiation and the use of prelacteal feeds at hospital should be undertaken to explore reasons for this practice in Kuwait. The attitudes not only of mothers but also their mothers and mothers-in-law and health professionals should be investigated. The results of such an investigation should be used to inform the design of future interventions to educate mothers, grandmothers and health professionals about the importance of initiating breastfeeding within the first hour of delivery and the value of colostrum. There is evidence from Pakistan that community-based interventions can increase rates of colostrum feeding. Omer et al. (2008) showed in a randomizedd trial that women in the intervention communities (i.e. women received illustrated information on the benefits of colostrum) were more likely to give colostrum to their newborn babies compared to non-intervention mothers.

6.2.2 Determinants of breastfeeding

Non-modifiable determinants of breastfeeding are factors that cannot be changed, such as maternal age and educational level. However, if shown to be significantly associated with breastfeeding, these types of data can be used to plan interventions to focus on targeting those specific groups to promote breastfeeding and to increase their awareness about breastfeeding benefits. In this project, a non-modifiable factor found to be independently associated with breastfeeding initiation was country of mother's birth. This study also found that a caesarean section delivery and an infant spending time in the SCN were negatively associated with breastfeeding initiation. While these two events may be medically unavoidable, although caesarean section could be done as an elective procedure, they do not necessarily preclude the establishment of successful breastfeeding. The single modifiable factor found positively associated with breastfeeding initiation was the father's preference for breastfeeding.

Two non-modifiable factors associated with breastfeeding duration included father's occupation and mother's country of birth, of which the latter was also associated with

breastfeeding initiation. Modifiable factors found to be independently associated with breastfeeding duration were time of first breastfeed, type of first feed, age of introducing a pacifier, demand feeds, intended breastfeeding duration, father's attitude towards breastfeeding and maternal grandmother's attitude towards breastfeeding.

6.2.2.1 Country of mother's birth

In this project, Kuwaiti mothers were found to be less likely to initiate breastfeeding and to breastfeed for a shorter duration than women from other Arabic countries and this needs to be the focus in future planning of breastfeeding campaigns and infant health educational lectures and workshops that promote both the initiation of breastfeeding and advise on the recommended duration of breastfeeding. Kuwaiti mothers are either not aware of the significance of breast milk (colostrum) to their newborn, or if they know, they are not keen to do it. Kuwaiti women could be targeted in various ways. Firstly, since the Kuwaiti governmental schools are only for the Kuwaiti nationals, the educational curriculum may consider teaching young Kuwaiti women in secondary and high schools a special course on breastfeeding preparing them for motherhood. Secondly, Kuwaiti women can be targeted at different stages. They can be targeted during the prenatal period by raising their awareness about the benefits of breastfeeding thus encouraging them to breastfeed in the future. Having knowledge about it ahead of time will prepare them for what to expect. They can also be targeted postnatally soon after giving birth with one- on-one assistance teaching them how to attach the baby to the breast and to help them with any difficulties in breastfeeding.

6.2.2.2 Father's occupation

In this study, mothers whose husband's occupation was sales and clerical or unskilled occupation had significantly lower breastfeeding duration than those of managerial or professional positions. It is assumed that the lower the occupational position, the lower the economic status and the less educated the husband. This data can be used to plan future breastfeeding interventions and target those of lower socio-economic status and less educated to increase their knowledge about breastfeeding and raise their awareness about its importance to their infant's health.

6.2.2.3 Mode of delivery

This study found an inverse association between breastfeeding initiation and mothers who had delivered by caesarean section. The surgical procedures required in caesarean section could prevent early infant-breast-contact or interfere with mother even attempting to nurse. A mother who delivers via caesarean section is usually left to rest after surgery while the infant is taken care of by the nurse and formula feeds are more likely to be the first feed introduced. Recent studies of Western women have not reported a negative association between delivery method and the breastfeeding initiation and indicate that with adequate support and practical assistance that caesarean section delivery need not interfere with the successful establishment of breastfeeding. It is recommended that hospital policies be put in place to minimise the time that mothers are separated from their infants following a caesarean section delivery and that hospital staff receive training in the ways that they can support these vulnerable mothers and to target these women for additional practical assistance and guidance with breastfeeding.

6.2.2.4 Special Care Nursery

Infants with serious medical conditions requiring admission to the Neonatal Intensive Care Unit were not included in this study. Nevertheless, this study found that admission of an infant to the Special Care Nursery (SCN) for short-term observation and care was negatively associated with breastfeeding initiation. The emotional distress associated with having an infant requiring admission to the SCN and the physical separation from their infants can generate breastfeeding problems. Being physically separated for some period of time after delivery can cause a delay in the initiation of breastfeeding. One of the ten steps of successful breastfeeding is to show mother how to breastfeed and how to maintain lactation even if they should be separated from their infants (WHO, 1998). Nurses may offer the SCN infants a formula feed instead of encouraging and assisting mothers to go to SCN to breastfeed their infants directly from the breast or to express breast milk. This finding highlights the important role of health staff, including paediatrician and nurses, in encouraging and supporting the mothers to breastfeed her infant even when physically separated and again highlights the need for relevant hospital policies and staff training programmes.

6.2.2.5 Social support

Social support is an important factor identified in the literature to have a positive influence on breastfeeding outcomes (Scott & Binns, 1999; Dennis, 2002; Thulier & Mercer, 2009; Meedya *et al.*, 2010). Interestingly, this study found that family members had some impact on mother's infant feeding behaviour. In this study, women whose husbands preferred breastfeeding had significantly higher rates of both breastfeeding initiation and duration, thus husbands play a major role in women's decisions towards breastfeeding. Those husbands who preferred breastfeeding had a positive influence on their wives as a source of encouragement. This result is useful to public health practitioners in clinics and hospitals. Since the role of husbands was identified in this study to be important but because of the difficulty in identifying women prenatally with supportive husbands, it will be helpful to ensure all husbands receive antenatal education on the benefits of breastfeeding as well as educating them about how they can support their wives. National campaigns can take place in various settings to reach a large section of group of men. In Kuwait, men in general can be targeted in dewanya (a place of social gathering), mosque (especially on Friday lectures), and in schools and universities. Because men play an influential role in their wife's decision, infant feeding campaigns should consider men in the community to increase their awareness about infant feeding, health and breastfeeding benefits. In other countries peer support play a role in helping new mothers to breastfeed and overcome their breastfeeding problems. A recent systematic review of a randomized trials assessing the effectiveness of breastfeeding peer counselling in improving rates of breastfeeding initiation, duration and exclusivity (Chapman *et al.*, 2010), and the initiative proved to be effective and can be scaled up in both developed and developing countries as part of the promotion and maternal child health programs. Another recent systematic review has concluded that peer support in hospital and community is an effective intervention of prmoting breastfeeding and breast milk (Renfrew *et al.*, 2009). A good example of breastfeeding support for women residing in many areas worldwide is "La *Leche* League", the world largest organization dedicated to promoting and supporting breastfeeding and to help mothers around the world to breastfeed through various was such as free phone information and support (2010d).

Maternal grandmother's attitude towards breastfeeding is important in influencing breastfeeding decision and in this study was associated with longer breastfeeding duration. Similarly, female support positively influenced exclusive breastfeeding duration and the overall breastfeeding duration in Nigeria (Olayemi *et al.*, 2007). This result emphasized

the importance of close relative and family members on mother's choice at hospital as well as later at home. For that reason, the mothers and mothers-in-law of women who are expecting a newborn can be targeted in educational programs explaining the importance of breastfeeding compared with formula feeding.

While in Kuwait the extended family appear to have an important presence in the new mother's life, it is becoming more common to have smaller family size than it was in the past when the average number of most family at that time was seven to eleven family members. Recently families are becoming smaller in size amongst younger generations and this may influence the supportive effect of the extended family factor and would also emphasize the importance of peer support for the Kuwaiti as well as for non-Kuwaiti mothers living in Kuwait. Moreover, while this sample of this study involved women from other countries residing in Kuwait without their extended family, peer support will play an important role for the improvement of the breastfeeding amongst this group of mothers.

6.2.2.6 Intended breastfeeding duration

Mother's prior intention to breastfeeding is one of the factors shown to positively influence breastfeeding outcomes (Antoniou *et al.*, 2005; Camurdan *et al.*, 2008). In this study, the intended breastfeeding duration was one of the modifiable factors associated with length of breastfeeding. This study confirms an association between prior intention to breastfeed and positive breastfeeding duration. Therefore, this study emphasizes the importance of successful prenatal education to enhance women's awareness about the benefits of breastfeeding in order to achieve the desired long-term breastfeeding. Such education should occur before pregnancy, for example in high schools, as well as during the prenatal period.

6.2.2.7 Baby Friendly Hospital Initiative

There is evidence that implementation of the Baby Friendly Hospital Initiative in hospitals may positively influence breastfeeding for six months and beyond (DiGirolamo *et al.*, 2001) and increase breastfeeding rates (Caldeira & Goncalves, 2007). Kramer (2001) conducted the Promotion of Breastfeeding Intervention (PROBIT) study, a community-based randomized controlled trial in the Republic of Belarus. The aim of this trial was to assess the effect of the BFHI, through health care worker assistance with initiating and maintaining breastfeeding and postnatal breastfeeding support, compared with a control

intervention of continuation of usual infant feeding practices and policies, on breastfeeding duration. Their intervention significantly increased the duration of breastfeeding compared with the control group thereby emphasizing the importance of BFHI on breastfeeding outcomes.

The Kuwait Infant Feeding Study showed that a number of hospital-related practices, and therefore modifiable factors, were significantly inversely associated with breastfeeding duration. In particular, this study clearly showed a lack of advice received by mothers during their hospital stay and an apparent lack of adherence to the BFHI guidelines. For example, the majority of infants did not receive their first breast milk early and most women initiated breastfeeding more than six hours after birth. This does not show adherence to step number four of the Ten Steps for Successful Breastfeeding which states *"Help mother initiate breastfeeding within a half hour of birth"*. In step five hospital staff should *"show mothers how to breastfeed and how to maintain lactation even if they should be separated from their infant"*, but in this study 90% of mothers reported that they did not receive any breastfeeding help or information and almost all mothers reported that they have not received a demonstration on breastfeeding postpartum. Step six states *"Give newborn infants no food or drink other than breast milk, unless medically indicated",* yet the result of this study indicated the indiscriminate use of prelacteal feeds. Rooming-in was not practiced by half of the mothers in this study, suggesting a need to encourage mothers based on seventh step that advises hospital staff to *"Practice rooming-in. Allow mothers and infants to remain together 24 hours a day".* Additionally, step eight clearly states to *"Encourage breastfeeding on-demand"*, whereas most mothers (90%) in the studied hospitals did not receive any encouragement from hospital staff to demand feed prior to discharge. The ninth BFHI step is *"Give no artificial teats or pacifier (also called dummies or soothers) to breast feeding infants"*. Given the high rate of prelacteal feeding, most infants were fed with an artificial teat while in hospital. Although sixty per cent of infants did not receive a pacifier in this study, almost one third of women (27%) used a pacifier at an early stage (< 2 weeks) and 13% of infants at two to eight weeks, implying the need to follow step nine. Moreover, the result of the study indicates the necessity of providing a plan to follow-up the mothers after leaving the hospital through applying the tenth step *"Foster the establishment of breastfeeding support groups and refer mothers to them on discharge from hospital or clinic".* Almost all mothers (98%) reported that members of the staff of the hospitals did not give the name of anyone to contact (i,e.

nutritionist or breastfeeding specialist) in case of lactation problems after leaving the hospital.

Based on our study's finding, a recommendation would be to implement the BFHI in all public and private maternity hospitals in Kuwait, to plan strategies and implement them to promote and support breastfeeding practices. Educate health staff and professionals and engage them in providing mothers with breastfeeding advice based on proper training and scientific backgrounds.

This study observed three of the four governmental hospitals with maternity wards in Kuwait and the lack of infant feeding health advice was evident. Many health professionals dealing with mothers and infants are insufficiently prepared to give prenatal education, perinatal support and postpartum follow up for breastfeeding mothers (Wambach *et al.*, 2005). Worryingly in this study, almost all mothers stated that they did not receive any advice or practical administration in regards to breastfeeding during their hospital stay. Although not all of the maternity hospitals in Kuwait were included in this project, the four hospitals studied are responsible for delivering the majority of infants born in Kuwait and as such most new mothers in Kuwait report receiving inadequate breastfeeding advice and support whilst in hospital.

6.3 Recommendations

The KIFS project provides recent data on breastfeeding initiation and duration rates and determinants of these outcomes. It highlights potential areas to help in planning breastfeeding information programmes and educational interventions. Since level of breastfeeding data is low in Middle Eastern countries, more systematic reviews are needed.

6.3.1 Maternity hospitals

1- Hospitals in Kuwait should follow the principles of the Baby Friendly Hospital Initiative and seek formal accreditation to increase good breastfeeding practices such as breastfeeding exclusively, avoiding prelacteal feeds and introducing colostrum soon after birth.

2- While hospital practices should be improved to enable mothers to breastfeed in a comfortable environment, special attention should be given to encouraging early

infant-to-breast contact, helping the mothers to offer breast milk as the first feed after birth, encouraging demand feeding and avoiding the use of pacifier and artificial teats during hospital stay.

3- Women who deliver by Caesarean section or those whose children are admitted to SCN need to be given extra attention and assistance to successfully establish breastfeeding.

4- Instigate breastfeeding educational programmes for expectant mothers to modify their intentions and attitudes in favour of breastfeeding and to inform close family members, especially husband and maternal grandmothers, about the importance of breastfeeding.

5- Provide antenatal classes to teach mothers about breastfeeding prior to delivery. Attendance at antenatal classes to learn about infant feeding health increases awareness of mothers about breastfeeding. There is a need to consider antenatal classes on a national level in clinics as well as in hospitals. Advertisement about these classes is also needed since it is an unusual practice to this society.

The Kuwaiti government can improve the health facilities to increase breastfeeding rates and to guide mothers in the direction of successful breastfeeding. This goal can be achieved through applying the WHO recommendations (WHO, 2003) to encourage mothers to breastfeed. The Ministry of Health in Kuwait can apply some of the WHO guidelines to support breastfeeding through the health care system which was proven to be weak in this study.

There should be a set of standards in each maternity hospital to follow. All new staff should be oriented to the breastfeeding policy within their first week of employment and then fully trained to implement the breastfeeding policy according to their role within six months. Written lists that cover the Baby Friendly best practice standards should be available for all staff training. Breastfeeding training should be compulsory for all staff, and accurate records of attendance should be kept. All staff with responsibility for caring for breastfeeding mothers and babies should be able to answer questions on basic breastfeeding management correctly. All other staff who have contact with pregnant women and breastfeeding mothers should receive training to enable them to provide information and to uphold the breastfeeding policy, as appropriate to their role.

6.3.2 WHO recommendations that can be applied in Kuwaiti health facilities

- providing skilled counselling and help for infant and young child feeding, for instance at well-baby clinics, during immunization sessions, and in in- and out-patient services for sick children, nutrition services, and reproductive health and maternity services;
- ensuring that hospital routines and procedures remain fully supportive of the successful initiation and establishment of breastfeeding through implementation of the Baby-Friendly Hospital Initiative, monitoring and reassessing already designated facilities, and expanding the Initiative to include clinics, health centres and paediatric hospitals;
- increasing access to antenatal care and education about breastfeeding, to delivery practices which support breastfeeding and to follow-up care which helps to ensure continued breastfeeding;
- enabling mothers to remain with their hospitalized children to ensure continued breastfeeding and adequate complementary feeding and, where feasible, allow breastfed children to stay with their hospitalized mothers;
- ensuring effective therapeutic feeding of sick and malnourished children, including the provision of skilled breastfeeding support when required; training health workers who care for mothers, children and families with regard to:
  - counselling and assistance skills needed for breastfeeding,
  - complementary feeding, HIV and infant feeding and, when necessary, feeding with a breast-milk substitute,
  - feeding during illness,
  - health workers' responsibilities under the International Code of Marketing of Breast-milk Substitutes;
- revising and reforming pre-service curricula for all health workers, nutritionists and allied professionals to provide appropriate information and advice on infant and young child feeding for use by families and those involved in the field of infant and young child nutrition.

6.3.3 Further future action

1- Research

Further clarification is required for some findings in this study. Hence, there is a need for qualitative studies through the use of focus groups or in-depth interviews to explore the

reasons behind the delayed initiation of breastfeeding and the high use of prelacteal feeds to determine whether it is due to lack of knowledge about colostrum or whether to cultural beliefs and traditions. These studies need to consider not only the views of mothers but also grandmothers and health care professionals. Furthermore, Kuwaiti mothers should be studied, as well as those from other Arabic nationalities residing in Kuwait, to find an explanation for low rates of breastfeeding. It can be useful to recruit mothers from other Arab nationalities because they had higher rates of breastfeeding initiation and duration and to make a comparison with Kuwaiti mothers to investigate the difference in their knowledge and attitudes towards breastfeeding. Understanding the thoughts, feelings, attitudes and ideas of mothers from other Arab nationalities about breastfeeding can help in applying them in educating Kuwaiti mothers. Moreover, a good understanding of local beliefs, customs and tradition related to breastfeeding in general and colostrum in particular can help healthcare providers and breastfeeding promoters provide supportive and appropriate counselling to educate mothers with accurate breastfeeding information.

2- Evaluation & monitoring

These studies are needed to evaluate and monitor the breastfeeding policies in all Kuwaiti hospital where mothers are delivering their newborn. Maternity policies should be supportive to foster breastfeeding success. This includes monitoring maternity and birthing practices to ensure they are not interfering with the establishment of breastfeeding, and ensuring that health professionals have adequate training, education and resources to provide appropriate breastfeeding support. As reported in the State of the Code by Country report, the government of Kuwait has adopted only a few provisions of the International Code as law and it has taken measures to legislate on only some aspects of the Code which is well below the minimum investigated by the WHO when the Code was adapted. Hence, there is a need for monitoring hospitals to check if there is any advertising of human milk substitutes including hospital distribution of ready to feed formulas, direct marketing to parents and health professionals and other violations of the WHO International Code of Marketing of Breast-milk Substitutes. It is recommended that the Kuwaiti government sign up for the full WHO Code and should implement and monitor adherence to the regulations on the Code (Annon., 2006).

Mothers and infants need to be regularly monitored after delivery. Since mothers visit the health centre in their local area as a routine infant check- up, it will be useful if health care staff help mothers cope with the new situation by providing breastfeeding advice and

encouragement. Since there are no midwives in Kuwait to follow-up women at home to check for weight and height of child and the possibility of failure to thrive cases at an early stage of infants life, there is a need for postnatal care in Kuwait to provide maternal and infant health care soon after being discharged from hospital to support new mothers and help them with breastfeeding problems and concerns.

Finally, support and encouragement for breastfeeding can be provided at many levels. For example: health promotion campaigns at a national level; policies in maternity hospitals at Ministry of health level and primary care teams working with individual women and groups within the community. While these can support and encourage mothers to initiate and continue breastfeeding, the influential factors found in this study should be used as the basis for designing and targeting future research and interventions.

Multiple factors determine breastfeeding success. Breastfeeding initiation rate and mean breastfeeding duration improvement are also dependent on many factors. The recommendations outlines above, if implemented, would contribute to improved breastfeeding rates in Kuwait and help in planning future infant feeding studies.

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Appendices

Appendix 1: Subject Information Sheet-SIS-English version

UNIVERSITY of GLASGOW

Kuwait Infant Feeding Study

Dear New Mother,

You have been invited to participate in a study of infant feeding practices, which is being conducted by the Division of Developmental Medicine at the University of Glasgow, UK, in association with the Department of Biological Sciences at Kuwait University .The purpose of this study and what you will be asked to do, if you agree to participate, are explained below.

What is the purpose of the study?

Infant feeding in Kuwait is changing rapidly along with modernization and development of the country. The purpose of this survey is to study infant feeding practices among new mothers in Kuwait. This study will allow us to see how infant feeding practices may have changed over the last three decades.

Why I have been chosen?

You have been chosen to take part of this study because you have just had a healthy baby. Your participation in the study is completely voluntary and if you agree to participate you may withdraw from the study unconditionally at anytime without giving any reasons. The care you receive while in hospital, and afterwards, will not be affected in any way if you choose not to participate or withdraw from the study at a later time.

What do I have to do?

Before you leave the hospital we will ask you to complete a short interview questionnaire to provide us with some information about yourself, your new infant's feeding experiences and how you plan to feed your infant in the future. You may, if you prefer, complete the questionnaire without the interviewer's help. Once you have left the hospital you will not have to attend any special clinics as the responsible researcher will contact you by phone to ask about your infant's feeding and development. She will ring you five times only, at times convenient to you approximately every six weeks until your baby is 6 months old and then again when your baby is 12 months old.

Are there risks involved in taking part in this study?

There will be no risks as we will be asking only for information and this will be anonymous and your privacy will be respected completely.

What are the benefits of taking part in this study?

The results of the study may improve our understanding of factors influencing a mother's choice of infant feeding methods and the trends in Kuwait, and help us plan better educational activities to meet the needs of Middle Eastern mothers and infants.

What happen to the information I give?

The answers to any questionnaire that you complete will be kept strictly confidential. The data from all the women participating in the study will be presented as group data and will be published as a research report and as an article(s) in a medical journal. No one will be able to identify you from the results. Once the final research report is written we will send you a summary of the research findings.

Who is organizing and funding the study?

The project is being funded by the Kuwaiti Government (Civil Services Commission) and is being conducted by Mrs. Manal Dashti who is completing her PhD in human nutrition in the Division of Developmental Medicine at the University of Glasgow. She is being supervised locally by researchers at Kuwait University.

The project has been approved by the Faculty of Medicine Ethics Committee at Glasgow University, Faculty of Medicine Ethics Committee at Kuwait University and Kuwait Ministry of Health.

Who do I contact if I want further information about the study?

For further information please contact:

Mrs. Manal Dashti, Principle Researcher on 680 8878 / 562 5052

Or

Dr. Mona Al-Sughayer, Assistant Professor of Nutritional Biochemistry – Kuwait University, on 789 8970 / 498 7624

Appendix 2: Subject Information Sheet-SIS-Arabic version

UNIVERSITY of GLASGOW

دراسة تغذية الطفل الرضيع في الكويت

عزيزتي الأم

لقد تمت دعوتك للمشاركة في دراسة حول ممارسات تغذية الطفل الرضيع في الكويت، وهي دراسة استقصاء ومسح ميداني أعدت من قبل قسم الطب التطوري في جامعة جلاسگو في المملكة المتحدة بالتعاون مع قسم العلوم البيولوجية في جامعة الكويت .وفيما يلي شرح مختصر عن هدف هذه الدراسة وما هو المطلوب منك في حال موافقتك على المشاركة في الدراسة

ما هو الهدف من الدراسة؟

من الملاحظ أن ممارسات وأنماط تغذية الطفل الرضيع في الكويت تتغير بصورة سريعة مع التطور والحداثة التي تشهدها البلاد .ويهدف هذا المسح الميداني لدراسة ممارسات تغذية الطفل الرضيع لدى الأمهات حديثات الولادة في الكويت، ونأمل أن تتيح هذه الدراسة معرفة التغيرات التي حدثت خلال العقود الثلاث الماضية في ممارسات تغذية الطفل الرضيع.

