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Assessment of Breastfeeding and Complementary Feeding Practices among Children Less than 24 months of Age in Al-Am'ari Refugee Camp

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Assessment of Breastfeeding and Complementary feeding Practices among Children Less than 24 months of Age in Al-Am'ari Refugee Camp

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Dedication

To my two angels Jana and Fida

To my beloved husband Baher

To my very dear parents, Waheeb and Samira

To my best friend, wonderful brother Haider

Declaration

I certify that this thesis submitted for the degree of Master in Public Health is the result of my own research, except where otherwise acknowledged, and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed:

Mounira Waheeb Qleibo

Date:

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Abstract

Background: Breastfeeding is widely encouraged and practiced whereby 95.6% of mothers breastfeed their children. Low levels of exclusive breastfeeding might contribute to child malnutrition but also low nutrient intake of nursing mothers might affect the nutrient content in the breast milk. This decrease in the rate of exclusive breastfeeding means that the introduction of complementary food takes place in early stages of the infant's life. It was found that early introduction of some foods might be a primer reason for several infants' morbidities such as allergy and anemia.

Objectives: The general objective of this study is to assess mothers' practices of breastfeeding and complementary feeding for full term healthy infants less than 24 months of age residing at Al-Am'ari refugee camp. The specific objectives are to assess breastfeeding initiation, frequency and continuation of the indexed children and to assess mothers' practices regarding the introduction of complementary food to the indexed child in terms of time of introducing foods and type of food groups of items.

Material and methods: This study is a cross sectional household survey. All mother-child pairs (n=296) who were included in this study were registered in the files of UNRWA primary health care clinic in the refugee camp. An assessment of breastfeeding and complementary feeding practices for children less than 24 months of age was done. Person-to-person interviews were conducted with the targeted mothers. After completing data collection we had 199 filled in questionnaires. Only 178 were illegible for this study and were included in the analysis.

Results: The mean age of children was 13.5 (SD ± 6.3) months and 34.3% of them between 6-12 months of age. The mean age of mothers was 27 (SD ± 5.5) years. Nurses and the brochures were the main mothers' source of information regarding breastfeeding and breast care during antenatal visits. All of the indexed children were breastfed for at least one day and half of them were still on breastfeeding till the day of the interview. The rate of exclusive breastfeeding for 4 months and for 6 months was 10.1% and 3.4% respectively. Also, the rate of full breastfeeding for 4 months postpartum (i.e. exclusive breastfeeding and/or introducing food or formula after 4

months postpartum) was 57.9% and the rate of giving food or formula before 4 months was 42.1%. Around two-third of the studied population were receiving formula till the date of the interview. Rate of rooming in and breastfeeding initiation was 93.9% and 72.5% respectively. Main reported reason for breastfeeding cessation was the occurrence of a new pregnancy. Younger mothers tend to full breastfeed more than older one. Regarding complementary foods dairy products and fruits were the major food items introduced to the indexed children regardless of the starting age. Plain water, herbal drinks and cubed sugar with water or anis are the most common beverages to be introduced to children. More than half (51.7%) of the indexed children received their first food between 4-6 months of age and only 19.7% at the age of 6 months and above. First food tastes were home made cow's milk cooked with different additives like rice, starch, corn flour and sugar. Cooked cow's milk and whole egg are being introduced as early as 3 months of age. Empty calorie foods such as tea with biscuits, salt snacks are also being introduced at an early age taking the place of high nutrient foods. Number of individuals living in the house was positively associated with the introduction or carbohydrates, fruits and dairy products.

Conclusion: There is no compliance with the WHO/ UNICEF recommendations regarding exclusive breastfeeding and timely adequate complementary feeding. This study revealed that this is a serious problem and should be tackled urgently. Further work is essential nationwide but these provisional results provide further insight into the behavior and practices of mothers in refugee camps regarding breastfeeding and complementary feeding. Simple antenatal instructions with a short, single, individual counseling session combined with educational material proved to increase the rate of exclusive breastfeeding.

ملخص الدراسة:

خلفية الدراسة : إن التشجيع على الرضاعة الطبيعية يتم على نطاق واسع وبموجبه تقوم 95.6% من الأمهات بإرضاع أطفالهن. أن النسبة المنخفضة من الاقتصار على الرضاعة الطبيعية يمكن أن تساهم في انتشار سوء التغذية لدى الأطفال ولكن أيضا سوء تغذية الأمهات المرضعات قد تؤثر على المحتوى الغذائي في حليب الأم. هذا الانخفاض في معدل الاقتصار الرضاعة الطبيعية يعني أن إدخال الأغذية التكميلية تجري في المراحل الأولى من حياة الرضيع. وقد وجد أن إدخال الأغذية التكميلية في مرحلة مبكرة من العمر قد يؤدي لعدة أمراض مثل الحساسية وفقر الدم.

أهداف الدراسة : إن الهدف العام لهذه الدراسة هو تقييم ممارسة الأمهات للرضاعة الطبيعية وإدخال الأغذية التكميلية للأطفال دون السنتين من العمر والقاطنين في مخيم الامعري. أما الأهداف المحددة للدراسة فهي تقييم عملية البدء بالرضاعة الطبيعية، تواترها واستمرارها، كذلك تقييم ممارسات الأمهات الخاصة بإدخال الأغذية التكميلية لأطفالهن من حيث عمر الطفل ونوعية الأغذية التكميلية.

منهجية الدراسة : تعتبر هذه الدراسة دراسة وصفية مقطعية. تم اختيار الأطفال وعددهم 296 طفلا من سجلات مركز الرعاية الصحية الأولية التابعة لوكالة الغوث في مخيم الامعري. تم تقييم ممارسات الرضاعة الطبيعية وإدخال الأغذية التكميلية لهؤلاء الأطفال عن طريق إجراء مقابلات شخصية مع أمهات الفئة المستهدفة. شارك في الدراسة 199 أما وتم اعتماد 178 في التحليل الإحصائي.

النتائج الرئيسة: أظهرت نتائج هذه الدراسة أن متوسط أعمار الأطفال هو 13.5 شهرا (انحراف معياري ± 6.3)، حيث أن أعمار 34.3 % منهم بين 6-12 شهرا. متوسط أعمار الأمهات كان 27 عاما (انحراف معياري ± 5.5). كما وأظهرت الدراسة أن المصادر الرئيسة للأمهات حول كيفية الرضاعة الطبيعية والعناية بالصدر أثناء زيارات قبل الولادة هي الممرضات والكتيبات.
تم إرضاع جميع الأطفال الذين اشتركوا في الدراسة ليوم واحد على الأقل ونصف هؤلاء لا يزالون على الرضاعة الطبيعية حتى يوم المقابلة. معدل الرضاعة الطبيعية المطلقة لمدة 4 اشهر و 6 اشهر كان 10.1 % و 3.4 % على التوالي. كذلك، فان معدل سيادة الرضاعة الطبيعية لمدة 4 اشهر بعد الولادة (اي الرضاعة الطبيعية المطلقة و / أو إدخال الأغذية التكميلية أو الحليب الصناعي بعد 4 اشهر) هو 57.9 %، ومعدل إدخال الأغذية التكميلية أو الحليب الصناعي بعد 4 اشهر هو 42.1%. ثلثي الأطفال المستهدفين يتناولون الحليب الصناعي حتى تاريخ إجراء المقابلة. معظم (93.9%) الأطفال المستهدفين وضعوا في نفس الغرفة بجانب أمهاتهم بعد الولادة. كذلك فلن معدل البدء المبكر في الرضاعة كان 72.5%. أظهرت الدراسة أن السبب الرئيس لتوقف الأمهات عن الرضاعة الطبيعية هو حدوث حمل جديد. الأمهات الأصغر سنا يملن أكثر إلى ممارسة سيادة الرضاعة الطبيعية. أما فيما يتعلق بالأغذية التكميلية فقد أشارت الدراسة

إلى أن الأمهات يقدمن الفاكهة ومنتجات الألبان إلى أطفالهن بغض النظر عن عمر الطفل. أما بالنسبة إلى المشروبات المقدمة فهي الماء، الأعشاب والوجرة(سكر فضي مع ماء أو ينسون). أكثر من نصف الأطفال المستهدفين (51.7%) تلقوا أول غذاء غير حليب الأم أو الحليب الصناعي بين 4-6 أشهر من العمر، وفقط 19.7% في سن 6 اشهر وما فوق. المهلبية، السحلب والأرز مع الحليب هي أول الأطعمة التي قدمت للأطفال في هذه الدراسة. تم البدء بإدخال هذه الأنواع بالإضافة إلى البيض في عمر يناهز الثلاثة أشهر. أظهرت الدراسة إلى أنه يتم إدخال الأغذية الغنية في السعرات الحرارية مثل البسكويت والشاي والتسالي المالحة والوجبات الخفيفة للطفل في سن مبكرة لتأخذ مكانة الأطعمة المغذية. كما أظهرت الدراسة إلى ارتباط عدد الأفراد الذين يعيشون في المنزل ايجابيا بإدخال بعض أنواع الأطعمة مثل النشويات الفاكه ة ومنتجات الألبان .

الخلاصة: أظهرت الدراسة عدم وجود توافق بين الممارسات المتبعة بخصوص الرضاعة الطبيعية وإدخال الأغذية التكميلية مع نصائح وتوصيات منظمة الصحة العالمية واليونيسيف. كذلك كشفت هذه الدراسة أن هذا يمثل مشكلة خطيرة وينبغي التصدي لها على وجه السرعة. أن هذه النتائج تدعو إلى ضرورة القيام بمزيد من العمل على الصعيد الوطني لرفع نسبة الاقتصار على الرضاعة الطبيعية وكيفية البدء بالأغذية التكميلية. اثبت أن إعطاء الأم لتعليمات بسيطة قبل الولادة وتقديم المشورة الفردية إضافة إلى المواد التعليمية تزيد من معدل الاقتصار على الرضاعة الطبيعية.

Chapter 1: Background and Significance

Chapter 2: Literature review

List of figures

List of Tables

Chapter 1

Background and Significance

1.1 Background

1.2 Study problem

1.3 Study justification

1.4 Subject area

1.5 Study setting

1.6 Expected result and information

1.7 Study objectives

1.8 Study questions

1.9 Study limitations

1.10 Thesis chapters' description

1.1 Background

The importance of breastfeeding is well established since the ancient time. It was mentioned in the Holy Quran and the Hadiths that those mothers should breastfeed their babies for a total of 2 years, saying *"The mothers shall give suck to their offspring for two whole years for him who desires to complete the term. But he shall bear the cost of their food and clothing on equitable terms". (Surah Al-Baqarah, version 2;233).* In addition the Islamic religion oblige the father to support his wife through any circumstances that may affect breastfeeding and, in case of divorce, he must provide shelter and financial support for as long as breastfeeding continues.

Breastfeeding has its benefits for mother and child as well as the community as a whole. It even goes beyond the physical benefits to emotional ones. It provides immunity to the infant therefore reducing infants' morbidity and mortality (Truck 2005; Gartner et al., 2001). Worldwide, breastfeeding has shown to be an important topic in the various developed and developing countries. Therefore, several guidelines have been developed by many international organizations such as WHO, UNICEF, La Leche League (LLL) and the American Academy of Pediatrics (AAP) (Infact. Canada, 1998), in which mothers are encouraged to start breastfeeding as early as possible right after birth and continue to 2 years of life or beyond.

Complementary feeding is defined as the process of introducing any non-breast milk, foods or nutritive liquids to young children after 6 months of age where exclusive breastfeeding doesn’t meet their rapid growth requirements (UNICEF, 2007-a). Therefore improper complementary feeding plays a major role in malnutrition among infants as well as children under five years of age (WHO 2007-i), and was found to be a primer reason for several infants morbidities such as allergy and anemia.

Literature shows that breastfeeding and complementary feeding varied among countries. In general there is no compliance with the WHO/UNICEF recommendations regarding exclusive breastfeeding and the time of starting complementary feeding. In the developed countries breastfeeding initiation rates are high but it declines as the infant grow up. In developing countries breastfeeding is common, but exclusive breastfeeding is rare, and complementary foods are introduced at an early age.

Although many studies have been carried out on breastfeeding but it was much less on complementary feeding especially in developing countries such as Palestine.

1.2 Study problem

Exclusive breastfeeding for the first 6 months of age ensures the optimum nutrition to the infant whereby no other food or drink is needed, including water. It has a protective effect against several health complications such as asthma (Gdalevich et al., 2001). As a result of thorough research and investigations, breastfeeding for up to 2 years and beyond is now considered the major global recommendation reinforced by almost all organizations dealing with mother and child health. Despite the international recommendations regarding the initiation and duration of exclusive breastfeeding and the age of introducing complementary foods, mothers still start feeding their infants at early age to satisfy what is perceived as hunger cues (Danowski and Gargiula, 2002). Therefore, infants' exclusive breastfeeding rate is only 37%, which means that complementary feeding is the substitute to feed the infants.

Early introduction of some foods might affect the health of children, therefore, might lead to an increased infants' morbidity or even mortality rates such as iron deficiency anemia, early allergy and asthma symptoms. Thus, these disorders increase the cost of secondary and tertiary health care needed. Moreover, early introduction of complementary food might increase the family expenses since they might need to purchase commercially prepared baby food. Introducing solid foods to infants is a must but the question is when to start. According to WHO, UNICEF, AAP this process should start not before 6 months of age (WHO, 2002-c; WHO, 2003-e). The adequacy of complementary food depends on the availability of food as well as the feeding practices of the mothers or caregivers (WHO, 2002c). Introducing complementary foods too early might stress the immature gut, kidneys, and immune system as well as decreasing exposure to the protective effects of breast milk (Monte and Giugliani, 2004; Wright et al., 2004). It affects the uptake of important nutrients found in breast milk such as zinc and iron resulting in increasing the prevalence of anemia among this group (Monte and Giugliani, 2004). In addition complementary foods are an important source of contamination for infants (Monte and Giugliani, 2004).

Many factors determine when and for how long a women can keep breastfeeding her infant exclusively. Sociological and behavioral factors can influence a woman's decision to initiate and terminate breastfeeding (Huffman, 1984). Maternal level of education and employment status has an influence on breastfeeding and therefore the time of introducing complementary feeding (Huffman, 1984). Mothers of high educational level and families with high income tend to introduce food earlier. A combination of mother's self-perception, assessment of infant well-being, and indicators of household food supply influence the actual progression of weaning for individual children (Sellen, 2001). Advertisement campaigns of infant formula and complementary foods that can be viewed on television affect mother's decision on breastfeeding and complementary feeding (Fawzia et al., 1997). Health care providers and health professionals might influence mother's decision since they sometimes fail to support those mothers in their decision (Matta et al., 2007). Nevertheless mother's determination to breastfeed and religious motivation has a positive effect on duration of breast feeding (Marandi et al., 1993). Parents need to know the effect of early introduction of solids and/ or formula on their infant so that they will be able to make the right choice.

In Palestine, breastfeeding is widely encouraged and practiced whereby 95.6% of mothers breastfeed their children (UNICEF, 2005-c). The rate of exclusive breastfeeding is on a rise but still considered to be low. According to the Demographic Health Survey (DHS) 2004 a quarter of babies were exclusively breastfed till 6 months of age compared to 16.7% in year 2000 (UNICEF, 2005-c). Low levels of exclusive breastfeeding might contribute to child malnutrition but also low nutrient intake of nursing mothers might affect the nutrient content in the breast milk (UNICEF, 2005-c). This decrease in the rate of exclusive breastfeeding means that the introduction of complementary food takes place in early stages of the infant's life increasing infant mortality and morbidity.

1.3 Study justification

According to the state of Palestinian nutrition report published in 2005, one of the priorities set by the Palestinian National Nutrition Strategy 2003 was to support and encourage breast-feeding and appropriate complementary feeding (UNICEF, 2005-c).

Promotion of exclusive breastfeeding and proper complementary feeding is one of the priorities of the Palestinian National Nutritional Strategy in 2003. Unfortunately there is lack of coordination between the major health care providers in the country.

As stated by the PCBS "Palestinian Children–Issues and Statistics" annual report 2005, *"The available data about breastfeeding is insufficient to measure the indicator of exclusive breastfeeding which requires more effort in this field*". Breastfeeding is common in our country, but it is on a decline; the prevalence of breastfeeding was 95.6% in 2004 compared to 97.2% in the years 1997-2000. (PCBS, 2005-d). In year 2004 only one quarter of the mothers exclusively breastfed their children for six months presenting an increase by 8.7% compared to the year 2000 (UNICEF, 2005-c) and 38.1% were mixed fed (PMOH, 2005-a). The mean duration of breastfeeding is 10.9 months and goes up to one year among refugees (PCBS, 2004-b). This is also on a decline compared to 13.2% in the year 2002. The percentage of exclusive breastfeeding among all Palestinian refugees is relatively low (22.3%) with the highest in Jordan and lowest in Gaza strip, and the mean duration of exclusive breastfeeding is 2.7 months (UNRWA, 2001-a).

According to the Demographic Health Survey (DHS) in 2004 the percentage of children that are being weaned within the first 3 months of age is 16.1% compared with 14.0% in 2000 (PCBS, 2005-c). In refugee camps the situation is different; although breastfeeding is the norm like the rest of the country, only 9.5% are being introduced to complementary foods within the first 3 months (PCBS, 2004-b). Main reasons for that were; insufficient breast milk at 31.6%, the child's refusal of breastfeeding at 20.9% (PCBS, 2005-c). According to the state of nutrition report in 2005 one survey found out that 31.6% of mothers introduced protein and iron-rich foods at 8 months of age while the rest introduce it by the age of one year.

Regardless of the research that has been done in Palestine on breastfeeding, one of the recommendations stated in the Palestinian nutrition report published in 2005 is that more work should be done in the area of breastfeeding and infant feeding. Moreover, there isn't much published work done regarding the way complementary food is being introduced to the Palestinian infants.

1.4 Subject area

Palestine is a country in transition from a so called traditional to a more modern society (El-Sharif et al., 2002). The Palestinian population is a young one; more than half of it is less than the age of 18 of which 42.2% live in refugees (37.9% in West Bank and 62.1% in Gaza Strip) (PCBS, 2005-c). Those who are less than five years of age constitute 17.8% of the total population (MOH, 2005a). Fertility rate is 4.6 which explain the high growth rate (3.4 per year) that is considered among the highest in the world (Al-Rifai et al., 2006). The Palestinian Center Bureau of Statistics suggests that this rate will continue on a rise adding more social, economic and financial burden to the government (PCBS, 2005-d).

According to the United Nations for Refugees and Welfare Agency (UNRWA) report in 2005 there are 27 registered refugee camps situated in Palestine where 19 are located in the West Bank and 8 in Gaza strip (Passia, 2005). The refugees constitute 42.8% of the total Palestinian population with 28.5% living in the West Bank and 66.1% in Gaza strip (Passia, 2005).

In Ramallah district, there are five refugee camps; Jalazoun camp, Dir Amar camp, Qalandia camp, Qadura camp and Al-Am'ari camp. The latest was established in 1949 on Al-Bireh municipality land. As reported by UNRWA in 2005 the number of habitants in Al-Am'ari refugee camp is 8,805. Al-Am'ari camp suffers from overcrowding, poor sewerage and water networks. Like all other sectors of Palestinian society, Al-Am'ari also suffers from unemployment proliferation within its ranks. With the exception of a small group of civil servants, the vast majority of the work force struggles under the grip of unemployment. These range from workers who daily poured unto 1948 occupied Palestine before being barred from entry there with the eruption of al-Aqsa Uprising, craftsmen and laborers who worked inside Ramallah's workshops and factories that were made redundant due to closures and the stifling economic crisis, to day laborers who lost their only source of income due to curfews and road closures. The camp contains a single modest youth club and a centre for the welfare of disabled youth that caters for 150 young men and women. The recent years have also witnessed the emergence of promising initiatives pioneered by a group of residents, who founded a number of community clubs each representing the families, cities and villages of

origin, such as al-Lidd Association whose members had lived in al-Lidd before being driven out, and the ‘Annaba society. All these different associations are subsumed under the umbrella of Al-Am’ari Charity Association.

1.5 Study setting

UNRWA is responsible for providing primary health care (PHC) services for the refugee population of over 1 million including Al-Am’ari camp. It operates 51 PHC centers. UNRWA clinics provide growth monitoring, breastfeeding and nutrition counseling services. All UNRWA maternity centers are classified as "Baby Friendly Hospitals". UNRWA has always provided food aid to ‘hardship cases’ and significantly increased its food aid operation in 2001 after the second Intifada (UNICEF, 2005-c). Al-Am’ari clinic provides health care services to refugees residing in Al-Bireh and Ramallah districts (UNRWA, 2007-c). Food rations are distributed to refugees in the special hardship case category on a bi-monthly basis. The food basket contains basic foodstuffs such as flour, rice, sugar, milk and cooking oil. After the Intifada in September 2000 UNRWA distributed food parcels containing 50kg of flour, five kg of rice, five kg of sugar, two liters of cooking oil, one kg of powdered milk and five kg of lentils. Food availability in Palestinian refugee camps and villages is on decrease. More than 53% of refugees and village populations suffer from a shortage of food stuffs. This means that Al-Am’ari clinic provide services to more than 10,000 residents. This might lead to insufficiency health care provided to the refugees mainly women and children. Therefore, our study was conducted in Al-Am’ari refugee camp.

1.6 Expected result and information

Based on the results and outcomes of the study we expect to assess the maternal attitudes and practices regarding breastfeeding initiation, frequency and continuation, and to assess the mother's pattern and practices regarding the introduction of complementary foods to the indexed child. Also we expect to highlight if there is a relationship between these practices and the child's growth pattern.

This information is aimed to be of use on both levels; policy makers and community level. Regarding the first one it will help policy makers in setting their priorities regarding maternal and child health. On the community base the results will assist the

health care providers designing intervention programs targeting the health professionals (family physicians, pediatricians, nurses) as well as mothers, focusing on young ones having their first baby. Educational material is expected to be designed emphasizing on the traditional practices and showing their advantages and disadvantages as well as explaining the international guidelines of complementary feeding. In- person counseling during antenatal period is an important step to be taken into consideration; according to the UNRWA annual report of the department of Health more than two thirds of pregnant women receive antenatal care and the average number of antenatal visits is 6.8 visits (UNRWA, 2005-c).

1.7 Study objectives

1.7.1 General objectives

- To assess mothers' practices of breastfeeding and complementary feeding for full term healthy infants residing at Al-Am'ari refugee camp.

1.7.2 Specific objectives

- To assess breastfeeding initiation, frequency and continuation of the indexed children using a special designed questionnaire.
- To assess mothers' practices regarding the introduction of complementary food to the indexed child in terms of time of introducing foods and type of food groups or items.

1.8 Study questions

1) Are the International guidelines regarding breastfeeding initiation and duration, and complementary feeding applied and practiced by Palestinian mothers and in particular those residing at Al-Am'ari refugee camp?
2) What breastfeeding and complementary feeding practices and behaviors are used by mothers residing at Al- Am'ari refugee camp?

3) What factors determine the breastfeeding and complementary feeding practices and behaviors among mothers residing at Al- Am'ari refugee camp?

1.9 Study limitations

The constraints and limitations of the study were mainly along the procedure of the preparation of the study as well as identifying the indexed child.

- Generalization of the study findings to the whole community cannot be done since the study sample was selected from one refugee camp in Palestine; Al-Am'ari refugee camp.

- Furthermore the study was conducted by an in-person interview, self reported answers were given by the mothers of the indexed child and memory burden was noticed; therefore recall bias might have affected the results.

- No computer system is available in the clinic therefore a lot of time was spent in finding children meeting our inclusion criteria and registering their names.

- Finally the setup of the clinic and lack of space made us continue data collection by household in-person interviews rather than in the clinic which took more time in data collection than was planned.

1.10 Thesis structure

This thesis is presented in 6 chapters, listed as follows:

Chapter one contains the background and significance of the study, problem statement and study justification, objectives, research questions as well as study limitations. It also contains the benefits of breastfeeding and proper complementary feeding, demographic profile of Al-Am'ari and a description of the health services provided in the study area. **Chapter two** includes the international studies and research that were conducted concerning the assessment of breastfeeding and complementary feeding among children less than 2 years of age. In addition all Palestinian reports and studies that were

published in this area are included. **Chapter three** explains the scientific background of breastfeeding and complementary feeding and the international guidelines for both and how they affect the children health on the short and long term of their life. Definitions of breastfeeding, exclusive and predominant breastfeeding is included as well as definitions of weaning and complementary feeding. The methodology chapter, **chapter 4,** includes the study methods, population, sampling and sample size, ethical considerations, the way data was collected, coded and analyzed. The r**esults chapter 5** presents the frequencies, percentages and associations between the studied variables are included. At the final chapter, **chapter six, the discussion and recommendations,** the main results of the studies are discussed. Comparison between our study findings and international and regional ones are presented. Conclusions, recommendations and suggested future research plans are included in this chapter.

Chapter 2

Literature review

2.1 Introduction

2.2 International guidelines and recommendations for breastfeeding and complementary feeding

2.3 Guidelines of the WHO/UNICEF

2.4 Recommendations of the American Academy of Pediatrics (AAP)

2.5 Complementary feeding guidelines of the United Kingdom (UK)

2.6 Complementary feeding guidelines of the Philippine

2.7 Benefits of breastfeeding:

2.8 Effect of early complementary feeding on infant growth

2.9 Determinants and practices of breastfeeding and complementary feeding in developed countries

2.10 Determinants and practices of breastfeeding and complementary feeding in developing countries

2.11 Determinants and practices of breastfeeding and complementary feeding in Asia

2.12 Determinants and practices of breastfeeding and complementary feeding in the Arab countries

2.13 Determinants and practices of breastfeeding and complementary feeding in Palestine

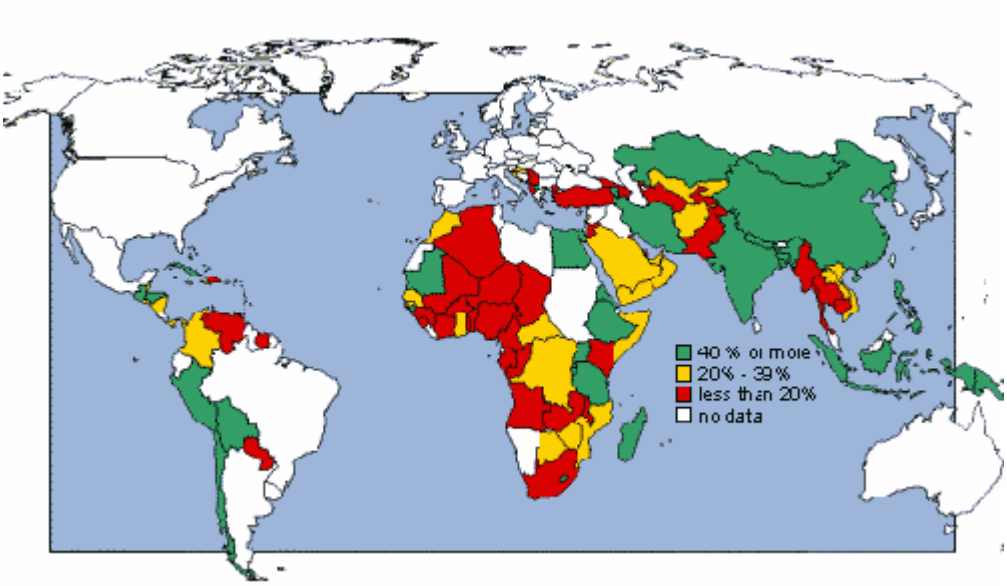
2.14 Summary

2.1 Introduction:

The relationship between infants' growth, breastfeeding and proper complementary feeding is well established. The advantages of exclusive breastfeeding for 6 months and extended breastfeeding up to 2 years or beyond has been studied and reinforced by many organizations dealing with mother and child health. The protection, promotion and support of breastfeeding, and the proper, adequate, and safe complementary feeding need concrete and concentrated effort to be done by all sectors dealing with health services, including governmental sector, non-governmental organizations and the United Nations agencies. In a UNICEF report entitled "A World Fit for Children" stated the above as one of its strategies to be achieved by the United Nations agencies for better life for children worldwide (UNICEF, 2006-f).

Complementary feeding of infants is a complex process involving the introduction of non-breast-milk foods, reduction in suckling activity, and eventual termination of breast feeding. The choice of strategies for each component of the complementary feeding process depends on the operating environmental constraints, reproductive demands on women, and prevailing levels of infant and weanling mortality (Gray, 1996). Time of introducing complementary foods, quality, and quantity of food consumed in infancy has a direct early effect of child's health as well as on the long term overall health status. As reported by the World Health Organization (WHO) around 1.3 million additional lives would be saved every year if babies were exclusively breastfed for the first six months of life while complementary feeding could prevent more than half a million deaths annually (Cremonesi, 2006). To promote breastfeeding in institutions that provide maternity services the WHO in conjunction with the UNICEF developed several recommendations which include rooming-in throughout the hospital stay, breastfeeding on demand, early initiation of breastfeeding, breastfeeding guidance by health professionals and avoidance of prelacteal food (Perez-Escamilla et al., 1994). According to UNICEF facts and figures (UNICEF, 2007-h) an 8% global increase in exclusive breastfeeding is estimated to have reduced infant mortality by more than one million, decreased fertility by more than half a million, and saved countries from spending huge amount of money on unnecessary

breast milk substitutes. As shown in figure (2.1) the rate of exclusive breastfeeding for the first four months of life is highest among Asian countries.



Adapted from: http://www.UNICEF.org/programme/breastfeeding/facts.htm

Figure 2.1: Worldwide exclusive breastfeeding levels between 1995-2000

In the following sections, the major guidelines for breastfeeding and complementary feeding will be discussed. Major studies' results in the past 2 decades on determinants and practices will be presented. The studies will be divided into sections according to the international divisions for developed countries, developing countries, the Arab countries, and the Palestinian local studies' outcome of research will be shown.

2.2 International guidelines and recommendations for breastfeeding and complementary feeding

The optimal age of introduction of complementary foods remains controversial (Brown, 2000). Several observational studies and other randomized trials failed to prove any benefit to infant's growth when introducing complementary feeding prior to 6 months of age even for low birth weight term infants (Brown, 2000). On the other hand higher risk of infections was documented when food was introduced prior to 6 months of age (Brown, 2000). Therefore the positive effects of breastfeeding increase

with increased exclusiveness of breastfeeding for the first 6 months of age with the continuation of breastfeeding up to 2 years or beyond. This was agreed upon by many international organizations such as WHO, UNICEF, La Leche League (LLL) and the American Academy of Pediatrics (AAP) (Infact. Canada, 1998). Complementary feeding should be timely, adequate, free of contamination and appropriate regarding energy and micronutrient content, texture, quality and quantity. It should be at an available cost, easily prepared at home with no much salt or spices (WHO, 2002-d; Monte and Giugliani, 2004). Optimal complementary feeding also depends on where, when and by whom the child is fed (PAHO/WHO, 2003).

The following guidelines are for healthy full term infants. Special guidelines and recommendations were designed for preterm infants or infants with or children with infections or other acute or chronic diseases that might affect their nutritional status (Brown, 2000). In Palestine there is no explicit recommendation for length of exclusive breastfeeding although it is recommended that time of introducing complementary feeding should be at the beginning of the 5^{th} month of age (PCBS, 2002-a).

2.3 Guidelines of the WHO/UNICEF

Between the years 1990-1998 the WHO recommended the introduction of solid food from 4-6 months, and then it changed to "around 6 months". In 1998 a review of the current scientific knowledge concerning complementary feeding was published by WHO/UNICEF recommending that starting with solids should not start before 6 months of age with continuation of breastfeeding till 2 years of age or beyond (WHO/ UNICEF, 1998; PAHO/WHO, 2003; WHOd, 2002-d).

2.3.1 Energy requirements and number of meals

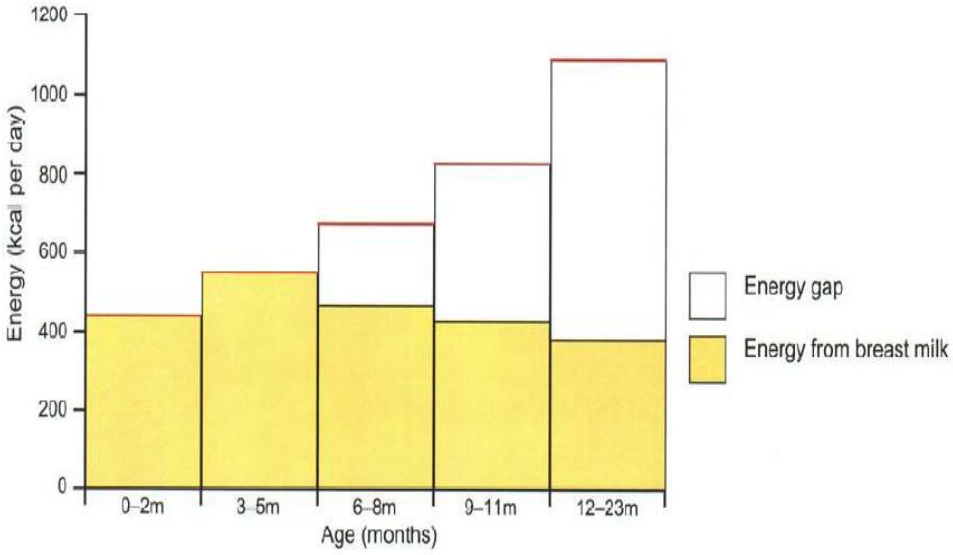
Energy and nutrient requirements as well as number of meals offered to infants 6-24 months of age for an average breastfed infant were revised and modified to meet their rapid growth rate (WHO, 2002-d). Children recovering from illness or living in environments where energy expenditure is high may require more energy than the average quantities (PAHO/WHO, 2003). Estimates of the amount of energy required

from complementary foods can be calculated as the difference between the total recommended energy intake and energy consumed from breast milk at different ages (Brown, 2000). Energy requirements from complementary foods assuming an average breast milk intake and number of meals offered in developing countries to infants 6-24 months of age are illustrated in table (2.1) (WHO/ UNICEF, 1998; PAHO/WHO, 2003; WHO, 2002-d).

Table 2.1: Energy requirements and number of meals offered to infants 6-24 months of age:

Age	Energy requirements (Kcal/day)	Number of meals
6-8 months	200	2-3
9-11 months	300	3-4
12-24 months	550	3-4

Figure (2.2) shows how the energy needed by a child increases as the child get older. It also shows how much of this energy is supplied by breast milk if the mother is frequently breastfeeding. The gap should be filled in by complementary feeding. This gap gets bigger as the child gets older (WHO, 1998-b). In another study it was reported that the average amounts of energy required from complementary foods are approximately 275, 450, and 750 kcalories/day for the same age intervals (Brown. 2000).



Source: Complementary feeding: family foods for breastfed children**.** Geneva, World Health Organization, 1998

Figure 2.2: Energy required (top line) and the amount from breast milk

Energy requirements in industrialized countries are slightly different due to differences in average breast milk intake and in fat content (PAHO/WHO, 2003; Monte and Giugliani, 2004). Additional nutritious snacks can be offered 1-2 times a day, as desired. A meal frequency that is greater than necessary may lead to excessive displacement of breast milk. Number of meals should increase as the child gets older (PAHO/WHO, 2003). Therefore the recommended energy intake of complementary foods varies according to the infant's age, how much breast milk the infant ingests, the fat content in breast milk, and the frequency at which the infant is fed complementary foods (PAHO/WHO, 2003). Recommendations regarding the energy density and frequency of feeding of complementary foods must take into consideration their potentially adverse effects on breast milk intake (Brown, 2000).

2.3.2 Protein content

Infants at this age are in rapid growth and developmental rate, therefore foods rich in high quality protein should be eaten daily or as often as possible (Monte and Giugliani,

2004). The protein requirement for infants 5-24 months of age is 0.7gm protein / 100 kcal of food (PAHO/WHO, 2003). High quality protein can be found in meat, poultry, fish and eggs. Alternatively it can be provided by properly mixing some vegetables or cereals (ex.: rice and beans) (PAHO/WHO, 2003).

2.3.3 Fat content

As for the fat content it depends on the frequency of breastfeeding and the level of breastfeeding energy intake; the higher the later is the lower the fat content in the complementary food (Monte and Giugliani, 2004). In general it should provide 30-45% of the total energy supplied from complementary feeding (PAHO/WHO, 2003). This will ensure a good energy intake and uptake of fat soluble vitamins.

2.3.4 Vitamins and minerals requirements

In order to meet the nutritional requirements of minerals and vitamins, infants and children 6-24 months of age need to get a mixture of complementary foods containing high amounts of minerals and vitamins since they cannot consume enough from food groups rich in micronutrients (PAHO/WHO, 2003). Infants aged 6-12 months cannot eat enough iron-rich foods to meet their requirements (WHO/UNICEF 1998; Monte and Giugliani, 2004). Moreover, from 9-11 months of life, the amount of minerals that should be provided by complementary foods is high therefore food items of high bioavailability of iron should be consumed. In developing countries where the economic status might not allow parents or caretakers to provide such food iron of plant origin can be consumed taking into considerations adding vitamin C to increase its uptake in the body (Monte and Giugliani, 2004). Fruits and vegetables rich in vitamin A should be eaten daily (PAHO/WHO, 2003). In addition drinks with low nutrient content should be avoided. Amount of juices should be limited to avoid displacement of nutrient-rich foods (PAHO/WHO, 2003).

Complementary foods should be introduced one at a time during a trial of several days. As infants grow, the consistency of complementary foods should change from semisolid to solid foods and the variety of foods offered should increase. By eight

months, infants can eat "finger foods" and by 12 months, most of them can eat family food (WHO, 2002-d).

2.4 Recommendations of the American Academy of Pediatrics (AAP)

In 2005, the AAP set a revised policy concerning breastfeeding and the use of human milk (Gartner et al., 2005). The recommendations are somehow similar to the guidelines of the WHO. Exclusive breastfeeding up to 6 months whereby no liquids are given to the infant including water was recommended. Gradual introduction of solids afterwards, and continued breastfeeding for 2 years or as mutually desired by mother and child were emphasized. Unique needs or feeding behaviors of individual infants may indicate a need for introduction of complementary foods as early as 4 months of age, whereas other infants may not be ready to accept other foods until approximately 8 months of age (Gartner et al., 2005).

At 6 months iron rich food or iron enriched food should be introduced gradually taking into consideration the unique needs feeding behaviors of individual infants. Cow's milk shouldn't be introduced before 12 months (Gartner et al., 2005). Restriction of the amount of fruit juices to 240ml/day is recommended to avoid competition with more nutritious foods (Monte and Giugliani, 2004)

2.5 Complementary feeding guidelines of the United Kingdom (UK)

In the United Kingdom there is still a debate to continue exclusive breastfeeding till 6 months of age (Foote and Marriott, 2003). The department of health recommends that complementary feeding can start between 4-6 months of age whereas the UK Scientific Advisory Committee on Nutrition (SACN) endorsed the WHO resolution on exclusive breast feeding for six months adding that flexibility is needed and no complementary feeding should be introduced before the end of 4 months (Foote and Marriott, 2003). The process of complementary feeding is similar to that described in the WHO recommendations regarding quality, quantity, texture of food and safety. Iron rich foods like meat should start 6-8 months of age (Hamlyn et al., 2000). Breast fed infants

should receive foods such as meat or iron fortified foods earlier in the complementary feeding process than formula fed infants, in whom cereals would suffice as the initial solid food (Foote and Marriott, 2003). Drinks other than water or breast/formula milk should be restricted (Hamlyn et al., 2000). Cow's milk shouldn't be introduced till infant's first birthday. Mother can start with mixing rice and pureed vegetables, mashed fruits with baby's milk (Foote and Marriott, 2003).

2.6 Complementary feeding guidelines of the Philippine

Following the WHO/UNICEF recommendations, Phillipinos recommended to start complementary feeding at 6 months. Nevertheless it is mentioned in their guidelines that some babies between 4-6 months old may show signals that suggest readiness for complementary feeding (Food and Nutrition Research Institute, 2000). A baby's physical ability to handle foods and his nutritional need determine the sequence and timing with which new foods are introduced to his diet Table (2.2) shows the sequence of introducing complementary food as suggested by the Food and Nutrition Research Institute (FNRI) in Philippine. Fats and oils may be added to the prepared diet such as the rice gruel or mashed vegetables or served in either sautéed or fried dishes for the baby after 6 months of age.

Table (2.2): complementary feeding guide:

Appropriate Food(s)	Age (months)	Method of Preparation	Example	Amounts
Cereals (first semi-solid foods given to the baby)	4-6	Cooked, well strained	- Thin rice gruel, oatmeal -Cooked, mashed root crops	- 1/2 cup thin gruel. - 2-3 Tbs
	8	Cooked	Thick gruel, soft cooked rice	3/4 cup thick gruel
	10-12	10-12 months	- Soft cooked rice. - Sliced bread or biscuits.	-1 cup -1 piece
Fruits	4-6	Mashed	- Ripe bananas, papaya, mango	2.5 Tbs
	8	Cut into small pieces	Soft fruit	3 Tbs
	10-12	Cut into finger sized pieces	Any fruit	4 Tbs
Vegetables	7	Cooked very soft	Carrots, squash, potatoes.	1 Tbs
	8	Cooked and finely chopped	All vegetables	1 Tbs
	10-12	Cooked and chopped	All vegetables	1-2 Tbs
Meat and Alternatives Egg	7	Cooked	Chicken egg	1/2 egg yolk
	11	Cooked	Chicken egg	1/2 egg
Meat/Fish/Poultry or Legumes, dried beans	6-11	Deboned, cooked well mashed or ground.	- Minced meat. - fresh or dried fish. - Minced chicken.	1 1/3 servings*
	10-12	Deboned, cooked, flaked or chopped well	- Meat. - Fresh or dried fish. -Chicken.	
Whole milk/Follow on formula (if not on breast-feeding)	12			2 cups
Other food	≥8	Steamed, bake	Custards, simple puddings, plain	1 teaspoon

			gulaman or jello	
Fats and Oils	6-11		Margarine, cooking oil	4 teaspoons
Sugar	6-11			3 teaspoons

* 1 serving cooked meat = 30 gm or about 3 cm cube; fish: 2 pieces, medium size (55-60 gm each), about 16 cm long; 1.5cups cooked dried beans/ nuts preferably taken 3 times a week. Source: http://www.fnri.dost.gov.ph/ngfiles/ng2.htm#comfoods

2.7 Benefits of breastfeeding:

Breastfeeding has its benefits for mother and child as well as the community as a whole. It even goes beyond the physical benefits to emotional ones. Human milk is the best milk for all infants including premature and sick newborn, with rare exceptions. It provides immunity to the infant protecting him from gastrointestinal illness, otitis media and lower respiratory tract infection, therefore reducing infants' morbidity and mortality (Truck, 2005). Diarrhea is less common among infants who are breastfed[1]. Breastfed children score on tests of cognitive development better than their formula fed counterparts (Truck, 2005). Increased duration of breastfeeding is associated with better academic outcome in childhood and adulthood (Horwood and Fergusson, 1998). They also might have lower risk of adolescent and childhood obesity (Truck, 2005). Exclusive breastfeeding for the first 6 months of age ensure the optimum nutrition to the infant whereby no other food or drink is needed, including water. It has a protective effect against asthma in childhood especially with the presence of family history of atopy (Gdalevich et al., 2001).

As for the mother the advantages of breastfeeding are as much important as those for the child but unfortunately they are sometimes overlooked or unknown. The repeated suckling of babies helps release oxytocin which is a hormone that promotes milk expulsion, induces uterus contractions and therefore involution, and prevents postpartum hemorrhage as well as depression (Boutet et al., 2006; LLLI, 2001). Breastfeeding often works as a natural birth control. In addition the delay of menstrual cycle might result in conserving the iron in the nursing mothers' bodies, therefore lowering the risk of getting iron deficiency anemia. Breastfeeding reduces the risk of

ovarian, uterine and breast cancer (LLLI, 2001; Shantakumar et al., 2006). It helps mothers lose weight faster than formula-feeding mothers since milk production requires an average of 200-500 kcal daily (LLLI, 2001).

Becoming a parent requires major changes in person's life. Mother should compensate between the newborn's demand and her daily responsibilities, especially when the baby's behavior is different than the family's expectations. Therefore breastfeeding boosts mother's self-reliance and self esteem, increasing her confidence in the ability to nurture by meeting the needs of her child. Nursing mothers are less anxious, less stressed and have better mood than formula feeding mothers (Groer, 2005). The skin to skin contact increases the bond between the mother and her child and helps the baby to develop trust.

Breastfeeding has environmental and economic and benefits reducing both direct and indirect costs. Formula feeding costs four times more than breastfeeding (taking into account extra food for lactating woman) (Horwood and Fergusson, 1998). More direct cost savings would include physician fees, hospitalization, and medicine since breastfeeding is prove to having a protective effect against many diseases and infections compared to formula milk. Possible indirect costs may relate to time and wages lost by parents (primarily mothers) attending to an ill child (weiner, 2006). Breast milk needs no packaging and its production doesn't harm the environment so it is more "environment friendly".

Breastfeeding is a natural process whereby biology and culture are mixed together; therefore having a breastfeeding friendly environment is essential to attain the global strategies and recommendation regarding optimum feeding. The decision whether to breastfeed or not wouldn't occur to mothers in prehistory. They simply didn't have any other choice. In some developing and poor countries it's a matter of life and death; the breastfed child will survive, otherwise he might die.

Cultural. political and socio-economic factors play a role in making breastfeeding an act controlled by the society, affecting its continuation (Almeida and Novak, 2004). Family, peer and community support as well as the acceptance of breastfeeding in public influence mother's decision to breastfeed (Breastfeeding, culture and

attachment. Fact sheet, 2005). Other cultural practices influence breastfeeding such as putting the baby to sleep in the same bed or room with the parents, holding the baby more often so that the mother will feel more with her child and the way mother is clothed (Breastfeeding, culture and attachment. Fact sheet, 2005). As for working mothers the decision of breastfeeding has more financial and economical burden. In addition to previously mentioned factors she will need workplace support such as paid maternity leave and flexible working hours.

In societies where breastfeeding is the norm new mothers would learn how to breastfeed from their families; mothers, aunts and respected old women in their community. They will get the knowledge and support they need to enjoy and accomplish the act of breastfeeding. In addition they will learn when and how to introduce food and drink to newborns. Cultural beliefs regarding the introduction of complementary feeding vary from one society to another. In most societies this knowledge transmitted from grandmothers to mothers and to daughters is not correct, leaving the new mother in shock between whether to follow the elderly advice or the new recommendations. The introduction of food might be too early or too late where in both cases it might lead to adverse health effects, of which malnutrition is one of them. In Western countries early weaning is considered as part of teaching the child independence and self reliance (Breastfeeding, culture and attachment. Fact sheet, 2005). Sometimes it's not socially accepted that a walking toddler is still breastfed. There are taboos against colostrums milk (Bassett MT, 2000), breastfeeding during pregnancy, and having sex during nursing period (Breastfeeding, culture and attachment. Fact sheet, 2005). The continuous crying of the baby especially at night might be explained by "not having enough milk" (Anderson et al., 2001). In communities where boys are in favor, they will be breastfed for longer period compared to the baby girl (Akin et al., 1986). All these factors will eventually lead to early weaning.

In Palestine where the country is going to more westernized lifestyle breastfeeding is still common but it's becoming less frequent. The rapid social and economic change only intensifies the difficulties that families face in properly feeding and caring for their children. Early marriage is common in Palestine so even mothers of childbearing

women themselves have little or no experience with breastfeeding and proper introduction of complementary food. Those mothers might fail to teach their daughters or daughter in law the skills of breastfeeding, leaving them struggling with their babies. As a result they might get depressed and discouraged from continuing to breastfeed, choosing the easier way; formula, and early introduction of food.

2.8 Effect of breastfeeding and early complementary feeding on infant growth

Many factors are involved in infants' health and one of the most important factors is the type of feeding offered in the first stage of infants' life. Breastfeeding remains the best food at this life stage. It has physical and emotional benefits for the mother as well as for the child. It provides immunity to the infant therefore reducing infants' infections, morbidity and mortality (Truck 2005; Gartner et al., 2001). The occurrence of constipation is lower in breastfed infants (Savino and Lupica, 2006). Breastfeeding might reduce the risk of obesity in adulthood (Kwavnick et al.1999; Hornell et al. 2001; Turck, 2005). Breastfed infant tend to score higher in IQ tests compared to formula fed infants.

Several studies have reported that early introduction of complementary feeding increases infants' mortality and morbidity since it reduces the ingestion of the protective factors present in breast milk (Monte and Giugliani, 2004). Shorter duration of exclusive breastfeeding doesn't protect neither improve the growth on an infant (WHO/UNICEF, 1998; PAHO/WHO, 2003; Monte and Giugliani, 2004). Complementary feeding too early will stress the immature gut, kidneys, and immune system as well as decreasing exposure to the protective effects of breast milk (Monte and Giugliani, 2004; Wright et al. 2004). It affects the uptake of important nutrients found in breast milk such as zinc and iron resulting in increasing the prevalence of anemia among this group (Monte and Giugliani, 2004). It reduces the efficacy of nursing being a birth control method. Complementary foods are an important source of contamination for infants. Gastroenteritis and diarrhea are most common among infants weaned early (Wright et al. 2004). In addition to the fact that complementary feeding replaces the breast milk, it also might have lower nutritional value like the extremely diluted foods (Monte and Giugliani, 2004).

Early introduction of complementary food is associated with atopic diseases (Gdalevich et al., 2004). Exclusive breastfeeding has a protective effect against asthma in childhood especially with the presence of family history of atopy (Gdalevich et al., 2001). The association between reducing the risk of getting any respiratory illness or childhood asthma and exclusive breast feeding for at least 4 months was indicated in one cohort study conducted in Australia and another one in Dundee-United Kingdom (Wilson et al., 1998; Oddy et al., 1999). Early exposure to cow's milk might increase the risk of developing type I diabetes mellitus by 50% (Monte and Giugliani, 2004). Several observational studies described an association between obesity and early complementary feeding but more research is needed in this field (Kwavnick et al.,1999; Hornell et al., 2001; Turck, 2005).

One of the methods in assessing the effect of early complementary feeding on infants' growth is measuring the degree of stunting and wasting among infants (Davies-Adetugbo and Adetugbo, 1997). In rural Nigeria weight-for-age indices were significantly lower for children being weaned before 2 months compared to those being weaned later (Davies-Adetugbo and Adetugbo, 1997).

2.9 Determinants and practices of breastfeeding and complementary feeding in developed countries

According to the State of the World's Children Report published by UNICEF in 2005, only 37% of infants are being exclusively breastfed worldwide. In the United States and according to the U.S. Department of Health and Human Services 70.9% of mothers ever breastfed their babies. In the year 2003 and despite the recommendations of the AAP only 14.2% of all babies in the US were exclusively breastfed for the first 6 months of life. A random digit dialing conducted by the National Immunization Survey (NIS) found out that more than two thirds of the children are being breastfed. At the age of 3 months only 42.5% are being exclusively breastfed and at the age of 6 months the percentage drops to 13.3%, meaning that the introduction of complementary food is being done at early stages of infant's life. These studies also showed that non-Hispanic black people have the lowest rates of breast feeding compared to other ethnic groups.

This was shown to be associated with the socioeconomic variations and geographic areas. Families and friends' encouragement to start feeding the baby earlier than 6 months makes it difficult to the mother to maintain breastfeeding (Li et al., 2005).

The Centers for Disease Control and prevention (CDC) analyzed the NIS data for infant born between the years 2000-2004. The report indicated that rates for exclusive breastfeeding through ages 3 months and 6 months among infants born in 2004 were 30.5% and 11.3%, respectively. These rates are still below targets set by Healthy People 2010 (CDC., 2007). Mothers of older age, urban residence, higher education, and higher income were positively associated with exclusive breastfeeding. CDC report recommended that more research is needed to identify programs and policies to support exclusive breastfeeding, especially among subgroups with the lowest rates.

In the United Kingdom (UK) there was a widespread of non-compliance with the UK recommendations on breastfeeding and timing of introducing complementary feeding (Savage et al., 1998). According to the infant feeding report 2000, 69% of mothers initially breastfeed their babies but this percentage declines as the infant grow up to reach only 21% of those who continue breastfeeding till 6 months of age. Early introduction of liquids is common in the UK (Hamlyn et al., 2000). Fifty five percent of mothers would introduce liquids (mainly water) other than milk when the baby is 4-10 weeks of age, and 24% would introduce solid food by the age of 3 months (Hamlyn et al., 2000). Reported reasons behind this trend are "mother thinking the baby is thirsty" and "general nutritional value and different flavors" respectively. In the Glasgow longitudinal infant growth study the majority of surveyed infants (93%) were weaned prior to 4 months of age. Reasons explaining this result were "mother thinks the baby needs more food" (Savage et al. 1998). The major source of information influencing time of introducing complementary feeding is previous experience. Other sources were books and leaflets, advice from the health visitor, and family and friends (Savage et al. 1998). Socioeconomic status plays a role in early introduction of liquids and solid food to babies in the United Kingdom. Younger mothers, those of lower socioeconomic status or never worked, mothers who bottle fed their infants are more likely to do so (Savage et al. 1998; Hamlyn et al. 2000).

In Italy 91.1% of infants are initially breastfed, and at the age of 6 months only 46.8% would be still receiving breast milk (Giovannini et al. 2004). Similar to Uppsala – Sweden, 34% of Italian infants receive solid food prior to 4 months of age (Hornell et al. 2001; Giovannini et al. 2004), and 5.6% at 3 months of age (Giovannini et al. 2004). Reasons behind complementary feeding prior to 3 months of age were socioeconomic status, mother never breastfed, early introduction of formula and low baby weights at the age of one month (Giovannini et al. 2004).

In France almost half of the children were ever breastfed leaving the other half on formula and early introduction of complementary food (Roques, 1998).

In Australia, and according to the 1995 National Health survey, 46% of the children were being breastfed till the age of 6 months (Hayman et al. 2000). Another study that was conducted in an Australian indigenous community found out that 75% of the surveyed infants were introduced to solid food prior to 6 months of age although in traditional communities the prevalence of breastfeeding is considered high (Hayman et al. 2000).

In Canada many studies reported that the introduction of solid food to babies is done prior to 4 months of age. Analysis of three cross-sectional studies of parents of six-month-old infants from the Ottawa-Carleton region revealed that 45% of mothers start introducing solid food shortly after 4 months of age (Kwavnick et al. 1999). According to the same study younger mothers, those of lower socioeconomic status and lower educational level are more likely to introduce solid foods earlier than recommended. Smoking cessation during pregnancy, adequate treatment of early breast problems, and breast-feeding promotion campaigns targeting socio-economically disadvantaged populations can increase breastfeeding initiation and duration in Canada and therefore delay the introduction of complementary feeding (Yang et al. 2004).

A cross sectional study conducted in Switzerland found out that Swiss mothers follow the Swiss guidelines regarding the timing of the introduction of complementary foods but not compatible with the WHO recommendations. Introduction of complementary foods is usually done between 5-6 months of age with 5% of infants receiving foods before 4 months of age (Dratva et al., 2006). The main influencing factors for infant

feeding practices were maternal age, language regions, mother's body mass index (BMI) and smoking status, the presence of siblings, and any allergic predisposition of the infant (Dratva et al., 2006).

2.10 determinants and practices of breastfeeding and complementary feeding in developing countries

Breastfeeding is common in developing countries, but exclusive breastfeeding is rare, and complementary foods are introduced at an early age (Davies-Adetugbo and, Adetugbo, 1997). The advantages of breastfeeding are enormous and all infants in the whole world will benefit from it. But more benefit would go to mothers and infants of the Third world; breast feeding is lower in cost, free of contaminants, less infections and eventually more nutritious (Davies-Adetugbo and, Adetugbo, 1997).

In Mexico, a national study reported that the percentage of exclusive breast feeding till six months of age was 8% and for one month was 60% (Gonzalez-Cossio et al. 2006). Early introduction of water, infant formula, nonnutritive liquids, and fruits and vegetables is common among all studied groups whereas more nutritive food items including animal food, cereal and legumes were introduced early only among urban areas. Late introduction of solid food occurred among rural and agricultural areas, poorer and indigenous communities. These groups have higher probability to follow the WHO recommendations (Schlaepfer and Infante, 1992; Gonzalez-Cossio et al. 2006).

In West Africa mothers would breast feed their infants till 12 months of age. In rural and urban poor communities the duration of breastfeeding would last to 24 months. Nevertheless the WHO recommendations are not implemented so early introduction of solid food takes place and it is of low nutrient density and high bulk. The first type of food to be introduced is thin cereal gruel. Although the process of complementary feeding is a gradual long procedure until the infant is used to family food, sometimes abrupt weaning would take place creating problems as the child may not be able to eat enough of the adult diet to meet his or her nutritional needs (Onofiok and Nnanyelugo,

1998). Socio-economic status plays a role in the quality of weaning food. Low income groups would seldom give protein rich food to their babies (meat, eggs or fish) while groups of high income would give these foods more frequently and would add more variety to their infants' weaning food (Onofiok and Nnanyelugo, 1998).

In Nigeria the rate of mothers introducing complementary food to their infants at 3-4 months of age depend on the ethnic group or community. In Tiv ethnic group, the largest group in Benue State and the fourth largest in Nigeria 73.5% of mothers introduced supplementary feeding at 3-4 months of age (Igbedio et al. 1996) while in Ilorin community, the capital of Kwara State of Nigeria 44.2% would do so (Fagbule and Olaosebikan, 1992). The most common reason reported for early complementary feeding was mother's response to infant's hunger cues either by frequent crying after a feed or demanding frequent feeds (Fagbule and Olaosebikan, 1992). Another study conducted in rural Nigeria found out that early complementary feeding affect infant's growth whereby the weight-for-age indices for infants who are weaned early (at 2 months of age) was significantly lower than those weaned later, and the prevalence of malnutrition was higher among those weaned early. Thus, poorer nutritional status was significantly associated with earlier complementary feeding (Davies-Adetugbo andAdetugbo, 1997).

In a semi-urban community in Ethiopia more than two thirds of infants were introduced to solid food prior to 4 months of age. Working mothers and mothers of higher income might do it earlier. Feeding pattern was infrequent and the consumption of vegetables and fruits was rare (Gebriel, 2000).

In Adamawa province of Cameron more than 3/4 of mothers would introduce complementary food to their infants between 3-6 months of age. As in the rest of West Africa high bulk low nutrient cereals and porridges are the main weaning food with fruits and vegetables being seldom introduced (Njongmeta et al. 2003). Mother's economic status might influence the type of complementary food to be introduced to the baby.

In South Africa breastfeeding is also common but exclusive breast feeding is done for less than 3 months and sometimes introduction of some form of food is done by less

than one month. Infant growth was found to be affected by this pattern of infant feeding. Increased weight gain was seen in the first 3 months but then declined. Postnatally the infants showed a pattern of gradual stunting. This pattern is associated with maternal socioeconomic status (Mamabolo et al. 2004).

In a systematic random sample study conducted in Teheran it was found out that the rate of exclusive breastfeeding is low (38%) and more than two thirds of the infants were bottle fed in the hospital. A minority of infants benefit from rooming-in facilities (Marandi et al. 1993). Like other research findings, mother's high educational level negatively affects the duration of breastfeeding.

2.11 Determinants and practices of breastfeeding and complementary feeding in Asia

Asia contains both highly developed and developing countries and so there is a wide spectrum of nutritional problems in children receiving complementary foods reflecting the different socioeconomic and cultural backgrounds. Developed countries have published recommendations and guidelines regarding infant feeding practices which is not the case with the developing countries in that part of the world. Like some African countries the base of weaning diet given at early infancy is low in energy high bulk food; mainly starchy roots and cereals. In the developed Asia the problem might be due to low intake of food rich in iron and Zinc. (Yamashiro, 2000).

In South Asia breast feeding is universal. However the duration of breast feeding is associated with the mother's place of residency (rural or urban areas), level of education, and the economic status. Consequently, too early introduction of breast milk substitutes and too late introduction of semi-solid complementary feeds are common and are responsible for the rapid increase in the prevalence of under nutrition between 6-24 months of age (Ramachandran, 2004).

In India breast feeding is considered to be the norm in both urban and rural areas with differences in breast feeding practices among states (Ramachandran, 2004). Moreover in some rural areas and because of ignorance or poverty mothers would extend exclusive breast feeding to eight months or even one year leading to infant malnutrition (Ramachandran, 2004). In an urban resettlement of Delhi the median duration of

exclusive breast feeding is 3.83 months (Chhabra et al. 1998). Mother's educational level and socioeconomic status were significantly associated with the prevalence of exclusive breast feeding; illiterate mothers and those of lower income had the highest rate of exclusive breast feeding (Chhabra et al. 1998). In Bangladesh the situation is similar to that in India (Ramachandran, 2004).

In a low socioeconomic peri-urban area in Karachi 25% of mothers would introduce semi-solids/ solid food to their infants between 4-6 months of age and 6 % would do it even earlier (Shamim, 2005). Nevertheless the quality, type and choice of complementary food are not appropriate for adequate infant growth, as well as food preparation and the use of diluted commercial cereals (Shamim, 2005).

In the urban areas of China infant feeding practices seems to be in accordance with the WHO recommendations. However the rate of exclusive breast feeding for 3 months and the introduction of solid or semi-sold food before 4 months is 55.8% and 19.3% respectively. Maternal low educational level and unemployment and antenatal non exclusive breast feeding plans were found to be correlated with the inappropriate feeding practices (Li L et al., 2003).

2.12 Determinants and practices of breastfeeding and complementary feeding in the Middle East

Breast-feeding remains the general rule in the Arab world, particularly among rural populations. Nevertheless it is declining particularly among urban areas and affluent countries in the Arab world. According to UNICEF reports one of reasons behind this is lack of support and monitoring of the process of breastfeeding and complementary feeding and eventually of nursing mothers. As a result mixed feeding (formula and human milk), inappropriate complementary feeding and complementary feeding practices are being practiced not taking into consideration their effect on children specially children malnutrition, infectious diseases and high morbidity (UNICEF, 2005).

In a case-control study conducted in Amman-Jordan 90% of surveyed infants were breastfed but only 30% were exclusively breastfed at 3 months of age. Complementary feeding would start before 4 months of age where herbal drinks are widely used as well as the introduction of solid food such as yogurt and cow's milk (kilbride et al., 1999). Another cross-sectional study in the Northern part of Jordan revealed that 58.3% of infants were fully breastfed (exclusive breastfed and almost exclusive breastfed), while 11.4% are bottle fed. No data indicates the percentage of exclusive breastfeeding. When asking about the main reason for bottle feeding 37% of mothers reported mothers' employment and 33% reported insufficient breast milk (Khassawneh et al., 2006).

In Lebanon the situation is similar to that in Jordan. As reported by UNICEF although 90% of Lebanese children are breastfed to a median age of 8-10 months, only 7% are exclusively breastfed till 4 months of age. The introduction of complementary food is done in the first 1-3 months of age and the quality of this food is inappropriate. The pattern and duration of breastfeeding differs among the regions; the percentage of children who were never breastfed in the capital Beirut is 24% compared to 9% in rural areas (UNICEF, 1995). Also, another national survey found that the rate of breastfeeding initiation is high but exclusive breastfeeding is low and breastfeeding duration is short (Batal et al., 2006). Factors such as type of delivery, rooming-in and mother-child interaction were associated with breastfeeding initiation, whereas the use of painkillers and maternal education were negatively associated with breastfeeding duration. Mothers who initiated breastfeeding in the few hours post delivery had better chances with exclusive breastfeeding beyond 6 months of age (Batal et al., 2006).

According to the Egyptian Demographic and Health Survey 1995 the rate of exclusive breast-feeding at 0-3 months was 67.6%, while its prevalence dropped to 24.1% among those aged 4-6 months. Two years later a community based study conducted in Alexandria-Egypt revealed that only 42.2% of surveyed infants were exclusively breastfed for less than 4 months and 21.1% were predominantly breastfed as they received, in addition to breast milk, water and water-based drinks (sweetened and flavored teas), infusions and fruit juice. The timely complementary feeding rate reported in this study for infants 6-9 months was 62.3% (Kamel et al., 1997).

In the Libyan Arab Jamahiriya a study conducted in a pediatric hospital in Benghazi revealed that 34% of surveyed children receive baby formula before the age of one month (Nuri et al., 1997). Moreover 18.5% received prelacteal feed in the form of water and sugar or honey and 65.3% of surveyed children received complementary feeding at age 3-5 months (Nuri et al., 1997). More than one type of food was introduced to the baby. Fresh fruits and vegetables were on top of the list to be introduced as complementary feeding in addition to rice, eggs, cereals, almonds and commercial foods. Cultural influence plays a major role in the decision about which foods are to be introduced and at what age (Nuri et al., 1997).

In Israel a study was conducted in the rural Moslem villages found out that the rate of breastfeeding initiation was relatively high (96%) and almost half of those mothers continued to breastfeed beyond 6 months of age (Azaiza and Palti, 1997). Breastfeeding continuation was significantly associated with the family socioeconomic status, mother's level of education, high religiosity, existence of sons in the family and traditional attitudes and practices.

In the gulf countries which are considered an affluent Arab area the situation is not any better. According to UNICEF malnutrition rates are generally higher than what would be expected given the high GNI per capita levels. The causes include anemia and other nutritional deficiencies. The Gulf Family Health Survey noted decreasing rates of exclusive breastfeeding and poor complementary feeding and bottle feeding practices, especially in Kuwait and Qatar (UNICEF, 2003-b). Moreover in Kuwait child birth order has a significant effect of infant feeding pattern; late order child had a better chance of being breastfed while low birth order children born to young, inexperienced mothers were more likely to be bottle-fed (Fawzia et al., 1997). Maternal education is associated with the time of introducing complementary feeding; mixed feeding was least common among illiterate mothers compared to educated ones. Reasons behind this were insufficient milk, personal desire, mother's illness and infant refusal. Moreover illiterate mothers seemed to be more prepared for breastfeeding for longer duration and subsequently introducing complementary feeding at more appropriate age (5.4 months) (Fawzia, et al., 1997).

In Bahrain which is another gulf country introduction of bottle feeding is associated with the socioeconomic status of the family. A high percentage (16.7%) of mothers of high social class would start bottle feeding as early as one month (Musaiger, 1983). Highly educated mothers tended to introduce rice, wheat, fruit as well as infant formula at an earlier age of the infant's life than other education groups (Musaiger and Abdulkhalek, 2000). Some of the reasons explaining these practices are health practitioners' advice of using infant formula, mothers being unaware of the importance of breastfeeding either through ignorance or the intensive marketing campaigns of infant formula. They find it primitive to breastfeed or it might adversely affect their breast shape.

2.13 Determinants and practices of breastfeeding and complementary feeding in Palestine

The Palestinian children's health had faced dramatic changes in the past decade. Even though, infant mortality rate (IMR) dropped from 25.5 per 1000 live births in (1995-1999) to 24.2 in (1999-2003). In 2005 it was reported at 20.8 per 1000 life births (MOH, 2005). According to UNRWA reports IMR among refugees in the West Bank was 27 per 1000 live birth in the year 2000 and 15.3 per 1000 live birth in 2003 (Madi, 2004). Literature proved that following the recommendations of exclusive breastfeeding up to 6 months and appropriate complementary feeding will help in reducing diarrhea, infections and respiratory disorders. Moreover, the degree of malnutrition among Palestinian children is on the rise. Although there is inconsistency between different studies and reports regarding the prevalence of iron deficiency anemia (IDA) among children and the percentages of wasting and stunting in Palestine, they all agree that it's a problem that should be tackled and more work and efforts should be done in order to reduce it. (PCBS, 2003; Al-Quds University et al., 2002; UNICEF, 2005-c). In 2002 the percentage of global acute malnutrition in the Palestine among children aged 6-59 months was 3.4% whereas global chronic malnutrition was even worse (10.7%) (Al-Quds University et al., 2002).

Iron deficiency anemia (IDA) is another form of malnutrition. It has its negative implications on the short term and long term for both mother and children. The

relationship between anemia and motor development, cognitive abilities and physical work is well established (UNICEF, 2005-c; Karaja, 2006). Several infant feeding practices increase the risk of anemia among both infants and children (Hassan et al. 1997). In addition the breast milk of anemic mothers will be lacking in nutrients. This may help to explain why anemia is high in very young children who are dependent on breast milk but gradually decreases with age as the child's own iron intake through food increases (UNICEF, 2005-c). On the other hand the bioavailability of iron present in human milk is high and it is impaired by the early introduction of complementary feeding (kilbride et al., 1999). In a study carried out in Gaza strip in 1994 a significant relationship was found between the type of child's feeding and anemia, while a more recent one didn't find an association between the use of infant formula and anemia (UNICEF, 2005-c).