لماذا تم اختياري للمشاركة في الدراسة؟

لقد تم اختيارك لتكوني ضمن هذه الدراسة لأنك قد وضعت مؤخراً طفلا يتمتع بصحة جيدة .إن مشاركتك في الدراسة أمر تطوعي وفي حال موافقتك على المشاركة يمكنك أن تنسحبي من الدراسة دون أي شرط أو قيد وفي أي وقت دون الحاجة لذكر الأسباب وراء قرار الانسحاب .إن الرعاية الصحية التي تتلقينها خلال إقامتك في المستشفى وبعد الخروج من المستشفى سوف لن تتأثر بأي حال إذا ما قررت عدم المشاركة في الدراسة أو الانسحاب منها في وقت لاحق.

ماذا يجب علي أن أفعل؟

قبل مغادرتك المستشفى سوف تقوم الباحثة في الدراسة بلقاء قصير معك لتعبئة بيانات الإستبانة المعدة للدراسة وذلك لجمع ببعض المعلومات عنك وعن تغذية طفلك الجديد وما هي خططك لتغذيته في المستقبل .بإمكانك بالطبع - إذا رغبت بذلك - القيام بتعبئة الإستبانة لوحدك من دون الاستعانة بالباحثة . بعد خروجك من المستشفى، لن تكوني مضطرة لزيارة أي عيادة أو مركز صحي لإتمام مشاركتك بالدراسة، فالباحثة المسئولة سوف تتواصل معك بواسطة الهاتف لتستفسر عن تطورات تغذية طفلك . سوف تتصل بك هاتفياً - في الأوقات المناسبة لك - لخمس مرات لاحقة، بمعدل كل ست أسابيع حتى بلوغ طفلك سن ست شهور، ثم اتصال هاتفي أخير عند بلوغه الشهر الثاني عشر.

هل هناك أي مخاطر من المشاركة بهذه الدراسة؟

لا توجد أي مخاطر، فالمطلوب فقط جمع المعلومات، وسوف تدون البيانات بدون أي إشارة إلى هوية المشاركات مع احترام كامل خصوصيتك كمشاركة في الدراسة.

ما هي الفائدة من المشاركة في هذه الدراسة؟

من المتوقع أن تعمل نتائج هذه الدراسة على تطوير معرفتنا بالعوامل المؤثرة على اختيارات الأم لأساليب تغذية طفلها، والأنماط السائدة لتغذية الطفل الرضيع في الكويت، مما يساهم في وضع خطط أفضل نحو الأنشطة التعليمية والتثقيفية المتلائمة مع حاجة الأمهات الشرق أوسطيات والأطفال الرضع.

ماذا سيحدث للمعلومات التي سأقدمها؟

إن الإجابات الخاصة بكل إستبانة سوف تحفظ بسرية تامة، وسوف تعرض البيانات المستخلصة من كافة المشاركات في الدراسة على هيئة بيانات جماعية وتنشر كمقالة بحث علمي في أحد الدوريات الطبية .ولا يمكن لأي شخص أن يتعرف على هويتك أو على بياناتك من النتائج المستخلصة .وعندما يتم نشر تقرير البحث النهائي سوف نرسل لك ملخص نتائج البحث.

من هي الجهة المنظمة والممولة لهذه الدراسة؟

هذه الدراسة بتمويل من حكومة دولة الكويت ممثلة بديوان الخدمة المدنية، وقد قامت السيدة منال دشتي بإعداد الدراسة كمتطلب لدراسة الدكتوراه في تخصص تغذية الإنسان في قسم الطب التطوري في جامعة جلاسگو .وتشرف على السيدة منال دشتي محلياً باحثة من جامعة الكويت .ولقد تمت الموافقة على مشروع الدراسة من قبل كل من لجنة أخلاقيات المهنة في كلية الطب بجامعة جلاسگو في المملكة المتحدة، ولجنة أخلاقيات المهنة في كلية الطب بجامعة الكويت، وكذلك وزارة الصحة في دولة الكويت .

ما هي جهة الاتصال في حال رغبت بالمزيد من المعلومات عن الدراسة؟

لمزيد من المعلومات برجاء الاتصال بكل من:

- السيدة منال دشتي - الباحث الرئيسي

هاتف نقال: - **680 8878** هاتف منزل**562 5052** :

أو

- د .منى عبدالرحمن الصغير - أستاذ مساعد في الكيمياء الحيوية والتغذية - جامعة الكويت

هاتف نقال - **789 8970** :هاتف مكتب**498 7624** :

Appendix 3: Study Consent Form-English-Arabic

إقرار موافقة على الاشتراك في مشروع دراسة علمية

دراسة تغذية الطفل الرضيع في الكويت

أقر بأن السيدة/ منال دشتي –الباحثة المسئولة عن مشروع الدراسة– قد قامت بالشرح لي عن طبيعة وأهداف هذه الدراسة بالتفصيل والدور الذي سأقوم به، وقد وافقت على الاشتراك في هذه الدراسة، والإجابة عن جميع الأسئلة الموجهة لي والواردة في الإستبانة المعدة لهذه الدراسة. كما أعلم أنه من حقي الانسحاب من الدراسة في أي وقت ودون أي شرط وقيد، وبإمكاني الحصول على بعض نتائج الدراسة.

التاريخ: / /

اسم وتوقيع الأم

_____

اسم وتوقيع الباحثة

_____

Consent Form

Kuwait Infant Feeding Study

Mrs. Manal Dashti, the researcher responsible for the current study project, has explained to me the aims of this study and what my participation will involve.

I agree to take part in this study project by answering the questions in the questionnaires specially designed for this study. I know that I have the right to quit this study project unconditionally at any time. It is also possible for me to get some information regarding the result of this study project.

Date: / /

Contestant Name & Signature

_____

Researcher Name & Signature

_____

Appendix 4: Study invitation poster

Appendix 5: KIFS baseline and follow-up questionnaires

Appendix 5.1: Baseline Questionnaire-English version

Division of Developmental Medicine
Human Nutrition

An Evaluation of

Infant Feeding Practices

The Human Nutrition Department at the University of Glasgow is studying how babies in Kuwait are fed. As part of this project mothers of new born babies in several hospitals in Kuwait are being asked about their experiences and opinions.

We are asking for some of your time to complete the attached questionnaire. Your answers will remain **strictly confidential** because you do **not** have to write your name on the questionnaire and staff at the hospital will not see your answers.

When you have completed the questionnaire please put it in the attached envelope and hand in the questionnaire while at hospital prior to discharge.

For each questionnaire please **circle** the number beside the answer of your choice **or** fill in the blank.

For most questions only circle on answer;

Example **What colour is your newborn's hair?**

Brown……1 (○)
Red……2
Blonde……3
I'm not sure……4

For some questions circle yes or no:

Example **Did you offer your baby any of the following liquids?**

	Yes	**No**
Herbal Tea	(○)	(1)…… 2
Glucose water		1……..2
Orange Juice		(1)……..2

For some questions circle any answer that applies.
(These questions are preceded by instructions)

Example **What colour do you prefer on your infant?**

Blue……(1)
Yellow……1
Green……(1)
Pink……...1

SECTION 1.

In this section we are interested in finding out about how you are feeding your new baby.

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1) How are you feeding your baby?

Bottle-feeding infant formula 1
Breast-feeding only (please go to Q3 if you answered this) 2
Mainly bottle-feeding (formula) but also breast-feeding 3
Mainly breast-feeding but 'topping up' with bottle-feeding (formula) ... 4

Other (please specify)_____

2a) If you are only bottle-feeding, did you try to breast-feed your baby?

No...(Go to question 3)..... 1
Yes 2

2b) why did you change to bottle-feeding?

1. Brest-feeding is too painful 1
2. Breast-feeding is too stressful 1
3. Dislike breast-feeding 1
4. Baby not gaining enough milk 1
5. Baby not gaining enough weight 1
6. Baby gests too little milk or too slow 1
7. Baby gets too much milk or too fast 1
8. Baby too tired to feed 1
9. Baby has problems sucking 1
10. Breast feeding is too embarrassing 1
11. Formula feeding is more convenient than breast feeding 1
12. Bottle feeding is easier 1
13. Returning to work or study soon after birth 1
14. Baby's father did not like me to breast feed my baby in public 1
15. Wanted to go onto OCP (pills) 1
16. I am on medications 1
17. My health will not permit me to breast-feed 1
18. Feeling that I am not doing very well at breast-feeding 1

19. Other reasons (please specify) .....

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3. When did you **first** decide how you were going to feed your new baby?

Before I became pregnant 1
Early in my pregnancy 2
Late in my pregnancy 3
During labor 4
After my baby was born 5

4. Who helped you decide whether you would bottle-feed or breast-feed? (Please circle **any answers** that apply) (You can have more than one answer)

1. No one 1
2. The baby's father 1
3. My mother 1
4. My mother in law 1
5. Other relatives 1
6. Friends 1
7. My obstetrician 1
8. My pediatrician 1
9. My GP 1
10. Other health professionals e.g., nurse, dietitian 1

11. Other (please specify) _____

5. If you decided to bottle-feed your baby from the start, what were the reasons for this choice? (Please circle **any answers** that apply) (You can have more than one answer)

1. formula is better for the baby 1
2. bottle-feeding is easier 1
3. I don't like breast-feeding 1
4. I will go back to work soon after the birth 1
5. breast-feeding will make my breasts sag 1
6. the baby's father prefers bottle-feeding 1
7. formula is just as good as breast-milk 1
8. the baby's father can help with bottle-feeding 1
9. I want to know how much milk baby has at each feed 1
10. my mother suggested bottle-feeding 1
11. my mother in law suggested bottle feeding 1
12. friend or relative suggested bottle-feeding 1
13. health worker (e.g , doctor, nurse) suggested bottle-feeding 1

14. other (please specify)_____

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6 **Before** you became pregnant, did you smoke cigarettes?

Yes 1
No (GO TO 8).....2

7 How many cigarettes did you smoke a day **before** you became pregnant? _____ ☐

8 **Before** you became pregnant, did you smoke hubble-bubble?

Yes 1
No (GO TO Q10).....2

9 How often did you smoke hubble-bubble a day **before** you became pregnant? _____ ☐

10 **While** you were pregnant, did you smoke cigarettes?

Yes 1
No (GO TO Q12).....2

11 How many cigarettes did you smoke a day **while** you were pregnant? ☐

_____

12 **While** you were pregnant, did you smoke hubble-bubble?

Yes 1
No (GO TO Q14).....2

13 How often did you smoke hubble-bubble a day **while** you were pregnant? ☐

_____

14 Did you take folic acid supplements during your pregnancy?

Yes, before and during my pregnancy.....1
Yes, as soon as I knew I was pregnant 2
No 3

15 Was this a planned pregnancy?

Yes, I was actively trying to get pregnant……1
No, the pregnancy was mistimed but I am happy……...……...2
No, I was not planning to have children …….....……3

Office Use Only

16 Did you receive advice or information about breastfeeding from any of the following? (You can have more than 1 answer)

1. Female relatives 1
2. Female friends 1
3. School 1
4. Other 1

17a) Did any member of the hospital staff encourage you to put your baby to the breast right after the birth?

Yes 1
No...(Go to question 18)..... 2

17b) Who encouraged you to put your baby to the breast right after the birth? (Please circle **any answers** that apply) (You can have more than one answer)

1. Obstetrician 1
2. Pediatrician..... 1
3. nurse 1
4. other (please specify)_____

_____

18. How much of the time have you kept your baby with you in your room?

All during the day and all of the night...(Go to question 20)..... 1
All during the day and part of the night 2
All during the day but not overnight..... 3
Part of the day but not all of the day..... 4

(specify how many hours) _____

baby has been in the Special Care Nursery all of the time…….5

19. Would you have liked to have had your baby with you overnight?

No 1
Yes, some nights 2
Yes, every night 3
Don't know 4

20. Have you shared your hospital room with other mothers?

No 1
Yes, one other mother 2
Yes, two other mothers 3
Yes, three other mothers 4
Yes, four or more other mothers 5

21. If your baby is in the nursery at night, what does the nursery staff **mainly** do when the baby gets hungry?

they bring the baby to me to feed 1
the nurse lets me know and I go to the nursery to feed baby 2
they give baby a bottle of formula..... 3
they give baby a bottle of my expressed breast milk..... 4
they give baby a bottle of glucose water 5
they give baby a bottle of plain water 6
I don't know 7

22. How often are you feeding your baby?

On demand ie. whenever baby wants to be fed
(e.g., cries out in hunger)..... 1
According to a schedule - about every 2 hours 2
According to a schedule - about every 3 hours 3
According to a schedule - about every 4 hours 4

Other (please explain) _____

_____

23. Have you been encouraged by hospital staff to "demand feed"? (Demand feeding is whenever the baby wants to feed)?

Yes 1
No..... 2

24a) Have you been satisfied with the hospital's recommendations about how often you should feed your baby?

Yes (Go to question 25a)..... 1
No..... 2

24b) Please explain what you don't like about these recommendations.

I am the one who decide my baby feeding rules..... 1
Hospital recommendations did not work with my baby..... 2
I was not given any recommendation from the hospital..... 3
Other reasons (please specify) .....

_____

_____

_____

25a) In general, do you think you have had enough help and information about feeding your baby from hospital staff?

Yes (Go to question 26)..... 1
No 2

25b) What kind of help or information would you have liked? (Please specify)

_____

_____

_____

26) Hospital staff members sometimes have conflicting ideas and opinions about infant feeding. Do you feel you have been given conflicting advice by different members of this hospital staff about feeding your baby?

Yes 1
No..... 2

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27. Since you have been in hospital have you received any of the following from hospital staff?

Please circle all that you have received (You can have more than one answer)

1. pamphlets on breast-feeding baby 1
2. lectures or classes on breast-feeding baby 1
3. demonstrations on how to breast-feed baby 1
4. video (TV) or slide show on how to breast-feed baby 1
5. individual consultation or discussion with any of the staff about breast-feeding baby 1
6. none of the above 1

7. other (please specify) _____

_____

28. Did your mother breast-feed any of her children?

Yes 1
No 2
Don't know 3

29. Does the baby's father have any preference for how you feed your baby?

Yes, he prefers bottle-feeding 1
Yes, he prefers breast-feeding 2
He doesn't mind how I feed my baby 3
Never really discussed the matter with him 4

30. Does your mother have any preference for how you feed your baby?

Yes, she prefers bottle-feeding 1
Yes, she prefers breast-feeding 2
She doesn't mind how I feed my baby 3
Never really discussed the matter with her 4

31 Does your mother-in-law have any preference for how you feed your baby?

Yes, she prefers bottle-feeding 1
Yes, she prefers breast-feeding 2
She doesn't mind how I feed my baby 3
Never really discussed the matter with her 4

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32. How have your relatives and friends fed their babies?.....

Most of them bottle-fed 1
Most of them breast-fed 2
Some breast-fed and some bottle-fed 3
Friends don't have babies 4
Don't know 5

33. Have you ever attended any antenatal classes, or lectures on how to feed your baby ?

Yes, for this pregnancy 1
Yes, for a previous pregnancy 2
Yes, for this pregnancy and a previous pregnancy 3
No 4

34. When do you plan to first give your baby solids?

before 2 months 1
From 2 months 2
From 3 months 3
From 4 months 4
From 5 months 5
From 6 months 6
From 7 months 7
From 8 months 8
From 9 months 9

Don't Know……..10

Other (please specify) _____

_____

35. How was your baby delivered?

Vaginal without forceps or suction 1
Vaginal with forceps or suction 2
Caesarean- Elective 3
Caesarean- emergency……...…4

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36. What was your baby's first feed? .....

Formula 1
Breast milk (or colostrum) 2
Herbs Water (i.e. chamomile, helba)..... 3
Glucose water 4
Dates water 5
Plain water 6

Other (please specify)_____

_____

37. Did you give permission for your baby to receive anything other than Breast milk?

Yes……1
No……..2

38a) Has your baby had any health problems, either since the birth or as a result of the birth?

Yes 1
No.(Go to question 39a)..... 2

38b) What health problems has your baby had?

_____

_____

_____

39a) Has your baby spent any time in a Special Care Nursery?

Yes 1
No...(Go to question 40)..... 2

39b) How long was your baby in the Special Care Nursery?

baby is still in the nursery 1
less than one day 2
between 1 and 2 days 3
between 3 and 4 days 4
between 5 and 7 days 5
more than 7 days 6

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40) How many children do you now have? (Including this child)

Please specify number.....

41a) Did you breastfeed any of your other children?

Yes……..……1

No……2

41b) If yes, what was the longest period of time that you breastfed one of your children?

Please specify number.....

wks

SECTION 2.

The following questions are for mothers who are breast-feeding. If you are not breast-feeding at all, please go to Section 3, on page 14 which starts with question 55.

42 When did you first try to breastfeed?

Within first hour of birth 1
between 1-3 hours after the birth 2
between 3-6 hours after the birth……3
between 6-24 hours after the birth 4
The next day after the birth……..5

other (please specify) _____ ☐

43 How long was it before your milk came in?

within 24 hours of the birth 1
between 24-48 hours after the birth..... 2
between 48-72 hours after the birth..... 3
still waiting for milk to come in 4

Other (please specify)_____ ☐

44. How much information about breast-feeding were you given by the hospital?

None or very little 1
Some, but I would have liked more 2
Enough 3
More than I wanted 4

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45. Did any staff member **check** how your baby's mouth was attached to your breast when you first started feeding?

No 1
Yes 2

46 Did any staff member **teach** you how to position and attach your baby to the breast?

No 1
Yes 2
I didn't need to be taught 3

47. Why did you decide to breast-feed?

(Please circle **any answers** that apply) (You can have more than one answer)

1. Breast-feeding is the right thing to do 1
2. Breastfeeding is part of religious beliefs 1
3. Breast milk is the best food for the baby because God has created it .. 1
4. Breastfeeding is cheaper 1
5. Breast milk is better for the baby 1
6. Breastfeeding helps to prevent allergies 1
7. Breastfeeding helps to minimize colic problems 1
8. Breast-fed babies are more intelligent 1
9. Breast-feeding helps you lose weight 1
10. Breast-feeding is more convenient for mother 1
11. Breastfeeding makes me emotionally closer to my baby 1
12. The baby's father wanted me to breast-feed 1
13. My mother advised me to breast-feed 1
14. My mother in law advised to breast-feed 1
15. Other people advised me to breast-feed 1
16. Breastfeeding can delay next pregnancy (natural contraceptive) 1
17. other (please specify)_____

_____

48. Have you experienced any of the following since you started breast-feeding?

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(Please circle **any answers** that apply) (You can have more than one answer)

1. Inverted nipples 1
2. Cracked or sore nipples 1
3. Baby gets too much milk 1
4. Baby gets milk too fast 1
5. Takes a long time before milk starts flowing at start of feed 1
6. Baby too tired to feed 1
7. Difficulty expressing milk 1
8. Baby not gaining enough weight 1
9. Baby has problems sucking 1
10. Breasts engorged (too full) 1
11. Baby doesn't wake up for feeds 1
12. Not enough milk or colostrum for baby 1

13. Feeling that I'm not doing very well at breast-feeding..... 1

14. Other (Please specify) _____

_____

_____

49. At what age do you plan to stop breast-feeding your baby?

1. During the 1st month 1
2. During the second month 2
3. Between 2 and 4 months 3
4. Between 4 and 6 months 4
5. Between 6 and 9 months 5
6. Between 9 and 12 months 7
7. Between 12 and 18 months 8
8. Between 18 and 24 months 9
9. Over 24 months 10
10. Don't know yet..... 11

11. Other (please specify)_____ .....

50. Are you planning to start giving your baby formula milk-feeds?

Yes 1
No...(Go to question 52a)..... 2
Don't know .(Go to question 52a).. 3

51. At what age do you plan to start giving your baby formula-feeds?

before baby is 6 weeks old 1
between 6 weeks and 2 months 2
between 2 and 3 months 3
between 4 and 6 months 4
between 7 and 9 months 5
between 9 and 12 months 6
over 12 months 7

other (please specify)_____

52a Has any member of the hospital staff given you the name of anyone to contact if you have problems with breast-feeding after you leave hospital?

Yes 1
No...(Go to question 53)..... 2

52b If yes, who were you told to contact?

(Please circle **any answers** that apply) (You can have more than one answer)

1. Doctor..... 1
2. Area Health Centre..... 1
3. Dietitian..... 1

4. Other, (please specify) _____

_____

_____

53. Have any of the following people supported or encouraged you with breast-feeding? (Please circle **any answers** that apply)
(You can have more than one answer)

1. Your friends 1
2. The baby's father 1
3. Your mother 1
4. Your mother-in-law..... 1
5. Other members of your family..... 1
6. Your baby's Pediatrician..... 1
7. Your obstetrician..... 1

8. Other, Please specify_____

SECTION 3

54. For each of the following statements, please indicate how much you agree or disagree by circling the number that most closely corresponds to your opinion. The number '1' indicates strong disagreement, whereas '5' indicates strong agreement.

		Strongly disagree				**Strongly agree**
a)	The nutritional benefits of breast milk last only until the baby is weaned from breast milk	1	2	3	4	5
b)	Formula-feeding is more convenient than breast-feeding	1	2	3	4	5
c)	Breast-feeding increases mother-infant bonding	1	2	3	4	5
d)	Breast milk is lacking in iron	1	2	3	4	5
e)	Formula-fed babies are more likely to be overfed than breast-fed babies	1	2	3	4	5
f)	Formula-feeding is the better choice if the mother works outside the home	1	2	3	4	5
g)	Mothers who formula-feed miss one of the great joys of motherhood	1	2	3	4	5
h)	Women should not breast-feed in public places such as restaurants	1	2	3	4	5
i)	Babies who are fed breast milk are healthier than babies who are fed formula	1	2	3	4	5
j)	Breast-fed babies are more likely to be overfed than formula-fed babies	1	2	3	4	5
k)	Fathers feel left out if a mother breastfeeds	1	2	3	4	5
l)	Breast milk is the ideal food for babies	1	2	3	4	5
m)	Breast milk is more easily digested than formula	1	2	3	4	5
n)	Formula is as healthy for an infant as breast milk	1	2	3	4	5
o)	Breast-feeding is more convenient than formula- feeding	1	2	3	4	5
p)	Breast milk is less expensive than formula	1	2	3	4	5
q)	Mother milk can be stored for days & months	1	2	3	4	5

SECTION 4.

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Finally the following information about you will help us to analyze our data. We recognize that some of the questions are very personal. Please remember that they will remain strictly confidential.

55. What area do you live in?

_____ ☐

56. How old were you at your last birthday?

_____ ☐

57. What is the highest level of education you have completed?

Some primary 1
Primary 2
Secondary 3
High School 4
University or higher 5

Other (Please Specify) _____ ☐

_____

58. How many years of schooling have you completed?

_____ ☐

59. Were you employed outside the home or studying in the past 6 months?

Yes, full-time employed 1
Yes, part-time employed 2
Yes, full-time student 3
Yes, part-time student 4
No 5

60. Have you ever worked in paid employment?

Yes 1
No 2

61 If yes, what is (was) the title of your current (or last) paid job? .....
For example, Primary school teacher, nurse, engineer, etc.

_____

62 What do you plan to do in the next 6 months?

Will still be home with the baby 1
Work full-time 2
Work part-time 3
Study full-time 4
Study part-time 5
Undecided 6

63 If you are a Kuwaiti working in Government sector, are you planning to have half paid salary maternity leave?

Yes 1
No 2

64 If you are working in private sector, how long is your maternity entitlement in your job contract?

_____ Months

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

Yes 1
No 2

66 Are you planning to have any non-paid salary maternity leave?

Yes (If yes go to next question) 1
No 2

67 If yes, for how long?

Less than 6 months 1
6-12 months 2
More than 12 months 3

68 What is the title of the current (or last) main job held by your husband?
For Example, Engineer, teacher…etc.

_____

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69 In what country were you born?