In a study conducted by UNRWA in Gaza strip the prevalence of anemia among pregnant refugee women, nursing refugee mothers and refugee infants aged 6-36 months was 35.7%, 45.7% and 38.3% respectively (PMOH 2005-a; UNRWA, 2005-b). The corresponding rates in the West Bank were 29.5% among pregnant women, 23.1 % among nursing mothers and 34.3 % among children. The high prevalence of anemia for many children will have permanent negative effects on their physical and mental development. It is worth mentioning that prevalence of anemia among infants 6-12 months of age reached 75 % in Gaza (UNRWA, 2005-b). Another study conducted by Al-Quds University and John's Hopkins University in 2002 found out that the prevalence of anemia among children aged 6-59 months in Palestine was 43.9%, of which 20% was among refugees.

A study conducted by MARAM/USAID funded project revealed that 22% of children were found to have low vitamin A plasma levels. The estimated prevalence would be considered to fall into the severe category (≥20%) according to WHO criteria for judging that vitamin A deficiency in a community constitutes a public health problem.

Giving all of the above indicators on children's health in Palestine, breastfeeding and proper complementary feeding put itself as a target for many local and international organizations although research in the 2 areas was limited. These figures raise the

question of the quantity of breast milk and duration of breastfeeding a mother can afford in such circumstances. Moreover exclusive breastfeeding and appropriate complementary feeding in infancy might help in reducing stunting and wasting in childhood (Davies-Adetugbo and Adetugbo, 1997).

The Palestinian Central Bureau of Statistics (PCBS) demographic and health survey 2004 indicated that 9.9% of children suffered from stunting, 2.8 % suffered from wasting while 4.9% were underweight (PCBS, 2006-e) In 2003 refugee children were found to be statistically more stunted than non-refugee children in both West Bank (12.4% compared to 9.4%) and Gaza Strip (13.2% compared to 10.6%) (UNICEF, 2005-c). Children in the age group 6-23 months were statistically more likely to have global acute malnutrition than those 24-59 months of age. (Al-Quds University et al., 2002; UNICEF, 2005-c).

The PCBS showed that the prevalence of breastfeeding in year 2004 was 95.6% compared to 97.2% in the years 1997-2000 (PCBS, 2005-c). In year 2004 only one quarter of the mothers exclusively breastfed their children for six months presenting an increase by 8.7% compared to the year 2000 (UNICEF, 2005-c), and 38.1% were mixed fed (PMOH, 2004-a). The mean duration of breastfeeding is about 11 months and goes up to one year among refugees (PCBS, 2004). This is also on a decline compared to 13.2% in the year 2002. The percentage of exclusive breastfeeding among all Palestinian refugees is relatively low (22.3%) with the highest in Jordan and lowest in Gaza strip, and the mean duration of exclusive breastfeeding is 2.7 months (UNRWA, 2001-a).

There isn't much work done in Palestine regarding the way complementary food is being introduced to the child. According to the demographic health survey in 2004 the percentage of children that were weaned within the first 3 months of age was 16.1% compared to 14.0% in the year 2000. In refugee camps the situation is different; although breastfeeding is the norm like the rest of the country, only 9.5% were weaned within the first 3 months (PCBS, 2004). Main reported reasons for early complementary feeding were insufficient breast milk (31.6%) and the child’s refusal of breastfeeding (20.9%) (PCBS, 2005-c).

According to the state of nutrition report in 2005 one survey found out that 31.6% of mothers introduced protein and iron-rich foods at 8 months of age while the rest introduce it by the age of one year (UNICEF, 2005-c).

2.14 Summary

The guidelines presented above showed that in general breastfeeding should start as early as possible right after birth and continue to 2 years of life or beyond. Lots of research has focused on the time of starting complementary feeding. Between the ages of four and six months, most babies are ready to gradually accept solid foods into their diets, in addition to breast milk and/or formula. The latest recommendation emphasize that starting on solid foods should not start before 6 months of age. There is no good evidence that specific foods need to be introduced to infants in any particular order but it’s important that the new foods contain nutrients that infants need. In general all the above mentioned guidelines agrees that mothers should begin with cereal as the bass line; vegetables and fruits enter like a rhythm section; then the protein sources. Some food items should not be introduced before the infant's first year of life such as cow's milk and honey.

The above literature review showed that breastfeeding and complementary feeding varied between developed, developing, and the Arab countries. Nevertheless only 37% of infants are being exclusively breastfed worldwide. In general there is no compliance with the WHO/UNICEF recommendations regarding exclusive breastfeeding and the time of starting complementary feeding. In the developed countries even though the percentage of breastfeeding initiation might be accepted but this percentage declines as the infant grow up. In developing countries breastfeeding is common, but exclusive breastfeeding is rare, and complementary foods are introduced at an early age. Mother's high educational level negatively affects the duration of breastfeeding as well as having a high socioeconomic status.

Breast-feeding remains the general rule in the Arab world, particularly among rural populations. Nevertheless it is declining particularly among urban areas and affluent

countries in the Arab world. Lack of system support and monitoring of the guidelines might be one of reasons behind this decline.

Finally, Palestine has a unique situation and research in the area of breastfeeding and complementary feeding determinates and practices. The prevalence of breastfeeding is on decline but on the other hand the prevalence of exclusive breastfeeding is on a rise. There are no specific guidelines for complementary feeding in Palestine but it is recommended that time of introducing complementary foods should be at the beginning of the 5^{th} month of age. Several factors and determinants play a role in explaining breastfeeding and complementary feeding practices among mothers. Taking this into consideration and the unique set up of the Palestinian refugee camps, the following chapter will present the conceptual framework of this study.

Chapter 3

Conceptual framework

3.1 Introduction

3.2 Definitions of Breastfeeding terms

3.3 Definitions of weaning and complementary feeding

3.4 Factors associated with breastfeeding and complementary feeding

3.5 The conceptual framework of the nutritional status adapted by UNICEF

3.6 The conceptual framework of this study

- 3.6.1 Socio-demographic details
- 3.6.2 Delivery information
- 3.6.3 Breastfeeding practices
- 3.6.4 Complementary feeding practices
- 3.6.5 Infant growth

3.7 Summary

3.1 Introduction

In this chapter the definitions of the main study terminology and definitions will be presented. Also, the model that was used in this study will be presented and discussed.

3.2 Definitions of Breastfeeding terms

A consensus was reached out by WHO in an informal meeting in 1991 on the definitions of key breastfeeding indicators and specific methodologies for their measurements (WHO, 1991-a). In that consensus exclusive breastfeeding was defined as the infant receiving only breast milk (including expressed milk or milk from wet nurse). No other liquids or solids are allowed with the exception of drops and syrups (vitamins, minerals, medicines). Predominant breastfeeding was defined as the infant receiving breast milk as a major source of nourishment, and is allowed liquids (water and water-based drinks, fruit-juice, oral rehydration salt (ORS), ritual fluids, and drops or syrups (vitamins, minerals, medicines). No food-based fluids are allowed or non-human milk (WHO, 1991-a). Both terms exclusive breastfeeding and predominant breastfeeding constitute full breastfeeding (WHO, 1991-a). Therefore, in this study the term full breastfeeding was used.

3.3 Definitions of weaning and complementary feeding

According to the concise Oxford dictionary the word "wean" means "to accustom an infant or any other young mammal to food other than milk" (Thompson et al., 1996). It has other meanings such as gradual discontinuation or even complete cessation of breastfeeding. The term "weaning" and "weaning foods" are often misleading because they might give the implication that complementary food replace breast milk rather than complement it specially that breastfeeding should continue till 2 years of life or beyond (European commission). To avoid confusion or misleading it was suggested in one of the articles to refrain from using the term "weaning" and replace it with complementary foods (Greiner, 1996). In that informal meeting in 1991 the term "weaning" wasn't defined but complementary feeding was defined as the infant receives breast milk and solid or semi-solid foods. Formula is also allowed in this category (WHO, 1991-a).

According to UNICEF complementary foods is defined as “any non-breast milk foods or nutritive liquids given to young children after 6 months of age where exclusive breastfeeding doesn’t meet their rapid growth requirements”. Complementary feeding is defined as the process of introducing these foods (UNICEF, 2007-i). According to the WHO, complementary feeding is the transition from exclusive breastfeeding to family foods (WHO, 2002-c). It covers the period from 6 to 18-24 months of age and is a vulnerable period and a critical phase since it affects the health status, morbidity and mortality of young children (WHO, 2002-c; WHO, 2007-i).

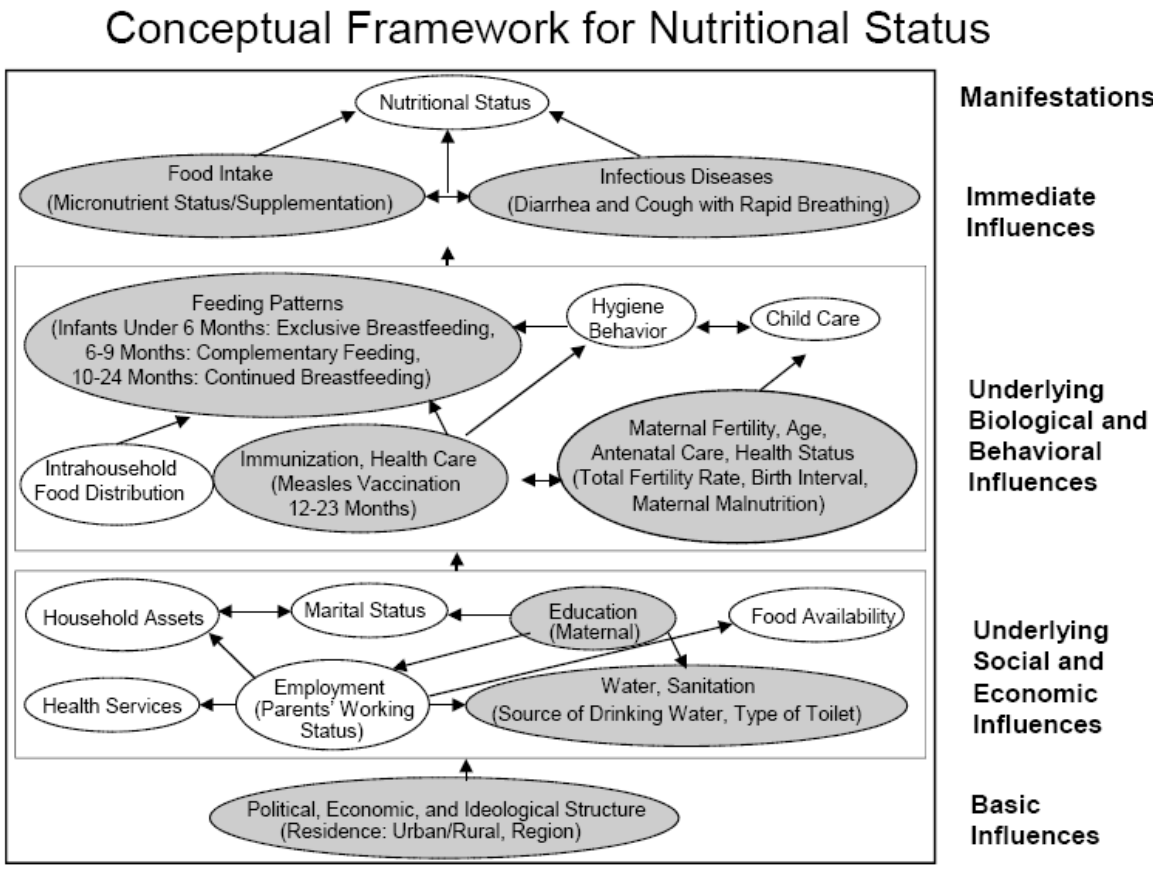
3.4 Indicators of breastfeeding and complementary feeding

Many factors affect the process of breastfeeding and complementary feeding. In order to assess infant feeding during the first 6 months of age researchers have developed a number of indicators that would help in measuring the adequacy of energy and nutrient content of the infant's diet These indicators include; early initiation of breastfeeding, exclusive breastfeeding, on demand, day and night, and finally the infant is fed from both breasts (Ruel et al., 2003).

An informal meeting was held in 2002 by WHO with the participation UNICEF, PAHO and other organizations to review and develop potential indicators for complementary feeding (WHO, 2002-d). Such indicators are required to study the dietary intake of children from 6-23 months and check if it is adequate to maintain their optimal health, growth and development. This could be done by recalculating the estimates of the amount of energy required from complementary foods, taking into consideration the average amount of breast milk consumption. In addition making sure that the complementary foods are meeting the children's needs of micronutrients, children's ability to chew and swallow different forms of foods, and finally avoid or minimize the transmission of pathogens through food to the infant (Ruel et al., 2003). Complementary feeding indicators need to be age-specific to reflect changing feeding practices and energy requirements. They can be used in program assessment, monitoring and evaluation as well as implementing community specific programs. The potential indicators that were presented to assess complementary feeding practices were: continuous breastfeeding, energy intake, nutrient density indicators, hand washing, safe food preparation and storage, clean utensils and avoidance of baby bottles, and water used in food preparation (WHO, 2002-d).

3.5 The conceptual framework of the nutritional status adapted by UNICEF

The UNICEF conceptual framework of nutritional status suggests that feeding patterns of infants and children less than 24 months of age is critical for their growth, development and survival (figure 3.1). Feeding patterns of infants less than 24 months of age is an underlying biological and behavioral influence. It is affected by other factors such as immunization in the second year of life, health care, intra-household food distribution as well as the hygiene behavior. These factors in turn affect the nutritional status which is also influenced directly by infectious diseases and food intake (micronutrient intake/supplementations). Based on this conceptual framework the model for our study was derived. The researcher focused on feeding patterns, maternal fertility age and antenatal care of which all are underlying biological and behavioral influences of the nutritional status. The other factors need to be investigated in another study .Other factors that might influence breastfeeding and complementary feeding are included in the model.



Adapted from UNICEF: State of the World's children, 1998

Figure 3.1: Conceptual framework for nutritional status

3.6 The conceptual framework of this study

After reviewing the theories that explain breastfeeding and complementary feeding practices, and taking into consideration the study objectives, the researcher developed the model on which the study was conducted (figure 3.2).

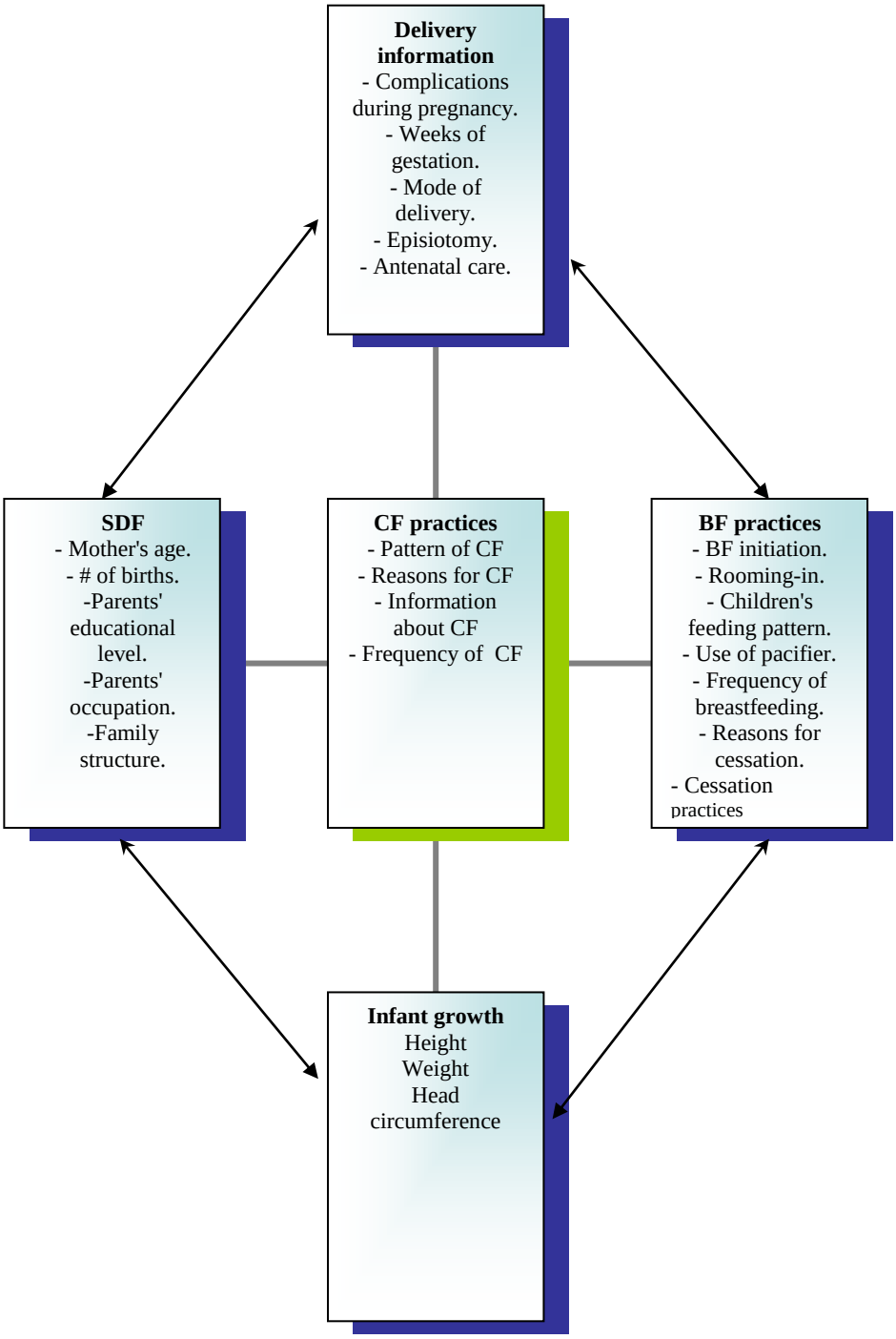


Figure 3.2: The conceptual framework of the study

3.6.1 Socio-demographic details

Several studies reported an association between socio-economic details and infant feeding pattern. In Canada, United Kingdom, Italy and Kuwait it was reported that parity, mother's age, income, employment and educational levels had a significant influence on infant feeding practices. In Kuwait a decline in breastfeeding rate followed the oil era where there was a sharp increase in the family's average income, and an increase in the rate of bottle feeding (Fawzia et al., 1997). The price of commercially prepared food and formula is not a burden for the average Kuwaiti family. Older Kuwaiti mothers were found to breast-feed their infants for a longer duration than young mothers (Fawzia et al., 1997). As for the mother's educational level; the more educated the mother is the earlier weaning would take place and the higher the rate of mixed feeding (Al-Mazroui et al., 1997; Fawzia et al., 1997). Educated mothers who work are more likely to wean their infants earlier (Fawzia et al., 1997). These findings are congruent with other studies conducted in the area such as in Lebanon and Jordan (Batal et al., 2006; Khassawneh et al., 2006).

Also socioeconomic status plays a role in early introduction of liquids and solid food to babies in the United Kingdom as well as Italy. In the United Kingdom younger mothers and those of lower socioeconomic status or never worked are more likely to do so (Savage et al., 1998; Hamlyn et al., 2000). In Italy younger mothers tends to have lower duration of breastfeeding and therefore early introduction of formula or other complementary foods (Giovannini et al., 2004). The same thing was reported in Canada; younger mothers, mothers of lower socioeconomic status and lower educational level are more likely to introduce solid foods earlier than recommended (Kwavnick et al., 1999).

Birth order and family structure might influence the child's feeding pattern. In a study conducted in Kuwait it was stated that late order child had a better chance for longer duration of breastfeeding and lower rate of bottle feeding compared to the previous one, and the least duration was noticed for the first order child (Fawzia et al., 1997).

Family support to the mother improves her ability to pay more attention and give more care to her child. This support might be in the form of help provided in childcare,

household work, emotional support or even informational support. In African, Asian, Latin American and the Pacific societies, older women, or grandmothers, traditionally have considerable influence on decisions related to maternal and child- health at the household level (Sharma and Kanani, 2006). Father's level of education as well as fathers not living with the children are factors associated with shorter duration of breastfeeding (Silveira and Lamounier, 2006).

Questions about the socioeconomic details, parent's education and employment status, family structure and birth order were asked in the first part of our study's questionnaire (refer to part 1, demographic details, questions 1-6, part 1, socioeconomic information, questions 1-5).

3.6.2 Delivery information

The researcher wanted to examine the effect of some pregnancy and delivery complications on breastfeeding pattern (i.e.; nipple cracks, vaginal versus cesarean section and episiotomy) and the effect of getting antenatal information about breastfeeding and complementary feeding on mother's decisions and practices.

Some studies reported that mode of delivery and mother-child interaction are factors associated with breastfeeding initiation and duration (Batal et al., 2006; Hwang et al., 2006; Borders, 2006). Cesarean birth (Borders, 2006) and other surgical delivery procedures such as vacuum extraction were associated with late start of feeding after delivery and therefore increased the incidence of bottle supplementations (Lawrence and Lawrence, 2005). In Lebanon for example almost 50% of mothers who delivered by cesarean section initiated breastfeeding a few days after delivery (Batal et al., 2006).

Another factor that might influence breastfeeding is mastitis (Foxman et al., 2002). Less frequent factors are sore nipples and nipple cracks (England et al., 2003). Pain and discomfort associated with mastitis or concerns about treatment with antibiotics that pass through the breast milk may lead some women to cease breastfeeding and therefore early weaning (Foxman et al., 2002). Adequate treatment of early breast problems can increase breastfeeding initiation and duration (Yang et al., 2004).

Complications during delivery might affect breastfeeding initiation (Al-Mazroui et al., 1997). Most women who undergo episiotomy feel pain and discomfort that might last for weeks enabling them to breastfeed their babies properly and on demand. This might result in giving formula to infant in the first weeks of his life resulting in less breast milk and sometimes early introduction of solid food. A study conducted in Southern Brazil reported that black women tend to have less episiotomy and cesarean section and longer breastfeeding duration compared to white women (Barros et al., 2001). Another study conducted in University of Port Harcourt Teaching Hospital found out that delay in the time of repair of episiotomy and labor duration less than 12 hours were associated with early breastfeeding initiation (Awi and Alikor, 2006).

Preterm infants of low birth weight are less likely to be breastfed compared to term infants (Lefebvre and Ducharme, 1989). In a study conducted in Hamilton, Ontario most of the mothers of preterm infants of low birth weight choose to give human milk to their babies but the first suckling episode was after 17 days of delivery (Lefebvre and Ducharme, 1989). Babies of low birth weight (<2500gm) were less likely to be breastfed.

Antenatal preparation of pregnant women for breastfeeding and complementary feeding raises awareness of their importance, empowers mothers with practical knowledge and skills in breastfeeding techniques, prepares them for possible difficulties and support their decision to do so (Gartner et al., 2005; Mattar et al., 2007). Results of a randomized controlled trial conducted in Singapore showed that mothers who received simple antenatal instruction with a short, single, individual counseling session combined with educational material were twice as likely to practice exclusive or predominant breastfeeding at 3 and 6 months postpartum compared with mothers who did not receive formal antenatal instruction (Mattar et al., 2007). Lack of support from health professionals and lack of knowledge about breastfeeding were among the reasons reported for influencing the decision of not breastfeeding (Mattar et al., 2007). In that same study weaning didn't seem to be influenced by antenatal care and interventions. Nevertheless in a longitudinal study conducted in northeast Brazil it was found out that visits for antenatal care was among other factors that are not independent predictors for the early introduction of other milk (formulas). The rest of

the factors were socio-demographic factors, parity and birth weight (Marques et al., 2001).

Questions about mode of delivery and delivery complications, antenatal care and information about breastfeeding, were asked in the second part of the study's questionnaire (refer to part 2; questions 1-6).

3.6.3 Breastfeeding practices

Breastfeeding initiation: Breastfeeding initiation is an important step that might affect the continuation of the process and therefore the age of introducing complementary feeding. Studies report that the infant should be put on mother's breast in the first 30 minutes after delivery (Lawrence and Lawrence, 2005). Physiologically, the stimulus to the mother's nipple and the stimulus to the infant's mouth trigger the release of vital hormones in both mother and infant, beginning the maturation of the intestinal mucosa and enhancing nutrient absorption for both mother and infant (Lawrence and Lawrence, 2005). In a study conducted in Hong Kong researchers found out that breastfeeding initiation (breastfeeding score in hospital) was significantly associated with continuation of breastfeeding (Dodgson et al., 2003). Other factors affecting the continuation were maternal age, attendance at a prenatal breastfeeding class, intended weeks of breastfeeding and length of exclusive breastfeeding (Dodgson et al., 2003). In a cohort study conducted in inner-city women of low income in the United States almost half (51%) of the studied population initiated breastfeeding, and it was strongly associated with maternal foreign-birth and the availability of a supportive friend (England et al., 2003). Nevertheless a negative association was found between breastfeeding initiation and the availability of a supportive relative (England et al., 2003). Studies reported several factors to be predictive factors for breastfeeding initiation and/or duration. These factors are maternal ethnicity, education, socioeconomic status, employment status, marital status, parity, and type of delivery (England et al., 2003). A high rate of breastfeeding initiation doesn't necessarily lead to long duration of exclusive breastfeeding (Gartner et al., 2005).

Colostrum: Human colostrum, expressed in early breast milk, is rich in a variety of immune and non-immune components that may be capable of protecting against

infection by enteric pathogens (Clemens et al., 1999). Moreover, colostrum is known to contain several epithelial growth factors that conceivably might accelerate intestinal maturation and resistance to infection as well as epithelial recovery from infection (Clemens et al., 1999). Knowledge and perception of mothers about colostrums is associated with initiation of breastfeeding (Al-Mazroui et al., 1997). This was supported by personal interview with health care provider and a focus group for breastfeeding mothers. A significant predictor of exclusive breast feeding is breast milk as first feed (Sachdev et al., 1995; Kumar et al., 2006). In some cultures the health benefits of colostrums are not valued; colostrum might be viewed as "stale milk" or "unhealthy for the child" and therefore it is discarded (Sachdev et al., 1995; Al-Mazroui et al., 1997). These beliefs lead to give pre-lacteals to the infants and reduce the duration of breastfeeding. Deprivation from colostrum and improper complementary feeding are significant risk factors for underweight (Kumar et al., 2006).

Rooming-in: Another factor that influences breastfeeding initiation is rooming-in. Keeping the mother and infant together 24 hours a day facilitates an early start and continuation of breastfeeding (Marand et al., 1993). It allows the mother to understand the body language of her infant and therefore breastfeeding on demand will be easier. Rooming-in is one of the ten steps recommended by WHO and UNICEF to successful breastfeeding in their joint statement in 1989 entitled "Protecting, promoting and supporting breastfeeding". In addition breast-feeding guidance in a rooming-in context had a beneficial impact on breast-feeding specially among mothers of the first baby (Perez-Escamilla et al., 1994).

Use of pacifier: Infants' sucking habits are described in the literature as nutritive and non-nutritive sucking (Aarts et al., 1999). Thumb sucking and sucking on a pacifier is considered a non nutritive sucking that is used for calming infants. The (WHO/UNICEF) Baby Friendly Hospital Initiative recommends avoiding the use of pacifiers in breastfed infants since it might lead to early weaning (Benis, 2002). As claimed by orthodontists non nutritive sucking might be related to dental malocclusion as well as increased prevalence of oral candida. The use of a pacifier in the early post-partum period might contribute to ‘nipple confusion’ since the infant is learning how to

suck from the breast in that period (Aarts et al., 1999). A study conducted in Italy showed that there is a negative association between pacifier use and breastfeeding duration (Giovannini et al., 2004). On the other hand a prospective longitudinal study conducted in Sweden stated that the use of pacifier was associated with fewer feeds and shorter suckling duration per 24 hours, shorter duration of exclusive breastfeeding, and shorter total breastfeeding duration (Aarts et al., 1999). This is consistent with another study conducted in Brazil (Silveira and Lamounier, 2006). A randomized controlled trial study explained that the use of pacifier might lead to early weaning since it might be a marker of breastfeeding difficulties or decreased maternal motivation to breastfeed (Benis, 2002). This finding was similar to that of a study conducted in brazil where it was reported that use of pacifier might be a possible marker for early weaning (Cunha et al., 2005), as well as a cohort study conducted in Australia where the use of a pacifier was among other factors that are negatively associated with breastfeeding duration. Other factors were postpartum difficulties for the first month, maternal smoking, and early return to work (Scott et al., 2006).

Questions about breastfeeding initiation and duration, colostrums, rooming-in, the use of pacifier, breastfeeding cessation were asked in the third part of the study's questionnaire (refer to part 3; questions 1-3, questions 7-17).

3.6.4 Complementary feeding practices

Weaning of infants is a complex process involving the introduction of non-breast-milk foods, reduction in suckling activity, and eventual termination of breast feeding. (Gray, 1996). Time of introducing complementary feeding, quality and quantity of food consumed in infancy has a direct early effect of child's health as well as on the long term overall health status.

Infants formulas: Commercial infant formulas were first introduced at the beginning of the 1900s (Walker, 2005). Most infant formulas are derived from cow’s milk while others are derived from soy. While formula and breast milk provide the same basic categories of nutrients, the type of nutrient differs somewhat, and these differences can affect the infant’s development and overall health.

The formulas presented now in the market contain certain ratios of protein, carbohydrates, and fat. The type of protein; human milk is rich in whey in addition that it contains lacto-ferrin and immunoglobulin that are deficit in formulas since the commercially added whey is also derived from cow's milk (Walker, 2005). The type of carbohydrates; formula contains mainly lactose while human milk contains oligosaccharides in addition to lactose. Since oligosaccharides are slower to digest and larger than lactose, they provide an attractive home for fermenting bacteria that are beneficial to a baby's health (Walker, 2005). On the other hand lack of oligosaccharides from infant formula is one of the reasons that explain why constipation is a common and sometimes chronic problem among formula-fed infants. The type of fat: Fat is considered the main source of energy for babies. It plays an important role in brain development and building and maintaining cells. Human milk is made of roughly equal portions of unsaturated and saturated fats, depending on the type of fat in the mother's own diet Infant formula contains mainly saturated fat and reconstituted with unsaturated fat from plant oils to improve the ratio. Table (3.1) illustrates to major differences between human milk and formula.

Table 3.1: Differences between human milk and formula

Type of nutrient	Human milk	Formula
Proteins	70% is whey 30% is curd	Commercially added whey derived from cow's milk. Deficient in lacto-ferrin and immunoglobulins.
Carbohydrates	Lactose. Oligosaccharides.	Mainly lactose; simple, easily digested sugar.
Fat	Approximately equal portions of unsaturated and saturated fat	Mainly saturated fat. Unsaturated fat from plant oils is added to improve the ratio.

Pattern of introducing complementary feeding: Several guiding principles were set for complementary feeding of the breastfed children (WHO 1998; WHO, 2002). These guidelines are summarized as follows:

1. Duration of exclusive breast feeding: Exclusive breastfeeding should be practiced from birth to six months of age, where complementary foods should be started while continuing to breastfeed.

2. Maintenance of breast feeding: Breast feeding should be continued frequently and on-demand until two years of age or beyond.

3. Responsive feeding, applying the principles of psycho-social care.

4. Practice good hygiene and proper food handling.

5. Amount of complementary food needed: It should start at six months of age with small amounts of food and increase the quantity as the child gets older, while maintaining frequent breastfeeding.

6. Food consistency: Food consistency and variety should be increased gradually as the infant gets older. Avoid foods that may cause choking such as nuts, grapes, raw carrots.

7. Meal frequency: The number of times that the child is fed complementary foods increases as they get older.

8. Nutrient content of complementary food: can be met by feeding the child a variety of foods.

9. Using fortified complementary foods or vitamin-mineral supplements for the infant, as needed, depending on the population.

10. Increase fluid intake during illness.

Types complementary feeding: There are two types of complementary feeding; specially prepared foods and home prepared modified foods. There is no good evidence that specific foods need to be introduced to infants in any particular order. But it’s important that the new foods contain nutrients that infants need (Walker,

2005). First feedings of the baby should be from the staple food which is the main food eaten by the community. It might be cereal such as rice, maize or wheat, or it might be roots such as corn or potato. These foods provide energy mainly from starch and can be easily modified to fit the infants' needs by mashing or cooking to make porridge. Since these foods are poor sources of iron and other vitamins, a rich source of protein and iron should be added such as legumes or red or white meat. Pureed vegetables and fruits can then be added, taking into consideration to maintain a balance between them so as to accustom the infant to the different flavors in vegetables, rather than quickly developing a taste for sweet foods (Walker, 2005).

No salt, sugar or spices should be added to the infant's food since babies haven't yet developed the palates and don't need all these flavor additives.

Cow's milk shouldn't be introduced before 12 months of age since it interferes with the absorption of iron from other foods. In addition the lactose in milk can be difficult to digest, and milk contains too much protein per serving, which can damage an infant’s developing kidneys (Gartner et al., 2005; Walker, 2005). Restriction of the amount of fruit juices to 240ml/day is recommended since it might compete with more nutritious foods. Juices should be served in a cup to prevent nursing bottle syndrome (Monte and Giugliani, 2004).

3.6.5 Infant growth

Several studies showed that there is a relationship between infant feeding practices (breastfeeding initiation, exclusive breastfeeding and proper complementary feeding) and infant's growth pattern (Adetugbo A and Adetugbo K, 1997; Kumar et al. 2006). Little growth is an indicator of poor nutrition therefore measuring the height, weight and head circumference for infants less than 24 months of age gives an idea of how healthy their growth pattern is. Literature showed that there is an association between breastfeeding, longer duration of breastfeeding and a lower risk of becoming overweight during childhood and adolescence, even after accounting for maternal obesity and family lifestyle behaviors (Harder et al., 2005; Owen et al., 2005). Others failed to confirm this association (Owen et al., 2005). Also, greater protection against childhood overweight is associated with more prolonged exclusive breastfeeding.

Moreover, available evidence suggests that prolonged and exclusive breastfeeding is associated with lower infant weight and length by 6 to 12 months of age. This evidence, however, is based on observational studies, which are unable to separate the effects of feeding mode itself from selection bias, reverse causality, and the confounding effects of maternal attitudinal factors.

Breastfed and formula-fed infants generally have slightly different growth patterns. Breastfed babies seem to grow faster for the first two or three months, but afterwards formula-fed infants are, on average, slightly taller and heavier (Walker, 2005; CDC, 2007). The 2000 CDC (Centers for Disease Control and Prevention) growth charts includes data for both formula-fed and breast-fed infants, proportional to the distribution of breast- and formula-fed infants in the population.

Recently the WHO Multicentre Growth Reference Study (MGRS) is generating new curves for assessing the growth and development of children worldwide, whereby breastfed children are the biological norm for growth (WHO, 2007g). These charts describe how children should grow, rather than how they actually grow (Wright, 2005). Moreover they provide more accurate estimates of malnutrition and permit identification of children at risk. These new charts link motor development to anthropometric standards to emphasize on the important message that both normal physical growth and motor development are essential elements of normal development (WHO, 2007g).

3.7 Summary

The model that was used in this study was derived from the UNICEF conceptual framework for nutritional status. The factors to be studied in the model were determined after reviewing the indicators for breastfeeding and those for complementary feeding. These factors include delivery information, socio-demographic factors, breastfeeding practices, complementary feeding practices, and infant growth (anthropometric measurements). All of these factors are linked together directly or indirectly. In the next chapter the study design will be presented in addition to the study's population, sampling method and methodology.

Chapter 4

Methodology

4.1 Introduction

4.2 Study setting

4.3 Study population

4.4 Study sample and the individual's inclusion -exclusion criteria

4.5 Identifying the sample

4.6 Study design and sample size

4.7 Study tools

4.8 Questionnaire content, development, validation and piloting

4.9 Weighting balance and strip meter

4.10 Field work

4.11 Data collection

4.12 Ethical considerations

4.13 limitations of the study

4.14 Summary

4.1 Introduction

This study followed the scientific methodology in its design and sampling. The study was authorized by Al-Quds University graduate studies council and the faculty of public health research committee. Permission to conduct the study at the primary health care clinic (PHC) in Al-Am'ari refugee camp was obtained from the UNRWA headquarters office, which enabled the researchers to access the clinic registration files and get a list of the targeted children. Furthermore, an informed consent to participate in the study was done by a letter of consent that was signed by all interviewees. A questionnaire was prepared according to this study's objectives and was validated by expertise and afterwards was piloted before using it in the field.

Preparation of the fieldwork included the selection of the study sample, mapping their location at the camp, and the preparation of the questionnaire's copies and field instruments, i.e. the weighing balance and the measuring meter. Data collection took place over three months period, including 296 registered mother-child pairs. Data was cleaned, entered and analyzed using the statistical software package SPSS version 13.

4.2 Study setting

The study was first planned to be carried out at Al-Am'ari UNRWA PHC clinic. Those mothers who fit in the inclusion criteria of the study were interviewed at the clinic's reception hall, then the child was weighted and his height and head circumference were measured. However, it was difficult to continue interviewing the mothers in the clinic since there was no available place to conduct the interviews privately, and the nurses felt uncomfortable with the fieldworkers' interruption to take the anthropometric measurements of the indexed children. Therefore the decision was made to conduct the interviews at the participants' houses. A map of Al-Am'ari refugee camp was obtained from the Palestinian Central Bureau of Statistics. With the help of the refugee camp director, houses of the participants was located on the map.

4.3 Study population

The study took place in Al-Am'ari refugee camp, which is situated in Ramallah district north of Palestine. According to the PCBS census in 1997 the number of children living in Al-Am'ari camp and less than 5 year of age is 675 children, which constitutes around 15% of the total Al-Am'ari population (PCBS, 1997). As reported by UNRWA health report 2005 the number of habitants in Al-Am'ari is 8,805. The primary health care provider is UNRWA primary health care clinic which is situated at the entrance of the camp. Almost all children are being immunized in the clinic. Due to the high awareness of mothers regarding their newborn's health, growth & development, the number of attendance to the clinic is higher during the child's first year of life, and it declines during the second & third year (UNRWA, 2005).

4.4 Study sample

A list of all children born between July 2004-July 2006 was prepared from the registered file at the PHC clinic. The child's name, the name of the child's mother, address and phone number were obtained. Then the following criteria were used to either include or exclude the child from the list. The inclusion criteria from the study list were:

- Mothers registered at Al-Am'ari UNRWA clinic.
- Mothers residing at Al-Am'ari refugee camp at the time of the study.
- The indexed child was a term infant (infant born at a gestational age between 37 and 42 completed weeks).
- The indexed child's age was less than 24 months, i.e. born between July 2004-July 2006.
- In cases where the mother has a twin, one of them was randomly chosen.
- In cases where the mother has two children in the same age categories, i.e. two children in the family less than 24 months of age, the youngest child was included in the study.

Exclusion criteria from the study list:

After preparing the above list, some individuals were excluded for the one or more of the following reasons:

- Mother registered at Al-Am'ari UNRWA clinic but not residing at Al-Am'ari refugee camp at the time of the study.
- The indexed child was a preterm infant (born prior to 37 weeks of gestation)
- The indexed child was a full term infant but underweight (low birth weight, i.e. less than 2500 gm at birth although born between 37-42 completed weeks of gestation).

4.5 Identifying the sample

After getting the approval to conduct the study and to facilitate the study's team work in Al-Am'ari UNRWA clinic, the director of the clinic introduced the researcher to the working team where the researcher explained the study aim and objectives.

As mentioned earlier mothers were identified as those registered at Al-Am'ari clinic, residing at Al-Am'ari refugee camp and having the latest child less than 24 months of age. To ensure that the study meets the inclusion criteria of the sample, the researchers used the registration files at the clinic. With the help of the responsible nurse, all registration files dated between July 2004-July 2006 were reviewed and mothers' names, children, addresses and telephone numbers were recorded on a special sheet, in addition to some information about child's gender, place and date of birth, mother, fathers and families names. Since no computer system is available, these data were recorded manually. Two field workers were trained by the researcher to help in identifying the indexed child, recording the names from the registration files, identifying their address and organizing for the interviews with the children's mothers. After the completion of reviewing the files, the study sample was 296 mother-child pairs meeting the criteria of the study.

4.6 Study design and sample size

The study design was a cross-sectional design. All full term healthy infants less than 24 months of age residing at Al-Am'ari refugee camp were selected for the study.

According to the registration files at the PHC, there were 296 infant- mother pairs matching the study specifications. During data collection there were 20 twins, 31 could not be traced, 31 were from the same age group in the same household, and 44 could not be found for several reasons; left the camp, couldn't find them at the address registered in the clinic or mother not at home after 3 visiting attempts. In total the number of infants who were included in the study was 199 infants (table 4.1).

Table 4.1: Distribution of infants and final study population:

Infants	Total number (%)
Number of registered children in the age group 0-24	296
Number of twins	22 (7.4%)
Number of infants of the same age group at the same household	31 (10.5%)
Number of infants could not be found	44 (14.9%)
	296-97=199

4.7 Study tool:

This study was a questionnaire based study, but also measurements of weight and height of the indexed child were done at the time of survey.

4.7.1 Questionnaire content, development, validation and piloting

The study questionnaire was developed by the researcher taking into consideration the aims and objectives of the study. Previous studies' validated questionnaires of similar objectives were used to develop the questionnaire (Donath and Amir, 2005; Mennella et al., 2005; Kramer and Kakuma, 2002). The researcher contacted the main author of each article by e-mail and fortunately could get a copy of the questionnaire that was

used in each study. The developed questionnaire was adapted to the Palestinian local community.

The questionnaire was an interview type of questionnaires that consisted of 53 questions, of which all were structured closed questions. It was divided into four parts according to the study objectives, as follows:

- Part one: includes the socio demographic information about the mother and father of the indexed child, including the educational level of the parents, occupation, age of mother and number of people living in the house. Characteristics of the indexed child includes date of birth, age, gender, child order and the height, weight and head circumference at birth.
- Part two: includes information about the method of delivery of the indexed child and the presence of any complications at labor time.
- Part three: includes questions on whether the mother received any information about breastfeeding, how to breastfeed, the benefits of the colostrums, breastfeeding pattern of all her children including the indexed child, rooming-in, use of pacifier and the reasons behind cessation of breastfeeding (if so).
- Part four: includes information about complementary feeding; the age at which the mother started introducing different types of foods and beverages to her child, the first food that was given to her child and reasons behind her choice. It also includes questions on whether the mother got any information about the introduction of solid foods and sources of this information. Finally, weight, height & head circumference measurements were taken for the indexed child.

In addition to the use of previously validated questionnaire, the researcher conducted a focus group discussion with 15 mothers of children less than 24 months of age to enrich the questionnaire with possible answers given by the mothers and to make it as much adapted to the Palestinian local community as possible.

A) Questionnaire validation: The study questionnaire was reviewed and validated by 3 specialists; a pediatrician, epidemiologist, and a breastfeeding counselor. All their comments and suggestions were considered.

B) Questionnaire piloting: a pre-test was conducted on 20 mothers attending Al-Am'ari clinic. The 20 mothers were interviewed by the field workers and were asked about the clarity, content and alternatives of the specified questions. In accordance to their answers and comments, some changes on the structure and terminology of some questions were performed to ensure better understanding by the interviewees. The results of the pilot testing were not included in the study sample.

4.7.2 Weighting balance and strip meter

For measuring the height and weight of the indexed child, a digital portable weighing balance was used (Adam equipments, MIW20 (20kg X 10gm), serial number AEX 20954). Also a measuring strip meter was used to measure the height and head circumference.

4.8 Field work and data collection

The field work started in July 2006 at Al-Am'ari PHC clinic until September 2006 (3 months period). Any child-mother pair visiting the clinic and meeting with the inclusion criteria of the study was interviewed. Anthropometric measurements were taken at the end of the interview. The team faced several obstacles that made their task difficult to be accomplished in the clinic. The MCH care section in the PHC clinic consisted of 3 main rooms with a small reception area. Unfortunately it was difficult to complete the interviews with the mothers privately. Therefore, interviewers had to continue collecting the data by visiting the targeted mothers at home (household person-to-person interview) and to give them appointments to come to the clinic with the indexed child to do the anthropometric measurements. To make this possible the approval of the clinic's director was obtained to review the registration files. Names, address, phone numbers of all child- mother pairs fitting in the inclusion criteria of the study were included. Unfortunately the number of mothers who complied with the appointment was low. Therefore, the researcher bought a portable digital balance and a measuring meter in order to complete taking the anthropometric measurements at the houses.

To help finding the address of the targeted families a map of Al-Am'ari refugee camp was obtained from the PCBS. With the assistance of the refugee camp director the team was able to identify the families and their locations on the map. After taking the oral consent of the mother to fill in the questionnaire she had to sign a letter of consent. All children were weighed with their clothes on therefore a systematic error is present in the study. The average numbers of interviews conducted by each field worker were 5 per day. The average time of the interview was 30 minutes.

The field work was done as follows:

- The address of the indexed child was identified from the registration files. A map of the refugee camp was used to facilitate finding the exact address (appendix 1 A). To make our mission in reaching the households easier we approached the director of the camp (mukhtar) who divided the camp into two major areas; left side of the main street and right side of the main street. Each side was divided into neighborhoods. By referring to the address registered in the files we were able to identify the household much easier.
- The questionnaire was completed through a person-to-person interview (appendix 1 B).
- The indexed child's height, weight and head circumference were measured after filling in the questionnaire.
- All indexed children were weighted with their clothes on. Those under 12 months of age we put on their back (lying down position) on the balance to take their weight. Those above 12 months of age were put in a sitting position on the balance to take their weight (see picture 1).
- For all indexed children the height was taken with shoes and hats off (if any). If the indexed child was above 12 months of age and can stand still he was put with his back to the wall and his height was taken. If the indexed child is less than 12 months of age and can't stand still he was put in a lying position, one of the field workers or the child's mother will stretch his leg and his height was taken (see picture 2).

Picture 1: weighting the indexed child

Picture 2: Anthropometric measurements of the indexed child

4.9 Ethical considerations

1. The approval of the study by the scientific committee at the School of Public health was obtained.

2. An official letter was sent to the head of health section in UNRWA to use the registration files in Al-Am'ari clinic.

3. An oral permission of the director of Al-Am'ari clinic was obtained to use the registration files with the help of the head nurse.

4. A written consent was attached to each questionnaire explaining the aims and objectives of the study, importance and confidentiality. This was signed by each mother who agreed to be part of the study.

4.10 Methods of data analysis

The World Health Organization (WHO) indicators for assessing breastfeeding practices were used (WHO, 1991a). Both terms exclusive breastfeeding and predominant breastfeeding constitute full breastfeeding. Therefore, in this study the operational definition for full breastfeeding was considered for those infants who are exclusively breastfed and /or didn't receive any food or formula (non-human milk) before 4 months of age.

The age of the indexed child was categorized as follows:

- 0-3 months means 0-3.9 months
- 4-6 months means 4-5.9 months
- 6-12 months means 6-11.9 months
- 12-18 months means 12-17.9 months
- 18-24 months means 18-24 months

Based on the operational definition of the study children were categorized into two groups as follows:

- Full breastfeeding: infants who were on exclusive breastfeeding and/or didn't receive any food or formula in the first 4 months of age.
- Not full breastfeeding: infants receiving food or formula in the first 4 months of age.

As for the child's complementary foods, some of the food items were categorized into groups as follows:

- Tea, sweetened water: includes water with sugar, tea with or without sugar.
- Tea, milk with biscuits: includes biscuits dipped in tea, or non human milk.
- Dairy products: includes cheese, fermented cheese (labneh), plain yogurt, and sweetened yogurt.
- Fruits: includes fresh fruits mashed, purred, or juice
- Vegetables: includes mashed or purred vegetables, vegetable juice such as tomato or carrot.
- Carbohydrates: includes bread, plain rice, rice with broth and potato.
- Eggs: includes egg yolk and egg white.

The indexed child's weight at birth was obtained from the immunization card. Height and head circumference measurements of the indexed child couldn't be obtained since they are recorded neither in the immunization card nor in the UNRWA registration files.

Data was entered, cleaned and analyzed using the statistical software package SPSS version 13. During the analysis we had to exclude infants less than 4 months of age since we cannot predict their mothers' practices regarding the introduction of complementary feeding. Therefore in total we had 178 mother-pairs infants' fitting the inclusion–exclusion criteria and included in our analysis.

Data analysis will be divided into three parts; the first part includes the descriptive analysis for the study population and the mothers' practices regarding breastfeeding and complementary feeding. In the second part the univariate analysis will be presented showing the association between infant's feeding pattern and the studied determinants such as demographic variables, delivery characteristics and the use of pacifier, breastfeeding practices and child's characteristics. Also the associations between the consumption of foods and beverages and the determinants mentioned above will be presented. In the third part, the multivariate model will be presented.

4.11 Limitations of the study

The constraints and limitations of the study were mainly along the procedure of the preparation of the study as well as identifying the indexed child. A summary of the limitations are the following:

- The sample included in this study was selected from one refugee camp in Palestine; therefore we cannot generalize the study findings to the whole community.
- The study was conducted by an in-person interview, self reported answers were given by the mothers of the indexed child and memory burden was noticed; therefore recall bias might have affected the results.
- Since there is no computer system in the clinic a lot of time was spent in finding children meeting our inclusion criteria and registering their names. In addition the

setup of the clinic and lack of space made us continue data collection by household in-person interviews which took more time than was planned.

4.12 Summary

Data was collected in a 3 months period. According to the objectives of the study a non-random sample was chosen from Al-Am'ari refugee camp to collect information regarding the assessment of breastfeeding and complementary feeding practices for children less than 24 months of age.

Reviewing the questionnaire by pediatricians and breastfeeding specialist enabled us better structuring the questionnaire. The focus group enriched the questionnaire with possible answers given by the mothers and to make it as much adapted to the Palestinian local community as possible. The pilot study enabled us to better structuring of the questionnaire as well as improving the clarity of the questions, ensuring better understanding by the interviewees.

Using the registration files at Al-Am'ari UNRWA clinic we had 296 infant-mother pair eligible for the study. In-person household interviews were conducted with the targeted mothers. After completing data collection we had 199 filled in questionnaires. Only 178 were included in the analysis since we had to exclude infants less than 4 months of age.

Data was analyzed using the statistical software package SPSS 13. The methods of analysis that was used met the objectives of the study.

Chapter 5
Results

4.1 Introduction

The main objective of this study was to assess the practices of breastfeeding and the introduction of complementary food among mothers of infants less than 24 months of age residing at Al-Am'ari refugee camp. A total 178 infant-mother pairs out of 2 96 infants-mothers registered at the filing system at Al-Am'ari refugee camp were included in the analysis. The World Health Organization (WHO) indicators for assessing breast-feeding practices were used. The study's full-breastfeeding operational definition was used as the outcome variable as mentioned in the previous chapter.

In this chapter, data will be presented in 3 parts; part 1 the descriptive analysis for the study population and the mothers' practices for breastfeeding and complementary feeding, in the second part the univariate analysis to study the association between the outcome and the various determinants will be presented. In the third part, the multivariate model will be presented.

4.2 Part 1: Descriptive results analysis

5.2.1 Characteristics of the study population

In this study 56.4% of the indexed children were males (figure 5.1). The mean age of children (standard deviation, SD) was 13.5 (± 6.3) months and 34.3% of them between 6-12 months of age (figure 5.2). Almost all of the indexed children were born in hospitals (99.4%). The mean weight (SD) at birth was 3294 (± 423) grams.

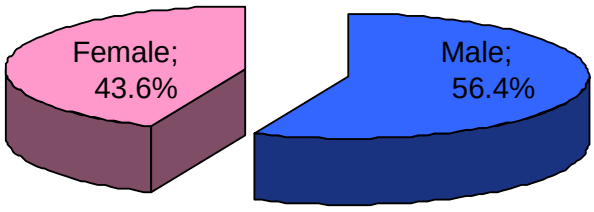


Figure 5.1: Distribution of infants by gender

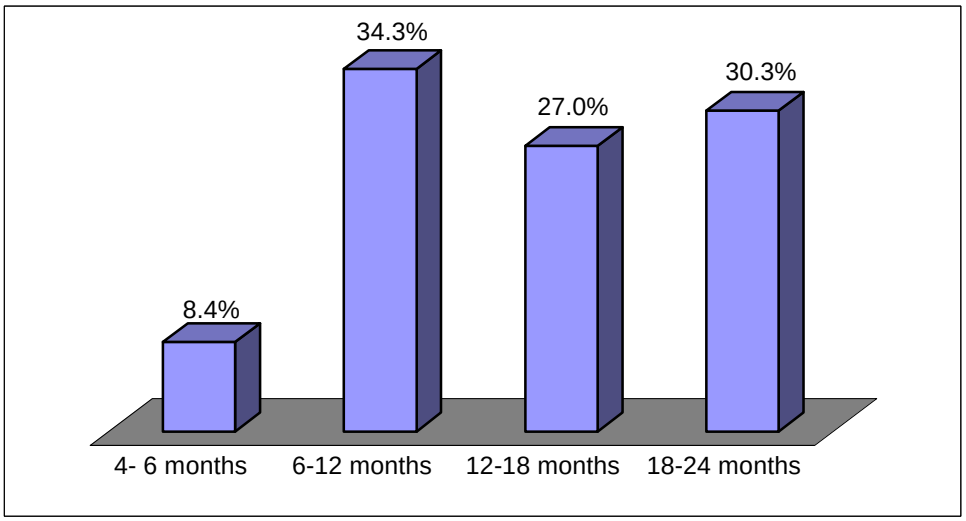


Figure 5.2: Distribution of infants by age

The mean age (SD) of mothers was 27 (± 5.5) years, of which 46.4% had a tawjihi degree (figure 5.3). As shown in figure (5.4) and figure (5.5) most of the mothers are housewives, but almost all fathers work. The average number of people living in the same house was 6.7 individuals and the mean (SD) number of the same family (mother, father and the children) was 5.43 (± 2.02) individuals.

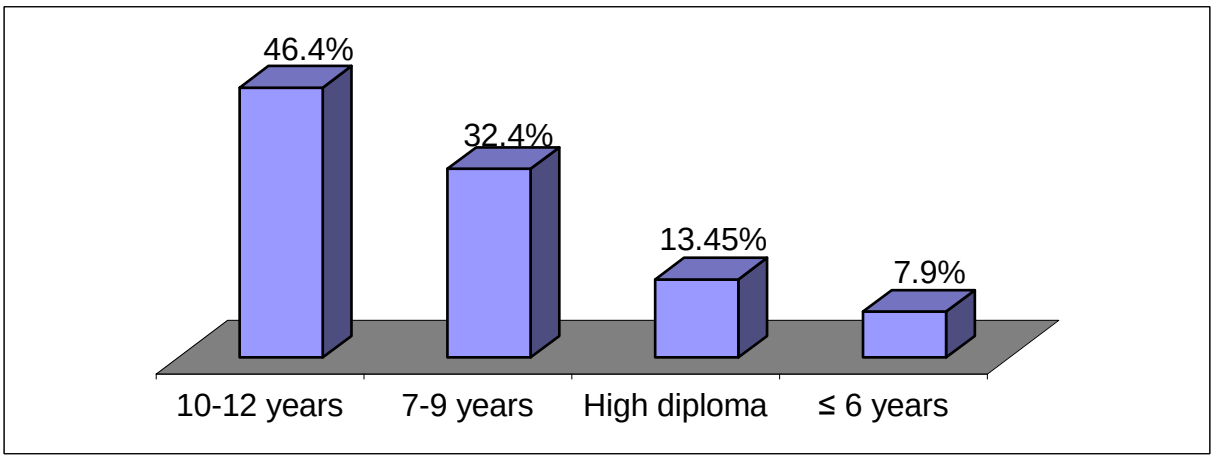


Figure 5.3: Distribution of mothers by level of education

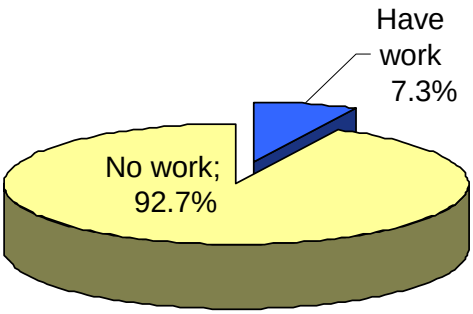


Figure 5.4: Distribution of mothers by working status

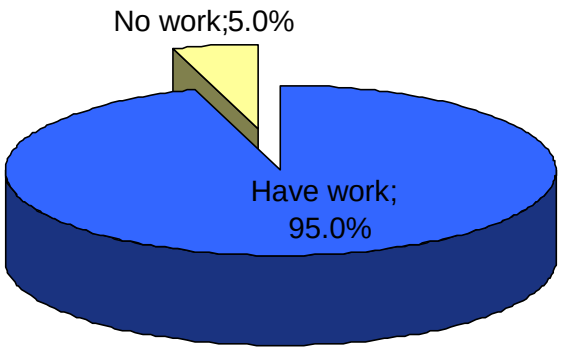


Figure 5.5: Distribution of fathers by working status

5.2.2 Delivery and breastfeeding information:

More than one quarter (26.7%) of the mothers had complications during pregnancy. Most (87.1%) of them had normal delivery and 43.6% had episiotomy (figure 5.6).

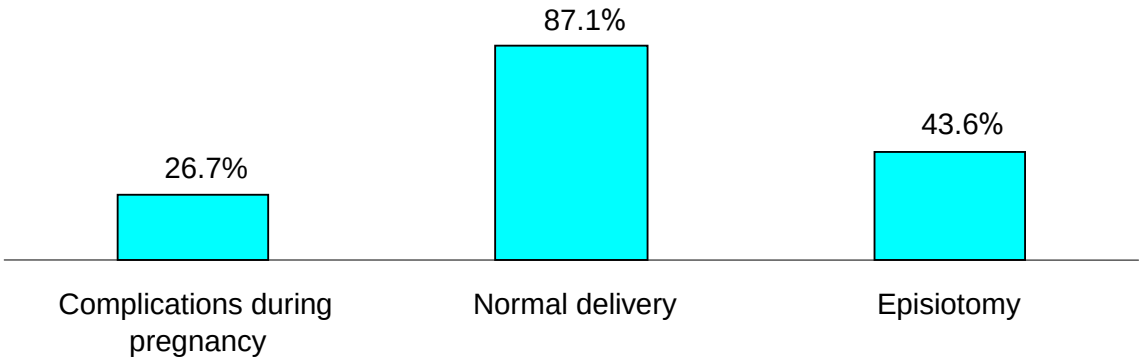


Figure 5.6: Mother's complications during pregnancy and mode of delivery

When examining the mothers' knowledge about colostrums and whether they got any information about breastfeeding and breast care during antenatal visits, the study showed that 91.1% of mothers knew about the colostrums and its benefits, and 95.5% gave colostrums to their babies. The nurse and the brochures were the main mothers` source of information (figure 5.7), although 72% got some kind of education and information at the antenatal care clinic.

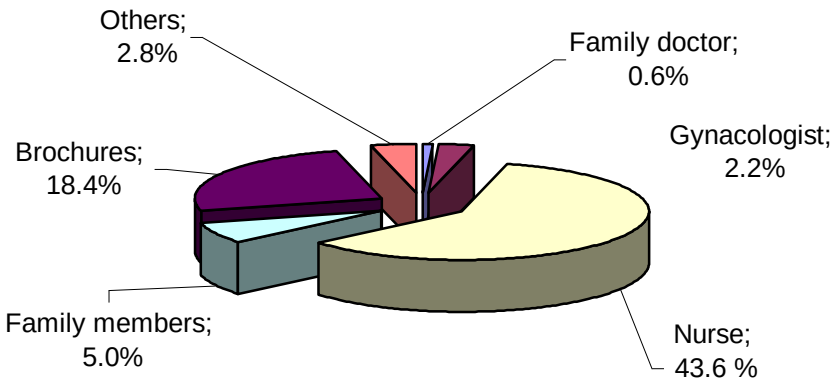


Figure 5.7: Distribution of mothers' sources of information on breastfeeding

5.2.3 Breastfeeding practices

All of the indexed children were breastfed for at least one day and half of them were still on breastfeeding till the day of the interview. Most (91.6%) of the mothers breastfed their infants day and night in response to different child cues as shown in figure (5.8).

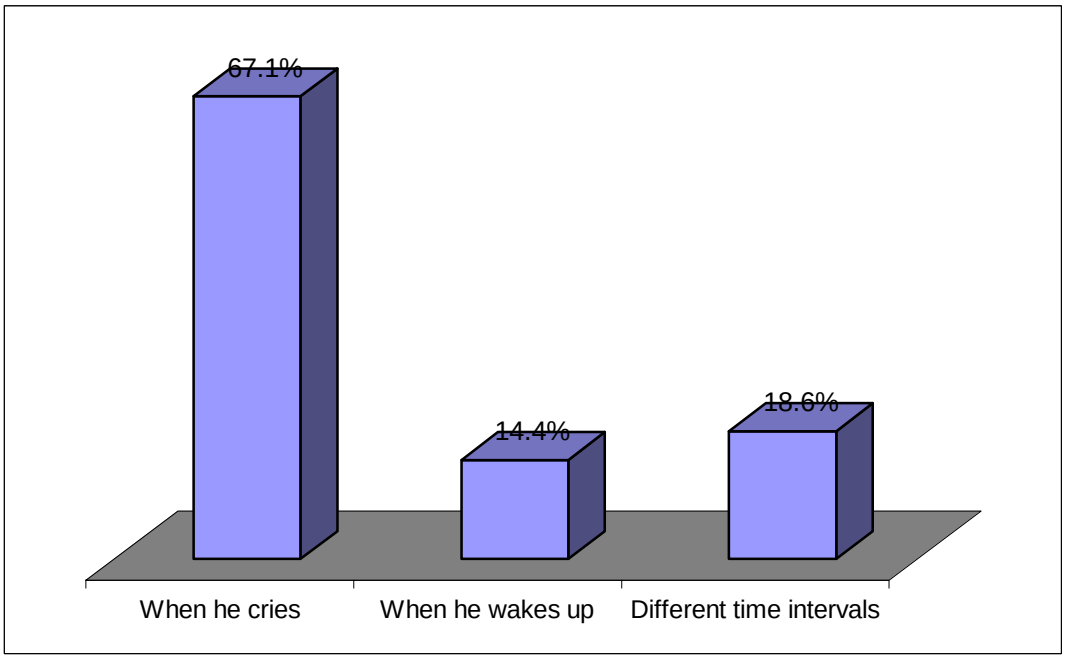


Figure 5.8: Condition and timing of breastfeeding

When examining the mothers' compliance with the current WHO/UNICEF recommendations regarding exclusive breastfeeding (EBF) and the introduction of complementary food (CF), the rate of EBF for 4 months and for 6 months was 10.1% and 3.4% respectively. Also, the rate of full breastfeeding for 4 months postpartum (i.e. exclusive breastfeeding and/or introducing food or formula after 4 months postpartum) was 57.9% and the rate of giving food or formula before 4 months was 42.1%.

Regarding non-human milk 39.3 % of mothers reported that they didn't give their infants any formula. In another section of the questionnaire mothers were asked if they introduced formula to infants, 42.7% of mothers reported that they didn't introduce it till the date of the interview.

A: Rooming in, breastfeeding initiation and use of pacifier

As shown in figure (5.10), 93.9% of the studied mothers reported that their newborns stayed in the same room with them, and that their newborns didn't get anything to drink or suck before first breastfeeding initiation. The proportion of breastfeeding initiation (i.e. baby being put to breast within an hour of birth) was 72.5% (figure 5.11) and 23.6% had their babies first put to their breast with 2 to 8 hour postpartum. Reported reasons for delaying breastfeeding initiation were: mother was tired, insufficient milk production and the baby was weak and couldn't suck.

Regarding the use the pacifier, out of 172 respondents only 20.3% reported that they do use it.

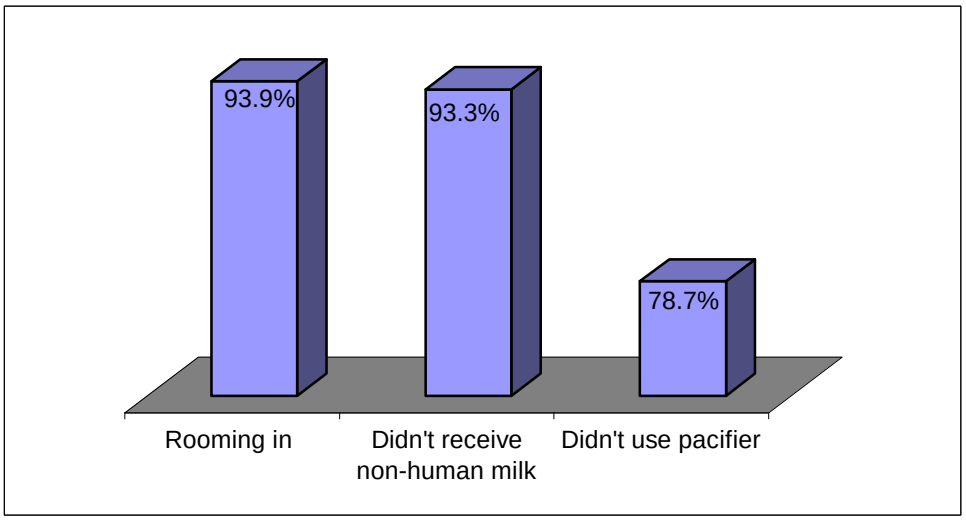


Figure 5.10: Rate of rooming in, receiving formula at birth and use of pacifier

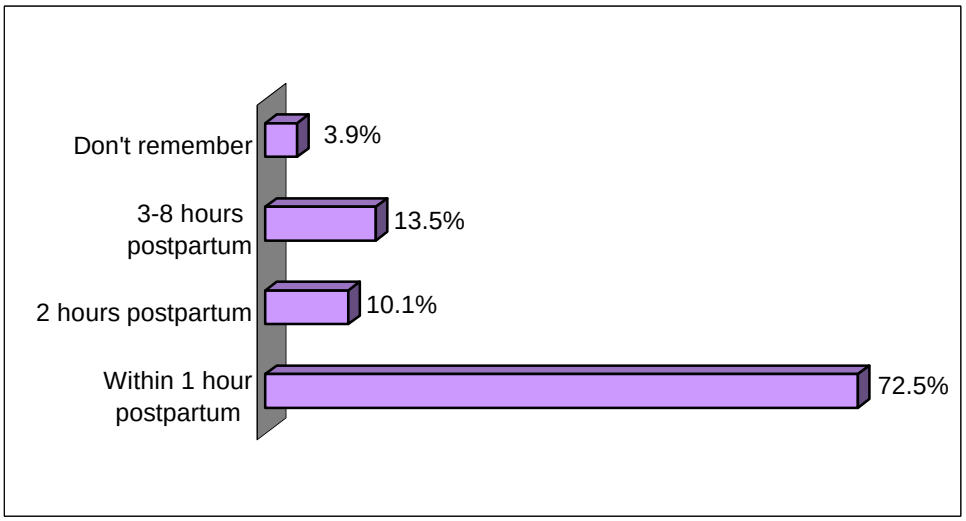
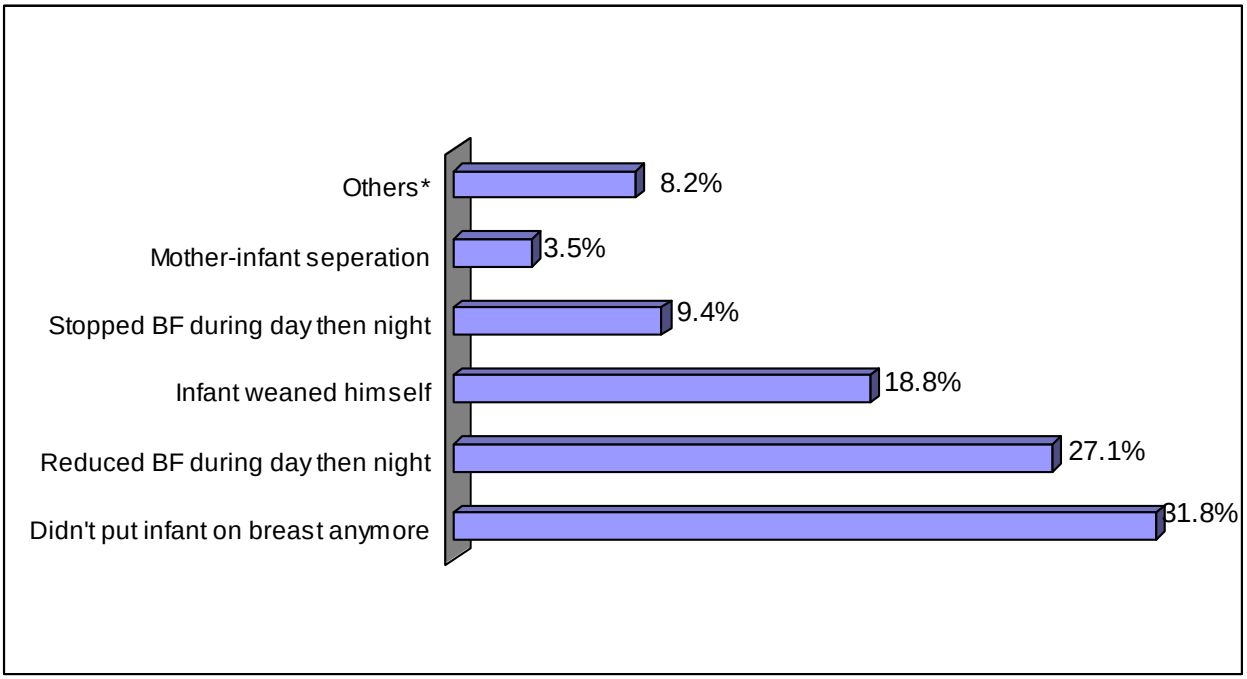


Figure 5.11: Rate of breastfeeding initiation

B: Breastfeeding continuation and pattern of breastfeeding cessation:

Until the day of the interview about half (52.5%) of the mothers were still breastfeeding their indexed child. Twenty two (22%) of the mothers stopped breastfeeding gradually and the rest (25.4%) stopped breastfeeding in an abrupt way mainly by stop putting their infants on their breast (31.8%). Other reported ways of breastfeeding cessation was reducing the number of feedings during the day then during the night (figure 5.12). The mean age of breastfeeding cessation (SD) was 9.95 (±5.54) months, and 17.7% of mothers stopped breastfeeding between 6-12 months of age (figure 5.13). Also, the data showed that the primary reasons for breastfeeding cessation were the occurrence of a new pregnancy (27.1%) and infants who weaned themselves (11.8%) (figure 5.14).