_____

70 For how long have you lived in Kuwait?.....

_____

71. In what country was your mother born?

_____

72 How much did you weigh before you became pregnant?

_____Kilograms

73 How tall are you?

_____Centimetres

THANK YOU VERY MUCH FOR YOUR PARTICIPATION

Appendix 5.2: Baseline Questionnaire-Arabic version

قسم الطب التطويري
قسم تغذية الإنسان

تقييم ممارسات تغذية الطفل الرضيع

يقوم قسم تغذية الإنسان في جامعة غلاسغو بدراسة عن كيفية تغذية الأطفال الرضع (حديثي الولادة) في الكويت، وفي إطار هذا المشروع سوف يتم توجيه أسئلة لأمهات المواليد الجدد في عدد من المستشفيات في الكويت عن خبراتهم وآرائهم.

ونرجو منك أن تمنحينا بعض الوقت من أجل استكمال الاستبيان المرفق، وستبقى اجاباتك سرية لأنك غير ملزمة بكتابة إسمك على الاستبيان، كما أن الهيئة الصحية والعاملين في المستشفى لن يطلعوا على الإجابات.

وعند الانتهاء من الاستبيان نرجو منك تسليمه بالظرف المرفق قبيل مغادرتك المستشفى.

عند الإجابة على الأسئلة ضعي **دائرة** على الرقم المجاور للإجابة التي تختارينها أو الكتابة في الفراغات عند اللزوم.

لأغلب الأسئلة: ضعي دائرة على الإجابة المناسبة (إجابة واحدة فقط):

مثال: ما هو لون شعرمولودك الجديد؟

- بني..... 1
- أسود..... 2
- أشقر..... 3
- لست متأكدة..... 4

لبعض الأسئلة: جاوبي بنعم أو لا:

مثال:	**هل قدمت لطفلك أيا من المشروبات التالية:**	**نعم**	**لا**
-	شاي الأعشاب	1	2
-	ماء الجلوكوز	1	2
-	عصير البرتقال	1	2

لبعض الأسئلة: ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة:

مثال: ما هي ألوان الملابس التي تفضلينها لطفلك؟

- أزرق 1
- أصفر..... 1
- أخضر.....1
- وردي.....1

القسم الأول

في هذا الجزء من الإستبانة نود أن نتعرف على كيفية إطعامك لطفلك.

لاستخدام الباحث فقط

(1) كيف تغذين طفلك حالياً؟

رضاعة صناعية لتركيبة حليب الرضع 1
رضاعة طبيعية فقط (انتقلي إلى سؤال رقم 3) 2
رضاعة صناعية بشكل أساسي مع الرضاعة الطبيعية 3
رضاعة طبيعة بشكل أساسي ولكن تكمل بالرضاعة الصناعية 4
أخرى (يرجى التحديد) _____

(2a) إذا كنت ترضعين طفلك رضاعةً صناعية فقط، هل جربت الرضاعة الطبيعية؟

نعم 1
لا (انتقلي إلى سؤال رقم 3) 2

(2b) لماذا غيرت إلى الرضاعة الصناعية؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- الرضاعة الطبيعية مؤلمة جداً 1
2- الرضاعة الطبيعية عملية مجهدة 1
3- لا أحب الرضاعة الطبيعية 1
4- الطفل لا ينال كفايته من الحليب 1
5- الطفل لا يزيد وزنة بشكل كافي 1
6- الطفل يرضع كمية قليلة من الحليب أو ببطء 1
7- الطفل يرضع كمية كثيرة من الحليب أو بسرعة 1
8- الطفل تعب جداً لكي يرضع 1
9- الطفل لدية مشاكل في المص 1
10- الرضاعة الطبيعية عملية محرجة للغاية 1
11- الرضاعة الصناعية تناسبني أكثر من الرضاعة الطبيعية 1
12- الرضاعة الصناعية أسهل 1
13- للرجوع إلى العمل أو الدراسة بعد الولادة مباشرة 1
14- والد الطفل لا يحبذ أن ارضع طفلي أمام العامة 1
15- أردت أن أتناول حبوب منع الحمل 1
16- لأنني أتناول أدوية علاجية 1
17- صحتي لا تسمح لي بالرضاعة الطبيعية 1
18- أشعر بأنني غير موفقة في الرضاعة الطبيعية 1
19- أخرى (يرجى التحديد) _____

لاستخدام الباحث فقط

(3) متى اتخذت قرار كيفية إرضاع طفلك الجديد للمرة الأولى؟

قبل أن أصبح حاملا 1
في بداية الحمل 2
في نهاية الحمل 3
أثناء الولادة 4
بعد ولادة طفلي 5

(4) من الذي ساعدك في اتخاذ قرار إرضاع طفلك رضاعة طبيعية أو صناعية؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- لا أحد 1
2- والد الطفل 1
3- أمي (والدتي) 1
4- أم زوجي 1
5- أقارب آخرين 1
6- أصدقاء 1
7- طبيب النساء والولادة 1
8- طبيب الأطفال 1
9- طبيب العائلة 1
10- آخرين من الهيئة الصحية (مثال: أخصائية التغذية أو الممرضة) 1
11- آخرين (يرجى التحديد) _____

(5) إذا كنت قد قررت أن ترضعي طفلك رضاعة صناعية منذ البداية، ما هي الأسباب التي دعتك لهذا الاختيار؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- تركيبة حليب الرضع أفضل للطفل 1
2- الرضاعة الصناعية أسهل 1
3- لا أحب الرضاعة الطبيعية 1
4- سأعود للعمل مباشرة بعد الولادة 1
5- الرضاعة الطبيعية ستجعل صدري يترهل 1
6- والد الطفل يفضل الرضاعة الصناعية 1
7- تركيبة حليب الرضع لها نفس جودة حليب الأم 1
8- والد الطفل يستطيع المساهمة في الرضاعة الصناعية 1
9- أرغب في معرفة كمية الحليب التي يشربها الطفل عند كل رضعه 1
10- أمي اقترحت الرضاعة الصناعية 1
11- أم زوجي اقترحت الرضاعة الصناعية 1
12- أصدقاء أو أقارب اقترحوا الرضاعة الصناعية 1
13- أحد أفراد الهيئة الصحية (مثال: الطبيب أو الممرضة) اقترح الرضاعة الصناعية 1
14- أخرى (يرجى التحديد) _____

لاستخدام الباحث فقط

(6) هل كنت تدخنين السجائر قبل الحمل ؟

نعم 1
لا (انتقلي إلى سؤال رقم 8) 2

(7) كم سيجارة كنت تدخنين في اليوم قبل الحمل؟ _____

(8) هل كنت تدخنين الشيشة قبل الحمل ؟

نعم 1
لا (انتقلي إلى سؤال رقم 10) 2

(9) كم مرة في اليوم كنت تدخنين الشيشة قبل الحمل؟ _____

(10) هل كنت تدخنين السجائر أثناء الحمل؟

نعم 1
لا (انتقلي إلى سؤال رقم 12) 2

(11) كم سيجارة كنت تدخنين في اليوم أثناء الحمل؟ _____

(12) هل كنت تدخنين الشيشة أثناء الحمل ؟

نعم 1
لا (انتقلي إلى سؤال رقم 14) 2

(13) كم مرة في اليوم كنت تدخنين الشيشة أثناء الحمل؟ _____

(14) هل تناولت حبوب حمض الفوليك كمكمل غذائي أثناء الحمل؟

نعم، قبل وأثناء الحمل 1
نعم، مباشرة بعد علمي بالحمل 2
لا 3

(15) هل كان هذا الحمل مخطط له مسبقاً؟

نعم، كنت أحاول جدياً لأصبح حاملا 1
لا، الحمل جاء في غير وقته ولكنني راضية 2
لا، لم أكن أخطط للحصول على الأبناء 3

(16) هل حصلت على نصائح أو معلومات عن الرضاعة الطبيعية من أحد هؤلاء:

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- القريبات 1
2- الصديقات 1
3- المدرسة 1
4- آخرين (يرجى التحديد) _____

لاستخدام الباحث فقط

(17a) هل نصحك أحد أفراد الهيئة الصحية بوضع طفلك على الثدي مباشرة بعد الولادة؟

نعم 1
لا (انتقلي إلى سؤال رقم 18) 2

(17b) من الذي قام بتشجيعك أن تضعي طفلك على الثدي مباشرة بعد الولادة؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- طبيب النساء والولادة 1
2- طبيب الأطفال 1
3- الممرضة 1
4- آخرين (يرجى التحديد) _____

(18) كم من الوقت قضى طفلك معك في الغرفة؟

كل الوقت في النهار وكل الوقت في الليل (انتقلي إلى سؤال رقم 20) 1
كل الوقت في النهار وجزء من الليل 2
كل الوقت في النهار ولكن ليس في الليل 3

جزء من اليوم ولكن ليس كل اليوم 4
يرجى تحديد كم ساعة: _____
الطفل كان موجوداً في غرفة العناية الخاصة طوال الوقت 5

(19) هل كنت تودين أن يكون طفلك بجانبك طوال الليل؟

لا 1
نعم، بعض الليالي 2
نعم، كل ليلة 3
لا أعلم 4

(20) هل شاركت غرفة المستشفى مع أمهات أخريات؟

لا 1
نعم، عدد 1 2
نعم، عدد 2 3
نعم، عدد 3 4
نعم، عدد 4 5

(21) إذا كان طفلك في غرفة الحضانة أثناء الليل، ماذا تفعل هيئة الرعاية غالباً إذا جاع طفلك؟

يأتون بالطفل لدي حتى أرضعه 1
الممرضة تخبرني واذهب إلى غرفة الحضانة لأرضع طفلي 2
يرضعون طفلي بتركيبة حليب للرضع بزجاجة الإرضاع 3
يرضعون طفلي بحليب مستخرج من صدري بزجاجة الإرضاع 4
يرضعون الطفل ماء الجلوكوز بزجاجة الإرضاع 5
يرضعون الطفل ماء فقط بزجاجة الإرضاع 6
لا أعلم 7

لاستخدام الباحث فقط

(22) كم مرة في المعدل ترضعين طفلك؟

"وفق الطلب" أي كلما رغب الطفل في أن يرضع (مثال: عندما يبكي الطفل جائعا) 1
وفق جدول معين- كل ساعتين تقريباً 2
وفق جدول معين- كل ثلاث ساعات تقريبا 3
وفق جدول معين- كل أربع ساعات تقريبا 4
أخرى (يرجى التوضيح) _____

(23) هل شجعك أفراد الهيئة الصحية بالمستشفى على الرضاعة "وفق الطلب"؟

(الرضاعة وفق الطلب هي كلما رغب الطفل في أن يرضع)

نعم 1
لا 2

(24a) هل كنت راضية من توصيات المستشفى عن المعدل المناسب لإرضاع طفلك؟

نعم (انتقلي إلى سؤال رقم 25a) 1
لا 2

(24b) يرجى توضيح ما الذي لم يعجبك من هذه التوصيات:

أنا من يقرر قواعد إرضاع طفلي 1
توصيات المستشفى لم تنفع مع طفلي 2
لم أحصل على أي توصيات من المستشفى 3
أخرى (يرجى التحديد):
- _____

- _____

- _____

(25a) عموماً، هل تعتقدين أنك حصلت على مساعدة كافية ومعلومات وافية عن تغذية طفلك من أفراد الطاقم الطبي في المستشفى؟

نعم (انتقلي إلى سؤال رقم 26) 1
لا 2

(25b) ما نوع المساعدة أو المعلومات التي كنت تودين لو أنك حصلت عليها؟ (يرجى التحديد)

_____

_____

_____

لاستخدام الباحث فقط

(26) في بعض الأحيان يكون لدى العاملين في المستشفى أفكارا وآراء متعارضة أو متضاربة عن تغذية الطفل، هل تشعرين بأنك حصلت على هذا النوع من النصائح من أفراد الطاقم الطبي في المستشفى عن طريقة تغذية طفلك؟

نعم 1
لا 2

(27) هل حصلت على أياً من الآتي من أفراد الهيئة الصحية في المستشفى أثناء فترة وجودك فيها؟

(ضعي دائرة على كل ما حصلت عليه. يمكن اختيار أكثر من إجابة)

1- كتيبات عن الرضاعة الطبيعية للطفل 1
2- محاضرات أو حصص عن الرضاعة الطبيعية للطفل 1
3- درس عملي عن كيفية إرضاع الطفل طبيعياً من الثدي 1
4- فيديو (تلفزيون) أو عرض شرائح عن كيفية الرضاعة الطبيعية 1
5- استشارة فردية خاصة أو نقاش مع أحد أفراد الهيئة الصحية عن الرضاعة الطبيعية 1
6- لا شيء مما سبق 1
7- أخرى (يرجى التحديد) _____

(28) هل أرضعت أمك أياً من أبناءها؟

نعم 1
لا 2
لا أعلم 3

(29) هل يفضل والد الطفل طريقة معينة لتغذية الطفل؟

نعم، يفضل الرضاعة الصناعية 1
نعم، يفضل الرضاعة الطبيعية 2
لا يمانع بأي طريقة أختارها 3
لم أناقش الموضوع معه أبدا 4

(30) هل تفضل والدتك طريقة معينة لتغذية طفلك؟

نعم، تفضل الرضاعة الصناعية 1
نعم، تفضل الرضاعة الطبيعية 2
لا تمانع في أي طريقة اختارها 3
لم أناقش الموضوع معها أبداً 4

(31) هل تفضل أم زوجك طريقة معينة لتغذية طفلك؟

لاستخدام الباحث فقط

نعم، تفضل الرضاعة الصناعية 1
نعم، تفضل الرضاعة الطبيعية 2
لا تمانع في أي طريقة اختارها 3
لم أناقش الموضوع معها أبداً 4

(32) ما هي الطريقة التي اختارتها قريباتك وصديقاتك لتغذية أطفالهن؟

أغلبهن أرضعن صناعياً 1
أغلبهن أرضعن طبيعياً 2
بعضهن أرضعن طبيعياً وبعضهن أرضعن صناعيا 3
صديقاتي ليس لديهن أبناء (أطفال) 4
لا أعلم 5

(33) هل حضرت أي حصص إرشادية قبل الولادة عن طرق وكيفية إرضاع المولود؟

نعم، لهذا الحمل 1
نعم، لحمل سابق 2
نعم، لهذا الحمل والسابق 3
لا 4

(34) متى تنوين إعطاء طفلك الأطعمة الصلبة (أغذية الفطام)؟

قبل عمر شهرين 1
من عمر شهرين 2
من 3 أشهر 3
من 4 أشهر 4
من 5 أشهر 5
من 6 أشهر 6
من 7 أشهر 7
من 8 أشهر 8
من 9 أشهر 9
لا أعلم 10
أخرى (يرجى التحديد) _____

(35) كيف تمت ولادة طفلك؟

مهبلية (طبيعية) بدون شفط (يدوي أو كهربائي) 1
مهبلية (طبيعية) مع شفط (يدوي أو كهربائي) 2
قيصرية – اختيار شخصي 3
قيصرية – طوارئ 4

(36) ما هو أول طعام أطعمته لطفلك ؟

تركيبة حليب للرضع 1

لاستخدام الباحث فقط

حليب الأم أو اللبأ (المادة الصفراء) 2
ماء أعشاب (بابونج، حلبة.. إلخ) 3
ماء جلوكوز 4
ماء التمر 5
ماء صافي 6
أخرى (يرجى التحديد) _____

(37) هل سمحت بأن يتناول طفلك أي شيء آخر غير حليب الأم؟

نعم 1
لا 2

(38a) هل واجه طفلك أي مشاكل صحية منذ الولادة أو بسبب الولادة؟

نعم 1
لا (انتقلي إلى سؤال رقم 39a) 2

(38b) ما هي المشاكل الصحية التي واجهت طفلك؟

- _____

- _____

(39a) هل قضى طفلك وقتاً في العناية الخاصة (الحاضنة) بالمواليد؟

نعم 1
لا (انتقلي إلى سؤال رقم 40) 2

(39b) ما هي المدة التي قضاها طفلك في العناية الخاصة (الحاضنة) للمواليد؟

الطفل مازال في الحاضنة 1
اقل من يوم واحد 2
بين 1 و2 يوم 3
بين 3 و4 أيام 4
بين 5 و7 أيام 5
أكثر من 7 أيام 6

(40) كم عدد أبنائك (من ضمنهم المولود الجديد)؟

(يرجى التحديد) _____

(41a) هل أرضعت أياً من أبناءك الآخين؟

نعم 1
لا 2

(41b) إذا كان الجواب بنعم، ما هي أطول مدة أرضعت طفلاً من أطفالك رضاعة طبيعة؟

(يرجى التحديد) _____

القسم الثاني

هذه الأسئلة هي للأمهات اللاتي يرضعن رضاعة طبيعية. إذا كنت لا ترضعين طبيعيا، الرجاء الانتقال إلى القسم الثالث في صفحة 14 يبدأ بالسؤال رقم 54.

(42) متى بدأت الرضاعة الطبيعية؟

خلال الساعة الأولى من الولادة	1
بين 1 - 3 ساعات بعد الولادة	2
بين 3 - 6 ساعات بعد الولادة	3
بين 6 – 24 ساعة بعد الولادة	4
اليوم التالي للولادة	5
أخرى (يرجى التحديد) _____	

(43) كم من الوقت انتظرت قبل سريان الحليب من ثديك؟

خلال 24 ساعة من الولادة	1
بين 24-48 ساعة من الولادة	2
بين 48–72 ساعة من الولادة	3
لا زلت أنتظر سريان الحليب من الثدي	4
أخرى (الرجاء تحديد) _____	

(44) ما هي كمية المعلومات عن الرضاعة الطبيعية التي حصلت عليها من المستشفى؟

لاشيء أو قليل جداً	1
بعض المعلومات ولكن كنت أود المزيد	2
معلومات كافية	3
أكثر مما أردت	4

(45) هل تأكدت أحدى الممرضات عن كيفية تثبيت فم طفلك بحلمة الثدي عند بداية أول رضعه؟

نعم	1
لا	2

(46) هل قام أحد فراد الهيئة الصحية بتعليمك الطريقة الصحيحة لوضعية تثبيت الطفل على الثدي؟

نعم	1
لا	2
لم أحتاج للتعليم	3

لاستخدام الباحث فقط

(47) لماذا قررت أن ترضعي رضاعة طبيعية من الثدي؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- الرضاعة الطبيعية هي الطريقة الأفضل الواجب عملها 1
2- الرضاعة الطبيعية هي جزء من اعتقادات دينية 1
3- حليب الأم هو أفضل طعام للطفل منحه الله تعالى 1
4- حليب الأم أرخص 1
5- حليب الأم أفضل للطفل 1
6- الرضاعة الطبيعية تساعد على منع الحساسية 1
7- حليب الأم يساعد على التقليل من مشكلة المغص وانتفاخ الأمعاء 1
8- الأطفال الذين يرضعون من الثدي أكثر ذكاء 1
9- الرضاعة الطبيعية تساعدني على فقدان الوزن 1
10- الرضاعة الطبيعية مناسبة أكثر للأم 1

11- الرضاعة الطبيعية تجعلني أرتبط عاطفيا أكثر بطفلي 1
12- والد الطفل يرغب مني أن أرضع طبيعياً 1
13- أمي نصحتني بالرضاعة الطبيعية 1
14- أم زوجي نصحتني بالرضاعة الطبيعية 1
15- أفراد آخرين نصحوني بالرضاعة الطبيعية 1
16- الرضاعة الطبيعية تمنع الحمل طبيعياً 1
17- أخرى (يرجى التحديد) _____ ☐

(48) هل واجهتك أياً من التالي منذ بدأت الرضاعة الطبيعية؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- حلمات منقلبة 1
2- حلمات متشققة ومؤلمة 1
3- الطفل يحصل على الكثير من الحليب 1
4- الطفل يحصل على الكثير من الحليب بشكل سريع جداً 1
5- يأخذ وقتاً طويلاً قبل أن يبدأ الحليب بالسريان في بداية الإرضاع..... 1
6- الطفل تعب جدا ليرضع 1
7- صعوبة في استخراج الحليب من الثدي..... 1
8- الطفل لا يزيد وزنة بشكل كافي 1
9- الطفل يعاني من مشكلة في المص 1
10- ثدي محتقن (كثير الامتلاء) 1
11- الطفل لا يستيقظ للإرضاع 1
12- الحليب أو اللبأ غير كافي للطفل 1
13- أشعر بأنني غير متمكنة من الرضاعة بشكل جيد 1
14- أخرى (يرجى التحديد)

- _____ ☐

- _____ ☐

لاستخدام الباحث فقط

(49) بأي عمر تخططين للتوقف عن رضاعة طفلك طبيعياً؟

خلال الشهر الأول	1
خلال الشهر الثاني	2
بين 2 و4 أشهر	3
بين 4 و6 أشهر	4
بين 6 و9 أشهر	5
بين 9 و12 شهر	6
بين 12 و18 شهر	7
بين 18 و24 شهر	8
أكثر من 24 شهر	9
لا أعلم حالياً	10
أخرى (يرجى التحديد) _____	☐

(50) هل تخططين لبدء إرضاع طفلك صناعياً؟

نعم	1
لا (انتقلي إلى سؤال رقم 52a)	2
لا أعلم (انتقلي إلى سؤال رقم 52a)	3

(51) في أي عمر تخططين لإرضاع طفلك صناعياً؟

قبل أن يصبح عمره 6 أسابيع 1
بين 6 أسابيع وشهرين 2
بين شهرين و3 أشهر 3
بين 4 و6 أشهر 4
بين 7 و9 أشهر 5
بين 9 و12 شهر 6
أكثر من 12 شهر 7
أخرى (يرجى التحديد) _____

(52a) هل أعطاك أي فرد من الهيئة الصحية اسم شخص معين للاتصال به إذا ما واجهتك مشكلة بالرضاعة الطبيعية؟

نعم 1
لا (انتقلي إلى سؤال رقم 53) 2

لاستخدام الباحث فقط

(52b) إذا كان الجواب بنعم، من هو الشخص الذي ستتصلين بهي؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- الطبيب 1
2- المركز الصحي في المنطقة 1
3- أخصائية التغذية 1
4- آخرين (يرجى التحديد) _____

(53) هل دعمك أو شجعك أياً من الأشخاص التاليين على الرضاعة الطبيعية؟

(ضعي دائرة على أي إجابة مناسبة. يمكن اختيار أكثر من إجابة)

1- صديقاتك 1
2- والد الطفل 1
3- أمك (والدتك) 1
4- أم زوجك 1
5- أفراد آخرين من عائلتك 1
6- طبيب الأطفال 1
7- طبيب النساء والولادة 1
8- آخرين (يرجى تحديد) _____

القسم الثالث

(54) لكل عبارة من العبارات التالية، أرجو منك تحديد مقدار موافقتك أو عدم موافقتك بوضع دائرة على الرقم الذي تعتبرينه أكثر تطابقاً مع رأيك. علماً بأن رقم (1) لا توافقين بشدة في حين رقم (5) توافقين بشدة.