* Other reasons were insufficient milk production and baby is always hungry.

Figure 5.12: Ways of breastfeeding cessation

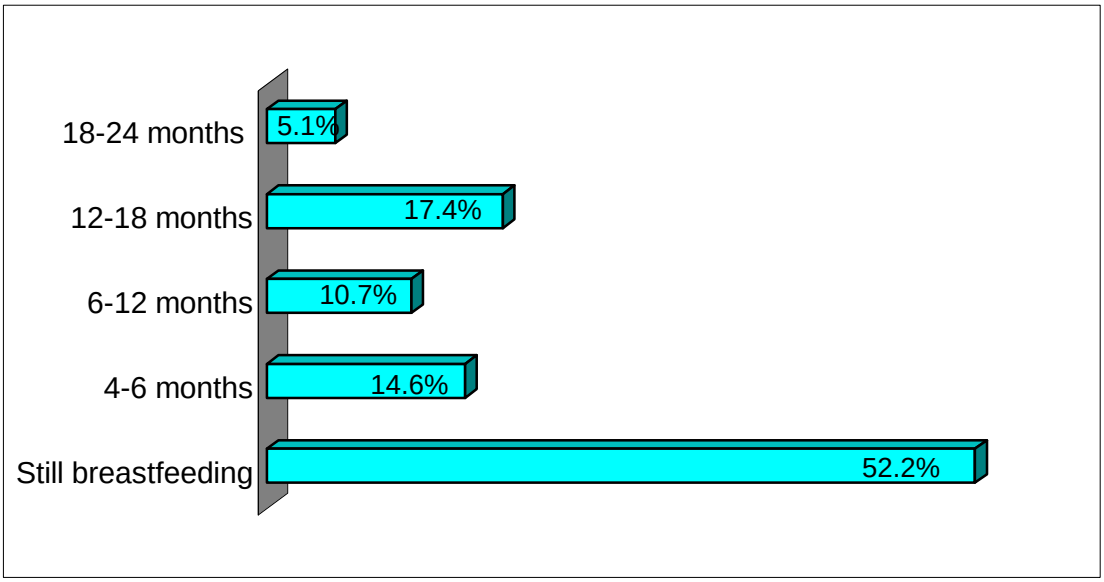


Figure 5.13: Age at breastfeeding cessation

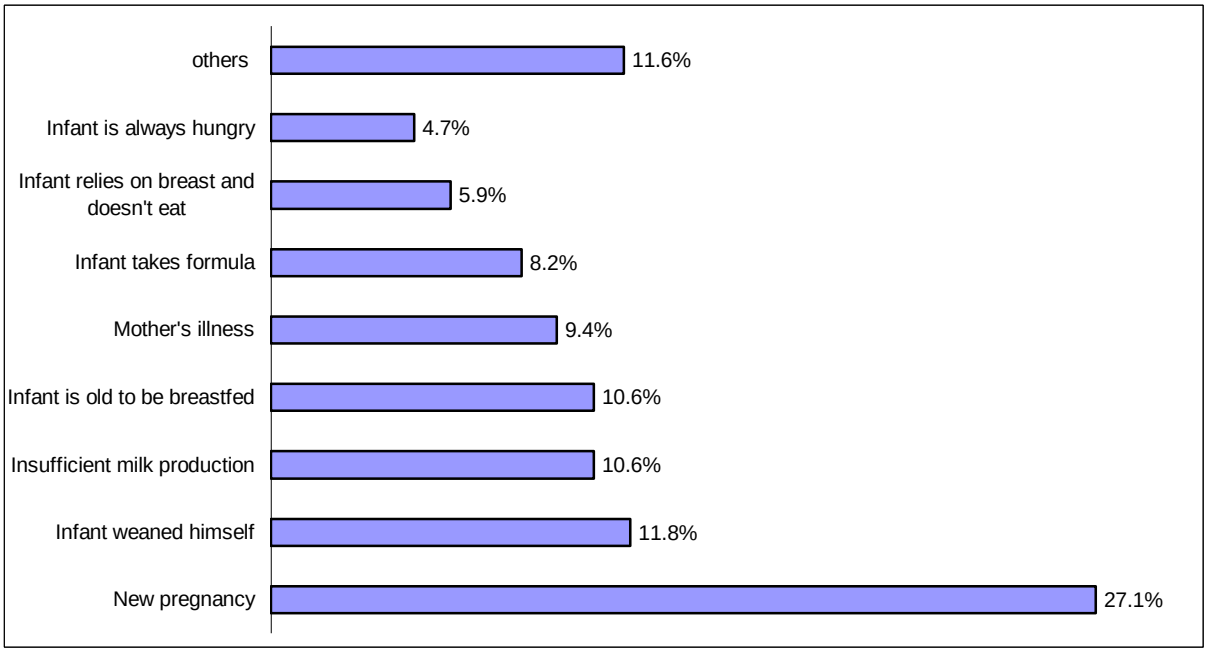


Figure 5.14: Reasons for breastfeeding cessation (%)

5.2.4. Complementary feeding:

Different food items were listed in the questionnaire namely non-human milk, yogurt, cheese, fruits, vegetables, bread, rice, biscuits, red and white meat, legumes, eggs, snacks and mixed dishes (family dishes). As for beverages, mothers were asked when they started introducing water, tea and herbal drinks such as chamomile, anis, or mixed herbs (with or without sugar). The number of children in each category was too small; therefore we added the items forming several food groups. The results of the starting age of all listed food items can be seen in appendix (2).

Figure (5.15) presents the percentages of children receiving different foods and food groups regardless the starting age. More than 90% of children received dairy products and fruits till the date of the interview. About 75% received muhalabiah or sahlab (cooked cow's milk with additives such as sugar and starch). Red or white meats which

are major sources of protein are introduced to 59.6% of the indexed children. On the other hand around 30% received honey or dibes (concentrated grape juice) and only 20.2% of the children received ready made baby food.

As for beverages it was noticed that 94.9% of the children received plain water and more than half of the indexed children (57.3%) received formula till the date of the interview. As for tea or sweetened water it was introduced to 36% of the indexed children.

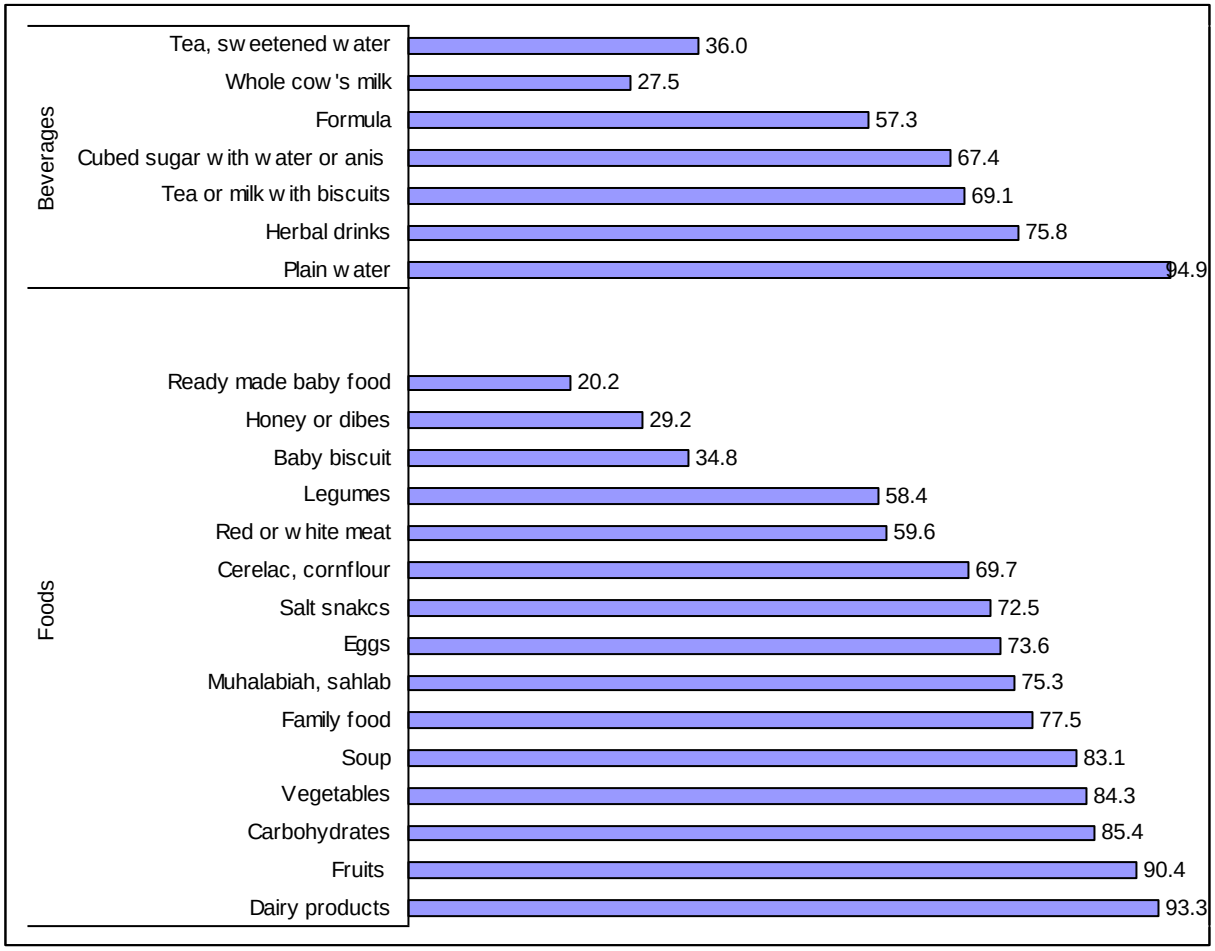


Figure 5.15: Percentages of the indexed child's consumption of different foods and food groups and beverages

To assess the time of introducing complementary food to the indexed children at age 0-3 months, figure (5.16) showed that the major food items introduced to the infants at this age group were muhalabiah and sahlab (14.6%) then fruits. Also, mothers

introduced cubed sugar with water or anis to 62% of the children, more than half of them had herbal drinks (chamomile, anis or mixed herbs), and one third had non-human milk.

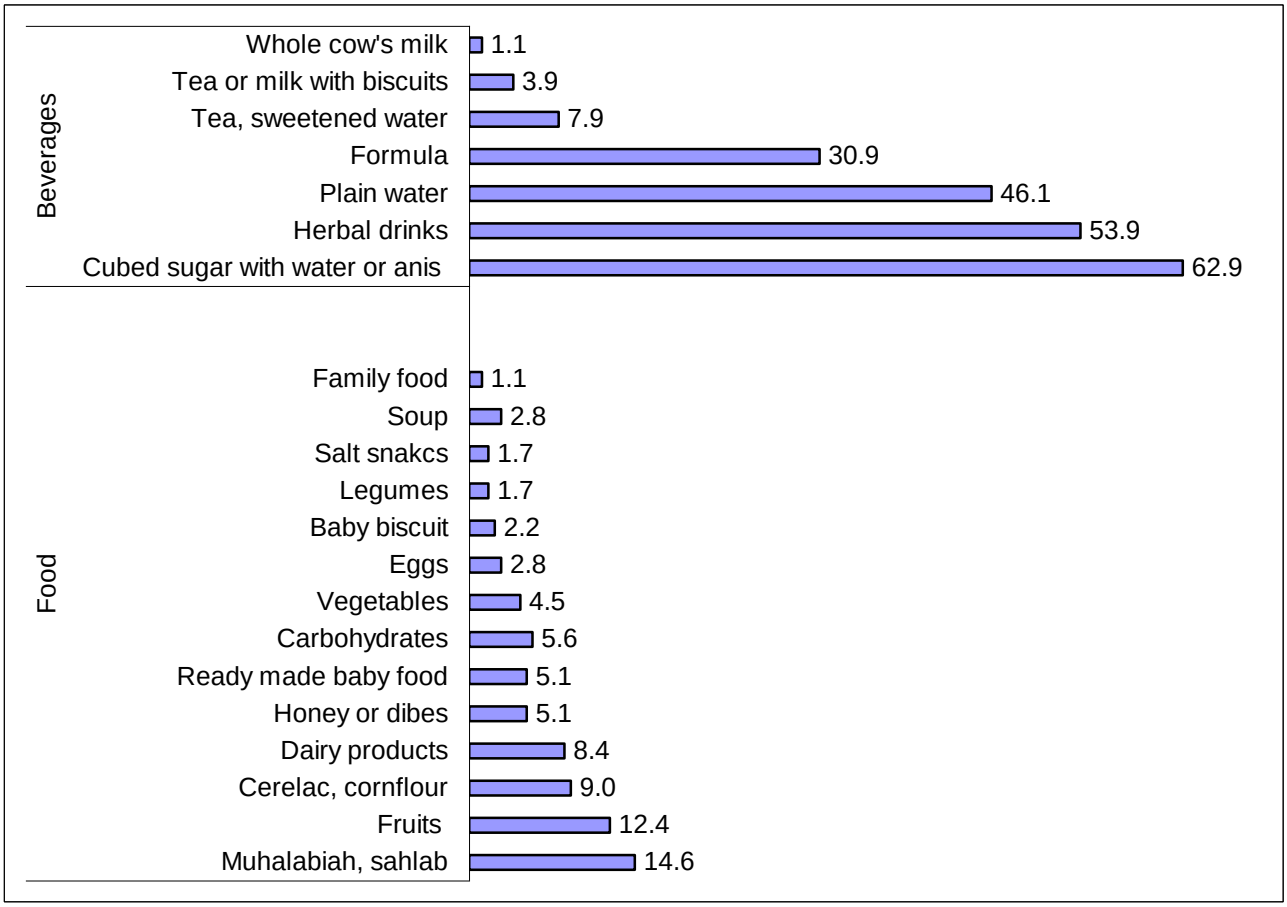


Figure 5.16: Percentages of children receiving different foods and beverages between 0-3 months of age

When assessing the food introduced to infants at age 4-6 months, figure (5.17) showed that fruits and dairy products were the most common food introduced followed by vegetables. Red or white meats were the least to be introduced. On the other hand plain water was introduced to 32.6% of the children at this age group and 6.2% of the indexed children started receiving formula .

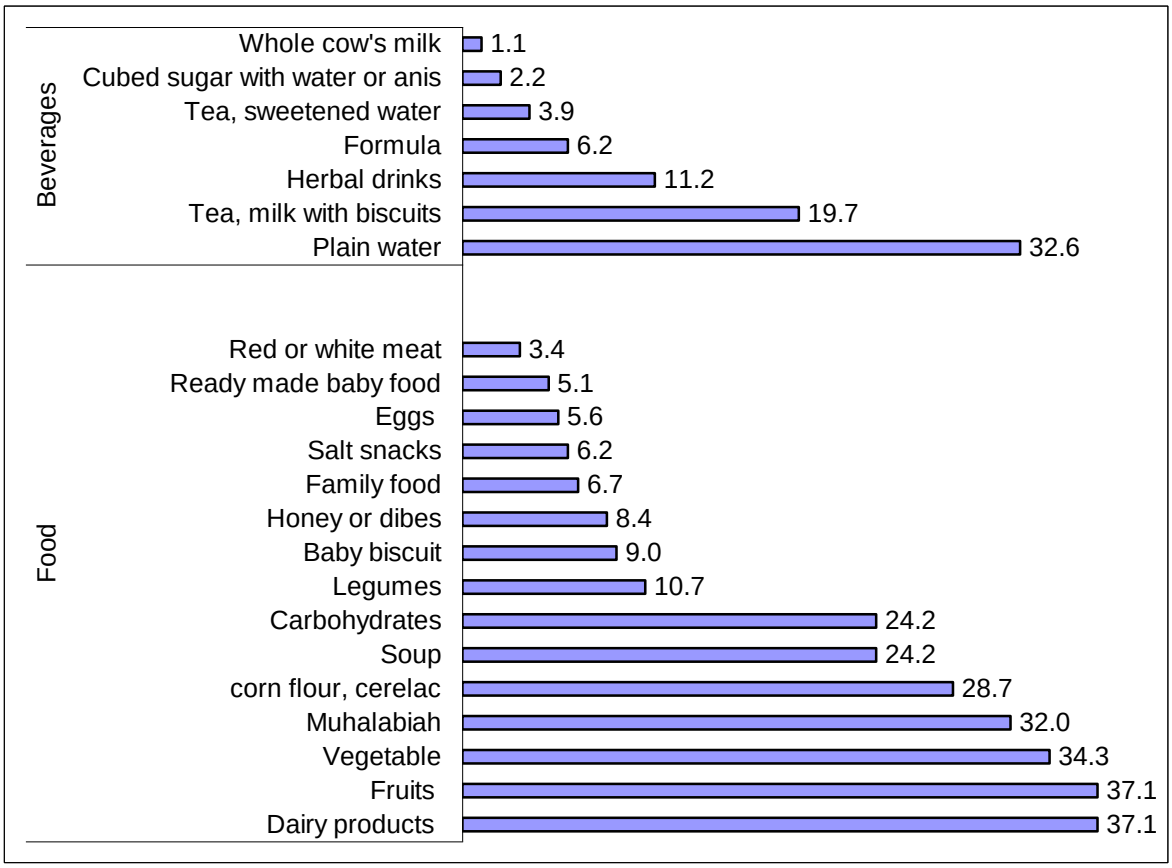


Figure 5.17: Percentages of children receiving different foods and beverages between 4-6 months of age

Between 6-12 months of age, mothers introduced cereal and cereal products including bread, rice, rice with broth, mashed potatoes to their children and almost half of them started introducing eggs (figure 5.18). Salt snacks such as bamba and chips were introduced to 41.6% of the children. Red or white meat was the least added too. Whole cow's milk was introduced to 9% of the indexed children at this age group compared to 1.1% were being introduced before 6 months of age. In addition the consumption of formula almost doubled; from 6.2% between 4-6 moths of age to 15.7% in this age group.

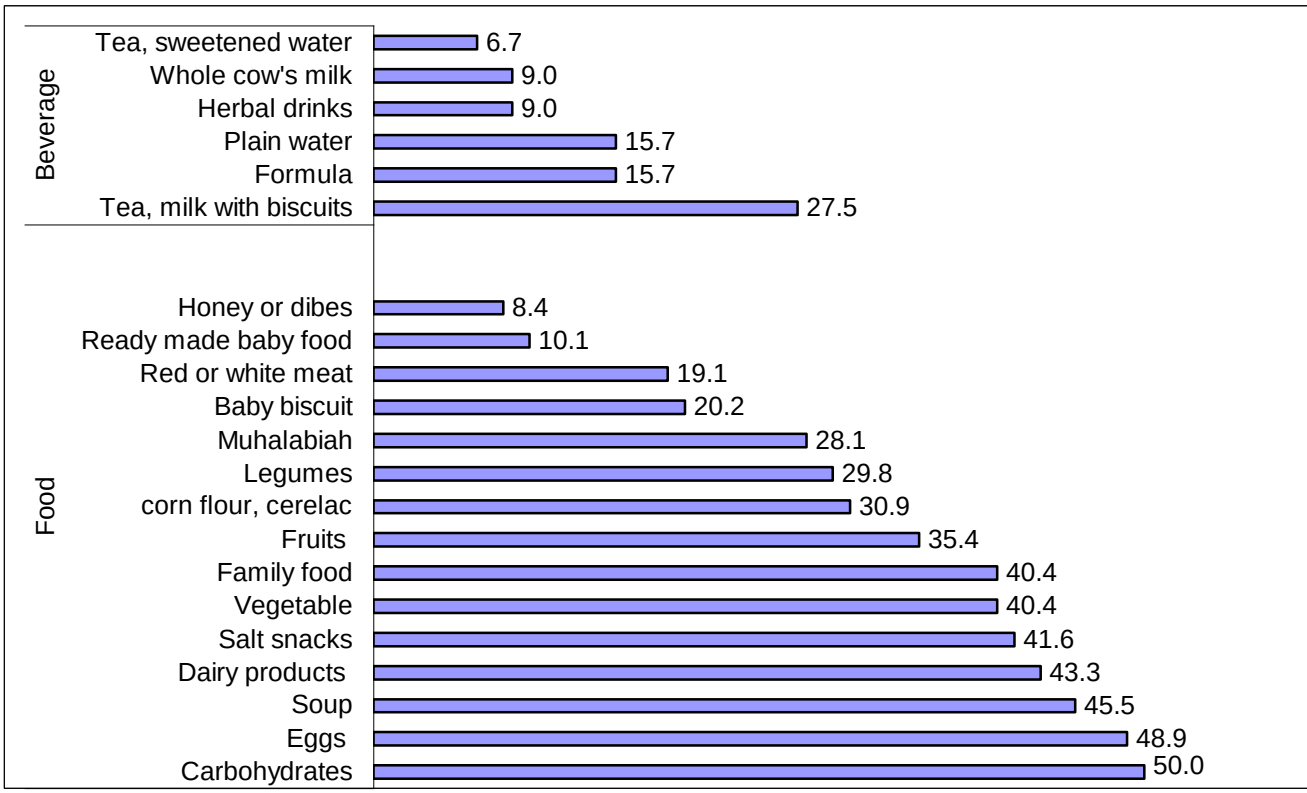


Figure 5.18: Percentages of children receiving different foods and beverages between 6-12 months of age

After the infant's first year of life it was observed that the mother would introduce all kinds of food items to her child. Red or white meats are introduced to around one third of the indexed children (figure 5.19) and 18% of them would start receiving milk or tea with biscuits.

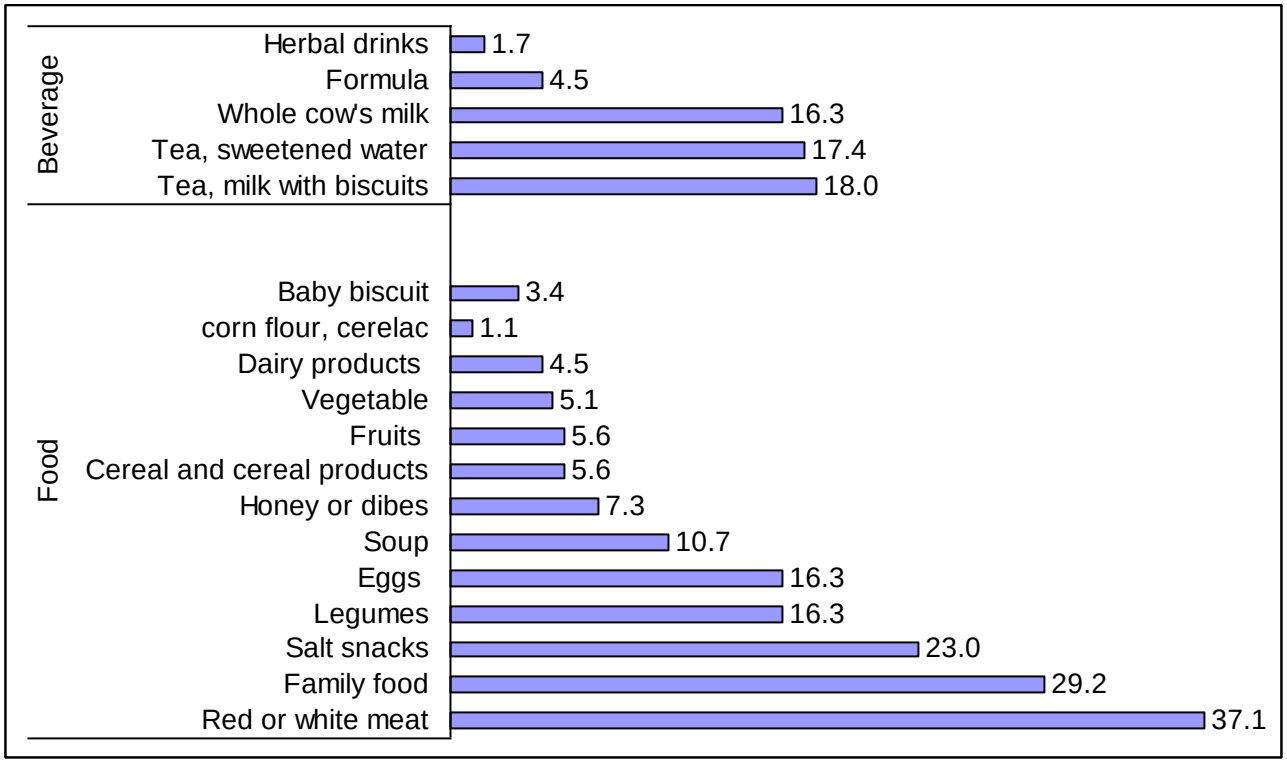


Figure 5.19: Percentages of children receiving different foods and beverages at 12 months of age or above

5.2.5 knowledge and sources of information about complementary feeding (CF):

Figure (5.20) shows the mother's sources of information regarding complementary feeding. Around Thirty eight percent (37.6%) of the mothers reported that they didn't get any information while 27.5% of them based their practices with the indexed child on their past experience or ask other family members. It was observed that the nurses' advice (15.7%) was a better source of information compared to the physicians or medical advice (3.9%).

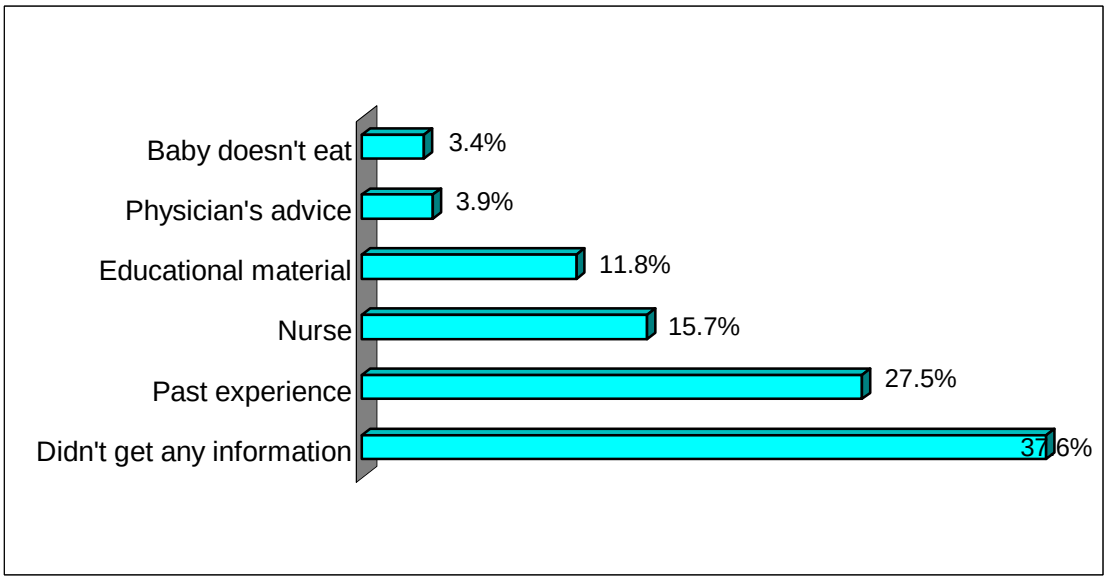


Figure 5.20: Rate of mother's sources of information about complementary feeding

5.2.6 First food items introduced to infants:

Figure (5.21) shows the percentage of children receiving different food items as their first baby food. Mothers fed 39% of indexed children with home made cow's milk cooked with different additives like rice, starch, corn flour and sugar as their first food, followed by cerelac or rice, then custard (which is a ready made sweet made up of cooked milk with eggs and sugar) and vegetables whether mashed or vegetable soup. Other food items such as plain or sweetened yogurt, cubed sugar with anis, herbal drinks and ready made baby food (gerber) were also introduced to infants as their first baby food at much lower percentages.

As shown in figure (5.22) more than half (51.7%) of the indexed children received their first food between 4-6 months of age and 19.7% at the age of 6 months or above.

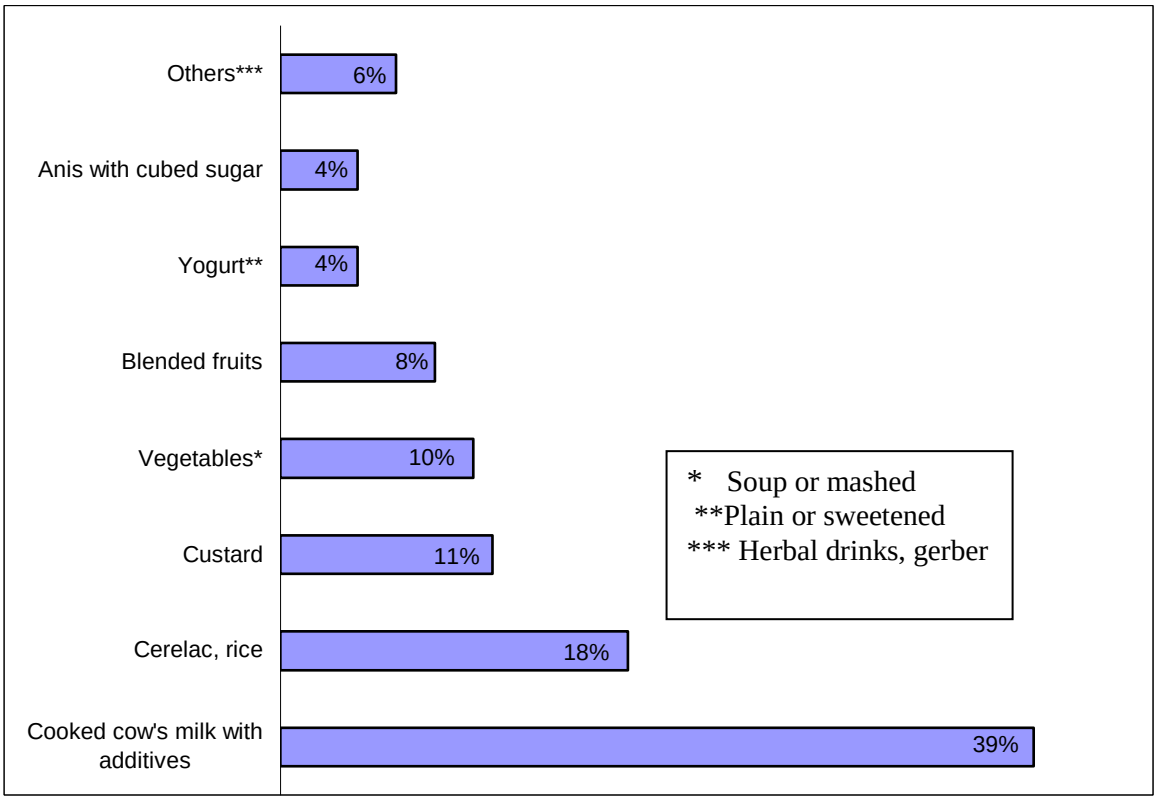


Figure 5.21: Percentages of first food items introduced to indexed child

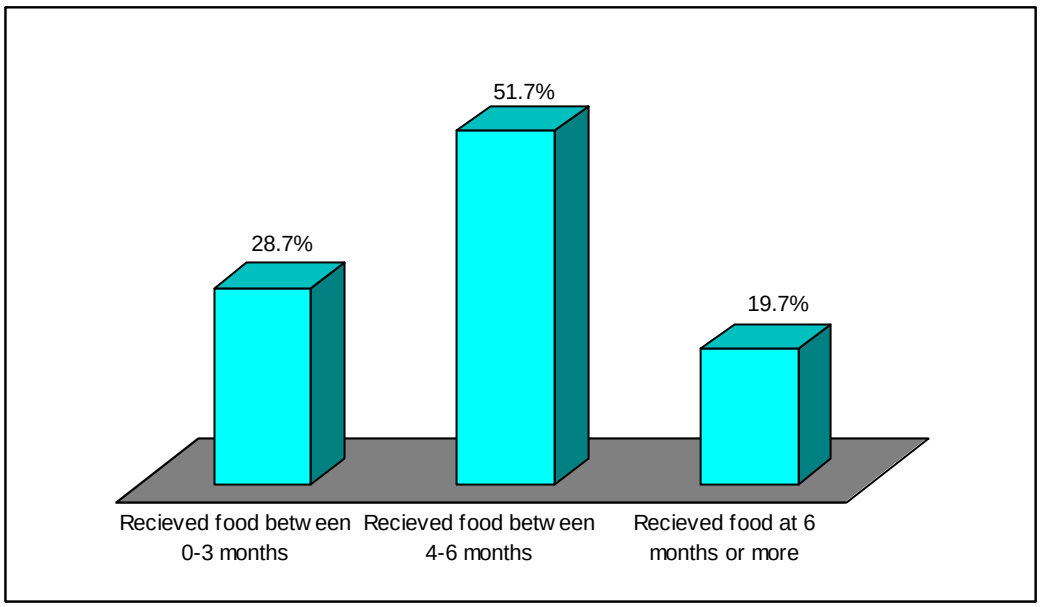
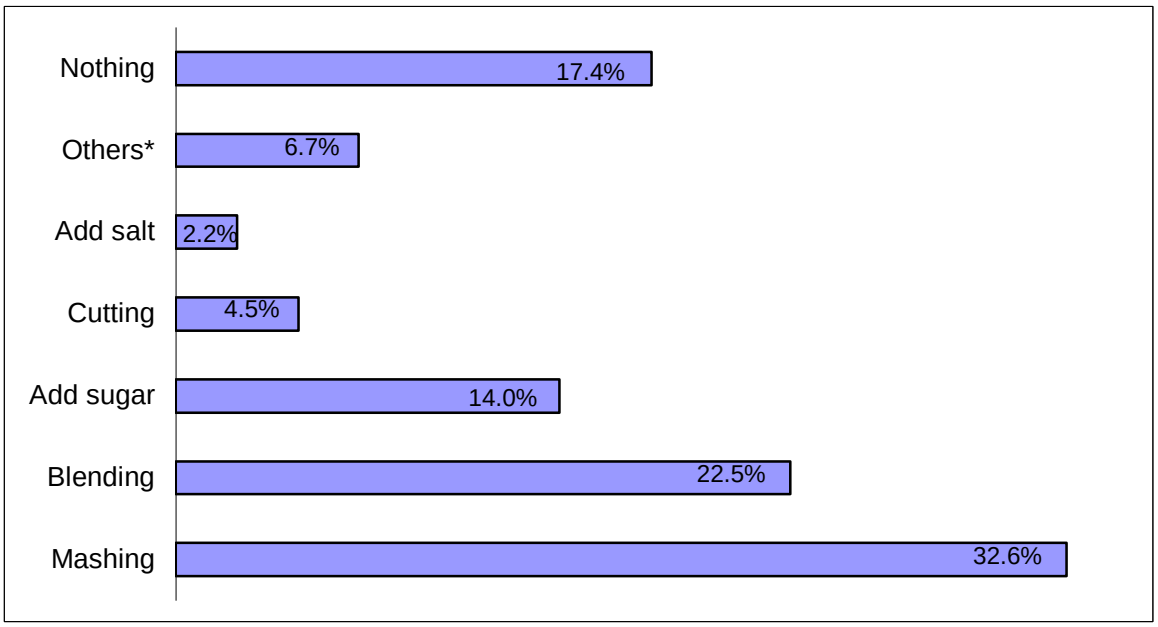


Figure 5.22: Children receiving their first food item at different age groups (%)

As shown in figure (5.23) different methods were used by mothers to make the food more acceptable to their child. Most reported methods were mashing the food manually (32.6%) and blending (22.5%). Adding sugar or salt was less practiced, and only 17% of the mothers did nothing to make food more acceptable. Other reported ways were decorating the child's plate (2.2%) and leaving the child hungry till he asks for food (1.1%).