		أوافق بشدة				لا أوافق بشدة
a)	الفوائد التغذوية لحليب الأم تستمر فقط إلى أن يفطم الطفل	5	4	3	2	1

	منها (ليست طويلة الأمد)					
b)	الرضاعة الصناعية ملائمة أكثر من الرضاعة الطبيعية	5	4	3	2	1
c)	الرضاعة الطبيعية تزيد من الارتباط بين الأم والوليد	5	4	3	2	1
d)	حليب الأم يفتقر للحديد	5	4	3	2	1
e)	الأطفال الذين يرضعون صناعيًا غالباً ما يتناولون كمية حليب أكثر من الأطفال الذين يرضعون طبيعياً	5	4	3	2	1
f)	الرضاعة الصناعية هي الاختيار الأفضل إذا كانت الأم تعمل خارج المنزل	5	4	3	2	1
g)	الأم التي ترضع طفلها صناعياً تفتقد أحد أهم متع الأمومة	5	4	3	2	1
h)	المرأة يجب أن لا ترضع رضاعة طبيعية في الأماكن العامة مثل المطاعم	5	4	3	2	1
i)	صحة الأطفال الذين يرضعون رضاعة طبيعية أفضل من الأطفال الذين يرضعون صناعياً	5	4	3	2	1
j)	الأطفال الذين يرضعون طبيعياً غالباً ما يتناولون كمية حليب أكثر من الأطفال الذين يرضعون صناعياً	5	4	3	2	1
k)	الأب يشعر بعدم المشاركة إذا كانت الأم ترضع رضاعة طبيعية	5	4	3	2	1
l)	حليب الأم هو الغذاء المثالي للطفل	5	4	3	2	1
m)	حليب الأم أسهل هضماً من تركيبة حليب الرضع	5	4	3	2	1
n)	تركيبة حليب الرضع مفيدة وصحية للطفل مثل حليب الأم	5	4	3	2	1
o)	الرضاعة الطبيعية مناسبة أكثر من الرضاعة الصناعية	5	4	3	2	1
p)	حليب الأم أقل تكلفة من تركيبة حليب الرضع	5	4	3	2	1
q)	حليب الأم يمكن تخزينه لأيام وأشهر	5	4	3	2	1

القسم الرابع

لاستخدام الباحث فقط

أخيراً، المعلومات التالية ستساعدنا على تحليل البيانات. علماً بأن كافة المعلومات ستحفظ بسريه نظرا لخصوصية بعضها.

(55) ما المنطقة التي تعيشين فيها؟

_____

(56) كم كان عمرك في أخر عيد ميلاد؟

(57) ما هو أعلى مستوى تعليمي أكملتيه؟

جزء من الابتدائي 1
ابتدائي 2
متوسط 3
ثانوي 4
دبلوم 5
جامعي أو أعلى 6
أخرى (يرجى التحديد) _____

(58) كم عدد السنين الدراسية قد أكملت؟

_____

(59) هل كنت موظفة خارج المنزل أو تدرسين خلال الستة الشهور الماضية؟

نعم، موظفة بدوام كامل 1
نعم، موظفة بدوام جزئي 2
نعم، طالبة بدوام كامل 3
نعم، طالبة بدوام جزئي 4
لا 5

(60) هل عملت في وظيفة ذات راتب من قبل؟

نعم (انتقلي إلى سؤال رقم 61) 1
لا (انتقلي إلى سؤال رقم 62) 2

(61) إذا كان الجواب بنعم، ما هو المسمى الوظيفي (للوظيفة الحالية أو السابقة)؟ (مثال: مدرسة ابتدائي، ممرضة، مهندسة، الخ.....)

_____

لاستخدام الباحث فقط

(62) ما الذي تخططين لعمله خلال الستة شهور القادمة؟

سأبقى موجودة مع الطفل في المنزل 1
العمل بدوام كامل 2
العمل بدوام جزئي 3
الدراسة بدوام كامل4
الدراسة بدوام جزئي 5
لم أخطط بعد6

(63) إذا كنت كويتية وتعملين في القطاع الحكومي، فهل تخططين للحصول على إجازة أمومة بنصف راتب حتى الشهر السادس من عمر الطفل؟

نعم 1
لا 2

(64) إذا كنت تعملين في القطاع الخاص، ما هي فترة إجازة الأمومة الممنوحة لك في العقد الوظيفي؟

_____

(65) هل يسمحون لك في وظيفتك الحالية الحصول على ساعات رضاعة الطفل أثناء ساعات العمل؟

نعم 1

لا 2

(66) هل تخططين للحصول على إجازة أمومة بدون مرتب؟

نعم (انتقلي إلى سؤال رقم 67) 1
لا (انتقلي إلى سؤال رقم 68) 2

(67) إذا كان الجواب السابق بنعم، ما هي المدة التي تودين الحصول عليها؟

أقل من 6 شهور 1
6–12 شهر 2
أكثر من 12 شهر 3

(68) ما هو المسمى الوظيفي الحالي (أو السابق) لزوجك؟ (مثال: مدرس ابتدائي، مهندس، عسكري، الخ.....)

_____

(69) في أي دولة ولدت؟

_____

(70) كم سنة عشت في الكويت؟

_____

(71) في أي دولة ولدت أمك؟

_____

لاستخدام الباحث فقط

(72) كم كان وزنك قبل الحمل؟

_____كغم

(73) كم يبلغ طولك؟

_____سم

شكراً جزيلا على المشاركة

Appendix 5.3: Follow-up Questionnaire-English version

UNIVERSITY of GLASGOW

Division of Developmental Medicine

Human Nutrition Department

KUWAIT'S INFANT FEEDING STUDY (KIFS-07)

FOLLOW-UP QUESTIONNAIRE

(To be completed by telephone interview at weeks 6, 12, 18, 26 and 52)

Mother's first name: _____

Baby's first name: _____

Mother's telephone number: Home: _____ Mobile: _____

Feeding method at discharge: Fully breastfeeding..... 1

Partially breastfeeding..... 2

Fully formula milk feeding ..... 3 **[Q 20 – Q 28 only]**

Notes: (e.g. good times to ring, special circumstances)

_____

_____

Kuwait's Infant Feeding Study (KIFS-07)

Name
Baby's Name
Other children
Address
Preferred time to call
Dates away

ID Code | | | |

Termination Date | | | | | | | |

	A wk 6	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
Date interview due					
Date interview completed					
Dates/times tried					

Note for Interviewer:

Questions are for the following status of breastfeeding:

1. **Termination Only (***No longer breastfeeding***)**
2. **Not for Termination (***Fully or partially breastfeeding***)**
3. **Both (for Termination & Not for Termination)**

		A wk 6	B wk 12	C wk 18	D wk 26	E wk 52
1a)	**How are you feeding your baby at the moment?**					
	- Exclusively breastfeeding - No formula, other fluids or solids	1	1	1	1	1
	- Fully breastfeeding - No formula, but may have had some juice or water	2	2	2	2	2
	- Combination formula milk and breastfeeding	3	3	3	3	3
	- Formula milk feeding only	4	4	4	4	4
	- Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

		A wk 6	B wk 12	C wk 18	D wk 26	E wk 52
1b)	**(***If changed feeding method***) Why did you change feeding method?**	☐	☐	☐	☐	☐
	1 - Mother has been under stress	1	1	1	1	1
	2 - Baby not gaining enough milk	1	1	1	1	1
	3 - Baby not gaining enough weight	1	1	1	1	1
	4 - Bottle feeding is easier	1	1	1	1	1
	5 - Breast feeding is too embarrassing	1	1	1	1	1
	6 - Formula feeding is more convenient than breast feeding	1	1	1	1	1
	7 - Baby prefers a bottle	1	1	1	1	1
	8 - Returning to work or study	1	1	1	1	1
	9 - Difficulty expressing milk	1	1	1	1	1
	10- Feeling that I am not doing very well at breastfeeding	1	1	1	1	1
	11- Baby’s father did not like me to breast feed my baby in public	1	1	1	1	1
	12- Baby's father can help with bottle-feeding	1	1	1	1	1
	13- Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

NOT FOR TERMINATION	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
2) **(***If started either fully or partially formula feeding since last interview***)** **How old was your baby (***in weeks***) when you first started giving him/her a regular formula milk bottle feeding?**	☐☐	☐☐	☐☐	☐☐	☐☐
3) **(***If currently exclusively breastfeeding***)** **Has your baby ever received any formula or other drinks or foods since his/her birth (or since we last spoke)? (***Even if only one bottle***)**					
- No	1	1	1	1	1
- Yes, occasional bottle of formula	2	2	2	2	2
- Yes, other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

NOT FOR TERMINATION	**A wk 6**
4) Thinking back to when you first had your baby, how long was it before your milk came in? (*Ask at week 6 interview only - Asked once only***)**	
- Within 24 hrs of the birth	1
- Between 24-48 hrs after birth	2
- Between 48-72 hrs after birth	3
- Other (*please specify*)	☐

A

NOT FOR TERMINATION	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
5a) Did anyone help you decide to _____ (*change in feeding practice***)?**					
- Yes	1	1	1	1	1
- No (Go to Q 6)	2	2	2	2	2
5b) If yes who?					
1 - The baby's father	1	1	1	1	1
2 - Mother	1	1	1	1	1
3 - Mother in-law	1	1	1	1	1

4 - Other relatives	1	1	1	1	1
5 - Friends	1	1	1	1	1
6 - Local GP	1	1	1	1	1
7 - Pediatrician	1	1	1	1	1
8 - Child health nurse	1	1	1	1	1
9 - Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
6) Are you feeding according to a schedule or by demand? (*Read out answers***)**					
- By demand	1	1	1	1	1
- According to a schedule, about every 2 hours	2	2	2	2	2

- According to a schedule, about every 3 hours	3	3	3	3	3
- According to a schedule, about every 4 hours	4	4	4	4	4
- Other (*please explain*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
7a) How many times per day (24 hours) on average do you feed your baby?	☐	☐	☐	☐	☐
7b) How many of these are breastfeeds? (*use 0 if none***)**	☐	☐	☐	☐	☐
7c) How many of these are formula feeds? (*use 0 if none***)**	☐	☐	☐	☐	☐
8a) How many times, on average would your baby wake up at night to feed?	☐	☐	☐	☐	☐
8b) On average, how many of these night feeds are breastfeeds?	☐	☐	☐	☐	☐

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
9a) Have you expressed your milk since we last spoke (or since you left hospital)?					
- Yes	1	1	1	1	1
- No (Go to Q 12a)	2	2	2	2	2
9b) If yes, why did you express your milk?					
1 - Wanted extra breast-milk just in case	1	1	1	1	1
2 - To see if baby would take a bottle (test run)	1	1	1	1	1
3 - Feed to be given by someone else, (e.g. mother, maid, nanny, etc.)	1	1	1	1	1
4 - To avoid breastfeeding in public when out with baby	1	1	1	1	1
5 - So father could feed baby (involvement)	1	1	1	1	1
6 - Had too much milk / uncomfortable	1	1	1	1	1
7 - Sore nipples / engorgement	1	1	1	1	1
8 - Baby ill	1	1	1	1	1
9 - Mother ill	1	1	1	1	1
10- Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
10) What method did you use to express your milk?					
1 - Hand	1	1	1	1	1
2 - Manual pump	1	1	1	1	1
3 - Electric/battery pump - single	1	1	1	1	1
4 - Electric/battery pump - double	1	1	1	1	1
11a) Did you have any difficulties expressing your milk?					
- Yes	1	1	1	1	1
- No	2	2	2	2	2
11b) If yes, what difficulties have you experienced with expressing milk?					

1 - Took too long	1	1	1	1	1
2 - Was painful	1	1	1	1	1
3 - Couldn't get very much/enough milk	1	1	1	1	1
4 - Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

NOT FOR TERMINATION *Don't ask if no longer breastfeeding*	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
12a) Have you had any difficulties with breastfeeding since I spoke to you last time (or you left hospital), so things like; - problems with your breasts? - problems with the baby feeding?					
- Yes	1	1	1	1	1
- No (Go to Q 15)	2	2	2	2	2

12b) **If yes, what difficulties experienced?** (*Do not prompt, but probe for more than one answer*)					
- Problems with breasts					
1 - Cracked or sore nipples	1	1	1	1	1
2 - Breasts engorged (too full)	1	1	1	1	1
3 - Mastitis or breast infection	1	1	1	1	1
4 - Inverted nipples	1	1	1	1	1
5 - Breastfeeding is painful	1	1	1	1	1
- Problems with baby feeding					
6 - Baby not gaining enough weight	1	1	1	1	1
7 - Baby has difficulties sucking	1	1	1	1	1
8 - Baby gets too much milk or too fast	1	1	1	1	1
9 - Poor " let-down"	1	1	1	1	1
10- Baby refuses to breastfeed	1	1	1	1	1
11- Baby too tired to feed, i.e. falls asleep at breast	1	1	1	1	1
12- Not enough milk for baby	1	1	1	1	1
13- Feeling that I'm not doing very well at breast feeding	1	1	1	1	1

Cont. Q 12b	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
14- Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

NOT FOR TERMINATION	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
13) Did you expect to have difficulties with breastfeeding?					
- Yes	1	1	1	1	1
- No	2	2	2	2	2
14a) Have you asked for advice or help from anyone about your breastfeeding problem(s)?					
- Yes	1	1	1	1	1
- No (Go to Q 15)	2	2	2	2	2

14b)	If yes who?					
	1 - Mother	1	1	1	1	1
	2 - Mother in-law	1	1	1	1	1
	3 - Other relatives	1	1	1	1	1
	4 - Friends	1	1	1	1	1
	5 - Local GP	1	1	1	1	1
	6 - Pediatrician	1	1	1	1	1
	7 - Child health nurse	1	1	1	1	1
	8 - Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
15)	**Have different people given you conflicting advice about feeding, since we last spoke (or since you left hospital)?**					
	- Yes	1	1	1	1	1
	- No	2	2	2	2	2
	- If yes (*please explain*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
16) How would you describe your current dietary intake (How much food you eat)?					
- Less than what was when pregnant	1	1	1	1	1
- Similar to what was when pregnant	2	2	2	2	2
- More than what was when pregnant	3	3	3	3	3
- Less than what was before being pregnant	4	4	4	4	4
- Similar to what was before being pregnant	5	5	5	5	5
- More than what was before being pregnant	6	6	6	6	6
- Don't know	7	7	7	7	7
17) Have you been on any diet to reduce your weight since we last spoke (or since you left hospital)?					
- Yes	1	1	1	1	1
- No	2	2	2	2	2

18)	**What is your current weight (*kg*)?**	☐☐	☐☐	☐☐	☐☐	☐☐
19)	**How many cups of water/fluids do you drink daily?**					
	- None	1	1	1	1	1
	- 1 to 2 cups	2	2	2	2	2
	- 3 to 4 cups	3	3	3	3	3
	- 5 to 6 cups	4	4	4	4	4
	- 7 to 8 cups	5	5	5	5	5
	- More than 8 cups	6	6	6	6	6

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
20a)	**(***If infant formula has been introduced***) What type of formula you are feeding your baby?** **(***Do not prompt, unless: 'I don't know'***)**					
	- Similac (Green)*	1	1	1	1	1
	- Similac (with Iron - Yellow)*	2	2	2	2	2
	- Similac Advance (with Iron)	3	3	3	3	3
	- Similac Advance 1 (with IQ – contain AA & DHA)	4	4	4	4	4
	- Similac Advance Excel (with Iron – contain LCP)	5	5	5	5	5
	- Aptamil 1 (with Iron)	6	6	6	6	6

- Bebelac 1	7	7	7	7	7
- Bebelac 1 (with Iron)	8	8	8	8	8
- Bebelac EC	9	9	9	9	9
- S26 Gold 1*	11	11	11	11	11
- Enfamil	12	12	12	12	12
- NAN 1 (with Iron)*	13	13	13	13	13
- Guigoz 1 (with Iron)*	14	14	14	14	14
- Novolac 1	15	15	15	15	15
- France Lait 1 (with Iron)	16	16	16	16	16
- Specialized infant formula (Go to Q 20b)	17	17	17	17	17
- I don't know	18	18	18	18	18

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
20b) (*If specialized infant formula has been introduced***) what type of formula you are feeding your baby? (***Do not prompt, unless: 'I don't know'***)**					
- Similac Advance LF (lactose-free with Iron)	1	1	1	1	1
- Similac Isomil 1 (Soy Formula with Iron)	2	2	2	2	2

- Aptamil Comfort 1	3	3	3	3	3
- Bebelac AR (For Regurgitation – with Iron)	4	4	4	4	4
- Bebelac FL (Free of Lactose – with Iron)	5	5	5	5	5
- Bebelac Soya (Based on Soy Protein – with Iron)	6	6	6	6	6
- S26 LF ((Lactose-free – with Iron)	7	7	7	7	7
- S26 AR (For Regurgitation – with Iron)	8	8	8	8	8
- S26 HA (Hypo-antigenic)	9	9	9	9	9
- Nursoy (Soy protein – with Iron)	11	11	11	11	11
- NAN H.A. 1 (with Iron – Bifidogeneic B effect)	12	12	12	12	12
- NAN A.R. (Anti-regurgitation – with Iron)	13	13	13	13	13
- al 110 (Lactose-free)	14	14	14	14	14
- Alfare (for cow's milk protein allergy)	15	15	15	15	15
- Novolac AR 1 (adapted formula)	16	16	16	16	16
- Novolac AC 1 (adapted formula)	17	17	17	17	17
- Novolac IT 1 (adapted formula)	18	18	18	18	18
- I don't know	19	19	19	19	19

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
21) Why did you choose this particular formula? (*Do not prompt, but probe for more than one answer*)					
1 - Recommended by hospital staff	1	1	1	1	1
2 - Recommended by paediatric	1	1	1	1	1
3 - Recommended by local GP	1	1	1	1	1
4 - Recommended by mother	1	1	1	1	1
5 - Recommended by mother in-law	1	1	1	1	1
6 - Recommended by other family member(s)	1	1	1	1	1
7 - Recommended by friend(s)	1	1	1	1	1
8 - It was the cheapest	1	1	1	1	1
9 - Available through Kuwait Supply Company (KSC)	1	1	1	1	1
10- Recommended by chemist	1	1	1	1	1
11- It was used for my baby in the hospital	1	1	1	1	1
12- Used it before	1	1	1	1	1
13- Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
22a) Have you tried other formulas? (*Only asked after formula introduced for the first time*)					
- Yes	1	1	1	1	1
- No (Go to Q 24a)	2	2	2	2	2
22b) (*If other formula has been introduced*) **what other type of formula?** (*Do not prompt, unless: 'I don't know'*)					
- Similac (Green)*	1	1	1	1	1
- Similac (with Iron - Yellow)*	2	2	2	2	2
- Similac Advance (with Iron)	3	3	3	3	3
- Similac Advance 1 (with IQ – contain AA & DHA)	4	4	4	4	4
- Similac Advance Excel (with Iron – contain LCP)	5	5	5	5	5
- Aptamil 1 (with Iron)	6	6	6	6	6
- Bebelac 1	7	7	7	7	7
- Bebelac 1 (with Iron)	8	8	8	8	8
- Bebelac EC	9	9	9	9	9
- S26 Gold 1*	11	11	11	11	11

	- Enfamil	12	12	12	12	12
	- NAN 1 (with Iron)*	13	13	13	13	13
	- Guigoz 1 (with Iron)*	14	14	14	14	14
	- Novolac 1	15	15	15	15	15
	- France Lait 1 (with Iron)	16	16	16	16	16
	- Specialized infant formula (Go to Q 22c)	17	17	17	17	17
	- I don’t know	18	18	18	18	18
BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
22c)	**(***If other specialized infant formula has been introduced***) what type of formula you are feeding your baby?** **(***Do not prompt, unless: ‘I don't know'***)**					
	- Similac Advance LF (lactose-free with Iron)	1	1	1	1	1
	- Similac Isomil 1 (Soy Formula with Iron)	2	2	2	2	2
	- Aptamil Comfort 1	3	3	3	3	3
	- Bebelac AR (For Regurgitation – with Iron)	4	4	4	4	4
	- Bebelac FL (Free of Lactose – with Iron)	5	5	5	5	5
	- Bebelac Soya (Based on Soy Protein – with Iron)	6	6	6	6	6
	- S26 LF ((Lactose-free – with Iron)	7	7	7	7	7
	- S26 AR (For Regurgitation – with Iron)	8	8	8	8	8
	- S26 HA (Hypo-antigenic)	9	9	9	9	9

- Nursoy (Soy protein – with Iron)	11	11	11	11	11
- NAN H.A. 1 (with Iron – Bifidogeneic B effect)	12	12	12	12	12
- NAN A.R. (Anti-regurgitation – with Iron)	13	13	13	13	13
- al 110 (Lactose-free)	14	14	14	14	14
- Alfare (for cow's milk protein allergy)	15	15	15	15	15
- Novolac AR 1 (adapted formula)	16	16	16	16	16
- Novolac AC 1 (adapted formula)	17	17	17	17	17
- Novolac IT 1 (adapted formula)	18	18	18	18	18
- I don't know	19	19	19	19	19

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
23) Why did you choose this particular formula? (*Do not prompt, but probe for more than one answer*)					
1 - Recommended by hospital staff	1	1	1	1	1
2 - Recommended by paediatric	1	1	1	1	1
3 - Recommended by local GP	1	1	1	1	1
4 - Recommended by mother	1	1	1	1	1
5 - Recommended by mother in-law	1	1	1	1	1

6 - Recommended by friend(s)	1	1	1	1	1
7 - Recommended by other family member(s)	1	1	1	1	1
8 - It was the cheapest	1	1	1	1	1
9 - Available through Kuwait Supply Company (KSC)	1	1	1	1	1
10- Recommended by chemist	1	1	1	1	1
11- It was used for my baby in the hospital	1	1	1	1	1
12- Used it before	1	1	1	1	1
13- Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
24a) Is your baby having any fluids other than breast milk or formula?					
- Yes	1	1	1	1	1
- No (Go to Q 25a)	2	2	2	2	2

24b)	**If yes, how old was your baby (*in weeks*) when first had any fluids other than breast milk or formula?**	☐☐	☐☐	☐☐	☐☐	☐☐
24c)	**What other fluid is your baby having?**					
	1 - Boiled and filtered tap water	1	1	1	1	1
	2 - Baby's bottle water	1	1	1	1	1
	3 - Still mineral water	1	1	1	1	1
	4 - Date water	1	1	1	1	1
	5 - Fruit juice/nectar	1	1	1	1	1
	- Baby's Tea					
	6 - Herbal Tea	1	1	1	1	1
	7 - Fruit Tea	1	1	1	1	1
	8 - Fennel Tea	1	1	1	1	1
	9 - Chamomile Tea	1	1	1	1	1
	10- Glucose D	1	1	1	1	1
	11- Flavoured Glucose D	1	1	1	1	1

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
25a)	**Is your baby eating any solid food?**					
	- Yes	1	1	1	1	1
	- No (Go to Q 29a)	2	2	2	2	2
25b)	**If yes, how old was your baby (*in weeks*) when first tried him/her on solid food?**	☐☐	☐☐	☐☐	☐☐	☐☐
26)	**What was the first solid food that you tried him/her on? (*please specify*)** _____ _____ _____	☐	☐	☐	☐	☐
27)	**How old was your baby (*in weeks*) when first tried him/her on:**					
	- Cereals/Rusks	☐☐	☐☐	☐☐	☐☐	☐☐
	- Vegetables	☐☐	☐☐	☐☐	☐☐	☐☐
	- Fruits	☐☐	☐☐	☐☐	☐☐	☐☐

- White meat	☐☐	☐☐	☐☐	☐☐	☐☐
- Red meat	☐☐	☐☐	☐☐	☐☐	☐☐
- Fish	☐☐	☐☐	☐☐	☐☐	☐☐

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
28) What solid food is your baby having now? (*Do not prompt, but probe for more than one answer***) (***Read out answers***)**					
- Infant Cereal					
1 - Cereal(s)	1	1	1	1	1
2 - Cereal(s) & vegetables	1	1	1	1	1
3 - Cereal(s) & fruits	1	1	1	1	1
4 - Cereal(s) with milk	1	1	1	1	1
5 - Cereal(s) with milk & vegetables	1	1	1	1	1
6 - Cereal(s) with milk & fruits	1	1	1	1	1
7 - Rusks	1	1	1	1	1