*Others: other reported ways were plate decoration and making the child hungry.

Figure 5.23: Percentages of ways for making food more appealing for the child

As illustrated in figure (5.24) around one third of the mothers fed their child themselves. When being away from the child the mother explains to the caregiver them. Giving the grandmothers this responsibility was represented by 28.7% of the sample.

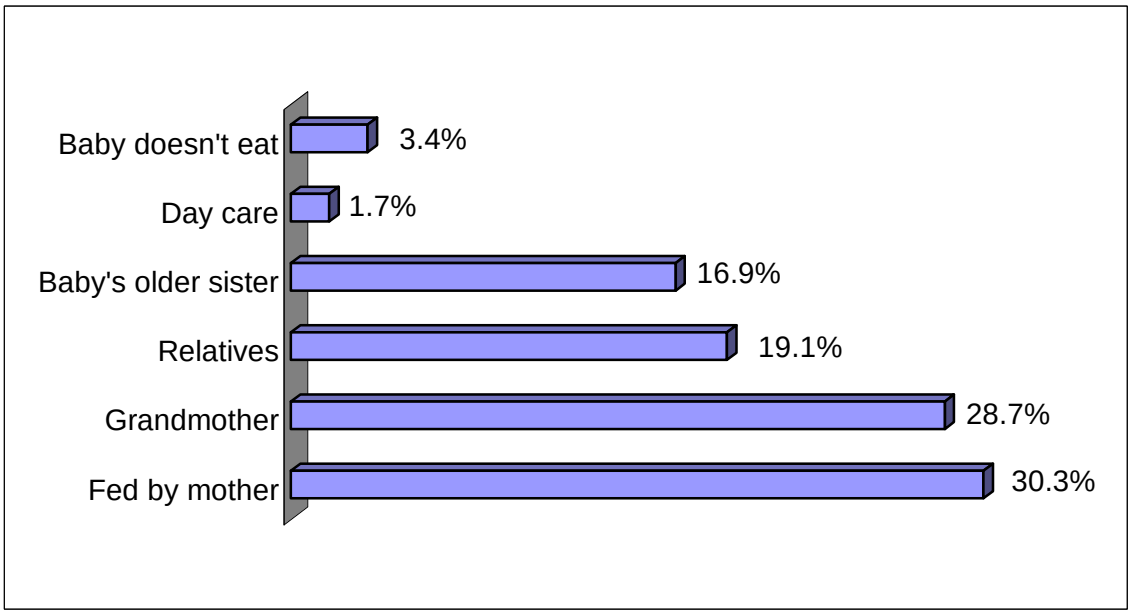


Figure 5.24: Percentages of people feeding the indexed child when the mother is away

5.3 Part II: Univariate results analysis

5.3.1 Infant feeding status and demographic variables

As mentioned earlier in this chapter full breastfeeding for 4 months, i.e. exclusive breastfeeding and/or predominant breastfeeding till 4 months constitute 57.9% of the indexed children. Parents working status was not included in this analysis since most mothers do not work, and only 5% of fathers did not have a work. Variables in table (5.1) were categorized except for mother's educational level. As shown in table (5.1) a statistically significant association was found between mother's age and infant feeding status (p-value = 0.03). No statistically significant association was found between the feeding status and mother's educational level or number of people living in the house.

Table 5.1: Associations between infant feeding status and demographic variables

	No=178 (100%)	**Full BF No= 103 (57.9%)**	**Not full BF No = 75 (42.1%)**	**P- value**
	Total (%)	%	%	
Mother's age				
< 20 years	6.7	1.9	13.3	
20-35 years	84.8	86.4	82.7	**0.03**
> 35 years	8.4	11.7	4.0	
Mother's education				
≤ 6 years	7.9	8.7	6.7	
7-9 years	32.6	35.0	29.3	0.35
10-12 years	46.1	46.6	45.3	
high diploma	13.5	9.7	18.7	
Number of people living in the house				
< 6 individuals	42.7	39.8	46.7	0.44
> 6 individuals	57.3	60.2	53.3	

5.3.2 Infant feeding status and delivery characteristics, the use of pacifier:

As shown in table (5.2) there is a significant association between infant feeding status and mode of delivery whether normal or cesarean (p value = 0.02). No significant associations were found between infant feeding status and other delivery characteristics, i.e. having any episiotomy during delivery, getting any education about breastfeeding and breast care during antenatal visits and the use of pacifier. Rooming in was not included in the associations since more than 90% of newborns stayed in the same rooms with their mothers.

In table (5.3), only the age of breastfeeding cessation had a significant difference with full breastfeeding , but neither the child birth order nor his gender showed any association with the full breastfeeding (table 5.4).

Table 5.2: Associations between infant feeding status and delivery characteristics

	No=178 (100%)	**Full BF No= 103 (57.9%)**	**Not full BF No = 75 (42.1%)**	
	Total (%)	%	%	**P- value**
Education about BF during antenatal visits				
Yes	72.5	72.8	72.0	0.68
No	27.6	272.	28.0	
Mode of delivery				
Normal	87.1	92.2	80.0	**0.02**
Cesarean	12.9	7.8	20.0	
Episiotomy				
Yes	43.3	45.6	40.0	0.54
No	56.7	54.4	60.0	
Use of pacifier*				
Yes	20.3	18.8	22.5	0.57
No	79.7	81.2	77.5	

* Total number of respondents was 172

Table 5.3: Associations between infant feeding status and breastfeeding practices

	No=172 (100%)	**Full BF No= 103 (57.9%)**	**Not full BF No = 75 (42.1%)**	
	Total (%)	%	%	**P- value**
Frequency of BF*				
During day and night	97.6	96.1	100.0	0.16
Only during the day	2.4	3.9	0.0	
When mother knows when to BF*				
When the baby cries	67.1	68.6	64.6	
When the baby wakes up	14.4	14.7	13.8	0.73
Different time intervals	18.6	16.7	21.5	
BF cessation				
Abrupt	25.4	24.5	26.7	0.94
Gradual	22.0	22.5	21.3	
Age of BF cessation				
< 6 months	13.7	4.9	26.4	
6-12 months	17.7	20.4	13.9	**0.00**
> 12 months	15.4	22.3	5.6	

* Number of respondents is 167, missing cases is 6.2%.

Table 5.4: Associations between Infant feeding status and the child's characteristics

		Full BF No= 103 (57.9%)	**Not full BF No = 75 (42.1%)**	
	Total (%)	%	%	**P- value**
Gender				
Male	56.7	57.3	56.0	0.88
Female	43.3	42.7	44.0	
Child order				
1st or 2nd	42.1	39.8	45.3	
3rd, 4th or 5th	39.9	40.8	38.7	0.72
6th or more	18.0	19.4	16.0	

5.3.2 Associations between the consumption of selected foods and beverages and demographic variables

Tables (5.5), (5.6) and (5.7) show the associations between the consumption of selected foods and food groups at any age with the demographic characteristics. As shown in table (5.5) there is a significant association between the consumption of carbohydrates, fruits, vegetables and dairy products by the indexed child and the number of people living in the house (p-values = 0.05, 0.004, 0.04, 0.03 respectively). Table (5.6) shows a significant associations between the consumption of family foods and the number of people living in the house (p-value = 0.02). Another significant association was found between mother's age and the introduction of meat whether white or red meat (p-value=0.01).

Table 5.5: Associations between the consumption of carbohydrates (CHO), fruits, vegetables, dairy products and demographic variables

		CHO		**Fruits**		**Vegetables**		**Dairy products**	
		No.= 152 (85.4)	**P-value**	**No=161 (90.4)**	**P-value**	**No=150 (84.3)**	**P-value**	**No=166 (93.3)**	**P-value**
	Total (%)	%		%		%		%	
Mother's age:									
< 20 yrs	4.5	3.3		3.7		3.3		4.2	
20-35 yrs	87.6	88.8	0.17	87.6	0.16	89.3	0.17	88.0	0.80
> 35 yrs	7.9	7.9		8.7		7.3		7.8	
Mother's level of education									
≤ 6 yrs	7.9	7.9		7.5		8.0		7.8	
7-9 yrs	32.6	34.9	0.45	32.9	0.93	32.7	0.34	32.5	0.96
10-12 yrs	46.1	44.1		46.0		44.0		45.8	
High diploma	13.5	13.2		13.7		15.3		13.9	
Number of people living in the house									
< 6 individuals	42.7	39.5	**0.05**	39.1	**0.004**	39.3	**0.04**	40.4	**0.03**
> 6 individuals	57.3	60.5		60.9		60.7		59.6	

Table 5.6: Associations between the consumption of muhalabiah, meat, eggs, family foods, honey and demographic variables

		muhalabiah		**Meat**		**Eggs**		**Family foods**		**Honey**	
		No.=134 (75.3)	**P-value**	**No=106 (59.6)**	**P-value**	**No.= 131 (73.6)**	**P-value**	**No.=138 (77.5)**	**P-value**	**No.=52 (29.2)**	**P-value**
	Total (%)	%				%		%		%	
Mother's age:											
< 20 yrs	4.5	5.2		0.9		3.1		3.6		3.8	
20-35 yrs	87.6	88.1	0.46	88.7	**0.01**	88.5	0.29	89.1	0.47	86.5	0.83
> 35 yrs	7.9	6.7		10.4		8.4		7.2		9.6	
Mother's level of education											
≤ 6 yrs	7.9	9.0		5.7		7.6		8.0		7.7	
7-9 yrs	32.6	32.8	0.46	39.6	0.06	37.4	0.06	37.0	0.08	34.6	0.70
10-12 yrs	46.1	43.3		40.6		40.5		41.3		40.4	
High diploma	13.5	14.9		14.2		14.5		13.8		17.3	
Number of people living in the house											
< 6 individuals	42.7	39.6	0.16	40.6	0.54	40.5	0.39	37.7	**0.02**	34.6	0.19
> 6 individuals	57.3	60.4		59.4		59.5		62.3		65.4	

Table 5.7: Associations between the consumption of formula, cow's milk, water, herbal drinks and demographic variables

		Formula		**Cow's milk**		**Water**		**Herbal drinks**	
		No.=102 (57.3)	**P-value**	**No.=49 (27.5)**	**P-value**	**No.=169 (94.9)**	**P-value**	**No.=135 (75.8)**	**P-value**
	Total (%)	%		%		%		%	
Mother's age:									
< 20 yrs	4.5	6.9		2.0		4.7		5.2	
20-35 yrs	87.6	86.3	0.16	91.8	0.52	87.0	0.51	87.4	0.69
> 35 yrs	7.9	6.9		6.1		8.3		7.4	
Mother's level of education									
≤ 6 yrs	7.9	6.9		8.2		7.7		8.1	
7-9 yrs	32.6	28.4	0.46	38.8	0.28	31.4	0.36	36.3	0.16
10-12 yrs	46.1	50.0		34.7		46.7		41.5	
High diploma	13.5	14.7		18.4		14.2		14.1	
Number of people living in the house									
< 6 individuals	42.7	48.0	0.13	42.9	1.00	42.6	1.00	40.7	0.38
> 6 individuals	57.3	52.0		57.1		57.4		59.3	

5.3.3 Associations between the consumption of selected foods and beverages and delivery characteristics, the use of pacifier:

As shown in table (5.8) no significant association was found between getting education about BF during antenatal visits, mode of delivery, the occurrence of episiotomy or the use of pacifier and the consumption of carbohydrates, fruits, vegetables or dairy products. Table (5.9) shows a significant association between the introduction of family food and the no-use of pacifier (p-value= 0.02). Another significant association was found between getting antenatal education and the introduction of herbal drinks (p-value= 0.05), and the no-use of pacifier and adding formula to infants feeding (p=0) (table 5.10).

Table 5.8: Associations between the consumption of different foods and delivery characteristics

		Carbohydrates		**Fruits**		**Vegetables**		**Dairy products**	
		No.= 152 (85.4)	**P value**	**No.=161 (90.4)**	**P value**	**No.=150 (84.3)**	**P value**	**No.=166 (93.3)**	**P value**
	Total (%)	%		%		%		%	
Education about BF during antenatal visits									
Yes	72.5	70.4	0.32	72.0	0.89	72.0	0.88	71.1	0.30
No	27.0	28.9		27.3		27.3		28.3	
Mode of delivery									
Normal	87.1	86.8	1.00	87.0	1.00	87.3	0.76	86.7	1.00
Cesarean	12.9	13.2		13.0		12.7		13.3	
Episiotomy									
Yes	43.3	42.8	0.83	42.9	0.80	43.3	1.00	50.0	0.77
No	56.7	57.2		57.1		56.7		50.0	
Use of pacifier									
Yes	20.3	19.6	0.59	19.9	0.74	20.7	1.00	20.5	1.00
No	79.7	80.4		80.1		79.3		79.5	

Table 5.9: Associations between the consumption of muhalabiah, meat, eggs, family foods honey and delivery characteristics

		Muhala-biah		Meat		Eggs		Family foods		Honey	
	Total	**No. =134 (75.3)**	**P value**	**No.=106 (59.6)**	**P value**	**No.= 131 (73.6)**	**P value**	**No.=138 (77.5)**	**P value**	**No.=52 (29.2)**	**P-value**
	(%)	%		%		%		%		%	
Education about BF during antenatal visits											
Yes	72.5	69.4	0.26	70.8	0.35	71.0	0.67	71.0	0.65	75.0	0.24
No	27.0	29.9		29.2		28.2		28.3		23.1	
Mode of delivery											
Normal	87.1	89.6	0.12	89.6	0.26	86.3	0.80	87.7	0.60	86.5	1.00
Cesarean	12.9	10.4		10.4		13.7		12.3		13.5	
Episiotomy											
Yes	43.3	44.0	0.73	45.3	0.54	43.5	1.00	45.0	0.86	42.3	1.00
No	56.7	56.0		54.7		56.5		55.0		57.7	
Use of pacifier											
Yes	20.3	20.2	1.00	17.5	0.33	21.3	0.67	16.4	**0.02**	26.5	0.21
No	79.7	79.8		82.5		78.7		83.6		73.5	

Table 5.10: Associations between the consumption of formula, cow's milk, water, herbal drinks and delivery characteristics

		Formula		Cow's milk		Water		Herbal drinks	
		No.=102 (57.3)	**P-value**	**No.=49 (27.5)**	**P-value**	**No.=169 (94.9)**	**P-value**	**No.=135 (75.8)**	**P-value**
	Total (%)	%		%		%		%	
Education about BF during antenatal visits									
Yes	72.5	75.5	0.35	79.6	0.08	71.6	0.53	69.6	**0.05**
No	27.0	23.5		18.4		27.8		30.4	
Mode of delivery									
Normal	87.1	86.3	0.82	87.8	1.0	86.4	0.60	87.4	0.80
Cesarean	12.9	13.7		12.2		13.6		12.6	
Episiotomy									
Yes	43.3	48.0	0.17	51.0	0.24	44.4	1.00	43.0	1.00
No	56.7	52.0		49.0		55.6		57.0	
Use of pacifier									
Yes	20.3	29.9	0.00	21.7	0.83	19.6	0.39	22.3	0.38
No	79.7	70.1		78.3		80.4		77.7	

5.3.4 Associations between the consumption of selected foods and beverages and breastfeeding practices

Table (5.11) shows that there is a significant association between age of breastfeeding cessation and the introduction of carbohydrates and dairy products (p-value = 0.001 and 0.04 respectively). As shown in table (5.12) the introduction of family food is significantly associated with the frequency of breastfeeding (p-value = 0.02). Age at which breastfeeding cessation occurs is found to be significantly associated with the introduction of muhalabiah and honey (p-value = 0.01 and 0.03 respectively). A significant association was found between the introduction of formula and the mother's decision when to breastfeed her child (p-value = 0.006 respectively) (table 5.13). Also table (5.14) shows that the introduction of herbal drinks has a significant association with the way breastfeeding cessation is done (p-value = 0.01).

Table 5.11: Associations between the consumption of carbohydrates (CHO), fruits, vegetables, dairy products, meat and breastfeeding practices :

		CHO		Fruits		Vegetables		Dairy products	
	Total	No.= 152 (85.4)	P-value	No.=161 (90.4)	P-value	No.=150 (84.3)	P-value	No.=166 (93.3)	P-value
	(%)	%		%		%		%	
Frequency of BF*									
During day and night	97.6	97.9	0.5	97.3	1.00	97.8	0.52	97.8	0.26
Only during the day	2.4	2.1		2.7		2.2		2.2	
When mother knows when to BF*									
When the baby cries	67.1	67.4		67.3		68.3		67.7	
When the baby wakes up	14.4	14.2	0.98	14.0	0.92	12.9	0.50	13.5	0.55
Different time intervals	18.6	18.4		18.7		18.7		18.7	
BF cessation									
Abrupt	25.4	53.8	1.00	75.0	0.62	50.0	1.00	53.0	1.00
Gradual	22.0	46.3		25.0		50.0		47.0	
Age of BF cessation									
< 6 mo	13.7	14.0		13.9		14.2		14.1	
6-12 mo	17.7	20.7	**0.001**	19.0	0.21	19.6	0.11	19.0	**0.04**
> 12 mo	15.4	18.0		16.5		16.9		16.6	

* Number of respondents is 167, missing cases is 6.2%.

Table 5.12: Associations between the consumption of eggs, family foods, honey, formula cow's milk and breastfeeding practices

		Muhalabiah		**Meat**		**Eggs**		**Family foods**		**Honey**	
		No.=134 (75.3)	**P-value**	**No.=106 (59.6)**	**P-value**	**No.= 131 (73.6)**	**P-value**	**No.=138 (77.5)**	**P-value**	**No.=52 (29.2)**	**P-value**
	Total (%)	%				%		%		%	
Frequency of BF*											
During day and night	97.6	97.6	1.00	98.0	1.00	98.3	0.30	99.2	**0.04**	98.0	1.00
Only during the day	2.4	2.4		2.0		1.7		8.		2.0	
When mother knows when to BF*											
when the baby cries	67.1	66.4		64.3		67.1		68.8		59.2	
when the baby wakes up	14.4	15.2	0.87	15.3	0.65	14.4	0.46	13.3	0.67	18.4	0.37
Different time intervals	18.6	18.4		20.4		18.6		18.0		22.4	
BF cessation											
Abrupt	25.4	54.2	1.00	58.2	0.11	54.7	0.73	56.0	0.29	51.6	0.82
Gradual	22.0	45.8		41.8		45.3		44.0		48.4	
Age of BF cessation											
< 6 mo	13.7	13.7		14.4		14.7		13.2		13.5	
6-12 mo	17.7	21.4	**0.01**	26.0	0.0	23.3	0.0	21.3	0.0	30.8	**0.03**
> 12 mo	15.4	18.3		23.1		18.6		19.9		15.4	

* Number of respondents is 167, missing cases is 6.2%.

Table 5.13: Associations between the consumption of formula, cow's milk, water, herbal drinks and breastfeeding practices

		Formula		**Cow's milk**		**Water**		**Herbal drinks**	
		No.=102 (57.3)	**P-value**	**No.=49 (27.5)**	**P-value**	**No.=169 (94.9)**	**P-value**	**No.=135 (75.8)**	**P-value**
	Total (%)	%		%		%		%	
Frequency of BF*									
During day and night	97.6	96.7	0.63	97.8	1.00	97.5	1.00	97.6	1.00
Only during the day	2.4	3.3		2.2		2.5		2.4	
When mother knows when to BF*									
when the baby cries	67.1	56.5		64.4		67.3		67.7	
when the baby wakes up	14.4	19.6	**0.006**	15.6	0.91	13.8	0.65	11.8	0.17
Different time intervals	18.6	23.9		20.0		18.9		20.5	
BF cessation									
Abrupt	25.4	51.6	0.61	46.0	0.12	66.7	1.00	61.5	**0.01**
Gradual	22.0	48.4		54.0		33.3		38.5	
Age of BF cessation									
< 6 mo	13.7	24.2		16.7		13.8		15.0	
6-12 mo	17.7	25.3	0.0	29.2	**0.003**	18.0	0.54	17.3	0.81
> 12 mo	15.4	12.1		22.9		16.2		15.8	

* Number of respondents is 167, missing cases is 6.2%.

Table 5.14: Associations between the consumption of carbohydrates, fruits, vegetables, dairy products and child's characteristics

		CHO		Fruits		Vegetables		Dairy products		Family foods	
		No.= 152 (85.4)	**P-value**	**No=161 (90.4)**	**P-value**	**No=150 (84.3)**	**P-value**	**No=166 (93.3)**	**P-value**	**No.=138 (77.5)**	**P-value**
	Total (%)	%		%		%		%		%	
Gender											
Male	56.7	55.9	0.67	58.4	0.20	58.0	0.53	56.6	1.0	56.5	1.0
Female	43.3	44.1		41.6		42.0		43.4		43.5	
Child order											
1st or 2nd	42.1	40.8		41.0		41.3		42.2		39.9	
3rd, 4th or 5th	39.9	39.5	0.32	39.1	0.13	39.3	0.55	39.2	0.61	39.9	0.28
6th or more	18.0	19.7		19.9		19.3		18.7		20.3	

5.3.5 Associations between the consumption of selected foods and beverages and child's characteristics

As shown in table (5.15) and table (5.16) a significant association was found between child's birth order and the introduction of meat (p-value= 0.02) as well as the introduction of formula (p-value = 0.05).

Table 5.15: Association between muhalabiah, meat, eggs, family foods, honey and child's characteristics

		Muhalabiah		**Meat**		**Eggs**		**Honey**	
		No.=134 (75.3)	**P-value**	**No=106 (59.6)**	**P-value**	**No.= 131 (73.6)**	**P-value**	**No.=52 (29.2)**	**P-value**
	Total (%)	%				%		%	
Gender									
Male	56.7	56.0	0.73	56.6	1.0	56.5	1.0	59.6	0.74
Female	43.3	44.0		43.4		43.5		40.4	
Child order									
1st or 2nd	42.1	44.0		39.6		42.0		42.3	
3rd, 4th or 5th	39.9	38.8	0.66	35.8	**0.02**	36.6	0.11	32.7	0.23
6th or more	18.0	17.2		24.5		21.4		25.0	

Table 5.16: Association between the consumption of formula, cow's milk, water, herbal drinks and child's characteristics

		Formula		**Cow's milk**		**Water**		**Herbal drinks**	
		No.=102 (57.3)	**P-value**	**No.=49 (27.5)**	**P-value**	**No.=169 (94.9)**	**P-value**	**No.=135 (75.8)**	**P value**
	Total (%)	%		%		%		%	
Gender									

Male	56.7	57.8	0.76	57.1	1.0	55.6	0.3	51.1	**0.008**
Female	43.3	42.2		42.9		44.4		48.9	
Child order									
1st or 2nd	42.1	49.0		49.0		43.8		44.4	
3rd, 4th or 5th	39.9	32.4	**0.05**	32.7	0.44	38.5	0.14	37.0	0.38
6th or more	18.0	18.6		18.4		17.8		18.5	

5.3.9 Associations between the consumption of selected foods and beverages between 0-3 months of age and demographic variables

Table (5.17) and table (5.18) show that there is a significant association between mother's education and the introduction of honey to infants less than 3 months of age (p-value = 0.03) as well as the introduction of plain water (p-value = 0.05).

Table 5.17: Associations between the consumption of muhalabiah, sahlab, fruits and honey between 0-3 months of age and demographic variables

		Muhalabiah, sahlab		**Fruits**		**Honey**	
		No.=26 (14.6%)	**P-value**	**No.=22 (12.4%)**	**P-value**	**No.=9 (5.1%)**	**P-value**
	Total (%)	%		%		%	
Mother's age:							
< 20 yrs	4.5	11.1		9.1		11.1	
20-35 yrs	87.6	81.5	0.20	77.3	0.28	66.7	0.14
> 35 yrs	7.9	7.4		13.6		22.2	
Mother's level of education							
≤ 6 yrs	7.9	7.4		4.5		33.3	
7-9 yrs	32.6	25.9	0.78	31.8	0.13	11.1	**0.03**

10-12 yrs	46.1	48.1		63.6		44.4	
High diploma	13.5	18.5		0.0		11.1	
Number of people living in the house							
< 6 individuals	42.7	48.1	0.54	27.3	0.17	22.2	0.30
> 6 individuals	57.3	51.9		72.7		77.8	

Table 5.18: Associations between the consumption of different beverages between 0-3 months of age and demographic variables

		Cubed sugar with anis or water		Plain water		Herbal drinks		Formula	
		No.=112 (62.9%)	**P-value**	**No.=82 (46.1%)**	**P-value**	**No.=96 (53.9%)**	**P-value**	**No.=55 (30.9%)**	**P-value**
	Total (%)	%		%		%		%	
Mother's age:									
< 20 yrs	4.5	4.5		7.3		6.3		9.1	
20-35 yrs	87.6	89.3	0.58	86.6	0.19	84.4	0.32	87.3	0.06
> 35 yrs	7.9	6.3		6.1		9.4		3.6	
Mother's level of education									
≤ 6 yrs	7.9	10.7		6.1		9.4		7.3	
7-9 yrs	32.6	33.0	0.22	23.2	**0.05**	32.3	0.79	25.5	0.23
10-12 yrs	46.1	42.0		54.9		43.8		47.3	
High diploma	13.5	14.3		15.9		14.6		20.0	
Number of people living in the house									
< 6 individuals	42.7	46.4	0.21	41.5	0.76	46.9	0.23	52.7	0.07
> 6 individuals	57.3	53.6		58.5		53.1		47.3	

5.3.10 Associations between the consumption of selected foods and beverages between 0-3 months of age and delivery characteristics, the use of pacifier

As shown in table (5.19) there is a significant association between the introduction of honey to infants before 3 months of age and the no-use of pacifier (p-value=0.01). Also table (5.20) shows a significant association between the introduction of non human milk at the same age group and the no-use of pacifier (p-value = 0.04).

Table 5.19: Associations between the consumption of muhalabiah, sahlab, fruits and honey between 0-3 months of age and delivery characteristics

		Muhalabiah, sahlab		**Fruits**		**Honey**	
		No.=26 (14.6%)		**No.=22 (12.4%)**		**No.=9 (5.1%)**	
	Total (%)	%	P-value	%	P-value	%	P-value
Education about BF during antenatal visits							
Yes	72.5	85.2	0.16	77.3	0.80	66.7	0.71
No	27.5	14.8		22.7		33.3	
Mode of delivery							
Normal	87.1	81.5	0.34	86.4	1.00	77.8	0.33
Cesarean	12.9	18.5		13.6		22.2	
Episiotomy							
Yes	43.3	33.3	0.23	36.4	0.65	44.4	1.00
No	56.7	66.7		63.6		55.6	
Use of pacifier							
Yes	20.3	15.4	0.60	28.6	0.38	55.6	**0.01**
No	79.7	84.6		71.4		44.4	

Table 5.20: Associations between the consumption of different beverages between 0-3 months of age and delivery characteristics

		Cubed sugar with anis or water		Plain water		Herbal drinks		Formula	
		No.=112 (62.9%)		**No.=82 (46.1%)**		**No.=96 (53.9%)**		**No.=55 (30.9%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Education about BF during antenatal visits									
Yes	72.5	65.2	**0.005**	78.0	0.13	63.5	**0.004**	78.2	0.28
No	27.5	34.8		22.0		36.5		21.8	
Mode of delivery									
Normal	87.1	87.5	0.82	87.8	0.83	86.5	0.83	80.0	0.09
Cesarean	12.9	12.5		12.2		13.5		20.0	
Episiotomy									
Yes	43.3	42.9	1.00	45.1	0.62	42.7	0.88	47.3	0.51
No	56.7	57.1		54.9		57.3		52.7	
Use of pacifier									
Yes	20.3	17.6	0.25	18.4	0.70	15.4	0.09	30.8	**0.04**
No	79.7	82.4		81.6		84.6		69.2	

5.3.11 Associations between the consumption of selected foods and beverages between 0-3 months of age and breastfeeding practices

As shown in table (5.21) there is a significant association between the introduction of muhalabiah or sahlab to infant less than 3 months of age and the way of breastfeeding cessation is done and the mother's decision when to breastfeed (p-value=0.03 and 0.05 espectively). Table (5.22) shows that adding formula is significantly associated with breastfeeding cessation ((p-value= 0.00).

Table 5.21: Associations between the consumption of muhalabiah, sahlab, fruits and honey between 0-3 months of age and breastfeeding practices

		Muhalabiah, sahlab		**Fruits**		**Honey**	
		No.=26 (14.6%)		**No.=22 (12.4%)**		**No.=9 (5.1%)**	
	Total (%)	%	P-value	%	P-value	%	P-value
Frequency of BF							
During day and night	97.6	95.7	0.45	95.0	0.40	100	1.00
Only during the day	2.4	4.3		5.0		0	
When mother knows when to BF							
when the baby cries	67.1	82.6		80.0		42.9	
when the baby wakes up	14.4	17.4	**0.05**	20.0	0.07	42.9	0.09
Different time intervals	18.6	0				14.3	
BF cessation							
Abrupt	53.6	83.3	**0.03**	87.5	0.06	66.7	0.68
Gradual	46.4	16.7		12.5		33.3	
Age of BF cessation							
< 6 mo	53.1	60.0		66.7		33.3	
6-12 mo	13.7	16.0	0.40	9.5	0.41	22.2	0.66
> 12 mo	17.7	20.0		19.0		22.2	

Table 5.22: Associations between the consumption of different beverages between 0-3 months of age and breastfeeding practices

		Cubed sugar with anis or water		**Plain water**		**Herbal drinks**		**Formula**	
	Total	**No.=112 (62.9%)**		**No.=82 (46.1%)**		**No.=96 (53.9%)**		**No.=55 (30.9%)**	
	(%)	%	P-value	%	P-value	%	P-value	%	P-value
Frequency of BF									
During day and night	97.6	99.0	0.3	97.4	1.00	96.7	0.63	100	0.58
Only during the day	2.4	1.0		2.6		3.3		0	
When mother knows when to BF									
when the baby cries	67.1	63.7		68.4		71.4		55.6	
when the baby wakes up	14.4	17.6	0.30	15.8	0.67	9.9	0.19	15.6	0.09
Different time intervals	18.6	18.6		15.8		18.7		28.9	
BF cessation									
Abrupt	53.6	58.2	0.26	52.6	1.00	60.0	0.23	56.7	0.82
Gradual	46.4	41.8		47.4		40.0		43.3	
Age of BF cessation									
< 6 mo	53.1	51.4		53.8		52.6		48.1	
6-12 mo	13.7	14.7	0.32	15.0	0.51	15.8	0.78	36.5	**0.00**
> 12 mo	17.7	21.1		20.0		17.9		11.5	

5.3.12 Associations between the consumption of selected foods and beverages between 0-3 months of age and child's characteristics:

Table (5.23) shows that there is no significant association between the consumption of muhalabiah, sahlab, fruits and honey and child's characteristics. On the other hand there is a significant association between the consumption of herbal drinks and child's gender (p-value=0.02) (table 5.24).

Table 5.23: associations between the consumption of muhalabiah, sahlab, fruits and honey between 0-3 months of age and child's characteristics

		Muhalabiah, sahlab		Fruits		Honey	
		No.=26 (14.6%)		**No.=22 (12.4%)**		**No.=9 (5.1%)**	
	Total (%)	%	P-value	%	P-value	%	P-value
Gender							
Male	56.7	40.7	0.09	45.5	0.26	33.3	0.18
Female	43.3	59.3		54.5		66.7	
Child order							
1st or 2nd	42.1	40.7		27.3		44.4	
3rd, 4th or 5th	39.9	40.7	0.99	45.5	0.20	22.2	0.37
6th or more	18.0	18.5		27.3		33.3	

Table 5.24: Associations between the consumption of different beverages between 0-3 months of age and child's characteristics

		Cubed sugar with anis or water		Plain water		Herbal drinks		Formula	
		No.=112 (62.9%)		**No.=82 (46.1%)**		**No.=96 (53.9%)**		**No.=55 (30.9%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Gender									
Male	56.7	56.3	0.88	51.2	0.18	47.9	**0.02**	60.0	0.63
Female	43.3	43.8		48.8		52.1		40.0	
Child order									
1st or 2nd	42.1	47.3		50.0		47.9		49.1	
3rd, 4th or 5th	39.9	38.4	0.11	34.1	0.14	34.4	0.20	36.4	0.43
6th or more	18.0	14.3		15.9		17.7		14.5	

5.3.13 Associations between the consumption of selected foods and beverages between 4-6 months of age and demographic variables

As illustrated in table (5.25) no significant association was found between the consumption of fruits, vegetables, dairy products and plain water between 4-6 months of age and any of the studied demographic variables.

Table 5.25: Associations between the consumption of different food and beverages between 4-6 months and demographic variables

		Plain water		**Fruits**		**Dairy products**		**Vegetables**	
		No.=58 (32.6%)		**No.=66 (37.1%)**		**No.=66 (37.1%)**		**No.=61 (34.3%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Mother's age:									
< 20 yrs	4.5	3.4		1.5		4.5		1.6	
20-35 yrs	87.6	86.2	0.64	93.9	0.13	87.9	0.99	93.4	0.22
> 35 yrs	7.9	10.3		4.5		7.6		4.9	
Mother's level of education									
≤ 6 yrs	7.9	5.2		6.1		4.5		4.9	
7-9 yrs	32.6	43.1	0.12	30.3	0.14	30.3	0.51	31.1	0.14
10-12 yrs	46.1	36.2		42.4		51.5		42.6	
High diploma	13.5	15.5		21.2		13.6		21.3	
Number of people living in the house									
< 6 individuals	42.7	41.4	0.87	43.9	0.88	43.9	0.21	39.3	0.53
> 6 individuals	52.7	58.6		56.1		63.6		60.7	

5.3.14 Associations between the consumption of selected foods and beverages between 4-6 months of age and delivery characteristics, the use of pacifier

As shown in table (5.26) no significant association was found between the consumption of fruits, vegetables, dairy products and plain water between 4-6 months of age and any of the studied delivery characteristics, in addition to the use of pacifier.
For infants ages 6-12 months results showed that there is a significant association between mother's level of education and the introduction of dairy products (p-value = 0.02). Another significant association was found between the introduction of carbohydrates and mode of delivery as well as the occurrence of episiotomy (p-value= 0.02 and 0.02 respectively). Also the age of breastfeeding cessation was significantly associated with and the introduction of dairy products (p-value = 0.02). Results for this age group are presented in appendix (3).

Table 5.26: Associations between the consumption of different food and beverages between 4-6 months and delivery characteristics, the use of pacifier

		Plain water		**Fruits**		**Dairy products**		**Vegetables**	
		No.=58 (32.6%)		**No.=66 (37.1%)**		**No.=66 (37.1%)**		**No.=61 (34.3%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Education about BF during antenatal visits									
Yes	72.5	65.5	0.16	69.7	0.60	69.7	0.60	73.8	0.86
No	27.5	34.5		30.3		30.3		26.2	
Mode of delivery									
Normal	87.1	84.5	0.48	90.9	0.36	86.4	0.82	88.5	0.81
Cesarean	12.9	15.5		9.1		13.6		11.5	
Episiotomy									
Yes	43.3	44.8	0.87	45.5	0.74	42.4	0.88	52.5	0.08
No	56.7	55.2		54.5		57.6		47.5	
Use of pacifier									

Yes	20.3	27.6	0.11	23.8	0.43	23.8	0.34	27.6	0.11
No	79.7	72.4		76.2		76.2		72.4	

5.3.16 Associations between the consumption of selected foods and beverages between 4-6 months of age and child's characteristics

Table (5.27) shows that there is a significant association between the consumption of plain water and fruits between 4-6 months of age and the sex pf the indexed child (p-value = 0.05 and 0.04 respectively).

Table 5.27: Associations between the consumption of different food and beverages between 4-6 months and breastfeeding practices

		Plain water		**Fruits**		**Dairy products**		**Vegetables**	
		No.=58 (32.6%)		**No.=66 (37.1%)**		**No.=66 (37.1%)**		**No.=61 (34.3%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Frequency of BF									
During day and night	97.6	96.4	0.6	95.0	0.13	98.4	1.00	94.6	0.11
Only during the day	2.4	3.6		5.0		1.6		5.4	
Mothers BF their infants when									
When baby cries	67.1	61.8		56.7		62.3		60.7	
When baby wakes up	14.4	16.4	0.6	16.7	0.08	16.4	0.61	17.9	0.45
Different time intervals	18.6	21.8		26.7		21.3		21.4	
BF cessation									
Abrupt	53.6	55.2	1.00	54.3	1.00	060.	0.49	64.7	0.12
Gradual	46.4	44.8		45.7		39.3		35.3	
Age of BF cessation									
< 6 mo	13.7	13.8		21.5		20.3		18.3	
6-12 mo	17.7	15.5	0.58	15.4	0.11	12.5	0.06	23.3	0.22
> 12 mo	15.4	20.7		16.9		9.4		13.3	

Table 5.28: Associations between the consumption of different food and beverages between 4-6 months and child's characteristics

		Plain water		**Fruits**		**Dairy products**		**Vegetables**	
		No.=58 (32.6%)		**No.=66 (37.1%)**		**No.=66 (37.1%)**		**No.=61 (34.3%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Gender									
Male	56.7	67.2	**0.05**	66.7	**0.04**	65.2	0.09	63.9	0.20
Female	43.3	32.8		33.3		34.8		36.1	
Child order									
1st or 2nd	42.1	43.1		45.5		45.5		50.8	
3rd, 4th or 5th	39.9	41.4	0.84	39.4	0.69	34.8	0.57	31.1	0.18
6th or more	18.0	15.5		15.2		19.7		18.0	

5.4 Multivariate analysis

To investigate which variables could determinate whether the infant was fully breastfed for the first 4 months of age or not fully breastfed the multivariate logistic regression analysis was done. Also this type of analysis was used to identify the variables that might determine the introduction of selected foods and beverages after controlling.

The table (5.29) shows the adjusted odds ratio for all the variables included in the model. All variables that might have an effect on full breastfeeding as shown in the univariate analysis were included in the model. However some of these variables could not be added since the number of the studied population in some of the categories was low. As shown in this table mother's age and mode of delivery were significantly inversely associated with the infant feeding status. Other variables in the model did not show any significant association.

When examining the factors that might be associated with the introduction of certain food and beverages, the regression models did not show any significant or logical results for why mothers introduce one food item before the other. Although there was a trend of showing that number of individuals in the house might determine the

introduction of certain food items like carbohydrates, daily products and fruits (see appendix 4, table a and table b).

Table 5.29: multivariate logistic regression analysis for factors associated with infant feeding status

	AOR	95.0% C.I		P- value
		lower	Upper	
Demographic variables				
- Mother's age				
< 20 years	1.00	--	--	
20-35 years	0.13	0.03	0.65	**0.03**
> 35 years	0.05	0.007	0.36	
- Mother's education				
≤ 6 years	0.39	0.10	1.54	
7-9 years	0.43	0.16	1.15	0.35
10-12 years	0.50	0.20	1.27	
high diploma	1.0	--	--	
- Number of people living in the house				
< 6 individuals	1.00	--	--	0.44
> 6 individuals	0.75	0.41	1.37	
Delivery characteristics				
- Education about BF during antenatal visits				
Yes	0.96	0.49	1.86	0.68
No	1.00	--	--	
- Mode of delivery				
Normal	**0.33**	0.135	0.843	**0.02**
Cesarean	1.00	--	--	
- Episiotomy				
Yes	0.79	0.43	1.45	0.54
No	1.00	--	--	
- Use of pacifier				
Yes	1.25	0.59	2.65	0.57
No	1.00	--	--	
- When mother knows when to BF				
when the baby cries	0.71	0.31	1.61	
when the baby wakes up	0.68	0.23	2.04	0.73
Different time intervals	1.00	--	--	
- BF cessation				
Abrupt	1.00	--	--	0.94
Gradual	0.87	0.36	2.07	
- Age of BF cessation				
< 6 months	1.00	--	--	**0.00**
6-12 months	0.12	0.03	0.43	
> 12 months	0.04	0.01	0.19	
Child's characteristics				
- Gender Male	0.94	0.52	1.73	0.88
Female	1.00	--	--	
- Child order				
1st or 2nd	1.38	0.59	3.22	0.72
3rd, 4th or 5th	1.15	0.48	2.71	
6th or more	1.00	--	--	

5.5 Summary

The number of infants registered in the UNRWA primary health care clinic files who fit the study's inclusion criteria was 199 infants. After excluding infants less than 4 months of age the analysis included 178 infant-mother pairs who met the inclusion–exclusion criteria.

The mean age of All of the indexed children were breastfed for at least one day and half of them were still breastfeeding till the day of the interview. The rate of exclusive breastfeeding for 6 months was 3.4%. The rate of full breastfeeding for four months postpartum (i.e exclusive breastfeeding and/or introducing food or formula after 4 months postpartum) was 57.9%. The mean age of breastfeeding cessation was 9.95 ±5.54 SD months whereby 25.4% of the mothers stopped breastfeeding in an abrupt way. Main reported reason for breastfeeding cessation was the occurrence of a new pregnancy (27.1%).

Regarding complementary foods most (93.3%) mothers introduced dairy products to their infants such as yogurt, labneh (fermented yogurt). As for beverages plain water was the most reported one. The age at which infants were first offered solid foods varied from three weeks to 11 months. More than half (51.7%) of the infants were offered their first tastes of solid foods between the ages of 4-6 months, and 28.7% were offered food before 4 months of age. Major reported food item introduced was cooked milk with additives such as muhalabiah and sahlab (39%), followed by cerelac and rice (18%).

When asked about the mother's sources of information regarding complementary feeding the nurses’ advice (15.7%) was a better source of information compared to the physicians or medical advice (3.9%).

Chapter 6

Discussion, Conclusion and Recommendations

6.1 Introduction

6.2 Summary of the study findings

6.3 Socio demographic factors

6.4 Delivery information

6.5 Breastfeeding practices

6.6 Complementary feeding

6.7 Conclusions and recommendations

6.1 Introduction

This study is the first in Palestine to assess mothers' behavior and practices regarding breastfeeding and complementary feeding in refugee camps. The study took place in Al-Am'ari refugee camp in Ramallah district and the sample was withdrawn from the registration files of UNRWA primary health care clinic in the camp.

6.2 Summary of the study findings

This study was conducted through in person household interviews. In some cases the field workers had to do several visits attempts in order to complete the questionnaire. Besides, having the map of the refugee camp with the assistance of the camp director helped us in locating the interviewees. This explains the high response rate of the study which was 98%. The age of the indexed children ranged from 4-24 months with 34.3% of the infants falling in the age range 6-12 months. The number of infants registered in the UNRWA primary health care clinic files who fit the study's inclusion criteria was 199 infants. During the analysis we excluded infants less than 4 months of age since their mothers' practices regarding the introduction of complementary feeding could not be predicted. Therefore in total the analysis included 178 infant-mother pairs.

All of the indexed children were breastfed for at least one day and half of them were still breastfeeding till the day of the interview. Most (91.1%) of the mothers knew about the colostrums and its benefits and 95.5% gave it to their newborns. The rate of exclusive breastfeeding for 4 months and 6 months was 10.1% and 3.4% respectively. Both percentages very low and running analysis on such numbers will not give accurate results. Therefore the decision was to combine those infants who were exclusively breastfed and predominantly breastfed for the first 4 months of life and put them under one category named "full breastfeeding". Based on this the rate of full breastfeeding for four months postpartum (i.e exclusive breastfeeding and/or introducing food or formula after 4 months postpartum) was 57.9%. Nurses were the mother's main source of information regarding breastfeeding and breast care. The mean age of breastfeeding cessation was 9.95 ±5.54 SD months whereby 25.4% of the

mothers stopped breastfeeding in an abrupt way. Main reported reason for breastfeeding cessation was the occurrence of a new pregnancy (27.1%).

Mothers introduced different food items to their children at different age groups. Most (93.3%) of them introduced dairy products to their infants such as yogurt, labneh (fermented yogurt), and fruits whether blended or squeezed (90%). Regarding beverages plain water was the most reported one; it was introduced to 94.9% of the indexed children. During the analysis the indexed children were categorized into 4 groups based on their ages; 0-3 months, 4-6 months, 6-12 months and 12-24 months. Main food items introduced were muhalabiah or sahlab, dairy products and carbohydrates at 0-3 months, 4-6 months and 6-12 months respectively. As for beverages cubed sugar with water of anis, plain water and tea or milk with biscuits were the main reported ones to be introduced at 0-3months, 4-6 months and 6-12 months respectively.

The age at which infants were first offered solid foods varied from three weeks to 11 months. More than half (51.7%) of the infants were offered their first tastes of solid foods between the ages of 4-6 months, and 28.7% were offered food before 4 months of age. Major reported food item introduced was cooked milk with additives such as muhalabiah and sahlab (39%), followed by cerelac and rice (18%).

When asked about the mother's sources of information regarding complementary feeding 37.6% of them reported that they didn't get any information while 27.5% based their practices on their past experience or asked other family members. Nurses' advice (15.7%) was a better source of information compared to the physicians or medical advice (3.9%).

In the coming sections the study results will be discussed and compared to the literature. Generalization of the study findings to the Palestinian community can't be done since the sample isn't a representative one, on the other hand it can be representative to all refugee camps since they have almost the same structure especially

in the health care setting. This also explains the diversion between some of the study results and the international ones.

6.3 Socio demographic factors

Mother's age, parent's educational level, occupational status and family structure were the major socio demographic factors of concern in this study. Mother's age didn't seem to influence the duration of breastfeeding, unlike other countries like Kuwait (Fawzia et al., 1997) but it affects the infant's feeding status whether it is full breastfeeding or mixed feeding. This is congruent with other countries like Italy (Giovannini et al., 2004) and Canada (Kwavnick et al., 1999). Also mothers' educational level had no influence on the duration of breastfeeding in this study, unlike in the United Kingdom and Canada (Savage et al., 1998; Hamlyn et al., 2000). The effect of the parents' occupational status on the duration of breastfeeding or the introduction of solid foods couldn't be examined in this study since most (92.7%) of the mothers don't work and only 5% of the fathers didn't have a work. This is typical in refugee camps' family structure whereby women are designated to stay at home and raise the children, unlike in city where the percentage of working women is higher.

The duration of breastfeeding and the infant feeding status didn’t seem to be influenced by the child's birth order. These findings are incompatible with a Kuwaiti study whereby the least duration of breastfeeding was noticed for the first order child (Fawzia et al., 1997).

Infant feeding status was not influenced by the number of people living in the house, although it was observed that a considerable number of the visited households where extended families. In countries like Latin American and the Pacific societies, family structure have a considerable influence on maternal decisions regarding child health (Sharma and Kanani, 2006).

6.4 Delivery information

This study shows that there is an association between mode of delivery and infant feeding status whether it is full breastfeeding till 4 months or not. The probability of

mothers who had normal delivery to practice full breastfeeding is higher than those who had cesarean section deliveries. This was also seen in other countries whereby breastfeeding is more practiced among women who had normal delivery (Barros et al., 2001). On the other hand no association was found between the mode of delivery and breastfeeding initiation, unlike other countries such as Korea and Lebanon (Batal et al., 2006; Hwang et al., 2006). Nevertheless the rate of breastfeeding initiation is considerably high (72.5%). This can be explained by the fact that in our country breastfeeding is highly valued and encouraged by most community members.

This study showed no association between mother's decision when to breastfeed her child and infant feeding status. Almost 63% of them feed the baby when the baby cries. Mother's perception of hunger cues in the camp is the crying of the baby, therefore the mother would finish all household responsibilities and wait till the baby starts crying to feed him. This is incompatible with the international recommendations that the mother should breastfeed her baby every 2 hours or 8-12 times in the 24 hours (WHO, 2003e).

Infant feeding status in this study was not affected by the occurrence of episiotomy or other complications during delivery. In other countries like Southern Brazil black women tend to have less episiotomy, less cesarean section deliveries and longer breastfeeding duration compared to white women (Barros et al., 2001).

Antenatal preparation of pregnant women for breastfeeding and complementary feeding didn't affect the infant feeding status. In countries like Singapore mothers who received simple, short and individual counseling session with educational material were more likely to practice exclusive or predominant breastfeeding at 3 and 6 months postpartum compared with those who did not receive formal antenatal instruction (Mattar et. al, 2007). In Al-Am'ari clinic, the nursing staff encourage the expectant mothers to breastfeed their newborns and to initiate breastfeeding right after giving birth, but no proper individual counseling was done as per see.

This study shows that women who didn't use the pacifier with their children have better probability to full breastfeed compared to those who used the pacifier, although not statistically significant. These findings are in congruent with the Swedish study

(Aarts et al., 1999). It is worth mentioning that pacifiers are not widely used in our study sample; only 20.3% use it with their babies.

6.5 Breastfeeding practices

All of the studied children were breastfed for at least one day and half of them were still on breastfeeding till the day of the interview. This rate is higher than that of Jordan (kilbride et al., 1999) as well as rates in the United States and France whereby according to the U.S. Department of Health and Human Services 70.9% of mothers ever breastfed their babies, and in France the rate is only 50% (Roques, 1998). This can be due to the fact that in our country breastfeeding is highly valued, it's a practice that is encouraged by the elderly women in the community, and it is passes from grand mother to mother to daughter. Also breastfeeding is motivated by the religion; breastfeeding for the first two years of life was emphasized in the Quran. On the other hand the rate of exclusive breastfeeding for 6 months in our study population was only 3.4%. This rate is much lower than that of the United States (11.3%) (CDC, 2007). Nevertheless both rates are still below targets set by Healthy People 2010 which aims that 50% of mothers will be on exclusive breastfeeding for the first 6 months of life.

Since the rate of exclusive breastfeeding in this study is low, running analysis using this number will not give accurate results; therefore we set our operational definition by combining those infants who were exclusively breastfed and predominantly breastfed for the first 4 months of life and putting them under one category named “full breastfeeding”. The rate of full breastfeeding for four months postpartum (i.e exclusive breastfeeding and/or introducing food or formula after 4 months postpartum) was 57.9%. Maternal age is associated with breastfeeding practices. On the other hand the probability that mothers of higher education practice full breastfeeding is higher compared to those of a less educational level. This is compatible with others countries such as Kuwait and Switzerland (Fawzia et al., 1997; Dratva et al., 2006).

One quarter (25.4%) of the mothers stopped breastfeeding in an abrupt way. Some West Africans countries do the same (Onofiok and Nnanyelugo, 1998). Main reported reason for breastfeeding cessation was the occurrence of a new pregnancy. This was also reported by the PCBS (PCBS-d, 2004). In Jordan the main reported reasons for bottle feeding were mothers' employment and insufficient breast milk (Khassawneh et al., 2006).

6.6 Complementary feeding

It was observed that more than half (51.7%) of the infants were offered their first tastes of solid foods between the ages of 4-6 months, and a considerable percentage (28.7%) were offered food even before that. These findings are somehow different than those found in a study conducted in Edinburgh whereby 73% of infants where offered their first tastes of solid foods between the ages of three and five months (Claire et al., 1996), but are in general agreement with Sweden, Italy and Jordan (Hornell et al., 2001; Giovannini et al., 2004; kilbride et al., 1999). Nevertheless all of these studies show that infants start having solid foods before the recommended time (6 months).
Commercial baby foods that are available in the Palestinian markets and most of the marketing brochures still follow the old WHO guidelines. Some health professionals in the health care settings and primary health care clinics would advice the mothers to start semi solid foods at 4 months of age. Also this study shows that the number of individuals living in the same house is positively associated with the introduction of several food items such as carbohydrates, fruits, vegetables and dairy products. Looking at those food items we can see that they are easily prepared (mashed or purred), easily swallowed and almost available in every house (such as cooked rice). Mothers would introduce these food items in specific based on their personal desire. Other reported seasons were nurses and physicians advice, family encouragement and baby is always crying which is, according to the mother’s perception, the baby is still hungry (data not presented because the numbers were small).

The most common first food was home made cooked cow's milk with additives such as muhalabiah and sahlab (39%), followed by cerelac and rice (18%). This is different than results in other studies such as in the United Kingdom where the majority of mothers use commercial baby food as first food (Claire et al., 1996). These food items are full of energy (for example muhalabiah contains sugar and starch), easily prepared (cooked rice is the Palestinian staple food) and from the mother's perception they are easily digested by the baby.

It was observed from this study that mothers think that cooked cow's milk is different that plain whole cow's milk. The most widely introduced foods and beverages before 3 months of age are muhalabiah or sahlab, cubed sugar with water or anis and herbal drinks whereby the least to be introduced was whole cow's milk (1.1%). This percentage goes up to 9% after 6 months of age and 16.3% after the baby's first year. In Jordan cubed sugar with water or anis and herbal drinks are the first foods to be introduced (kilbride et al., 1999). In our study more than two-thirds of children received prelacteal feed in form of cubed sugar with water or anis whereby in the Libyan Arab Jamahiriya only 18.5% of the children received water and sugar or honey (Nuri et al., 1997). Cubed sugar with water or anis and herbal drinks such as chamomile are believed to have a soothing effect to the baby. They calm him down, reduce the colic and make him stop crying.

Although the international recommendations as well as all Palestinian health projects and institutions emphasize that no need to introduce water to those babies who are not receiving formula, yet this study showed that 46.1% of the children receive plain water before 3 months of age. This rings the bell that mothers are still not convinced that breast milk substitute for water. Looking at the overall picture we notice that mothers start introducing foods at a very early age but unfortunately iron rich foods are the least to be introduced (3.4% between the ages of 4-6 months). This is in accordance with the results from the United Kingdom study (Claire et al., 1996). The economic situation for our study population might be the reason behind these practices. Although most of the fathers do have a work but this doesn't allow the family to afford meat regularly or buying commercial baby food. Also mothers believe that iron rich foods such as meat,

chicken are difficult to prepare for the baby and causes chocking. On the other hand the introduction of tea with biscuits or "qarshalleh" increases dramatically after the age of 4 months (3.9% compared to 19.7%). The introduction of tea with biscuits is widely practiced in Palestine In addition tea interferes with the absorption of iron. This might explain the increased rate of iron deficiency anemia among infants less than 6 months of age in some unprivileged communities (karaja, 2006). Salt snacks such as bamba was found to be introduced to 41.6% of children between 6-12 months of age. These foods are "empty calorie" foods; high in energy but has low nutrients. Such behaviors have an impact on the child overall health and development (Unicef, 2005c). Whole eggs which are supposed to be introduced after the first year of life are being introduced to almost half of our studied population between 6-12 months of age.

There was a trend in this study that the use of pacifier was inversely associated with the introduction of carbohydrates and fruits, although not statistically significant. Child's gender or birth order didn't influence the starting age of introducing food.

6.7 Conclusions and Recommendations

This study showed non-compliance with the international guidelines and recommendations regarding breastfeeding and complementary feeding. Although the rate of breastfeeding initiation is high (72.5%) the rate of exclusive breastfeeding is extremely low (3.4%). Mothers would start introducing food according to their own perception of what they believe is good for their child, not realizing that they causing then harm more than good. Cooked whole cow's milk and whole eggs are introduced as early as 3 months of age. Empty calorie foods are also being introduced art an early age, taking the place of high nutrient foods.

In order to encourage mothers to follow the international recommendations regarding breastfeeding and complementary feeding, several steps should be taken into consideration on different levels; policy makers' level and the community level. Although most governmental and non governmental organizations emphasize on the importance of exclusive breast feeding and timely adequate complementary feeding,

yet this study revealed that the problem is serious and should be tackled urgently. Further work is essential nationwide but these provisional results provide further insight into the behavior and practices of mothers in refugee camps regarding breastfeeding and complementary feeding. As a result of this study the following are recommended:

- At the national level:
    - Conduct the same study in urban and rural areas in Palestine to see if there is any difference between the practices in the camp and other districts.
    - Develop national guidelines for breastfeeding and complementary feeding that are specific to the Palestinian population.
    - Include the new WHO recommendations regarding exclusive breastfeeding in all educational materials such as brochures, pamphlets, as well as on the baby commercial food packaging.
    - Increase the duration of maternity leave to 6 months instead of 3 months.
    - Create “breastfeeding friendly environment”; nursing areas should be available in public places as well as working places and health care settings.

- At the community level (Al-Am’ari refugee camp):
    - Conduct intensive training sessions for health care providers in the PHC clinic, mainly for nursing staff at antenatal and maternity services emphasizing on the importance of breastfeeding and complementary feeding counseling.
    - Encourage short individualized sessions between the expectant mother and the health care provider since it was proved to increase the rate of exclusive breastfeeding in several countries.
    - Increase the awareness of family planning in Al-Am’ari camp so that the mother will extend the duration of breastfeeding.
    - Plan for promotion campaigns that include accurate information about appropriate complementary foods and practices at the community level.

References

Aarts C, Hornell A, Kylberg E, Hofvander Y, Gebre-Medhin M. (1999). Breastfeeding patterns in relation to thumb sucking and pacifier use. Pediatrics, Vol. 104(4), pp. e50-e50.

Aarts, C. (2001). Exclusive breastfeeding-Does it make a difference? A longitudinal, prospective study of daily feeding practices, health and growth in a sample of Swedish infants. (http://urn.kb.se/resolve?urn=urn:nbn:se:uu:diva-630).

Akin JS, Bilsborrow RE, Guilkey DK, Popkin BM. (1986) Breastfeeding patterns and determinants in the Near East: an analysis for four countries. Population Studies. Vol. 40, pp. 247-62

Al-Mazrou YY, Aziz KM, Khalil M. (1994). Breastfeeding and weaning practices in Saudi Arabia. J Trop Pediatr, Vol. 40(5), pp. 267-271.

Al-Mazroui MJ, Oyejide CO, Bener A, Cheema MY. (1997). Breastfeeding and supplemental feeding for neonates in Al-Ain, United Arab Emirates. J Trop Pediatr. Vol. 43(5), pp. 304-306.

Almeida JA, Novak FR. (2004). Breastfeeding: a nature-culture hybrid. J Pediatr (Rio J). Vol. 4 (80) (5 Suppl), pp.119-125.

Al-Quds University, John's Hopkins University, USAID, Care (2002): Nutrition Assessment of the West Bank and Gaza Strip.

Al-Rifai A., Roudi-Fahimi F. (2006). A First Glimpse at the 2004 Palestinian Demographic and Health Survey. Population Reference Bureau. (http://www.prb.org/Articles/2006/FirstGlimpse2004PalestinianDHS.aspx)

Anderson AS, Guthrie CA, Alder EM, Forsyth S, Howie PW, Williams FL. (2001). Rattling the plate--reasons and rationales for early weaning. Health Educ Res. Vol. 16(4), pp. 471-479.

Aregai W. Gebriel. (2000). Determinants of Weaning Practices. The Ethiopian Journal of Health Development. Vol. 14(2), pp. 183-189.

Awi DD, Alikor EA. (2006). Barriers to timely initiation of breastfeeding among mothers of healthy full-term babies who deliver at the University of Port Harcourt Teaching Hospital. Niger J Clin Pract. Vol. 9(1), pp. 57-64.

Azaiza F, Palti H. (1997). Determinants of breastfeeding among rural Moslem women in Israel. Fam Syst Health. Vol. 15(2), pp. 203-211.

Barros FC, Victora CG, Horta BL. (2001). Ethnicity and infant health in Southern Brazil. A birth cohort study. Int J Epidemiol. Vol. 30(5), pp. 1001-8.

Bassett MT. (2000). Psychosocial and Community Perspectives on Alternatives to Breastfeeding. Ann N Y Acad Sci. Vol.918, pp.128-135.

Batal M, Boulghourjian C, Abdallah A, Afifi R. (2006). Breast-feeding and feeding practices of infants in a developing country: a national survey in Lebanon. Public Health Nutr. Vol.9(3), pp.313-319.

Benis MM. (2002) Are pacifiers associated with early weaning from breastfeeding? Adv Neonatal Care. Vol. 2(5), pp. 259-66.

Borders N. (2006). After the afterbirth: A critical review of postpartum health relative to method of delivery. J Midwifery Womens Health. Vol. 51(4), pp. 242-248.

Boutet C, Vercueil L, Schelstraete C, Buffin A, Legros JJ. (2006). Oxytocin and maternal stress during the post-partum period. Ann Endocrinol (Paris). Vol. 67(3), pp. 214-223.

Breastfeeding, culture and attachment. Fact sheet. (2005). (http://www.attachmentacrosscultures.org/beliefs/bfeed_culture.pdf)

Brown KH. (2000). WHO/UNICEF Review on Complementary Feeding and Suggestions for Future Research: WHO/UNICEF Guidelines on Complementary Feeding. Pediatrics. Vol. 106(5), pp.1290.

Centers for Disease Control and Prevention (CDC). (2007). Breastfeeding trends and updated national health objectives for exclusive breastfeeding-United States, birth years 2000-2004. MMWR Morb Mortal Wkly Rep. Vol. 56(30), pp. 760-763.

Centers for Disease Control and Prevention (CDC). (2007). Frequently asked questions about the 2000 CDC growth charts. (http://www.cdc.gov/nchs/about/major/nhanes/growthcharts/GrowthchartFAQs.htm)

Chhabra P, Grover VL, Aggarwal OP, Dubey KK. (1998). Breast feeding patterns in an urban resettlement colony of Delhi. Indian J Pediatr. Vol. 65(6), pp. 867-872.

Claire E.A. Seaman, Diane D'Alessandro, Marlene Swannie. (1996). Choice of weaning foods. British Food Journal. Vol. 98 (8), pp.13-16.

Clemens J, Elyazeed RA, Rao M, Savarino S, Morsy BZ, Kim Y, Wierzba T, Naficy A, Lee YJ. (1999). Early initiation of breastfeeding and the risk of infant diarrhea in rural Egypt. Pediatrics. Vol. 104(1), pp. e3-e3.

Conceptual framework for nutritional status. (2006). (http://www.fanrpan.org/documents/d00177/4-Malawi-DHS04_Jul2006.pdf)

Cremonesi A. (2006). Health: Mother's Milk Saves Lives. IPS. (http://ipsnews.net/news.asp?idnews=34411)

Cunha AJ, Leite AM, Machado MM. (2005). Breastfeeding and pacifier use in Brazil. Indian J Pediatr. Vol. 72(3), p. 209-212.

Danowski L, Gargiula L. (2002) Selections from current literature. Attitudes and practices regarding the introduction of solid foods to infants. Fam Pract. Vol. 19(6), pp. 698-702.

Davies-Adetugbo AA, Adetugbo K. (1997). Effect of early complementary feeding on nutritional status in term infants in rural Nigeria. Nutr Health. Vol. 12(1), pp. 25-31.

Dodgson JE, Tarrant M, Fong DY, Peng XH, Hui WH. (2003). Breastfeeding patterns of primiparous mothers in Hong Kong. Birth. Vol. 30(3), pp. 195-202.

Donath SM, Amir LH. (2005). Breastfeeding and the introduction of solids in Australian infants: data from the 2001 National Health Survey. Aust N Z J Public Health. Vol. 29(2), pp. 171-175.

Dratva J, Merten S, Ackermann-Liebrich U. (2006). The timing of complementary feeding of infants in Switzerland: compliance with the Swiss and the WHO guidelines. Acta Paediatr. Vol. 95(7), pp. 818-825.

Earle S. (2002). Factors affecting the initiation of breastfeeding: implications for breastfeeding promotion. Health Promot Int. Vol. 17(3), pp. 205-214.

El-Sharif N, Abdeen Z, Qasrawi R, Moens G, Nemery B. (2002). Asthma prevalence in children living in villages, cities and refugee camps in Palestine. Eur Respir J. Vol. 19(6), pp. 1026-1034.

England L, Brenner R, Bhaskar B, Simons-Morton B, Das A, Revenis M, Mehta N, Clemens J. (2003). Breastfeeding practices in a cohort of inner-city women: the role of contraindications. BMC Public Health. Vol. 20.

European Commission, Burlo, Karolinska Institutet, WHO. Infant and young child feeding; Standard recommendations for the European Union. (http://www.burlo.trieste.it/old_site/Burlo%20English%20version/Activities/EUpolicy06.pdf)

Fagbule DO, Olaosebikan A. (1992). Weaning practices in Ilorin community, Nigeria. West Afr J Med. Vol. 11(2), pp. 92-99.

Fawzia A, Al-Awadi, Ezzat K. Amine. (1997). Recent trends in infant feeding patterns and weaning practices in Kuwait. Eastern Mediterranean Health Journal. Vol. 3(3), pp. 501-510.

Food and nutrition research institute. Nutritional Guidelines for Filipinos 2000. (http://www.fnri.dost.gov.ph/ngfiles/ng2.htm#comfoods)

Foote KD, Marriott LD. (2003). Weaning of infants. Arch Dis Child. Vol. 88(6), pp. 488-492.

Foxman B, D'Arcy H, Gillespie B, Bobo JK, Schwartz K. (2002). Lactation mastitis: occurrence and medical management among 946 breastfeeding women in the United States. Am J Epidemiol. Vol. 155(2), pp.103-114.

Gartner LM, Morton J, Lawrence RA, Naylor AJ, O'Hare D, Schanler RJ, Eidelman AI. (2005). American Academy of Pediatrics Section on Breastfeeding. Breastfeeding and the use of human milk. Pediatrics. Vol. 115(2), pp. 496-506.

Gdalevich M, Mimouni D, Mimouni M. (2001). Breast-feeding and the risk of bronchial asthma in childhood: a systematic review with meta-analysis of prospective studies. J Pediatr. Vol. 139(2), pp. 261-6.

Giovannini M, Riva E, Banderali G, Scaglioni S, Veehof SH, Sala M, Radaelli G, Agostoni C. (2004). Feeding practices of infants through the first year of life in Italy. Acta Paediatr. Vol. 93(4), pp 492-497.

Gonzalez-Cossio T, Rivera-Dommarco J, Moreno-Macias H, Monterrubio E, Sepulveda J. (2006). Poor compliance with appropriate feeding practices in children under 2 y in Mexico. J Nutr. Vol. 136(11), pp. 2928-2933.

Gray SJ. (1996). Ecology of weaning among nomadic Turkana pastoralists of Kenya: maternal thinking, maternal behavior, and human adaptive strategies. Hum Biol. Vol. 68(3), pp. 437-465.

Greiner T. (1996). The concept of weaning: definitions and their implications. J Hum Lact. Vol. 12(2), pp. 123-128.

Groer MW. (2005). Differences between exclusive breast feeders, formula-feeders, and controls: a study of stress, mood, and endocrine variables. Biol Res Nurs. Vol. 7(2), pp. 106-17.

Hamlyn B, Brooker S, Oleinikova K, Wands S. (2000). Infant feeding report 2000. London. The stationary office.

Harder T, Bergmann R, Kallischnigg G, Plagemann A. (2005). Duration of breastfeeding and risk of overweight: a meta-analysis. Am J Epidemiol. Vol. 162, pp. 397–403.

Hassan K, Sullivan KM, Yip R, Woodruff BA. (1997). Factors associated with anemia in refugee children. J Nutr. Vol. 127(11), pp. 2194.

Hayman N, Kanhutu J, Bond S, Marks GC. (2000). Breast-feeding and weaning practices of an urban community of indigenous Australians. Asia Pacific J CLin Nutr. Vol. (3), pp. 232-234.

Hornell A, Hofvander Y, Kylberg E. (2001). Introduction of solids and formula to breastfed infants: a longitudinal prospective study in Uppsala, Sweden. Acta Paediatr. Vol. 90(5), pp. 477-482.