8 - Teething rusks	1	1	1	1	1
9 - Biscuits	1	1	1	1	1
10- Plain yogurt	1	1	1	1	1
11- Flavored yogurt	1	1	1	1	1
- Strained/puree					
12- Fruit(s)	1	1	1	1	1
13- Vegetable(s)	1	1	1	1	1
14- Creamy vegetables with pasta	1	1	1	1	1
15- Vegetable soups	1	1	1	1	1
16- Legumes	1	1	1	1	1
17- Custard	1	1	1	1	1
18- Cereal & fruits puddings / desserts	1	1	1	1	1
19- Fruit pudding / desserts	1	1	1	1	1
Cont. Q 28	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
20- Chocolate pudding / desserts	1	1	1	1	1
21- Egg yolk	1	1	1	1	1
22- Whole eggs	1	1	1	1	1
- Meat					
23- Chicken (white meat)	1	1	1	1	1
24- Lamb (red meat)	1	1	1	1	1

	25- Fish	1	1	1	1	1
	26- Honey	1	1	1	1	1
	27- Other solid food (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
29a)	**Has your baby started using a dummy since we last spoke (or since you left hospital)?**					
	- Yes	1	1	1	1	1
	- Yes, but didn't accept it	2	2	2	2	2
	- No (Go to Q 31a)	3	3	3	3	3
29b)	**If yes, how old was your baby (*in weeks*) when you first gave him/her a dummy?**	☐☐	☐☐	☐☐	☐☐	☐☐
30)	**Why did you start your baby on a dummy?**					

- To help him/her sleep	1	1	1	1	1
- To help him/her stop crying	2	2	2	2	2
- To stop him/her of sucking breast/bottle without feeding	3	3	3	3	3
- To terminate breastfeeding	4	4	4	4	4
- To terminate bottle feeding	5	5	5	5	5
- To help comfort teething	6	6	6	6	6
- Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
31a) Has your baby experienced any health problems since we last spoke (or since you left hospital)?					
- Yes	1	1	1	1	1
- No (Go to Q 33a)	2	2	2	2	2

31b)	**If yes, what type of problem?**					
	1 - Vomiting	1	1	1	1	1
	2 - Diarrhoea	1	1	1	1	1
	3 - Respiratory	1	1	1	1	1
	4 - Skin-rash, dermatitis, etc.,	1	1	1	1	1
	5 - Jaundice	1	1	1	1	1
	6 - Colic	1	1	1	1	1
	7 - Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
32a)	**Did you take your baby to see anyone about this problem?**					
	- Yes	1	1	1	1	1

	- No (Go to Q 33a)	2	2	2	2	2
32b)	**If yes, who?**					
	1 - Local GP	1	1	1	1	1
	2 - Pediatrician	1	1	1	1	1
	3 - Child health nurse	1	1	1	1	1
	4 - Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
33a) Have you experienced any health problems since we last spoke (or since you left hospital)?					
- Yes	1	1	1	1	1
- No (Go to Q 35a)	2	2	2	2	2

33b)	If yes, what type of problem?					
	1 - Constipation	1	1	1	1	1
	2 - Haemorrhoid	1	1	1	1	1
	3 - Depression	1	1	1	1	1
	4 - Excessive uterus bleeding	1	1	1	1	1
	5 - Colic	1	1	1	1	1
	6 - Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**

34a)	**Did you see anyone about this problem?**					
	- Yes	1	1	1	1	1
	- No (Go to Q 35a)	2	2	2	2	2
34b)	**If yes, who?**					
	1 - Local GP	1	1	1	1	1
	2 - Gynecologist	1	1	1	1	1
	3 - Others (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
35a)	**Have you experienced any major changes in your life since we last spoke (or since you left hospital)?**					
	- Yes	1	1	1	1	1
	- No (Go to Q 36a)	2	2	2	2	2
35b)	**If yes, what type of changes?**					
	1 - Moved house	1	1	1	1	1
	2 - Changed career	1	1	1	1	1
	3 - Death in the family	1	1	1	1	1
	4 - Divorce or separation	1	1	1	1	1
	5 - Husband got other marriage	1	1	1	1	1
	6 - Serious illness in the family	1	1	1	1	1
	7 - Other (*please specify*)	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
36a)	**Are you currently on birth control pills (OCA)?**					
	- Yes	1	1	1	1	1
	- No (Go to Q 37a)	2	2	2	2	2
36b)	**If yes, which type of pill are you on?**					
	- Regular pill	1	1	1	1	1
	- Mini-pill	2	2	2	2	2
37a)	**Are you taking any other medications at the moment?**					
	- Yes	1	1	1	1	1
	- No (Go to Q 38a)	2	2	2	2	2
37b)	**If yes, what medications you are taking? (***please specify***)**	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH		**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
38a)	**Have you had help from anyone, on a daily or almost daily basis, since we last spoke (or since you left hospital)?**					
	- Yes	1	1	1	1	1
	- No (Go to Q 39)	2	2	2	2	2
38b)	**If yes, from who?**					
	1 - Husband	1	1	1	1	1
	2 - Mother	1	1	1	1	1
	3 - Mother in-law	1	1	1	1	1
	4 - Other family member(s)/in-low	1	1	1	1	1
	5 - Friend(s)	1	1	1	1	1
	6 - Paid help (nanny)	1	1	1	1	1
	7 - Maid	1	1	1	1	1
38c)	**If yes, what type of help did you receive?**					
	1 - House work	1	1	1	1	1
	2 - Cooking	1	1	1	1	1
	3 - Caring for other children	1	1	1	1	1

4 - Caring for baby to give me break	1	1	1	1	1
5 - Shopping	1	1	1	1	1

BOTH	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
39) Have you visited the Child Health Center since we last spoke (or since you left hospital)?					
- Yes	1	1	1	1	1
- No	2	2	2	2	2
40) How do you feel about your baby's weight change since birth? (*Read out answers*)					
- Satisfied/pleased	1	1	1	1	1
- A little concerned	2	2	2	2	2
- Very worried or concerned	3	3	3	3	3
- Don't know	4	4	4	4	4
41) How would you describe your baby's temperament?					

- Placid / easy going	1	1	1	1	1
- Irritable / fussy	2	2	2	2	2
- Combination	3	3	3	3	3
- Don't know	4	4	4	4	4

NOT FOR TERMINATION (TWICE ONLY)	**A wk 6**		**D wk 26**
42) How would you rate your confidence in breastfeeding?			
- Not confident	1		1
-	2		2
-	3		3
-	4		4
- Very confident	5		5
43) How enjoyable do you find breastfeeding?			

- Not enjoyable	1		1
-	2		2
-	3		3
-	4		4
- Very enjoyable	5		5
44) How satisfied are you with your breastfeeding experience?			
- Not satisfied	1		1
-	2		2
-	3		3
-	4		4
- Very satisfied	5		5

NOT FOR TERMINATION (TWICE ONLY)	**A wk 6**		**D wk 26**
45) In general, how comfortable would you or do you feel while breastfeeding in front of other people?			
- Not comfortable	1		1
-	2		2

	-	3		3
	-	4		4
	- Very comfortable	5		5
46)	**In general, how comfortable would you or do you feel while breastfeeding in front of <u>female friends</u>?**			
	- Not comfortable	1		1
	-	2		2
	-	3		3
	-	4		4
	- Very comfortable	5		5
47)	**In general, how comfortable would you or do you feel while breastfeeding in front of <u>female relatives</u> (e.g., mother, sister)?**			
	- Not comfortable	1		1
	-	2		2
	-	3		3
	-	4		4
	- Very comfortable	5		5

NOT FOR TERMINATION (TWICE ONLY)	**A wk 6**		**D wk 26**
48) In general, how comfortable would you or do you feel while breastfeeding in front of male relatives (e.g., father, brother)?			
- Not comfortable	1		1
-	2		2
-	3		3
-	4		4
- Very comfortable	5		5
49) In general, how comfortable would you or do you feel while breastfeeding in someone else's house?			
- Not comfortable	1		1
-	2		2
-	3		3
-	4		4
- Very comfortable	5		5
50) In general, how comfortable would you or do you feel while breastfeeding in a public eating place?			
- Not comfortable	1		1

-	2		2
-	3		3
-	4		4
- Very comfortable	5		5

NOT FOR TERMINATION (TWICE ONLY)	**A wk 6**		**D wk 26**
51) In general, how comfortable would you or do you feel while breastfeeding in a public place (e.g. park, beach, etc.)?			
- Not comfortable	1		1
-	2		2
-	3		3
-	4		4
- Very comfortable	5		5

BOTH (ONCE ONLY)	**A wk 6**	**B wk 12**	**C wk 18**	**D wk 26**	**E wk 52**
52a) Do you smoke cigarettes?					
- Yes	1	1	1	1	1
- Usually, but not at the moment (*asked again if this option chosen*)	2	2	2	2	2

	- No (Go to Q 53a)	3	3	3	3	3
52b)	**How many cigarettes do you currently smoke a day on average?**	☐☐	☐☐	☐☐	☐☐	☐☐
53a)	**Do you smoke hubble-bubble?**					
	- Yes	1	1	1	1	1
	- Usually, but not at the moment (*asked again if this option chosen*)	2	2	2	2	2
	- No (Go to Q 54)	3	3	3	3	3
53b)	**How often do you smoke hubble-bubble a day on average?**	☐☐	☐☐	☐☐	☐☐	☐☐

BOTH (ONCE ONLY)	**A wk 6**
54) In general, what effect do you think breastfeeding has on a woman's weight?	
- No effect	1
- Helps reduce weight	2

	- Keeps the weight on	3
	- Don’t know/not sure	4
55)	**In general, what effect do you think breastfeeding has the shape or size of a woman's breasts after she has stopped feeding?**	
	- It causes breasts to sag	1
	- It doesn't make any difference	2
	- Makes them smaller	3
	- Don’t know/not sure	4
	- Other (*please specify*)	☐

A _____

BOTH (ONCE ONLY)	**A wk 6**
I'm going to read out a few statements which are related to breastfeeding. Please just answer True, False or Don't know. It really doesn't matter if you don't know.	
56) **Feeding more often increases milk supply.**	

	- True	1
	- False	2
	- Don’t know	3
57)	**Babies need to feed more when they are having a growth spurt.**	
	- True	1
	- False	2
	- Don’t know	3
58)	**There are lots of women who need to give their babies formula because they can't make enough milk.**	
	- True	1
	- False	2
	- Don’t know	3
59)	**Birth control pills (OCA) can reduce milk supply.**	
	- True	1
	- False	2
	- Mini-pill won’t but normal pill will	3
	- Don’t know	4

BOTH (ONCE ONLY)	**A wk 6**
60) Getting extra rest and relaxation is necessary to ensure a good milk supply.	
- True	1
- False	2
- Don’t know	3
61) Feeding formula to a one month old baby will not reduce the amount of milk produced by the mother.	
- True	1
- False	2
- Don’t know	3
62) Babies naturally know how to breastfeed correctly.	
- True	1
- False	2
- Don’t know	3
63) Formula-fed babies sleep longer at night.	

- True	1
- False	2
- Don't know	3

TERMINATION ONLY

64) How old was your baby (*baby's name*) when you stopped breastfeeding?	
- Weeks	☐☐
- Months	☐☐
CENSORING FACTOR	☐

TERMINATION ONLY

65) Why did you decide to stop breastfeeding? **(***Do not prompt, but probe for more than one answer***)**	
- Prolonged breastfeeding reasons	
1 - Baby old enough to not be breast-fed	1

2 - Baby weaned itself	1
3 - I've done my bit, given a good start	1
- Problems/pain	
4 - Breast feeding too painful	1
5 - Cracked or bleeding nipples	1
6 - Breast engorgement	1
7 - Breast infection/mastitis	1
8 - Inverted nipples	1
9 - Problem with nursing technique	1
- Maternal psychological	
10- Mother anxious or unsure about breastfeeding	1
11- Breastfeeding requires too much motivation	1

Cont. Q 65

12- Breast feeding too difficult	1
13- Breast feeding too inconvenient	1
14- Mother has been under stress	1
15- Mother too tired	1
16- Dislike breastfeeding	1
17- Concern about how breastfeeding will affect your figure	1
- Insufficient milk/ other baby factors	

18- Can't tell how much infant is drinking	1
19- My milk isn't good enough	1
20- Not enough milk	1
21- Baby not gaining enough weight	1
22- Baby no longer interested in the breast	1
23- Baby biting nipples	1
24- Baby prefers a bottle	1
25- Baby ready for solids	1
26- Baby ill	1
- Other maternal factors	
27- Mother ill	1
28- Use of prescription medication	1
29- Wanted to go onto OCA	1
30- Return to work or study	1
- Paternal factors	
31- Baby's father preferred bottle-feeding	1

Cont. Q 65

32- Baby's father can help with bottle-feeding	1

33- Other (*please specify*) _____ _____ _____	☐

TERMINATION ONLY

66a)	**Did you plan to stop breastfeeding now (***when you did***)?**	
	- Yes (Go to Q 67a)	1
	- No	2
66b)	**If not, at what age did you plan to stop breastfeeding?**	
	- Before 6 weeks	1
	- Between 6 weeks and 2 months	2
	- Between 2 and 3 months	3
	- Between 4 and 9 months	4
	- Between 7 and 8 months	5
	- Between 9 and 12 months	6
	- Over twelve months	7
	- When gets teeth	8
	- Other (*please specify*) _____ _____	☐

TERMINATION ONLY

67a)	**Did anyone advise you to stop breastfeeding?**	
	- Yes	1
	- No (Go to Q 68a)	2
67b)	**If yes, who?**	
	1 - The baby's father	1
	2 - Mother	1
	3 - Mother in law	1
	4 - Other relative(s)	1
	5 - Friend(s)	1
	6 - Local GP	1
	7 - Paediatrician	1
	8 - Dietitian	1
	9 - Other (*please specify*) _____ _____	☐

TERMINATION ONLY

68a)	**Would you breastfeed another child if you had another baby?**	
	- Yes	1
	- Yes, if I could	2
	- No (Go to Q 68c)	3
68b)	**If yes, why?** **(***Do not prompt, but probe for more than one answer***)**	
	1 - Better for baby	1
	2 - Better for mother	1
	3 - More contented baby	1
	4 - Natural	1
	5 - Closer relationship with baby	1
	6 - Convenience	1
	7 - Enjoyment/satisfaction of mother	1
	8 - No particular reason	1
	9 - Other (*please specify*) _____ _____ _____	☐

68c)	**If no, why wouldn't breastfeed another child?** **(***Do not prompt, but probe for more than one answer***)**	
	1 - Inconvenient	1
	2 - Lack of enjoyment/satisfaction of mother	1
	3 - Tied to the house	1
Cont. Q 68c		
	4 - Embarrassment	1
	5 - Too emotionally taxing for mother	1
	6 - Formula is just as good	1
	7 - Other (*please specify*) _____ _____ _____	☐
69)	**Would you encourage a friend to breastfeed?**	
	- Yes, definitely	1
	- Yes, probably	2
	- Perhaps	3
	- If she wants to	4
	- No	5

TERMINATION ONLY

The following questions are on your feelings about breastfeeding. So there are no right or wrong answers. For example the first question is "How would you describe your breastfeeding experience?" If you can imagine a ruler with five points on it. At one end of the ruler is "not successful" and at the other end of the ruler is five, which is "very successful". Where do you think you would fit on the ruler?

70) How would you describe your breastfeeding experience?	
- Not successful	1
-	2
-	3
-	4
- Very successful	5
- Uncertain	6
71) How enjoyable did you find breastfeeding?	
- Not enjoyable	1
-	2
-	3
-	4
- Very enjoyable	5
- Uncertain	6

72) **How satisfied are you with your breastfeeding experience?**	
- Not satisfied	1
-	2
-	3
-	4
- Very satisfied	5
- Uncertain	6

Thank you very much for your participation

Appendix 5.4: Follow-up Questionnaire-Arabic version

دراسة الكويت لتغذية الطفل الرضيع

إستبانة المتابعة

(للإستكمال بالهاتف في الأسبوع 6 ، 12 ، 18 ، 26 ، 52)

إســم الأم:_____

أسـم الطفـل الأول:_____

رقـم هاتـف الأم: المنزل:_____ **النقال:**_____

طريقة تغذية الطفل عند الخروج من المستشفى: رضاعة كاملـة:_____1

رضاعة جزئية:_____2

ملحوظة: (مثال: الأوقات المناسبة للإتصال، المناسبات الخاصة):_____

_____

_____

دراسة الكويت لتغذية الطفل الرضيع

الإســـــم:

أســم الطـفـل:

الأبـنـاء الآخريـن:

العنـوان:

الوقت المناسب للاتصال:

الأيـام الغير موجـودة:

الأسابيـع:

التاريخ النهائي للمقابلة :Due Date

تاريخ استكمال المقابـلة:

التاريخ والأوقات التي حاولت الاتصال بها:

ID Code

تاريخ الانتهاء

A	B	C	D	E
6 أسابيع	12 أسبوع	18 أسبوع	26 أسبوع	52 أسبوع

a1. كيف يتغذى طفلك في الوقت الحالي؟

A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
☐☐	☐☐	☐☐	☐☐	☐☐

رضاعة طبيعية كلية- بدون حليب صناعي ، أو أي سوائل أخرى أو أطعمة صلبة

رضاعة كاملة- بدون حليب صناعي ولكن ممكن أنه أخذ عصير أو ماء

خليط من الرضاعة والحليب الصناعي

حليب صناعي فقط

غير ذلك

A_____
B_____
C_____
D_____
E_____

b1. (إذا تم تغيير طريقة التغذية) لماذا تم التغيير؟

☐☐	☐☐	☐☐	☐☐	☐☐

A_____
B_____
C_____

D _____

E _____

Not For Termination

A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع
☐☐	☐☐	☐☐	☐☐	☐☐
2	2	2	2	2

(إذا كنت قد بدأت بالرضاعة الصناعية الكاملة أو الجزئية منذ آخر مكالمة)

2. **كم كان عمر طفلك عندما ابتدأت بإعطائه رضاعة صناعية منتظمة؟**

1	1	1	1	1
2	2	2	2	2
☐☐	☐☐	☐☐	☐☐	☐☐

(إذا كنت ترضعي طفلك رضاعة كاملة من الثدي)

3. **هل أعطيت طفلك أي حليب صناعي أو أي مشروب أو طعام من الولادة (أو منذ آخر مقابلة)؟**

كلا

نعم ، حليب صناعي في بعض الأحيان

نعم ، غيرها – يرجى التحديد

A _____

B _____

C _____

D _____

E _____

4. **تذكري الوقت مباشرة بعد ولادة طفلك ، ما هي المدة التي استغرقت لكي يصل الحليب في الثدي؟**

(اسأليها في الأسبوع السادس فقط)

خلال 24 ساعة من الولادة	1
بين 24 – 48 ساعة بعد الولادة	2
بين 48 – 72 ساعة بعد الولادة	3
مازلت أنتظر الحليب أن يصل	4
غير ذلك (الرجاء تحديد):	5

5. هل ساعدك أحد في اتخاذ قرار تغيير طريقة التغذية؟

إذا كان الجواب بنعم ، من هو الشخص:

A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1

لا أحد
والد الطفل
أمي
أم الزوج
أقارب آخرين
أصدقاء
طبيبي الخاص
أصحاب مهن طبية آخرين (مثال: الممرضة أو أخصائية التغذية)
غير ذلك

A_____
B_____
C_____
D_____
E_____

6. **هل ترضعين الطفل وفق جدول معين أو حسب الطلب؟**
(أقرئي الأجوبة للأم)

A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4

حسب الطلب
حسب جدول- كل ساعتين تقريبا
حسب جدول- كل ثلاث ساعات تقريبا
حسب جدول- كل أربع ساعات تقريبا
ردود أخرى (أرجو التحديد):

a7. **كم معدل عدد المرات التي ترضعين فيها طفلك في اليوم (خلال 24 ساعة)؟**

b7. **كم من هذه المرات تكون الرضاعة طبيعية من الثدي؟** (اختاري 0 لأبداً)					
c7. **كم من هذه المرات يكون الحليب صناعي؟** (اختاري 0 لأبداً)					
a8. **كم عدد المرات، في المعدل، يستيقظ منها طفلك في الليل لكي يرضع؟**					
b8. **في المعدل ، كم من رضعات الليل هذه تكون رضعات طبيعية من الثدي؟**					

BOTH

	A **6** **أسابيع**	**B** **12** **أسبوع**	**C** **18** **أسبوع**	**D** **26** **أسبوع**	**E** **52** **أسبوع**
9. **هل قمت بعصر الحليب من صدرك منذ آخر مرة تكلمنا (أو منذ خروجك من المستشفى)؟**					
نعم	1	1	1	1	1
لا	2	2	2	2	2

BOTH

10. لماذا عصرت حليب صدرك؟ أردت حليب الصدر فيما لو احتجت	1	1	1	1	1

1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1

معرفة إذا كان طفلي سيأخذ الزجاجة (عملية اختبار)
حتى يرضع من شخص آخر (الخادمة / عند خروجي للعمل)
لتفادي الرضاعة الطبيعية أمام الناس عند خروجي مع الطفل
حتى يشارك الوالد في ارضاعة
لدي الكثير من الحليب / غير مرتاحة منه
ألم في الحلمة / تورم / تضخم
الطفل مريض
الأم مريضة
غير ذلك

أسباب أخرى:

A_____
B_____
C_____
D_____
E_____

11. ما هي الطريقة التي استخدمتها لعصر حليبك؟

BOTH

A **6** **أسابيع**	**B** **12** **أسبوع**	**C** **18** **أسبوع**	**D** **26** **أسبوع**	**E** **52** **أسبوع**
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1
1	1	1	1	1

اليد
المضخة اليدوية
المضخة – الكهربائي _ فردي أي لثدي واحد
المضخة – الكهربائي – زوجي أي للثديان معا

BOTH

12. **هل واجهت أي صعوبات في عصر الحليب؟**					
نعم	1	1	1	1	1
لا	2	2	2	2	2
BOTH					
13. **(إذا واجهت صعوبات) ما هي الصعوبات التي واجهتك لشفط الحليب؟**					
تأخذ وقتاً طويلاً	1	1	1	1	1
كان مؤلماً	1	1	1	1	1
لم أستطع أن أحصل على كمية كافية من الحليب	1	1	1	1	1
صعوبات أخرى واجهتك (لشفك الحليب)	☐	☐	☐	☐	☐

A_____

B_____

C_____

D_____

E_____

لا تسألين هذا السؤال إذا توقفت عن الرضاعة الطبيعية منذ آخر مقابلة أو مكالمة

	A	**B**	**C**	**D**	**E**
	6	**12**	**18**	**26**	**52**
14. **هل واجهت صعوبات مع الرضاعة الطبيعية منذ تكلمت معي أخر مرة (أو منذ خرجت من المستشفى) أشياء مثل: مشاكل مع الصدر ، مشاكل أخرى مع تغذية الطفل؟**					
نعم	1	1	1	1	1

لا تسألين هذا السؤال إذا توقفت عن الرضاعة الطبيعية منذ آخر مقابلة أو مكالمة					
15. ما هي الصعوبات التي واجهتك؟ (لا تقرأي و لكن اطلبي منها أكثر من جواب)					
مشاكل مع الثديين:					
حلمات متشققة أو مؤلمة	1	1	1	1	1
تضخم الصدر (كثير الامتلاء)	1	1	1	1	1
التهاب الحلمات أو التهاب الصدر	1	1	1	1	1
الحلمات المقلوبة	1	1	1	1	1
الرضاعة الطبيعية مؤلمة	1	1	1	1	1
مشاكل مع الطفل:					
الطفل لا يزيد وزنة بشكل كافي	1	1	1	1	1
الطفل لدية مشاكل مع المص	1	1	1	1	1
الطفل يحصل على الكثير من الحليب أو بسرعة	1	1	1	1	1
POOR "LET-DOWN"	1	1	1	1	1
الطفل يرفض الرضاعة الطبيعية	1	1	1	1	1
الطفل تعب جداً ليرضع – ينام على الصدر مثلا	1	1	1	1	1
أشعر أنني لا أرضع جيداً	1	1	1	1	1
لا يكفي الحليب للطفل	1	1	1	1	1
أي مشاكل أخرى في الرضاعة؟	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

16. **هل توقعت أن تواجهك مشاكل مع الرضاعة الطبيعية؟**

	A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع
نعم	1				
لا	2				

17. هل طلبت النصح أو المعونة من أي شخص عن مشاكل الرضاعة الطبيعية؟

	A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع
لا					
إذا نعم ، ممن؟	1	1	1	1	1
نعم ، الطبيب	1	1	1	1	1
نعم ، ممرضة المستشفى	1	1	1	1	1
نعم ، صديقتي / أصدقاء	1	1	1	1	1
نعم ، أمي	1	1	1	1	1
نعم ، فرد من أفراد العائلة	1	1	1	1	1
أي ردود أخرى					

A_____

B_____

C_____

D_____

E_____

BOTH

18. **هل أعطاك الناس نصائح مشوشة عن التغذية منذ أن تكلمنا أخر مرة (أو منذ أن تركت المستشفى)؟**

A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع

1 2	1 2	1 2	1 2	1 2	نعم لا إذا نعم ، أرجو التوضيح
☐	☐	☐	☐	☐	

A _____

B _____

C _____

D _____

E _____

19. **إذا قدمت الحليب الصناعي ، ما هو النوع؟**(لا تقرئي الإجابة إلا إذا قالت لا أعلم)

01	01	01	01	01	Similac
02	02	02	02	02	Aptamil
03	03	03	03	03	Beblac
04	04	04	04	04	S26 Gold1
05	05	05	05	05	Enfamil
06	06	06	06	06	NAN 1
07	07	07	07	07	Guigoz 1
08	08	08	08	08	Novolac 1
09	09	09	09	09	France Lait 1
10	10	10	10	10	Specialized infant formula / Other
☐	☐	☐	☐	☐	
E **52** **أسبوع**	**D** **26** **أسبوع**	**C** **18** **أسبوع**	**B** **12** **أسبوع**	**A** **6** **أسابيع**	**BOTH**

20. لماذا اخترت هذا النوع بالذات؟

نصحني به العاملين المستشفى	1	1	1	1	1
نصحتني به أمي	1	1	1	1	1
نصحتني به أم زوجي	1	1	1	1	1
نصحت به صديقتي	1	1	1	1	1
نصح به فرد من أفراد العائلة	1	1	1	1	1
رأيته في الإعلان	1	1	1	1	1
كان أرخص نوع	1	1	1	1	1
نصح به الصيدلاني	1	1	1	1	1
نصح به الطبيب	1	1	1	1	1
متوفر بحجم تجريبي	1	1	1	1	1
رأيته يستخدم في المستشفى	1	1	1	1	1
استخدمته من قبل	1	1	1	1	1
ردود أخرى	☐	☐	☐	☐	☐

A _____

B _____

C _____

D _____

E _____

BOTH

21. هل جربت حليب صناعي أخر؟

	A **6** **أسابيع**	**B** **12** **أسبوع**	**C** **18** **أسبوع**	**D** **26** **أسبوع**	**E** **52** **أسبوع**
نعم	1	1	1	1	1

2	2	2	2	2	لا
					BOTH
					22. (إذا أستخدم حليب صناعي أخر) **ما هو النوع الآخر**؟(لا تقرئي الإجابة إلا إذا قالت لا أعلم)
01	01	01	01	01	Similac
02	02	02	02	02	Aptamil
03	03	03	03	03	Beblac
04	04	04	04	04	S26 Gold1
05	05	05	05	05	Enfamil
06	06	06	06	06	NAN 1
07	07	07	07	07	Guigoz 1
08	08	08	08	08	Novolac 1
09	09	09	09	09	France Lait 1
10	10	10	10	10	Specialized infant formula / Other

_____A
_____B
_____C
_____D
_____E

E **52** **أسبوع**	**D** **26** **أسبوع**	**C** **18** **أسبوع**	**B** **12** **أسبوع**	**A** **6** **أسابيع**	**BOTH**
					23. لماذا اخترت هذا النوع بالذات؟

نصحني به العاملين في المستشفى	1	1	1	1	1
نصحتني به أمي	1	1	1	1	1
نصحتني به أم زوجي	1	1	1	1	1
نصحتني به صديقتي	1	1	1	1	1
نصحني به فرد من العائلة	1	1	1	1	1
رأيته في الإعلان	1	1	1	1	1
كان أرخص نوع	1	1	1	1	1
نصح به الصيدلاني	1	1	1	1	1
نصح به الطبيب	1	1	1	1	1
متوفر بحجم تجريبي	1	1	1	1	1
رأيته يستخدم في المستشفى	1	1	1	1	1
استخدمته من قبل	1	1	1	1	1
ردود أخرى					

_____A
_____B
_____C
_____D
_____E

BOTH

24. **هل يأخذ طفلك أي نوع آخر من السوائل بجانب حليب الأم أو الصناعي؟**

	A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع
نعم	1	1	1	1	1

2	2	2	2	2	لا السوائل الأخرى

_____A
_____B
_____C
_____D
_____E

BOTH

25. **كم كان عمر طفلك عندما جرب أي سائل أخر بجانب حليب الأم أو الصناعي؟** **العمر عندما تم إطعامه لأول مرة** ☐ أسابيع

26. **إذا نعم ، ما الذي تعطينه لطفلك؟**

ماء مغلي	1
ماء معدني (قنينة)	2
عصير فواكه	3
مشروبات غازية	4
عصائر النكتار	5
حليب الصويا	6
حليب البقر الغير معدل (العادي)	7
حليب الماعز الغير معدل (العادي)	8
Date water	9
Glucose D:	
Flavored Glucose D	10
Baby's Tea:	
شاي أعشاب Herbal Tea	11a
شاي فاكهة Fruit Tea	11b
Fennel Tea	11c
شاي البابونج	11d

	A 6	B 12	C 18	D 26	E 52
27. **هل يأكل طفلك أي أطعمة صلبة؟**					
نعم	1	1	1	1	1
لا	2	2	2	2	2

28. **إذا نعم ، كم كان عمر الطفل (بالأسابيع) عندما جرب لأول مرة الأطعمة الصلبة؟** **العمر عندما تم إطعامه لأول مرة** ☐ أسابيع

29
. ما هو نوع الطعام الصلب الذي جربه لأول مرة؟_____

_____

_____

BOTH

30. **إذا نعم ، ما هي الأطعمة الصلبة التي يتناولها طفلك؟ حددي الأطعمة.**
(لا تقرئي ، ولكن أطلبي منها الإجابة على أكثر من سؤال من المجموعة)

	العمر عندما تم إطعامه لأول مرة ☐ **أسابيع**
Infant Cereal حبوب الأفطار الخاصة بالمرضع	1
حبوب الأفطار الأخرى (مثل: الشوفان) Other breakfast cereal (e.g. oatmeal)	2
Rice & pasta الأرز و المعكرونية	3
Bread الخبز	4
White fish (e.g. cod, haddock, or canned tuna) السماك البيضاء	5
Oily fish/blue fish (e.g. salmon, trout , sardines, fresh tuna) الأسماك المدهنة	6
البسكويت المخصص لعمر التسنين Rusks (e.g. teething Rusks)	7
Biscuits البسكويت	8
Plain yogurt الروب السادة	9
Flavored yogurt الروب ذات النكهات	10
لحوم الدجاجPoultry meat	11
Beef or lamb لحم البقر أو العجل	12
Eggs (yolk only) البيض (الصفار فقط)	13
Eggs (including the white) البيض الكامل	14
Potato (chips, French fries) البطاطس بأنواعها	15
Cooked or Canned fruits الفواكة المطبوخة أو المعلبة	16

Dried fruits الفواكة الجففة	17
Raw vegetables الخضروات النية	18
Cooked vegetables الخضروات المطبوخة	19
Pudding, Custard, desserts الكستارد و الحلويات	20
Sweets & chocolate الحلاوة و الشوكولاته	21
Honey العسل	22
Strained / Puree	
Fruits (please specify) الفواكه (أرجو التحديد)	22a
Vegetables (please specify) الخضروات (أرجو التحديد)	22b
Creamy vegetables with pasta الخضروات مع الكريمة و المعكرونية	22c
Other Food أطعمة أخرى	

ردود أخرى:

A_____

B_____

C_____

D_____

E_____

E	D	C	B	A
52	26	18	12	6

BOTH

31. **هل بدأ طفلك باستخدام المصاصة منذ آخر مرة تكلمنا أو منذ مغادرتك المستشفى؟**

1	1	1	1	1	نعم
2	2	2	2	2	لا
3	3	3	3	3	نعم: ولكن لم يتقبلها

32. **كم كان عمر طفلك عندما أستخدم المصاصة لأول مرة؟**

أسبوع ☐ ☐ أشهر

33. **لماذا بدأ طفلك باستخدام المصاصة؟**_____

_____

BOTH

34. **هل واجه طفلك أي متاعب (مشاكل) صحية؟ منذ أخر مرة تكلمنا (أو منذ أن غادرت المستشفى)؟**

نعم	1	1	1	1	1
لا	2	2	2	2	2

BOTH

35. **إذا كان الجواب بنعم ، ما هي نوع المشاكل؟**

الاسترجاع	1	1	1	1	1
الإسهال	1	1	1	1	1
مشاكل بالرئة	1	1	1	1	1
جلدية / حرارة	1	1	1	1	1
بوصفار	1	1	1	1	1
مشاكل أخرى					

مشاكل أخرى تتعلق بالطفل:

A_____

B_____

C_____

D_____

E_____

36. **هل أخذت طفلك إلى المختصين لمعرفة سبب المشاكل؟**

A 6	B 12	C 18	D 26	E 52	
1	1	1	1	1	نعم
2	2	2	2	2	لا
1	1	1	1	1	إذا نعم " من؟ نعم، طبيب المنطقة (المستوصف)
1	1	1	1	1	نعم طبيب الأطفال
1	1	1	1	1	نعم الممرضة الصحية في المنطقة
					غير ذلك

ردود أخرى:

A_____

B_____

C_____

D_____

E_____

BOTH

37. **هل واجهت أي مشاكل صحية منذ أخر مرة تكلمنا (أو منذ مغادرة المستشفى)؟**

A 6 أسابيع	B 12 أسبوع	C 18 أسبوع	D 26 أسبوع	E 52 أسبوع	
1	1	1	1	1	نعم
2	2	2	2	2	لا
					إذا كان الجواب بنعم ، ما هي نوع المشكلة؟

A _____
B _____
C _____
D _____
E _____

38. **هل قابلتي أي أحد عن هذه المشكلة؟**

لا	1	1	1	1	1
نعم، طبيب المنطقة (المستوصف)	1	1	1	1	1
نعم طبيب أمراض النساء	1	1	1	1	1
غير ذلك ردود أخرى:	☐	☐	☐	☐	☐

A _____
B _____
C _____
D _____
E _____

BOTH

39. **هل واجهت أي تغييرات جذرية في حياتك منذ أخر مرة تكلمنا (أو منذ مغادرة المستشفى؟ علي سبيل المثال:**

	A **6** **أسابيع**	**B** **12** **أسبوع**	**C** **18** **أسبوع**	**D** **26** **أسبوع**	**E** **52** **أسبوع**
لا	1	1	1	1	1
نعم انتقلت من المنزل	1	1	1	1	1

1	1	1	1	1	نعم، وفاة في العائلة
1	1	1	1	1	نعم، طلاق ، انفصال
1	1	1	1	1	نعم ، مرض خطير في العائلة
					غير ذلك- تغييرات جذرية أخرى:

A _____

B _____

C _____

D _____

E _____

E 52	D 26	C 18	B 12	A 6	**BOTH**
					40. حالياً ، هل تأخذين حبوب منع الحمل؟
1	1	1	1	1	نعم
2	2	2	2	2	لا
					41. إذا كنت تأخذين الحبوب ما هو النوع؟
1	1	1	1	1	حبوب عادية
2	2	2	2	2	حبوب mini-pill
3	3	3	3	3	أنواع أخرى من hormonal delivery system (e.g. patches)
					BOTH
					42. هل تأخذين أنواع أخرى من الحبوب حالياً؟
1	1	1	1	1	نعم
2	2	2	2	2	لا
					43. ما أنواع الأدوية التي تأخذينها؟

_____A
_____B
_____C
_____D
_____E

E	D	C	B	A	
52	**26**	**18**	**12**	**6**	
					BOTH
					44. **هل ساعدك أي أحد يومياً أو بشكل يومي؟** منذ أخر مرة تكلمنا أو منذ غادرت المستشفى؟
1	1	1	1	1	لا
1	1	1	1	1	نعم ، زوجي
1	1	1	1	1	نعم، أمي
1	1	1	1	1	نعم، أفراد أخرى من العائلة
1	1	1	1	1	نعم، أصدقائي
1	1	1	1	1	نعم، مساعدة الخادمة أو تأجير ممرضة
					BOTH
					45. **إذا كان الجواب بنعم ، ما هي نوع المساعدة التي تلقيتها؟**
1	1	1	1	1	أعمال المنزل
1	1	1	1	1	الاهتمام ببقية الأبناء
1	1	1	1	1	الاهتمام بالمولود لكي أخذ أنا وقت للراحة
1	1	1	1	1	التسوق
1	1	1	1	1	الطبخ
					BOTH
					46. **هل كان والد الطفل متواجد أثناء الولادة؟**
1	1	1	1	1	نعم
2	2	2	2	2	كان يود أن يحضر ولكن لم يستطع لظرف ما

لا	3	3	3	3	3

BOTH

47. **هل زرت المركز الصحي لمتابعة صحة الطفل (المستوصف)؟** منذ أخر مكالمة

نعم	1	1	1	1	1
لا	2	2	2	2	2

BOTH

48. **ما هو شعورك بالنسبة لتغيير وزن طفلك منذ الولادة؟** (أقرئي الاختيارات)

راضية / مقتنعة	1	1		1	1
قلقة قليلاً	2	2	2	2	2
منزعجة جداً وقلقة	3	3	3	3	3
لا أعلم	4	4	4	4	4

BOTH

49. **كيف تصفين طبيعة شخصية طفلك؟**

سهل ا لتعاون ، هادئ ، رائق ، ساكن	1	1	1	1	1
سريع الهيجان ، نزق ، حاد الطبع ، انفعالي	2	2	2	2	2
متوسط (بين البين)	3	3	3	3	3
لا أعلم	4	4	4	4	4

50. **كيف تصنفين ثقتك في الرضاعة الطبيعية؟** **NOT FOR TERMNATION**

1) غير واثقة	1	1			
2)	2	2			
3)	3	3			
4)	4	4			
5) واثقة جداً	5	5			

51. **ما مقدار الاستمتاع التي تجدينه في الرضاعة الطبيعية؟**

	A	**D**			
	6 wks	**26 wks**			

1) غير ممتع	1	1
2)	2	2
3)	3	3
4)	4	4
5) ممتع جداً	5	5
52. **ما مقدار الرضا لديك مع تجربتك للرضاعة الطبيعية؟**	**A 6 wks**	**D 26 wks**
1) غير راضية	1	1
2)	2	2
3)	3	3
4)	4	4
5) راضية جداً	5	5
53. **عموماً ، ما مقدار الراحة أو الثقة التي تشعرين بها أثناء الرضاعة الطبيعية أمام أشخاص آخرين؟**	**A 6 wks**	**D 26 wks**
1) غير مرتاحة	1	1
2)	2	2
3)	3	3
4)	4	4
5) مرتاحة جداً	5	5
54. **عموماً ، ما مقدار الراحة أو الثقة التي تشعرين بها أثناء الرضاعة الطبيعية أمام صديقاتك؟**		
1) غير مرتاحة	1	1
2)	2	2
3)	3	3
4)	4	4
5) مرتاحة جداً	5	5

55. **عموماً ، ما مقدار الراحة أو الثقة التي تشعرين بها أثناء الرضاعة الطبيعية أمام قريباتك؟** مثال: الأم و الأخت

1) غير مرتاحة	1
2)	2
3)	3
4)	4
5) مرتاحة جداً	5

56. **عموماً ، ما مقدار الراحة أو الثقة التي تشعرين بها أثناء الرضاعة الطبيعية أمام أقاربك من الرجال؟** الأب و الأخ

1) غير مرتاحة	1
2)	2
3)	3
4)	4
5) مرتاحة جداً	5

57. **عموماً، ما مقدار الراحة أو الثقة التي تشعرين بها أثناء الرضاعة الطبيعية في منزل شخص آخر؟** **6/ A**

1) غير مرتاحة	1
2)	2
3)	3
4)	4
5) مرتاحة جداً	5

58. **عموماً ، ما مقدار الراحة أو الثقة التي تشعرين بها أثناء الرضاعة الطبيعية في المطاعم العامة؟**

1) غير مرتاحة	1
2)	2
3)	3

26/ D

4)
5) مرتاحة جداً

59. **عموماً ، ما مقدار الراحة أو الثقة التي تشعرين بها أثناء الرضاعة الطبيعية في الحديقة أو البحر (الأماكن العامة)؟**

1) غير مرتاحة
2)
3)
4)
5) مرتاحة جداً

60. **هل تدخنين؟** **BOTH (ONCE ONLY)**

نعم
عادةً، ولكن ليس في الوقت الحالي (Ask again if this option chosen)
لا

61. **في المعدل، كم سيجارة تدخنين في اليوم؟**

BOTH (ONCE ONLY)

62. **عموماً، ما هو تأثير الرضاعة الطبيعية على وزن المرأة في اعتقادك؟**

لا يوجد أي تأثير
يساعد على نزول الوزن
يساعد على المحافظة على الوزن
لا أعلم، غير متأكدة

BOTH (ONCE ONLY)

63. **عموما، ما هو تأثير الرضاعة الطبيعية على شكل وحجم صدر المرأة بعد التوقف عن الرضاعة؟**

يسبب ترهل الصدر
لا يسبب أي تغيير

6/ A	12/ B	18/ C	26/ D	52/ E
4			4	
5			5	
1			1	
2			2	
3			3	
4			4	
5			5	
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3

6/ A
1
2
3
4
1
1

يصغر الثديين 1
لا أعلم، غير متأكدة 1
ردود أخرى

A 6 **BOTH (TWO WEEKS ONLY)**

سأقوم بقراءة بعض العبارات المتعلقة بالرضاعة الطبيعية ، أرجو الإجابة بصح أو خطأ أو لا أعلم (في الحقيقة ، لا يؤثر إذا لم تكوني تعلمي صحة العبارات)

64. **الرضاعة لفترات متكررة (كثيرة) غالباً تزيد من كمية الحليب في ثدي.**
صح 1
خطأ 2
لا أعلم 3

65. **يحتاج الأطفال الرضع إلى زيادة في التغذية أثناء فترة النمو المتزايدة (الطفرة السريعة في النمو).**
صح 1
خطأ 2
لا أعلم 3

66. **هناك الكثير من النساء اللاتي تحتجن إلى استخدام الحليب الصناعي لأنهن لا ينتجن حليباً كافياً.**
صح 1
خطأ 2
لا أعلم 3

BOTH (TWO WEEKS ONLY)

67. **حبوب منع الحمل ممكن أن تقلل من امداد حليب الثدي.**
صح 1
خطأ 2

Mini-pill won’t but normal pill will	3
لا أعلم	4
68. الراحة والاستجمام مهمتان لضمان كمية كافية من إمداد حليب ا لثدي.	
صح	1
خطأ	2
لا أعلم	3
69. إعطاء حليب بودرة للطفل الذي يبلغ شهراً واحداً من العمر لا يقلل كمية الحليب المنتج من الأم.	
صح	1
خطأ	2
لا أعلم	3
70. الأطفال الرضع ، يعلمون كيفية الرضاعة الصحيحة بشكل طبيعي (غريزة).	
صح	1
خطأ	2
لا أعلم	3
71. الأطفال الذين يرضعون حليباً صناعياً ينامون فترة أطول أثناء الليل.	
صح	1
خطأ	2
لا أعلم	3

Termination Questions

72. **كم كان عمر طفلك عندما توقف عن الرضاعة الطبيعية؟** أسابيع أشهر

CENSORING FACTOR

73. **لماذا قررت التوقف عن الرضاعة الطبيعية؟**

(لا تسترسلي ، ولكن اسألي عن ما إذا كانت لديها أسباباً أخرى)

أسباب الرضاعة الطبيعية الطويلة المدى

عمر الطفل كافي للتوقف عن الرضاعة من الثدي 1

الطفل فطم نفسه 1

لقد فعلت كل ما في وسعي وأعتبرها بداية لا بأس بها 1

مشاكـــل/ألـــم

عملية الرضاعة بالثدي مؤلمة جدا 1

تشقق الحلمات أو نزيف دموي 1

تورم الثدي 1

التهاب الحلمة/mastitis 1

الحلمات المقلوبة أو غير بارزة 1

مشاكل مع طريقة الرضاعة السليمة 1

نفسية الأم

الأم متوترة وغير متأكدة من رضاعتها الحالية 1

الرضاعة تحتاج إلى الكثير من الدعم و الدافع الداخلي 1

الرضاعة صعبة جداً 1

الرضاعة غير عملية جدا 1

الأم تحت ضغط نفسي كبير 1

الأم تعبة جداً	1
لا أحب الرضاعة الطبيعية	1
قلقة عن إمكانية تغيير شكل الجسم	1
الحليب غير كافي/عوامل أخرى تخص الطفل	
لا أستطيع أن أقيم كمية الحليب التي يشربها الطفل	1
الحليب الذي لدي غير جيد بما فيه الكفاية	1
الحليب غير كافي	1
الطفل لا يزيد وزنة بشكل كافي	1
الطفل غير راغب في الثدي كما كان في السابق	1
الطفل يعض حلماتي	1
الطفل مستعد للأطعمة الصلبة	1
الطفل يفضل الحليب من الزجاجة (القنينة)	1
الطفل مريض	1
عوامـــل أخرى متعلقة بالأم	
الأم مريضة	1
الأم تستخدم أدوية علاجية	1
أريد أن أبدء بتناول حبوب منع الحمل	1
العودة للعمل أو الدراسة	1
عوامـــل أخـــرى	
والد الطفل يفضل الحليب الصناعي	1
والد الطفل يستطيع المساعدة بالتغذية الصناعية (المشاركة)	1

T

ردود أخرى:

A_____

B_____

C_____

D_____

E_____

74. **هل خططت للتوقف عن الرضاعة الطبيعية الآن؟** (when you did)

نعم	1
لا	2

75. **إذا كان الجواب بلا ، في أي عمر قررت التوقف عن الرضاعة الطبيعية؟**

قبل 6 أسابيع	1
بين 6 أسابيع و شهران	2
بين 2 و 3 أشهر	3
بين 4 و 6 أشهر	4
بين 7 و 8 أشهر	5
بين 9 و 12 شهر	6
أكثر من 12 شهراً	7
عندما بدأ بالتسنين	8
ردود أخرى	

A_____

B_____

C_____

D_____

E_____

76. **هل نصحك أحد بالتوقف عن الرضاعة الطبيعية؟**

لا 1
الطبيب (المستوصف) 1
الاختصاصي (حددي):_____ ☐
الأم 1
أم الزوج 1
قريباتي 1
صديقة 1
غير ذلك (حددي) ☐
ردود أخرى:
A_____
B_____
C_____
D_____
E_____

77. **إذا ولدت طفلاً جديداً ، هل ستقررين أن ترضعيه رضاعة طبيعية؟**
نعم 1
نعم ، إذا استطعت 2
لا 3

78. **لا تسترسلي الإجابات ، ولكن اسألي عن ما إذا كانت لديها أسباباً أخرى**
إذا كان الجواب بنعم، لماذا؟
أفضل للطفل 1
أفضل للأم 1
الطفل سعيد أكثر 1

طبيعي
علاقة أقوى مع الطفل 1
أسهل / عملياً 1
استمتاع / رضا الأم 1
لا أسباب محدده 1
ردود أخرى، لماذا ترغبين برضاعة طبيعة لطفل أخر

_____
_____
_____
_____
_____

79. **لا تسترسلي الإجابات ، ولكن اسألي عن ما إذا كانت لديها أسباباً أخرى**
إذا كان الجواب بلا، لماذا لا ترغب برضاعة طفل أخر؟
غير عملي 1
عدم الأستمتاع أو الرضا للأم 1
متعلقة بالمنزل 1
إحراج 1
ضريبة عاطفية تدفعا الأم 1
الحليب الصناعي هو بنفس المستوى 1
ردود أخرى، لماذا لا ترغبين برضاعة طبيعة لطفل أخر T

_____
_____
_____
_____

80. **هل تشجعين صديقتك لترضع طبيعياً؟**	**T**
نعم ، بالتأكيد	1
نعم ، ممكن	2
ربما	3
إذا أرادت أن ترضع	5
لا	6

الأسئلة التالية هي عن مشاعرك تجاه الرضاعة الطبيعية، لذلك لا يوجد جواب صحيح أو خاطيء

علي سبيل المثال: السؤال الأول: "كيف تقيمين تجربتك مع الرضاعة الطبيعية؟" ، إذا تخيلنا المسطرة عليها خمسة نقاط و في نهايتها العدد **"5"** وهو **"شديد النجاح"** ، أين ممكن أن تقيمين نفسك على هذه المسطرة؟

T	81. كيف تصفين تجربتك مع الرضاعة الطبيعية؟	T	82. كيف كان مدى استمتاعك للرضاعة الطبيعية؟	T	83. ما هو مقدار الرضا بالنسبة لتجربتك مع الرضاعة الطبيعية؟
1	**غير ناجحة**	1	**غير ممتعة**	1	**غير راضية**
2		2		2	
3		3		3	
4		4		4	
5	**ناجحة جداً**	5	**ممتعة جداً**	5	**شديدة الرضا**
9	غير متأكدة	9	غير متأكدة	9	غير متأكدة

Appendix 6: Additional univariate analysis of breastfeeding duration

Appendix 6.1: Table1: The univariate analysis of factors associated with the risk for discontinuing any breastfeeding before 6 months (n=331)

Variable	N	%	Any Breast-feeding to 6 mo HR	95% CI
Sociodemographic				
Maternal Age				
<25	74	22.4	1.49	0.87-2.54
25-34	214	64.7	0.86	0.53-1.39
≥35 (ref)	43	13.0	1.00	
Mother's Education (Yrs of Schooling)				
<12 years (ref)	111	33.5	1.00	
≥12 years	220	66.5	0.90	0.64-1.26
Country of mother's birth				
Kuwait & Gulf countries (ref)	117	53.5	1.00	
Other Arab countries	115	34.7	0.43	0.29-0.63
Other world countries	39	11.8	0.83	0.51-1.33
Mother's occupation				
Managers & professionals (ref)	87	26.3	1.00	
Sales & clericals	65	19.6	1.61	0.98-2.66
Unskilled occupations	29	8.8	1.15	0.61-2.17
Housewives	150	45.3	1.35	0.88-2.07
Father's occupation:				
Managers & professionals (ref)	88	26.6	1.00	
Sales & clericals	98	29.6	1.10	1.22-3.23
Unskilled occupations	142	42.9	2.19	1.38-3.47
No jobs	3	0.9	8.82	2.63-29.59
Mother employed/studying part- or full time at 6 months before birth				
Yes (ref)	140	42.3	1.00	
No	191	57.7	0.90	0.65-1.24
Mother intended to be employed/studying part- or full time at 6 months postpartum				
Yes (ref)	128	38.7	1.00	
No	185	55.9	0.77	0.55-1.07
Don't know yet/undecided	18	5.4	1.83	1.004-3.34
Biomedical				
Parity				
Primiparous (ref)	98	29.6	1.00	
Multiparous	233	70.4	0.66	0.47-0.93
Method of Delivery				
Vaginal (ref)	212	64.0	1.00	
Cesarean section	119	36.0	1.02	0.73-1.41
Mother's pre-pregnancy BMI (kg/m²)				
<25(ref)	146	44.1	1.00	
≥25	185	55.9	1.02	0.74-1.42
Infant gender				
Male (ref)	170	51.4	1.00	
Female	161	48.6	0.97	0.70-1.33
Infant admitted to SCN				
Yes (ref)	60	18.1	1.00	
No	271	81.9	0.99	0.65-1.50
Breastfeeding problems at or before 6 wks				
Yes (ref)	145	43.8	1.00	
No	186	56.2	1.34	0.97-1.86
Age of infant when pacifier was introduced				
< 2 wks	84	25.4	2.23	1.56-3.20
≥ 2 wks	48	14.5	1.42	0.91-2.21
Not using a pacifier at 6 months (ref)	199	60.1	1.00	
Hospital Practices				
Infant's first feed				
Formula/other (ref)	264	79.8	1.00	
Breastmilk/colustrum	67	20.2	0.80	0.52-1.21
24 hours rooming-in in hospital				
Yes (ref)	178	53.8	1.00	
No	153	46.2	0.74	0.54-1.03
Infant demand feeding				

Yes (ref)	238	71.9	1.00	
No	93	28.1	1.33	.94-1.88
Early infant-to-breast contact				
Birth-6 hrs (ref)	79	23.9	1.00	
6-24 hrs	67	20.2	1.42	0.85-2.37
More than 24 hrs	185	55.9	1.48	0.96-2.25
Psychosocial				
Intended Pregnancy				
Yes (ref)	190	57.4	1.00	
No	141	42.6	0.74	0.53-1.03
Mother attended antenatal classes for this or for previous pregnancy				
Yes (ref)	29	8.8	1.00	
No	302	91.2	1.07	0.62-1.85
Mother's IIFAS score				
Low (<70;ref)	168	50.8	1.00	
High (≥70)	163	49.2	0.91	0.66-1.26
Father prefers breastfeeding				
Yes (ref)	270	81.6	1.00	
No or ambivalent	61	18.4	1.63	1.11-2.40
Maternal grandmother prefers breastfeeding				
Yes (ref)	300	90.6	1.00	
No or ambivalent	31	9.4	2.16	1.28-3.62
Intended breastfeeding duration				
<6 mo/undecided (ref)	130	39.3	1.00	
≥ 6 mo	201	60.7	0.51	0.37-0.70

Appendix 6.2: Table 2: The univariate analysis of factors associated with the risk for discontinuing full breastfeeding before 6 months (n=331)

Variable	N	%	Full Breast-feeding to 6 mo HR	95% CI
Sociodemographic				
Maternal Age				
<25	74	22.4	0.96	0.66-1.40
25-34	214	64.7	0.84	0.61-1.17
≥35 (ref)	43	13.0	1.00	
Mother's Education (Yrs of Schooling)				
<12 years (ref)	111	33.5	1.00	
≥12 years	220	66.5	1.01	0.81-1.27
Country of mother's birth				
Kuwait & Gulf countries (ref)	117	53.5	1.00	
Other Arab countries	115	34.7	0.66	0.52-0.84
Other world countries	39	11.8	0.95	0.67-1.34
Mother's occupation				
Managers & professionals	87	26.3	1.00	
Sales & clericals	65	19.6	1.21	0.88-1.67
Unskilled occupations	29	8.8	0.99	0.65-1.51
Housewives	150	45.3	0.89	0.68-1.15
Father's occupation:				
Managers & professionals (ref)	88	26.6	1.00	
Sales & clericals	98	29.6	1.20	0.90-1.61
Unskilled occupations	142	42.9	1.27	0.97-1.65
No jobs	3	.9	1.67	0.53-5.28
Mother employed/studying part- or full time at 6 months before birth				
Yes (ref)	140	42.3	1.00	
No	191	57.7	1.01	0.81-1.26
Mother intended to be employed/studying part- or full time at 6 months postpartum				
Yes (ref)	128	38.7	1.00	
No	185	55.9	0.77	0.61-0.97
Don't know yet/undecided	18	5.4	1.49	0.91-2.46
Biomedical				
Parity				
Primiparous (ref)	98	29.6	1.00	
Multiparous	233	70.4	0.83	0.65-1.05
Method of Delivery				
Vaginal (ref)	212	64.0	1.00	
Cesarean section	119	36.0	1.04	0.83-1.30
Mother's pre-pregnancy BMI (kg/m²)				
<25(ref)	146	44.1	1.00	
≥25	185	55.9	0.94	0.80-1.24
Infant gender				
Male (ref)	170	51.4	1.00	
Female	161	48.6	1.04	0.84-1.29
Infant admitted to SCN				
Yes (ref)	60	18.1	1.00	
No	271	81.9	0.78	0.59-1.03
Breastfeeding problems at or before 6 wks				
Yes (ref)	145	43.8	1.00	
No	186	56.2	1.10	0.89-1.37
Age of infant when pacifier was introduced				
< 2 wks	84	25.4	1.20	0.93-1.56
≥ 2 wks	48	14.5	1.01	0.73-1.38
Not using a pacifier at 6 months (ref)	199	60.1	1.00	
Hospital Practices				
Infant's first feed				
Formula/other (ref)	264	79.8	1.00	
Breastmilk/ colostrum	67	20.2	0.89	0.68-1.16
24 hours rooming-in in hospital				
Yes (ref)	178	53.8	1.00	
No	153	46.2	1.09	0.88-1.36
Infant demand feeding				
Yes (ref)	238	71.9	1.00	

No	93	28.1	1.24	0.98-1.58
Early infant-to-breast contact				
Birth-6 hrs (ref)	79	23.9	1.00	
6-24 hrs	67	20.2	1.77	0.85-1.63
More than 24 hrs	185	55.9	1.19	0.91-1.55
Psychosocial				
Intended Pregnancy				
Yes (ref)	190	57.4	1.00	
No	141	42.6	0.82	0.66-1.02
Mother attended antenatal classes for this or for previous pregnancy				
Yes (ref)	29	8.8	1.00	
No	302	91.2	1.18	0.81-1.73
Mother's IIFAS score				
Low (<70;ref)	168	50.8	1.00	
High (≥70)	163	49.2	0.93	0.75-1.16
Father prefers breastfeeding				
Yes (ref)	270	81.6	1.00	
No or ambivalent	61	18.4	1.46	1.10-1.93
Maternal grandmother prefers breastfeeding				
Yes (ref)	300	90.6	1.00	
No or ambivalent	31	9.4	1.59	1.09-2.31
Intended breastfeeding duration				
<6 mo/undecided (ref)	130	39.3	1.00	
≥ 6 mo	201	60.7	0.79	0.63-0.98

Appendix 6.3: Table 3: The univariate analysis of factors associated with the risk for discontinuing exclusively breastfeeding before 6 months (n=331)

Variable	N	%	Exclusive Breast-feeding to 6 mo HR	95% CI
Sociodemographic				
Maternal Age				
<25	74	22.4	1.06	0.73-1.55
25-34	214	64.7	1.08	0.78-1.50
≥35 (ref)	43	13.0	1.00	
Mother's Education (Yrs of Schooling)				
<12 years (ref)	111	33.5	1.00	
≥12 years	220	66.5	0.96	0.76-1.20
Country of mother's birth				
Kuwait & Gulf countries (ref)	117	53.5	1.00	
Other Arab countries	115	34.7	0.73	0.57-0.93
Other world countries	39	11.8	0.89	0.63-1.26
Mother's occupation				
Managers & professionals (ref)	87	26.3	1.00	
Sales & clericals	65	19.6	1.03	0.75-1.42
Unskilled occupations	29	8.8	0.85	0.55-1.29
Housewives	150	45.3	1.01	0.77-1.31
Father's occupation:				
Managers & professionals (ref)	88	26.6	1.00	
Sales & clericals	98	29.6	1.73	0.88-1.57
Unskilled occupations	142	42.9	1.22	0.93-1.59
No jobs	3	.9	0.89	0.28-2.83
Mother employed/studying part- or full time at 6 months before birth				
Yes (ref)	140	42.3	1.00	
No	191	57.7	1.01	0.81-1.26
Mother intended to be employed/studying part- or full time at 6 months postpartum				
Yes (ref)	128	38.7	1.00	
No	185	55.9	0.96	0.77-1.21
Don't know yet/undecided	18	5.4	1.18	0.72-1.94
Biomedical				
Parity				
Primiparous (ref)	98	29.6	1.00	
Multiparous	233	70.4	1.03	0.82-1.31
Method of Delivery				
Vaginal (ref)	212	64.0	1.00	
Cesarean section	119	36.0	1.09	0.87-1.37
Mother's pre-pregnancy BMI (kg/m²)				
<25(ref)	146	44.1	1.00	
≥25	185	55.9	1.12	0.89-1.38
Infant gender				
Male (ref)	170	51.4	1.00	
Female	161	48.6	1.07	0.86-1.33
Infant admitted to SCN				
Yes	60	18.1	1.02	
No (ref)	271	81.9	1.00	0.77-1.37
Breastfeeding problems at or before 6 wks				
Yes (ref)	145	43.8	1.00	
No	186	56.2	1.12	0.90-1.40
Age of infant when pacifier was introduced				
< 2 wks	84	25.4	1.02	0.79-1.31
≥2 wks	48	14.5	0.83	0.60-1.14
Not using a pacifier at 6 months (ref)	199	60.1	1.00	
Hospital Practices				
Infant's first feed				
Formula/other (ref)	264	79.8	1.00	
Breastmilk/colustrum	67	20.2	0.94	0.72-1.24
24 hours rooming-in in hospital				
Yes (ref)	178	53.8	1.00	
No	153	46.2	0.92	0.74-1.14
Infant demand feeding				

Yes (ref)	238	71.9	1.00	
No	93	28.1	1.04	0.82-1.33
Early infant-to-breast contact				
Birth-6 hrs (ref)	79	23.9	1.00	
6-24 hrs	67	20.2	1.11	0.80-1.54
More than 24 hrs	185	55.9	1.02	0.79-1.33
Psychosocial				
Intended Pregnancy				
Yes (ref)	190	57.4	1.00	
No	141	42.6	0.95	0.76-1.18
Mother attended antenatal classes for this or for previous pregnancy				
Yes (ref)	29	8.8	1.00	
No	302	91.2	1.01	0.69-1.47
Mother's IIFAS score				
Low (<70;ref)	168	50.8	1.00	
High (≥70)	163	49.2	0.86	0.69-1.07
Father prefers breastfeeding				
Yes (ref)	270	81.6	1.00	
No or ambivalent	61	18.4	1.25	0.94-1.65
Maternal grandmother prefers breastfeeding				
Yes (ref)	300	90.6	1.00	
No or ambivalent	31	9.4	1.36	0.94-1.98
Intended breastfeeding duration				
<6 mo/undecided (ref)	130	39.3	1.00	
≥ 6 mo	201	60.7	0.88	0.70-1.10

Appendix 7: Poster Presentation

Presented at the 19th International Congress of Nutrition (ICN) 4-9 October 2009 conference, Bangkok. Thailand

Prevalence and Exclusivity of Breastfeeding at Discharge from Hospital Among Mothers In Kuwait

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Background & Aim

Exclusive breastfeeding is recommended as the optimal way to feed infants for the first six months of life. The objective of this study was to identify the prevalence and extent of breast-feeding at discharge amongst women in Kuwait.

Methods

A total of 373 women (aged 17-47 years), recruited from three government and one private hospital in Kuwait shortly after delivery and prior to discharge from hospital, completed an interviewer administered structured questionnaire.

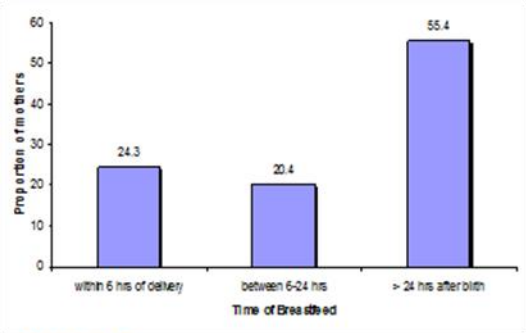
Table 1: Prevalence of breast-feeding at discharge from hospital

	Percentage of women breast-feeding			
	n	Fully	Partially	Total
At discharge	373	29.8	55.0	84.8

Table 2: Infants' first feed

First feed	*n*	%
Breast-milk or colostrum	68	18.2
Infant formula or other fluids	305	81.8
Infant formula	285	76.4
Glucose water	17	4.6

Figure 1: Time post-partum when infant was first put to the breast (n=334)



Results

More than half (52.5%) of the recruited mothers were born in Kuwait and the remainder were from other Arabic or other world countries (177, 47.5%).

At discharge the majority of mothers were partially breastfeeding (55%), with only 30% of mothers fully breastfeeding (Table1). Only 10.5% of infants had been exclusively breastfed since birth, the remainder of breastfed infants having received either pre-lacteal or supplementary feeds at some time during their hospital stay.

Of the mothers who attempted to breastfeed in hospital (n=334), 24.3% first put their baby to the breast within 6 hours of delivery, 20.4% between 6 and 24 hours, with the majority of women (55.4%) delaying their first attempt to breastfeed until 24 hours or more after delivery. Pre-lacteal feeding was the norm (81.8%) with 76.4% of infants receiving formula and 4.6% glucose water as their first feed (Table 2) . Less than 1 in 5 infants (18.2%) received colostrum or breast milk as their first feed.

Conclusion

The reasons for the high use of pre-lacteal and supplementary formula feeds warrant investigation. Hospital policies and staff training are needed to discourage the unnecessary use of infant formula in hospital, in order to support the establishment of exclusive breastfeeding among mothers in Kuwait.

Appendix 8: PDF file of published article

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INTERNATIONAL BREAST FEEDING JOURNAL

RESEARCH Open Access

Determinants of breastfeeding initiation among mothers in Kuwait

Manal Dashti[1], Jane A Scott[2], Christine A Edwards[1*], Mona Al-Sughayer[3]

Abstract

Background: Exclusive breastfeeding is recommended as the optimal way to feed infants for the first six months of life. While overall breastfeeding rates are high, exclusive breastfeeding is relatively uncommon among Middle Eastern women. The objective of this study was to identify the incidence of breastfeeding amongst women in the six governorates of Kuwait and the factors associated with the initiation of breastfeeding.

Methods: A sample of 373 women (aged 17-47 years), recruited shortly after delivery from four hospitals in Kuwait, completed a structured, interviewer-administered questionnaire. Multivariate logistic regression analysis was used to identify those factors independently associated with the initiation of breastfeeding.

Results: In total, 92.5% of mothers initiated breastfeeding and at discharge from hospital the majority of mothers were partially breastfeeding (55%), with only 30% of mothers fully breastfeeding. Prelacteal feeding was the norm (81.8%) and less than 1 in 5 infants (18.2%) received colostrum as their first feed. Only 10.5% of infants had been exclusively breastfed since birth, the remainder of the breastfed infants having received either prelacteal or supplementary infant formula feeds at some time during their hospital stay. Of the mothers who attempted to breastfeed, the majority of women (55.4%) delayed their first attempt to breastfeed until 24 hours or more after delivery. Breastfeeding at discharge from hospital was positively associated with paternal support for breastfeeding and negatively associated with delivery by caesarean section and with the infant having spent time in the Special Care Nursery.

Conclusions: The reasons for the high use of prelacteal and supplementary formula feeding warrant investigation. Hospital policies and staff training are needed to promote the early initiation of breastfeeding and to discourage the unnecessary use of infant formula in hospital, in order to support the establishment of exclusive breastfeeding by mothers in Kuwait.

Background

There is an ever increasing volume of evidence highlighting the importance of breastfeeding in infancy and later life. International recommendations promote exclusive breastfeeding as the optimal method of infant feeding for the first six months of life [1]. Studying breastfeeding practices in women is important to identify those population groups most likely to not breastfeed and to identify and understand their reasons for not breastfeeding. The identification of the determinants of breastfeeding practices will inform the design of targeted interventions to promote breastfeeding [2] and the formulation of national public health policy.

Kuwait is located in the Middle East, bordering the Persian Gulf, between Iraq and Saudi Arabia. Less than one half of the population are Kuwaiti nationals (45%) with the other predominant ethnic groups being other Arabic groups (35%), South Asian (9%), Iranian (4%) and other nationalities (7%). Arabic is the official language, while English is widely spoken [3]. Despite the large amount of evidence that breastfeeding reduces the risk of diseases in infancy and later life, efforts to promote breastfeeding have been limited and irregular in Kuwait. Breastfeeding practices have not been well studied in Kuwait with no major studies having been conducted since the late 1980s when a large cross sectional survey conducted in 1989 reported an initiation rate of any breastfeeding of 86% and exclusive breastfeeding of 60.6% [4]. The proportion of children breastfeeding at

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six months in Kuwait is well below international targets ranging from 35% to 44% [5,6].

The purpose of the Kuwait Infant Feeding Study (KIFS) is to identify the incidence and prevalence of breastfeeding up to 26 weeks postpartum among a population of women living in Kuwait and to identify the factors associated with the initiation and duration of breastfeeding. Data collected in this study will contribute to the limited breastfeeding surveillance data available for Kuwait and inform future public health policy. The aim of this paper is to present the results of the cross-sectional analysis of the baseline data related to the initiation of breastfeeding and infant feeding practices prior to discharge from hospital.

Methods

A longitudinal study of infant feeding patterns among women in Kuwait was conducted over the period of October 2007 to October 2008. Mothers were recruited from three main governmental hospitals (Maternity, Al-Addan and Al Farwania), located in different areas of Kuwait, as well as one private hospital located in the Bnaid al Gar area which services patients from various areas across Kuwait. Within 72 hours of delivery, mothers were visited on the postnatal ward and given verbal and written information explaining the aims of the study and what their participation would involve. The questionnaire was administered by the principal researcher (MD) via a 30 minute face-to-face interview, which had the advantage of ensuring that the questionnaire was fully completed. The study aimed to recruit approximately 500 mothers over a six months period and a weekly recruitment target of 20 mothers per week was set for logistical reasons, as the principal researcher was the sole person responsible for recruiting subjects and for conducting the subsequent follow-up telephone interviews at 6, 12, 18 and 26 weeks postpartum. Data from these surveys will be analyzed and reported separately.

Data collection

The structured baseline questionnaire used in this study was adapted from the first Perth Infant Feeding Study (PIFS) [7] and was designed to identify feeding practices while in hospital and to collect information on variables known or suspected to be associated with breastfeeding initiation, including socio-demographic, biomedical and psychosocial factors, and hospital practices. The PIFS questionnaire has been shown to have good content validity and has been used in other Australian studies [8] and translated from English into a variety of languages for use in similar studies of infant feeding practices in China and Kenya [9,10]. The PIFS questionnaire was modified slightly for use in this study to suit the various cultural differences of women living in Kuwait, for example the questions on marital status and alcohol intake were removed. It was translated from English into Arabic by the principal researcher and back into English by a second person unfamiliar with the subject matter to ensure the face validity of the questionnaire was retained. The Arabic version was pilot-tested on a group of 25 Arabic speaking new mothers and minor modifications were made based on some of their comments and suggestions.

Breastfeeding terms and definitions used in this study are those internationally recommended by the World Health Organization. Full breastfeeding is breastfeeding either exclusively or predominantly and exclusive breastfeeding means giving a baby no other food or drink, including water, in addition to breast milk (medicines and vitamin and minerals drops are permitted) [11]. Ever breastfed includes all infants who were put to the breast on at least one occasion. Breastfeeding at discharge was defined as the method of feeding at the time that the baseline questionnaire was completed.

Statistical analysis

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS, version 16.0) [12]. As a preliminary investigation of the data, contingency tables of feeding method versus explanatory factors were made and univariate logistic regression analysis was performed. Multivariate logistic regression analysis was employed to determine which individual variables were independently associated with the initiation of breastfeeding. All variables reported in the literature to be associated with the decision to breastfeed and investigated in this study were included in the full model which was reduced using the backward stepwise procedure. All variables in the final model were variables for which when excluded, the change in deviance compared with the corresponding chi-square test statistic on the relevant degrees of freedom was significant.

Ethical considerations

Signed informed consent was obtained from all participants who were advised that they could withdraw from the study without having to provide justification or affecting their hospital care. The confidentiality of the data and the privacy of mothers were respected at all times. The project received ethical approval from the University of Glasgow Medical Faculty Ethics Committee, the Faculty of Medicine at Kuwait University and the Ministry of Health in Kuwait. Letters of approval were obtained from all participating hospitals.

Results

A total of 439 women were invited to participate in the study and 373 mothers completed the baseline

questionnaire while in hospital, giving a response rate of 85%. Table 1 describes the socio-demographic and biomedical characteristics of participants. The age of women ranged from 17-47 years, with an average of 29.16 years (SD = 6.6 years), and most women had 12 or more years of schooling (66%).

Table 1 Socio-demographic and biomedical characteristics of participants (n = 373)

Maternal characteristics	N	%
Maternal age		
< 25 yrs	82	22.0
25-34 yrs	240	64.3
≥35 yrs	51	13.7
Maternal education		
< 12 yrs	127	34.0
≥ 12 yrs	246	66.0
Country of mother's birth		
Kuwait	196	52.5
Other Gulf States	13	3.5
Other Arabian countries	123	33.0
Other Islamic countries	10	2.7
Other world countries	31	8.3
Mother's living area (Kuwaiti governorates)		
Hawalli	186	49.9
Farwaniya	96	25.7
Mubarak al Kabeer & Ahmadi	49	13.1
Kuwait City & Jahraa	42	11.3
Father's occupation		
Managers & professionals	97	26.0
Sales & clerical	115	30.8
Unskilled occupations	157	42.1
Unemployed	4	1.1
Employment plans for the next 6 months		
Stay at home with the baby	207	55.5
Work full time	20	5.4
Work part time	113	30.3
Study full time	7	1.9
Study part time	6	1.6
Undecided	20	5.4
Parity		
Primiparous	112	30.0
Multiparous	261	70.0
Vaginal delivery		
Yes	235	63.0
No	138	37.0
Infant characteristics		
Gender		
Male	195	52.3
Female	178	47.7
Spent time in SCN		
Yes	76	20.4
No	297	79.6

All of the mothers declining to participate in the study (n = 66) were asked three short questions related to their socio-demographic status and chosen method of feeding to allow comparison with the study sample. There were no significant differences between participants and those declining to participate with respect to age (χ^2 4.413, P = 0.110), level of education (χ^2 2.455, P = 0.117) and chosen method of feeding at discharge (χ^2 447, P = 0.800), suggesting that the sample was representative of the population from which it was drawn. However, just over one third of women (37%) had delivered by caesarean section, which was significantly higher than the 11.5% reported for Kuwaiti women in general [13].

In total, 92.5% of mothers initiated breastfeeding however, at discharge from hospital, 84.8% of participants were breastfeeding their infants with less than one third of mothers (29.8%) fully breastfeeding their infants (Table 2). Prelacteal feeding was the norm, (81.8%) with less than 1 in 5 infants (18.2%) receiving colostrum as their first feed. Only 10.5% of infants had been exclusively breastfed since birth, the remainder of breastfed infants having received prelacteal feeds of either infant formula (76.4%) or glucose water (4.6%) and/or supplementary feeds of infant formula at some time during their hospital stay.

Of the mothers who attempted to breastfeed in hospital, 24.3% first put their baby to the breast within 6 hours of delivery, 20.4% between 6 and 24 hours, with the majority of women (55.3%) delaying their first attempt to breastfeed until 24 hours or more after delivery.

Univariate analysis

Table 3 lists a variety of socio-demographic, biomedical and psychosocial factors that might be expected to have an influence on breastfeeding initiation at discharge. The univariate odds ratios indicate the likelihood of a mother breastfeeding at discharge from hospital. In this study, no association was found between breastfeeding at discharge and any of the socio-demographic factors including maternal age, education, employment and

Table 2 Infant feeding practices

Feeding practices	*n*	%	95% CI
Initiated breastfeeding[a]	345	92.5	89.8, 95.2
Feeding method at discharge			
Fully breastfed	111	29.8	25.2, 34.4
(Exclusively breastfed since birth)	*(39)*	*(10.5)*	*(7.4, 13.6)*
Partially breastfed	205	55.0	50.0, 60.0
Fully formula fed	57	15.3	11.6, 19.0
Received prelacteal feed	305	81.8	77.0, 85.0

[a] Includes those infants who were ever breastfed on at least one occasion

Table 3 Number (percentage) and univariate odds ratios (95% confidence intervals) for any breastfeeding at discharge from hospital (n = 373)

Variables	Any breastfeeding at discharge		Univariate odds ratio	
	Yes	No		
	N (%)	N (%)	OR	95% CI
Sociodemographic				
Mother's age (years):				
< 25	71 (86.6)	11 (13.4)	1.00	
25-34	204 (85.0)	36 (15.0)	1.57	0.62, 4.02
≥ 35	41 (80.4)	10 (19.6)	1.38	0.64, 3.00
Maternal Education (years of schooling):				
< 12	106 (83.5)	21 (16.5)	1.00	
≥12	210 (85.4)	36 (14.6)	1.60	0.64, 2.08
Mother's country of birth:				
Kuwait & Gulf States	172 (82.3)	37 (17.7)	1.00	
Other Arabic countries	109 (88.6)	14 (11.4)	1.67	0.87, 3.24
Other world countries	35 (85.4)	6 (14.6)	1.25	0.49, 3.20
Mother employed/studying part- or full-time at 6 months before birth				
Yes	132 (82.5)	28 (17.5)	1.00	
No	184 (86.4)	29 (13.6)	1.35	0.76, 2.37
Mother intended to be employed/studying part- or full time at 6 months postpartum				
Yes	119 (81.5)	27 (18.5)	1.00	
No	179 (86.5)	28 (13.5)	0.69	0.39, 1.23
Don't know yet/undecided	18 (90.0)	2 (10.0)	0.31	0.31, 6.40
Mother's occupation:				
Managers & professionals	83 (88.3)	11 (11.7)	1.00	
Sales & clericals	62 (82.7)	13 (17.3)	0.63	0.26, 1.50
Unskilled occupations	26 (81.2)	6 (18.8)	0.57	0.19, 1.70
House wives	145 (84.3)	27 (15.7)	0.71	0.34, 1.51
Father's occupation:				
Managers & professionals	85 (87.6)	12 (12.4)	1.00	
Sales & clericals	93 (80.9)	22 (19.1)	2.36	0.23, 24.58
Unskilled occupations	135 (75)	22 (14)	1.41	0.14, 14.2
Unemployed	3 (75)	1 (25)	2.04	0.20, 20.56
Location:				
Kuwait City & Jahraa	31 (73.8)	11 (26.2)	1.00	
Hawalli	163 (87.6)	23 (12.4)	2.51	1.11, 5.68
Farwania	80 (83.3)	16 (16.7)	1.77	0.74, 4.24
Mubarak Al Kabeer & Ahmedi	42 (85.7)	7 (14.3)	2.13	0.74, 6.12
Biomedical				
Parity:				
Primiparous	92 (82.1)	20 (17.9)	1.00	
Multiparous	224 (85.8)	37 (14.2)	1.32	0.72, 2.39
Vaginal Delivery:				
Yes	206 (87.7)	29 (12.3)	1.00	
No	110 (79.7)	28 (20.3)	0.55	0.31, 0.98
Infant admitted to special care nursery:				
Yes	55 (72.4)	21 (27.6)	1.00	
No	261 (87.9)	36 (12.1)	2.77	1.50, 5.10
Psychosocial				
Mother attended antenatal classes for this or previous pregnancy:				
Yes	29 (93.5)	2 (6.5)	1.00	
No	287 (83.9)	55 (16.1)	0.36	0.08, 1.55

Table 3 Number (percentage) and univariate odds ratios (95% confidence intervals) for any breastfeeding at discharge from hospital (n = 373) *(Continued)*

Father prefers breastfeeding				
Yes	259 (86.3)	41 (13.7)	1.00	
No or ambivalent	57 (78.1)	16 (21.9)	0.56	0.30, 1.07
Maternal grandmother prefers breastfeeding				
Yes	286 (84.6)	52 (15.4)	1.00	
No or ambivalent	30 (85.7)	5 (14.3)	1.09	0.40, 2.94
Maternal grandmother breastfed at least one infant				
Yes	297 (84.1)	56 (15.9)	1.00	
No or don't know	19 (95.0)	1 (5.0)	0.28	0.04, 2.13
Infant feeding decision made before pregnancy				
Yes	241 (84.3)	45 (15.7)	1.00	
No	75 (86.2)	12 (13.8)	1.17	0.59, 2.32

country of origin. Among the biomedical factors, no association was observed with parity, but there was a negative association between mode of delivery and breastfeeding at discharge. Women who had a caesarean section delivery were significantly less likely to be breastfeeding at discharge than women who had delivered vaginally (OR 0.55, 95% CI 0.31, 0.98). Also, infants who had not been admitted to the Special Care Nursery (SCN) for short-term observation after delivery were significantly more likely to be breastfed (OR 2.77, 95% CI 1.50, 5.10) than those admitted to the SCN. No association was found with any of the psychosocial factors investigated.

Multivariate analysis

The understanding of the factors associated with the initiation of breastfeeding was enhanced by modeling all of the factors identified in table 3 using multivariate logistic regression. Those factors that were independently associated with initiating breastfeeding and breastfeeding at discharge (both any and exclusive breastfeeding) are presented in Table 4. After potential confounding factors were controlled for, infants who were delivered by caesarean section were less likely to be exclusively breastfed at discharge from hospital (adjOR 0.15: 95% CI 0.05, 0.43). Mothers whose infants had not been admitted to SCN were significantly more likely to have initiated breastfeeding (adjOR 5.67: 95% CI 2.49, 12.95) and to be exclusively breastfeeding (adjOR 4.23: 95% CI 0.98, 18.34) or feeding their infants any breast milk at discharge from hospital (adjOR 2.85: 95% CI 1.52, 5.33). Women who perceived that their husband either preferred formula feeding or was ambivalent about how she would feed their infant were less likely to be breastfeeding at discharge than those whose husbands preferred breastfeeding (adjOR 0.49: 95% CI 0.25, 0.96). Mothers originally from other Arab countries were found to be more likely to initiate breastfeeding (adjOR 3.47: 95% CI 1.12, 10.80) and to be exclusively breastfeeding at discharge (adjOR 3.12: 95% CI 1.46, 6.66) than mothers from Kuwait and other Gulf States.

Discussion

The initiation rate of 92.5% (95% CI 89.8, 95.2) reported in our study was significantly higher than the rate of 86% (95% CI 84.7, 87.3) reported for Kuwait in 1989 [4] and comparable to recent breastfeeding initiation rates for other Middle Eastern countries, which are reportedly 100% in Iran [14], 95.4% in Egypt [15], 89.1% to 98.2% in Turkey [16,17], 95.4% in Lebanon [18], 91.3% to 95% in Iraq [19,20], and 91.1% in Tunisia [15]. Nevertheless, while this study revealed that the majority of women in Kuwait initiated breastfeeding, less than one-third of infants were fully breastfed and the use of prelacteal feeds was very common. Subsequently only one in ten infants had been exclusively breastfed since birth.

There is evidence that the implementation of the Baby Friendly Hospital Initiative (BFHI) in maternity wards improved breastfeeding practices [21-23]. None of the hospitals in this study were BFHI accredited at the time of the study and it is clear, from the results of this study, that two of the BFHI Ten Steps to Successful Breastfeeding that are; "*Help mothers initiate breastfeeding within half an hour of birth*" and "*Give newborn infants no food or drink other than breast milk, unless medically indicated*", were not practiced in the participating hospitals. In this study, the majority of women had not attempted to breastfeed until 24 or more hours after birth, contributing to the high incidence of prelacteal feeding.

The practice of delayed breastfeeding initiation deprives infants of the benefits of colostrum [24] and delaying initiation beyond two hours postpartum has

Table 4 Factors independently[a] associated with initiation of breastfeeding and any and exclusive breastfeeding at discharge from hospital after adjustment for potential confounders[b] (n = 373)

Variables	*n*	Ever initiated breastfeeding		Any breastfeeding at discharge from hospital		Exclusive breastfeeding at discharge from hospital	
		AdjOR[c]	CI 95%	AdjOR	CI 95%	AdjOR	CI 95%
Biomedical							
Method of delivery							
Vaginal (ref)	235	NS		1.00		1.00	
Cesarean section	138			0.60	0.33, 1.06	0.15	0.05, 0.43
Infant admitted to SCU							
Yes (ref)	76	1.00		1.00		1.00	
No	297	5.67	2.49, 12.95	2.85	1.52, 5.33	4.23	0.98, 18.34
Psychosocial							
Father prefers breastfeeding							
Yes (ref)	300	NS		1.00		NS	
No or ambivalent	73			0.49	0.25, 0.96		
Sociodemographic							
Country of mother's birth							
Kuwait & Gulf countries (ref)	209	1.00		NS		1.00	
Other Arab countries	123	3.47	1.12, 10.80			3.12	1.46, 6.66
Other world countries	41	1.38	0.38, 8.82			1.49	0.45, 4.93

[a]All variables in the final model were variables for which, when excluded, the change in deviance compared with the corresponding χ^2 test statistic on the relevant degrees of freedom was significant.

[b] Non-significant variables were maternal grandmother preference of breastfeeding, when the feeding decision was made, previous employment status, future employment intentions, number of years schooling, whether maternal grandmother breastfed any of her children, father's occupation, parity, maternal age, mother's occupation, attendance at antenatal classes

[c]AdjOR: Adjusted Odds Ratio

been associated with shorter breastfeeding duration [25]. The practice has been reported in other Middle Eastern countries, for instance, only 6% of mothers in an Iranian study [26] breastfed within five hours of delivery, while in an Egyptian study [27] most women (71.6%) gave the first breastfeed more than 36 hours after delivery. Similarly, only 10% of Turkish mothers breastfed their infants within the first hour of birth, with most women (90%) initiating breastfeeding two days after birth [28]. As a consequence, high rates of prelacteal feeding have been reported among populations of Middle Eastern women, with lower rates being reported in a Lebanese study [18] where 49%of women offered prelacteal feeds, 61.0% in a Jordanian survey [29] and 60.2% in an Iraqi study [30]. Prelacteal feeding was almost universal in an Iranian study [31] where 96.1% of mothers gave sugar water as the first feed after birth and reported rates of prelacteal feeding in Egypt ranged from 48.8% [32] to as high as 97.6% [27]. In addition to prelacteal feeding, mixed feeding during the hospital stay was common in our study and is a practice which has consistently been shown to be negatively associated with the initiation of breastfeeding in Egypt [33-35] and the duration of exclusive breastfeeding in Turkey [36], Saudi Arabia [37,38] and Western countries [39-41].

High rates of delayed breastfeeding initiation and prelacteal feeding in various Muslim cultures are related to the traditional beliefs held by women that colostrum should not be fed to the infant because it is of limited nutritional value or because it might harm the infant [42]. For instance, Pakistani [43], Somali [44] and Turkish [28] women reportedly believe colostrum to be dirty, stale milk that has been stored in the breast for nine months. Similarly, Gambian women [45] believe that colostrum is "hot milk" which could give their baby stomach ache and diarrhoea, while some Pakistani women [43] believe that colostrum might even kill their infant. These beliefs, while more common in less literate women [28], are firmly entrenched and reinforced by religious leaders [28] and elders, both female and male [45] and supported by traditional birthing assistants [45].

As we did not expressly ask women about their beliefs related to the value of colostrum, we do not know if this negative view is prevalent amongst Kuwaiti women and can help explain the high rates of delayed breastfeeding and prelacteal feeding observed. The reasons for the high prevalence of these practices amongst Kuwaiti and the associated beliefs and attitudes of mothers, grandmothers and health professionals warrant further investigation and are probably best studied using qualitative research methodologies which are better suited to eliciting information on sensitive issues than the quantitative methodology employed in this study.

The current study failed to find an association between breastfeeding initiation or prevalence at discharge and a variety of socio-demographic factors that have been reported to be associated with breastfeeding initiation in other studies of Middle Eastern women. For instance, no positive association was found between maternal age and breastfeeding initiation previously reported in an earlier study in Kuwait [5] and in other studies of Middle Eastern women in the United Arab Emirates (UAE) [46,47] and Saudi Arabia [48]. Similarly, no association was found for breastfeeding initiation with level of maternal education, whereas an earlier study in Kuwait [5] and studies conducted in Lebanon [49], Saudi Arabia [50] and Qatar [51] all reported an inverse association between maternal level of education and the initiation of breastfeeding. Conversely, a study in Egypt reported that educated mothers were more likely to initiate breastfeeding earlier and to exclusively breastfeed their infants in the first week of life than less educated women [32], which is consistent with most studies from Western countries [52].

Of interest in this study was the finding that non-Kuwaiti mothers who were from other Arab countries were more likely than Kuwaiti born women to initiate breastfeeding and to exclusively breastfeed their infants. It is unclear why this should be the case, as the reported rates of breastfeeding initiation in other Middle Eastern countries are similar to those reported for this study, so this association does not reflect necessarily a cultural difference in breastfeeding initiation rates.

A number of biomedical factors were investigated that other studies had shown to be associated with the initiation of breastfeeding. Consistent with other studies of Middle Eastern women in the UAE [46] and Saudi Arabia [37], we found that women who had delivered by caesarean section were less likely to be exclusively breastfeeding at discharge. Newborns are often taken to a nursery following a caesarean section delivery in order to allow the mother to rest after her operation, making it difficult for her to establish breastfeeding and increasing the likelihood of the infant receiving prelacteal and supplementary formula feeds. This negative association has been reported also in a studies of Western [52] and Chinese women [53], and having delivered by caesarean section has been associated with the delayed onset of lactation [54]. We also found that admission of an infant to the SCN was negatively associated with the initiation of breastfeeding and the likelihood of a mother exclusively breastfeeding at discharge from hospital, a finding that has been reported also in studies of Western women [55].

Social support from a woman's partner or other family members has been shown to affect the mother's decision to initiate breastfeeding and we found a significant independent association between the husband's preference for breastfeeding and breastfeeding at discharge. Two studies of women in Saudi Arabia have investigated the influence of paternal attitudes on breastfeeding outcomes, with one finding that mothers were more likely to initiate breastfeeding if their partners supported breastfeeding and encouraged them to initiate exclusive breastfeeding [38], whereas the second study found no association between the Saudi father's attitude towards breastfeeding and breastfeeding initiation [56]. The degree to which a woman's partner will influence her decision to breastfeed varies according to the woman's age, social class and cultural or ethnic background [57]. For instance, Anglo-American women identified their husband as being their major source of support regarding infant feeding decision and less often turned to their mother. On the other hand, women of Latin American origin were more likely to consult their mother on infant feeding matters, although husbands were responsible for most other family decisions [58]. Studies of Muslim women have highlighted the importance of grandmothers both in providing practical support and as major influences on infant feeding decisions [28,43].

There are a number of limitations to this study. Firstly, the sample size is relatively small and this is reflected in the wide confidence intervals around some of the adjusted odds ratios reported. This suggests that more data should be collected before a more definitive statement can be made regarding some of the associations reported here. Secondly, while there was no significant difference in age, level of education and method of feeding between participants and those women who declined to participate, the proportion of women who had undergone a caesarean section in this study is three times that of the national average. The average length of post-partum stay for Kuwaiti public hospitals is a maximum of two nights for uncomplicated deliveries and five nights for a caesarean section. While every attempt was made to recruit mothers within 72 hours, and in most cases 48 hours, of delivery, women who had undergone a caesarean section had a greater chance of being recruited because of their extended hospital stay. Finally, with the data collection methodology employed it was not possible to ascertain the true method of feeding at discharge. Women were surveyed within 72 hours of delivery, so for those women who delivered vaginally the method of feeding at the time of completing the survey is likely to be the same as the method at discharge, but for women who had delivered by caesarean section it probably reflects the feeding method 48 hours prior to discharge and hence may have been subject to change. However, data collected in the six week follow-up survey (not reported here) confirmed that 97% of women who were breastfeeding at the time of

completing the baseline questionnaire left hospital breastfeeding, indicating that this was a reliable definition of breastfeeding at discharge. The remaining 3% of women identified as breastfeeding at discharge were lost to follow-up and we were unable to confirm at the six week interview if they actually left hospital breastfeeding. Despite these limitations, this is the first breastfeeding study in Kuwait in recent years and the results reported here are generally consistent with the findings of other studies of Middle Eastern women and/or Western women and can be used to inform future breastfeeding promotion interventions in Kuwait.

Conclusion

The initiation of breastfeeding is almost universal amongst women in Kuwait however, few women fully breastfeed their infants. The reasons for the high use of prelacteal and supplementary formula feeds warrant further investigation. Hospital policies and staff training are needed to help mothers initiate breastfeeding within a half-hour of birth and to discourage the early introduction and unnecessary use of infant formula in hospital, in order to support the establishment of exclusive breastfeeding among mothers in Kuwait. Governmental health services need to emphasize and support the importance of regular training programs to all hospital staff, especially those involved in antenatal clinics and maternity wards, as they can influence the early infant feeding practices among the new generation of mothers. As a first step, a Health Ministry policy mandating that all government funded hospitals follow the 10 Steps to Successful Breastfeeding and attain Baby Friendly Hospital Initiative accreditation would do much to promote and establish successful exclusive breastfeeding amongst Kuwaiti women.

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Authors' contributions

MD participated in the design of the study, collected the data, performed the statistical analysis and wrote the first draft of the manuscript. JAS conceived of the study, assisted with statistical analysis and helped draft the manuscript. CAE advised on the statistical analysis and commented on drafts of the manuscript and MAS provided assistance with the coordination of the study and commented on drafts of the manuscript. All authors read and approved the final manuscript.

Competing interests

The authors have no competing interests to declare.

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