Horwood LJ, Fergusson DM. (1998). Breastfeeding and later cognitive and academic outcomes. Pediatrics. Vol. 101(1), e9.

Huffman SL. (1984). Determinants of breastfeeding in developing countries: overview and policy implications. Stud Fam Plann. Vol. 15(4), pp. 170-183.

Hwang WJ, Chung WJ, Kang DR, Suh MH. (2006). Factors affecting breastfeeding rate and duration. J Prev Med Pub Health. Vol. 39(1), pp. 74-80.

Igbedioh SO, Ogbeni AO, Adole GM. (1996). Infant weaning practices of some Tiv women resident in Makurdi, Nigeria. Nutr Health. Vol. 11(1), pp. 13-28.

Jon Weiner. (2006). The Economic Benefits of Breastfeeding: A Review and Analysis. Food and Rural Economics Division, Economic Research Service, U.S. Department of Agriculture. Food Assistance and Nutrition Research. Report No. 13.

Kamel N, Ibrahim A, Aref S, Ziyo F. (1997). Current status of breast-feeding in Alexandria governorate: a community-based study. Eastern Mediterranean Health Journal. Vol. 3(3), pp.511-518.

Karaja N. (2006). Assessment of Nutritional Status of Children below 24 Months of Age in the Town of Yatta with Special Reference to Iron Deficiency Anemia. Al-Quds University.

Khassawneh M, Khader Y, Amarin Z, Alkafajei A. (2006). Knowledge, attitude and practice of breastfeeding in the north of Jordan: a cross-sectional study. Int Breastfeed J. Vol. 23, pp. 1:17.

Kilbride J. Baker T. Parapia LA. Khoury SA. Shuqaidef SW. (1999). Anaemia during pregnancy as a risk factor for iron deficiency anaemia in infancy: a case-control study in Jordan. Int J epidemiology. Vol. 28, pp. 461-468.

Kneepkens CM. (2006). Prevention of allergy is both useful and necessary. Ned Tijdschr Geneeskd. Vol. 150(38), pp. 2086.

Kulsoom U, Saeed A. Breast feeding practices and beliefs about weaning among mothers of infants aged 0-12 months. (1997). J Pak Med Assoc. Vol. 47(2), pp. 54-60.

Kumar D, Goel NK, Mittal PC, Misra P. (2006). Influence of infant-feeding practices on nutritional status of under-five children. Indian J Pediatr. Vol. 73(5), pp. 417-421.

Kwavnick BS, Reid DJ, Joffres MR, Guernsey JR. (1999). Infant feeding practices in Ottawa Carleton: the introduction of solid foods. Can J Public Health. Vol. 90(6), pp. 403-407.

La Leche League International (LLLI). (2001). A Well-Kept Secret Breastfeeding's Benefits to Mothers. (http://www.lalecheleague.org/NB/NBJulAug01p124.html)

Lawrence R.A., Lawrence R.M. (2005). Breastfeeding; a guide for the medical profession. Sixth edition. Elsevier Mosby.

Lefebvre F, Ducharme M. (1989). Incidence and duration of lactation and lactational performance among mothers of low-birth-weight and term infants. CMAJ. Vol. 140(10), pp. 1159-1164.

Li L, Li S, Ali M, Ushijima H. (2003). Feeding practice of infants and their correlates in urban areas of Beijing, China. Pediatr Int. Vol. 45(4), pp. 400-406.

Li R, Darling N, Maurice E, Barker L, Grummer-Strawn LM. (2005). Breastfeeding rates in the United States by characteristics of the child, mother, or family: the 2002 National Immunization Survey. Pediatrics. Vol. 115(1), e31-7. Epub 2004 Dec 3

Madi H. (2004). Infant and early child mortality among Palestine Refugee population. UNRWA, Health department.

Mamabolo RL, Alberts M, Mbenyane GX, Steyn NP, Nthangeni NG, Delemarre-Van De Waal HA, Levitt NS. (2004). Feeding practices and growth of infants from birth to 12 months in the central region of the Limpopo Province of South Africa. Nutrition. Vol. 20(3), pp. 327-333.

Marandi A, Afzali HM, Hossaini AF. (1993). The reasons for early weaning among mothers in Teheran. Bull World Health Organ. Vol. 71(5), pp. 561-569.

Marques NM, Lira PI, Lima NC, et al. (2001). Breastfeeding and early weaning practices in northeast Brazil: a longitudinal study. Pediatrics. Vol. 108, e66.

Mattar CN, Chong YS, Chan YS, Chew A, Tan P, Chan YH, Rauff MH. (2007). Simple antenatal preparation to improve breastfeeding practice: a randomized controlled trial. Obstet Gynecol. Vol. 109(1), pp. 73-80.

Mennella JA, Turnbull B, Ziegler PJ, Martinez H. (2005). Infant feeding practices and early flavor experiences in Mexican infants: an intra-cultural study. J Am Diet Assoc. Vol. 105(6), pp. 908-915.

Monte CM, Giugliani ER. (2004). Recommendations for the complementary feeding of the breastfed child. J Pediatr (Rio J). Vol. 80(5 Suppl), pp. 131-141.

Musaiger AO. (1983). The extent of bottle-feeding in Bahrain. Food and nutrition bulletin. The United Nations University Press. Vol. 5(1). (http://www.unu.edu/unupress/food/8f051e/8F051E05.htm#The%20extent%20of%20bottle-feeding%20in%20bahrain)

Musaiger AO, Abdulkhalek N. (2000). Breastfeeding and weaning practices in Bahrain: the role of mothers' education. Nutr Health. Vol. 14(4), pp. 257-263.

N.O. Onofiok and D.O. Nnanyelugo. (1998). Weaning foods in West Africa: Nutritional problems and possible solutions. Food and nutrition bulletin. Vol. 19(1). (http://www.unu.edu/unupress/food/V191e/ch06.htm)

Njongmeta Lynda NA, Ejoh RA, Mbofung CM, Verhoef H, Nout MJR. (2003). Weaning practices in the Adamawa Province of Cameroon. Second International Workshop. Food-based approaches for a healthy nutrition.

Nuri M. Shembesh, Nura Naseb M. Balo and Ratan Singh. (1997). Breast-feeding and weaning patterns in Benghazi, Libyan Arab Jamahiriya. East Mediterr Health J. Vol. 3(2), pp. 251-257.

Nutrition for Healthy term infants. (1998). Infact Canada. (http://www.infactcanada.ca/healthyterm.htm)

Oddy WH, Holt PG, Sly PD, Read AW, Landau LI, Stanley FJ, Kendall GE, Burton PR. (1999). Association between breast feeding and asthma in 6 year old children: findings of a prospective birth cohort study. BMJ. Vol. 319(7213), pp. 815-819.

Owen CG, Martin RM, Whincup PH, Smith GD, Cook DG. (2005). Effect of infant feeding on the risk of obesity across the life course: a quantitative review of published evidence. Pediatrics. Vol.115, pp. 1367–1377.

Palestinian Academic Society for the Study of International Affairs (PASSIA). (2006) Refugees. (http://www.passia.org/palestine_facts/pdf/pdf2006/5-Refugees.doc)

Palestinian Central Bureau of Statistics (PCBS). (2002a). Feeding infants during his first year of life. Ramallah-Palestine.

Palestinian Central Bureau of Statistics (PCBS-b). (2004). Differentials in Prevalence and Duration of Breastfeeding Among Children Born in Three Years Preceding Survey, by Type of Breastfeeding and Selected Background Characteristics. (http://www.pcbs.gov.ps/Portals/_pcbs/health/dhs04Table13.aspx)

Palestinian Central Bureau of Statistics (PCBS). (2005c). Annual Report 2005. *Palestinian Children–Issues and Statistics.* Child Statistics Series (No.8). Ramallah-Palestine.

Palestinian Central Bureau of Statistics. (PCBS). (2005d). *Palestinian Children–Rights and Numbers*. Ramallah-Palestine.

Palestinian Central Bureau of Statistics, (PCBS). (2006e). *Palestine in Figures 2005.* Ramallah-Palestine

Palestinian Ministry of Health (PMOH). Demography of Palestine. (2005a). (http://www.moh.gov.ps/index.asp?deptid=3&pranchid=141&action=articles)

Palestinian Ministry of Health (PMOH-b). Women Health. (2005). (http://www.moh.gov.ps/index.asp?deptid=3&pranchid=22&action=articles).

Palestinian Ministry of Health (MOH-PHIC) (2006a). Mortality. Health Status in Palestine 2005. (http://www.moh.gov.ps/pdffiles/MORT2005_WFin.pdf)

Palestinian Ministry of Health (MOH-PHIC) (2006b). Women Health. Health Status in Palestine 2005. (http://www.moh.gov.ps/pdffiles/women%20health.pdf)

Pan American Health Organization/World Health Organization (PAHO/WHO). (2003). Guiding Principles for Complementary Feeding of the Breastfed Child. Washington DC.

Parenting web; information and interaction for nurturing parents. Why breastfeed. (http://www.parentingweb.com/lounge/whybf.htm)

Perez-Escamilla R, Pollitt E, Lonnerdal B, Dewey KG. (1994). Infant feeding policies in maternity wards and their effect on breast-feeding success: an analytical overview. Am J Public Health. Vol. 84(1), pp. 89-97.

Raisler J, Alexander C, O'Campo P. (1999). Breast-feeding and infant illness: a dose-response relationship? Am J Public Health. Vol. 89(1), pp. 25-30.

Ramachandran P. (2004). Breast-feeding practices in South Asia. Indian J Med Res. Vol. 119(6), pp. xiii-xv.

Ruel MT, Brown KH, Caulfield LE. (2003). Moving forward with complementary feeding: indicators and research priorities. International Food Policy Research Institute (IFPRI).

Sachdev HP, Mehrotra S. (1995). Predictors of exclusive breastfeeding in early infancy: operational implications. Indian Pediatr. Vol. 32(12), pp. 1287-1296.

Savage SA, Reilly JJ, Edwards CA, Durnin JV. (1998). Weaning practice in the Glasgow Longitudinal Infant Growth Study. Arch Dis Child. Vol. 79(2), pp. 153-156.

Savino F, Lupica MM. (2006). Breast milk: biological constituents for health and well-being in infancy. Recenti Prog Med.. Vol. 97(10), pp. 519-27.

Schlaepfer LV, Infante C. (1992). Infant nutrition in Mexico and its relationship with the utilization of maternal health services. Salud Publica Mex. Vol. 34(6), pp. 593-606.

Scott JA, Binns CW, Oddy WH, Graham KI. (2006). Predictors of breastfeeding duration: evidence from a cohort study. Pediatrics. Vol. 117(4), pp. e646-55.

Sellen DW. (2001). Weaning, complementary feeding, and maternal decision making in a rural east African pastoral population. J Hum Lact. Vol. 17(3), pp. 233-244.

Shamim S. (2005). Weaning practices in peri-urban low socioeconomic groups. J Coll Physicians Surg Pak. Vol. 15(3), pp. 129-132.

Shantakumar S, Terry MB, Teitelbaum SL, Britton JA, Millikan RC, Moorman PG, Neugut AI, Gammon MD. (2007). Reproductive factors and breast cancer risk among older women. Breast Cancer Res Treat. Vol. 102(3), pp. 365-374.

Sharma M, Kanani S. (2006). Grandmothers' influence on child care. Indian J Pediatr. Vol. 73(4), pp. 295-298.

Silveira FJ, Lamounier JA. (2006). Factors associated with breastfeeding duration in three cities in the region of Alto Jequitinhonha, Minas Gerais, Brazil. Cad Saude Publica. Vol. 22(1), pp. 69-77. Epub 2006 Feb 6.

Sjolin S, Hofvander Y, Hillervik C. (1979). A prospective study of individual courses of breast feeding. Acta Paediatr Scand. Vol. 68(4), pp. 521-529.

Thompson D, Fowler HW, Fowler GG, (1996). The concise Oxford dictionary. 9th ed. London:BCA/Oxford University Press.

Turck D. (2005). Comite de nutrition de la Societe francaise de pediatrie. Breast feeding: health benefits for child and mother. Arch Pediatr. Vol. 12, S3:S145-S165. (Epub 2005 Nov 21).

United Nations Children's Fund (UNICEF). (1995a). The situation of children and women in Lebanon. (http://www.peacewomen.org/resources/Lebanon/unicef.pdf)

United Nations Children's Fund (UNICEF). (2003b). Economic and social council. (http://www.unicef.org/about/execboard/files/03-PL16.pdf)

United Nations Children's Fund (UNICEF), WHO, PMOH. (2005c). The state of nutrition, A comprehensive review of nutrition situation of West Bank and Gaza Strip. First Edition.

United Nations Children's Fund (UNICEF). (2005d). Press center, News note. (http://www.unicef.org/media/media_27854.html)

United Nations Children's Fund (UNICEF). (2006e). Breastfeeding and complementary feeding. (http://www.childinfo.org/areas/breastfeeding/).

United Nations Children's Fund (UNICEF). (2006f). A World Fit for Children Report. New York.

United Nations Children's Fund (UNICEF). (2006g). The State of the World's Children report.

United Nations Children's Fund (UNICEF). (2007h). The Breastfeeding Initiatives Exchange. Facts and Figures. (http://www.UNICEF.org/programme/breastfeeding/facts.htm)

United Nations Children's Fund (UNICEF) (2007i). The Breastfeeding Initiatives Exchange, Complementary Foods and Feeding: Nutritional companion to breastfeeding after 6 months. (http://www.unicef.org/programme/breastfeeding/food.htm)

United Nations Children's Fund (UNICEF) (2007j). The Breastfeeding Initiatives Exchange, INNOCENTI DECLARATION on the Protection, Promotion and Support of Breastfeeding. (http://www.unicef.org/programme/breastfeeding/innocenti.htm)

United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). (2001a). Assessment of breastfeeding practices among mothers of infants utilizing UNRWA clinics. Health department.

United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). (2005b). Annual report of the department of Health.

United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA). (2007c). Amari refugee camp. (http://www.un.org/unrwa/refugees/westbank/amari.html)

Walker W.Allan. (2005). Eat, play and be healthy. The Harvard medical school guide for healthy eating for kids. McGraw-Hill companies.

Wambach KA. (1997). Breastfeeding intention and outcome: a test of the theory of planned behavior. Res Nurs Health. Vol. 20(1), pp. 51-59.

Wilson AC, Forsyth JS, Greene SA, Irvine L, Hau C, Howie PW. (1998). Relation of infant diet to childhood health: seven year follow up of cohort of children in Dundee infant feeding study. BMJ. Vol. 316(7124), pp. 21-25.

Women's Health USA 2005. Health status- maternal health. U.S. Department of Health and Human Services, Health Resources and Services Administration. (http://mchb.hrsa.gov/whusa_05/pages/0428breastfeed.htm)

World Health Organization (WHO, 1991a). Indicators for assessing breastfeeding practices. Report from an informal meeting 11-12 June 1991. Geneva, Switzerland. Division of Diarhoeal and acute respiratory disease control. WHO/CDD/Ser/91.14.

World Health Organization/United Nations Children's Fund (WHO/UNICEF) (1998). Complementary feeding of young children in developing countries: a review of current scientific knowledge. Geneva: WHO/NUT/98.1,1998.

World Health Organization (WHO) (1998b). Complementary feeding: family foods for breastfed children**.** Geneva.

World Health Organization (WHO). (2002c). Complementary feeding: report of the global consultation, and summary of guiding principles for complementary feeding of the breastfed child. Geneva.

World Health Organization (WHO) (2002d). Report of Informal Meeting to Review and Develop Indicators for Complementary Feeding. 3–5 December 2002. Washington, D.C.

World Health Organization (WHO). (2003e). The Global Strategy on Infant and Young Child Feeding. A joint WHO/UNICEF statement. Geneva, Switzerland.

World Health Organization (WHO). (2006f). Health conditions in the occupied Palestinian territory, including East Jerusalem, and in the occupied Syrian Golan: progress report. FIFTY-NINTH WORLD HEALTH ASSEMBLY A59/24, Provisional agenda item 13..

World Health Organization (WHO). (2007g). WHO Child Growth Standards: Methods and development. (http://www.who.int/childgrowth/en/)

World health organization (WHO) (2007). Infant and young child feeding. A tool for assessing national practices, policies and programmes. (http://www.who.int/nutrition/publications/inf_assess_nnpp_part1_eng.pdf)

World health organization (WHO) (2007i). Nutrition, complementary feeding. (http://www.who.int/nutrition/topics/complementary_feeding/en/index.html)

World health organization (WHO). (2007j) The WHO Global Data Bank on Breastfeeding and Complementary Feeding. http://www.who.int/research/iycf/bfcf/bfcf.asp?menu=21&cID=FRA&iID=&yID=&ok=true

Wright CM. (2005). Growth charts for babies. BMJ. Vol. 330(7505), pp.1399-400. (http://www.bmj.com/cgi/content/full/330/7505/1399)

Wright CM, Parkinson KN, Drewett RF. (2004). Why are babies weaned early? Data from a prospective population based cohort study. Arch Dis Child. Vol. 89(9), pp. 813-816.

Yamashiro Y. (2000). Overview of complementary feeding (weaning) in countries of Asia. Pediatrics. Vol. 106(5), pp. 1274A-1274.

Yang Q, Wen SW, Dubois L, Chen Y, Walker MC, Krewski D. (2004). Determinants of breast-feeding and weaning in Alberta, Canada. J Obstet Gynaecol Can. Vol. 26(11), pp. 975-81.

Appendices

Appendix 1 A : Map of Al-Am’ari refugee camp

Appendix 1 B

جامعة القدس

كلية الصحة العامة

تقييم ممارسات الرضاعة الطبيعية والفطام بين الأطفال من الولادة إلى عمر 24 شهرِ في مخيّمِ الامعري

ايار 2006

اختي المبحوثة:

السلام علبكم ورحمة الله وبركاته

تهدف دراسة تقييم ممارسات الرضاعة الطبيعية والفطام بين الأطفال من الولادة إلى عمر 24 شهر إلى تقييم مدى معرفة النساء في مخيم الامعري حول كيفية الرضاعة الطبيعية والفطام اضافة الى معرفة كيفية البدء باضافة الاطعمة التكميلية لهؤلاء الاطفال.

نرجو موافقتكم بالانضمام لجمهور هذه الدراسه بتعبئتكم لهذه الاستبانه والتى ستعكس معرفتكم وممارساتكم لموضوع الرضاعة الطبيعية وكيفية الفطام، علما بان هذه الدراسه تهتم بتقييم ممارسات كافة المشاركات بغض النظر عن الخلفيه العلميه للموضوع وذلك لاهميته الاجتماعيه والنفسيه بالاضافه لضرورته الطبيه، هادفين الوصول الى مجتمع فلسطيني سليم صحيا، واملين من حضرتكن الاجابه على كافة الاسئله بموضوعية تامة، علما أن المعلومات الواردة في الاستبانة ستستعمل لاغراض البحث فقط وستعامل بسرية تامة.

ارجو التوقيع على الاستمارة والتي هي اعلان بموافقتك بالمشاركة

اوافق على المشاركة بالدراسة اعلاة بعد قراءة الهدف منها .

التوقيع: _____الاسم_____

اسم الباحثة: _____ الرقم: __ __ __ __

القسم الاول: التفاصيل السكّانية والإجتماعية:

1- اسم الام الاول: _____ اسم العائلة: _____

2- العنوان: _____ تليفون: __ __ __ __ __ __ __

جوال: __ __ __ __ __ __ __ __ __ __

3- العمر: _____سنة تاريخ الميلاد: _____/_____/_____

4- الحالة الاجتماعية:

أ. متزوجة ب. أرملة ج. مطلقة

5- عدد مرات الحملِ: _____

6- عدد الولادات الحية: _____

خصائص الطفلِ المبحوث:

1- اسم طفلك الرضيع: الاسم الأول: _____ اسم العائلة_____

2- الجنس: ا. ذكر ب. أنثى

3- ترتيبه بين بقية الاطفال: _____

4- العمر: _____ سنة _____ شهر تاريخ الميلاد:

___/___/__200

5- وزن الطفل عند الوِلادة: 1. _____ غم 2. غير متوفر

6- طول الطفل عند الوِلادة: 1._____ سم 2. غير متوفر

7- محيط الرأس: 1. _____ سم 2. غير متوفر

8- أين ولد الطفل؟

أ. في المستشفى ب. في البيت

معلومات اجتماعية:

1- ما هو المستوى التعليمي لوالد الطفل:

أ. اقل او يساوي 6 سنوات

ب. 7-9 سنوات

ج. 10-12 سنة

د. دبلوم عالي، بكالوريوس، ماجستير

ه. أمّي

2- ما هو المستوى التعليمي لوالدة الطفل:

أ. اقل او يساوي 6 سنوات

ب. 7-9 سنوات

ج. 10-12 سنة

د. دبلوم عالي، بكالوريوس، ماجستير

ه. أمّية

3- هل تعملين؟

ا. نعم، حدّدي:_____

ب. ربّة بيت

4- هل والد الطفل يعمل؟

أ. نعم، حدّدي:_____

ب. لا

5- ما هو عدد الاشخاص الذين يسكنون معك في البيت: _____

القسم الثاني: الولادات

1- هل عانيت من أي تعقيدات أثناء الحملِ الأخيرِ بما فيها تشقق الحلمات؟
أ. نعم، حددي: _____
ب. لا
ج. لا اتذكر
2- كم عدد أسابيع فترة الحمل الاخير؟ (للباحثة: اول التاسع=37 اسبوع)
أ. أقل من 37 اسبوع
ب. 37-42 اسبوع
ج. أكثر من 42 اسبوع
د. لا اتذكر
3- كيف تمت عملية الولادة؟
أ. ولادة طبيعية
ب. عملية قيصرية
4- هل كان هناك أي تمزقات أو شق أثناء الولادة؟
أ. نعم
ب. لا
ج. لا اتذكر
5- هل تلقيت معلومات حول كيفية الرضاعة الطبيعية والعناية بالصدر قبل الولادة؟
أ. نعم
ب. لا (انتقلي الى القسم 3)
ج. لا اتذكر (انتقلي الى القسم 3)
6- اين تلقيت هذه المعلومات؟
أ. طبيب العائلة
ب. الطبيب النسائي
ج. الممرضة / القابلة/عاملة إجتماعية
د. أفراد العائلة
ه. مواد تثقيفية
و. التلفزيون
ز.غيره، حددي _____

القسم الثالث: معلومات حول الرضاعة الطبيعية:

1- هل تعرفين ما هو حليب اللبا / الحليب الاصفر / المسمار؟
أ. نعم
ب. لا (للباحثة: اشرحي للام ما هو ثم انتقلي الى سؤال 3)
2- ماذا تعرفين عنه؟
أ. جيد للطفل (يعطي مناعة للطفل الرضيع، يعطي طاقة،دهن عالي)
ب. حليب غير جيد ؛ ذو كثافة عالية، لا يجب أن يعطى للطفل
ج. ليس كافي للطفل الرضيع
3- هل أعطيت طفلك الرضيع حليب اللبا؟
أ. نعم
ب. لا
ج. لا اتذكر
4- هل أرضعت أطفالك جميعا اضافة الى طفلك الاخير رضاعة طبيعية من الصّدر ؟
أ. نعم (انتقلي الى سؤال 6)
ب. لا
ج. ليس جميعهم
5- لماذا لم ترضعي أطفالك من الصّدر؟
أ. لم أعرف كيف
ب. الرضاعة تؤثر على شكلِ الصدرِ
ج. خوفا من تعقيدات ومشاكل الرضاعة الطبيعية (إلتهاب الثدي)
د. خوفا من زيادة الوزن
ه. لم أحصل على الدعمِ العائليِ
و. لم أحصل على دعمِ زوجي
ز. اسباب أخرى؛ حدّدي _____

6- كيفية ممارسة الرضاعة الطبيعية لكل طفل على حدة؛ بالاشهر:
للباحثة:
- اقتصار على رضاعة طبيعية تعني **عدم** اعطاء الطفل أي شيء غير حليب الام، حتى الماء.
- سيادة الرضاعة الطبيعية تعني اعتماد الطفل على حليب الام مع امكانية اعطائه القليل من الماء أو العصير أو الاعشاب ولكن **ليس** حليب صناعي أو اطعمة مهروسة.
- اطعمة تكميلية تعني اعطاء الطفل اطعمة صلبة أو مهروسة او حليب صناعي **اضافة** الى حليب الام.

ترتيب الطفل	اقتصار على رضاعة طبيعية (عدد الاشهر)	سيادة الرضاعة الطبيعية (عدد الاشهر)	اطعمة تكميلية (عدد الاشهر)	استمرار الرضاعة الطبيعية لغاية عمر ___ شهر (حددي الشهر)	حليب اطفال صناعي
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

7- ما هي الفترة الزمنية بين الولادة وأول مرة تم وضع **الطفل الرضيع** على صدرك ليرضع؟
أ. _____ ساعات ب. لا أتذكر

8- هل تم اعطاء طفلك أيّ شئ للشرب قبل وضعه على الصدر ليرضع؟
أ. نعم، ما هو؟ _____. من أعطاه اياه؟ _____. لماذا؟
_____
ب. لا
ج. لا أعرف أو اتذكر

9- هل تم وضع الطفل بجانبك (في نفس الغرفة في المستشفى أو البيت) بعد الولادة؟
أ. نعم
ب. لا

10- هل تستخدمين اللهاية (بز كذاب) لطفلك؟
أ. نعم
ب. لا

11- كيف تحددين متى ترضعين طفلك في اليوم؟
أ. أنا لا أرضع الطفل (انتقلي الى سؤال 13)
ب. كلما طلب الطفل (كلما بكى)
ج. كلما استيقظ الطفل
د. كل ساعتين
ه. كل 3 ساعات
و. غير ذلك، حدّدي: _____
12- هل ترضعين طفلك نهاراً وليلاً؟

أ. نعم
ب. فقط في النهار
ج. فقط في الليل

13- هل ما زلت تُرضعين طفلك من الصّدر؟
ا. نعم (انتقلي الى القسم الرابع)
ب. لا

14- في أيّ عُمر توقفت عن ارضاع طفلك؟ _____ شهور

15- لماذا توقفت عن ارضاع طفلك عند هذا العمر؟
للباحثة: ضعي دائرة حول جميع الأجوبة المحتملة
أ. الطفل يأخذ حليب اصطناعي
ب. الطفل كبير السن
ج. الطفل جائع دائماً/ لا يشبع
د. الطفل يمسك الطعام بيده
ه. رفض الطفلِ لصدري
و. مشاكل مع زوجي بسبب الرضاعة
ز. عدم تشجيع من العائلة / الأصدقاء
ح. تعبت من الرضاعة من الصّدرِ
ط. حليبي غير كافي
ي. مرض / علاج بالمستشفى
ك. العودة للعمل
ل. ملابسي اصبحت دائما مبللة وحمالة الصدر غير جيدة بسبب الحليب
م. سفر / عطلة
ن. حدوث حمل
س. زاد وزني / خفت من زيادة الوزن
ع. شكل صدري اصبح غير جميل / غير متناسقِ
ف. غير ذلك، حدّدي: _____

16- كيف توقفت عن الرضاعة؟
أ. مرة واحدة
ب. تدريجيا
ج. لم أتوقف عن الرضاعة
17- كيف تم ذلك؟
أ. قرّرت أن لا أضعه على صدري مرة أخرى
ب. وضع طعم كثير التوابل أو مرٌ على الصدرِ (صبرة مرة، فلفل، الخ ...)
ج. ابعاد الطفل عني لعدة أيامٍ (تركه مع أجداده، احد افراد العائلة)
د. توقفت عن ارضاعه من الصّدر أثناء النهار، ثم أثناء اللّيلِ
ه. تخفيف عدد الرضعات أثناء النهار، ثم أثناء اللّيلِ، ثم توقفت
و. غير ذلك ، حدّدي: _____

القسم الرابع: الفطام:

1- كيف بدأت بتقديم الحليب الصناعي / الطعام المهروس أو السائل / الطعام الكامل إلى طفلك **غير حليب الام؟**
للباحثة: حددي الشهر الذي تقوله الام

العمر (اشهر)	الشهر	محاولة / تذوق	لا يأخذ	لا اتذكر
الحليب الصناعي للرضع / للاطفال				
سكر فضي مع ماء أو ينسون				
ماء				
ماء محلى				
شاي بدون سكر				

شاي مع سكر				
شاي مع بسكويت أو قرشلة				
حليب مع بسكويت أو قرشلة				
مهلبية / كاسترد / سحلب				
بابونج/ينسون/ ميرمية/اعشاب				
عصير فاكهه طبيعي				
العمر (اشهر)	الشهر	محاولة / تذوق	لا يأخذ	لا اتذكر
عصير خضار (جزر/ بندورة				
حليب بقر كامل الدسم (بودرة / سائل)				
لبنة/ جبنة/ جبنة مثلثات				
لبن رايب / شمينت				
لبن محلى (برللي، جماديم، لبن مع فاكهه				
خضار مهروسة في البيت				
فاكهه مهروسة في البيت				
بطاطا مهروسة				
بقوليات (حمص، فول، عدس)				
عسل/دبس				
حبوب للاطفال (سيريلاك، كورن فلور)				
بسكويت الاطفال				
خبز، بسكويت بانواعه				
ارز مهروس بدون اضافات				
ارز مهروس مع اضافة مرقة الطعام				
طعام اطفال جاهز (جيربر)				
شوربات				
طعام العائلة (طبيخ)				
بياض بيض				
صفار بيض				
بيضة كاملة				
لحوم/ دجاج/ سمك				
بمبا/ شيبس				
غيره، حددي				

2- ماذا كان الغذاء الأول الذي اعطي للطفل غير حليبِ الصدرِ أو الحليب الصناعي؟ لماذا؟

_____
_____
_____

3- لماذا بدأت بإعطاء الأطعمة الصلبة أو السوائل في هذا الشهر _____ **(للباحثة: حدّدي الشهر)**؟

للباحثة: ضعي اشارة بجانب جميع الأجوبة المحتملة

1	رغبة شخصية من قبل الأم	
2	نصيحة الدكتور	
3	نصيحة الممرضة	
4	تجربة سابقة	
5	الطفل وصل عمر الفطام	
6	حليبي غير كافي	
7	الطفل دائم البكاء	
8	رفض الطفل لصدري	

9	مشاكل مستمرة في الصدر	
10	عودتي للعمل	
11	سفر / عطلة	
12	مرض/ علاج بالمستشفى	
13	الطفل لا يشبع	
14	تشجيع العائلة / الأصدقاء	
15	ضغط الجدات	
16	تعبت من الرضاعة	
17	اشعر بالعزلة بسبب الرضاعة	
18	ملابسي اصبحت دائما مبللة وحمالة الصدر غيرمرتبة بسبب الحليب	
19	تعاطي ادوية	
20	حمل جديد	
21	الطفل يمسك الطعام بيده	
22	الطقس الحار	
23	غيره، حددي	

4- من أين حصلت على معلوماتك حول كيفية إطعام الطفل؟
أ. لم احصل على أي معلومات
ب. طبيب العائلة
ج. طبيب الأطفال
د. ممرضة / عاملة إجتماعية
ه. تجربة سابقة
و. أفراد العائلة
ز. مواد تثقيفية
ح. التلفزيون
ط. غيره، حددي _____

6- هل هناك شيء معين تقومين به لجعل غذاء طفلك مقبول أكثرِ؟
أ. نعم
ب. لا

7- ماذا تفعلين؟
أ. أضافة سكر
ب. أضافة ملح / فلفل
ج. أ مضغ الطعامً قبل إعطائه إليه
د. اقطع الطعام إلى قطع صغيرة
ه. أ هرس الطعام
و. اخلط الطعام بالخلاط
ز. غيره، حددي _____

8- من يطعم طفلك عندما تكونين بعيدة عنه؟
أ. انا فقط الذي تطعمه
ب. الجدة
ج. الأخت أو الاخ الأكبر سنا
د. الأقرباء (العمّات، الخالات الخ)
ه. في الحضانة

9- كم مرة تعطي طفلك المواد الغذائية التالية:

الطعام	مرة/ اليوم	2-4 مرات / اليوم	5-7 مرات / اليوم	يوم بعد يوم	2 مرة / الاسبوع	مرة / الاسبوع	محاولة/ تذوق	لا يأخذ
الحليب الصناعي								
ماء								
شاي بدون سكر								
شاي مع سكر								
اعشاب مع سكر								
شاي مع بسكويت أو قرشلة								
حبوب								
خبز، ارز، بطاطا، كورن فلور								
فاكهه								
خضار								
مهلبية								
حليب بقر								
لبنة / جبنة								
لبن								
بيض								
لحوم / دجاج								
طعام العائلة								

10- الوزن الحالي: _____ غم

11- الطول الحالي: _____ سم

12- محيط الرأس الحالي: _____ سم

شكرا لتعاونكم

Appendix 2

Table 2.A: Percentages of food items introduced to the indexed child at different age groups.

Food item	None (%)	Received between 0-3 months (%)	Received between 4-6 months (%)	Received between 6-12 months (%)	Received after the age of 12 months (%)
Formula	42.7	30.9	6.2	15.7	4.5
Cubed sugar with water or anis	32.6	62.9	2.2	2.2	0.0
Plain water	5.1	46.1	32.6	15.7	0.6
Herbal drinks	24.2	53.9	11.2	9.0	1.7
sweetened water	91.6	7.3	1.1	0.0	0.0
sweetened tea	69.7	1.1	2.8	7.3	19.1
unsweetened tea	98.9	0.6	0.6	0.0	0.0
tea with biscuit	65.7	1.1	6.7	12.9	13.5
Milk with biscuit	41.0	3.4	15.7	25.3	14.6
Whole cow's milk	72.5	1.1	1.1	9.0	16.3
Muhalabiah	24.7	14.6	32.0	28.1	0.6
labneh	37.1	1.1	7.3	32.0	22.5
plain yogurt	25.3	3.4	15.7	40.4	15.2
sweetened yogurt	13.5	7.9	33.7	38.2	6.7
mashed fruits	15.7	7.3	33.1	39.3	4.5
fresh juice	20.8	8.4	22.5	37.6	10.7
Vegetable juice	9.6	12.4	37.1	35.4	5.6
mashed vegetables	20.8	3.9	30.3	39.9	5.1
Corn flour, cerelac	30.3	9.0	28.7	30.9	1.1
bread	25.8	2.2	12.9	39.3	19.7
rice	55.1	5.1	12.9	23.6	3.4
rice with broth	36.5	1.7	7.9	40.4	13.5
mashed potato	52.8	1.7	10.1	28.7	6.7
Honey or dibes	70.8	5.1	8.4	8.4	7.3
Soup	16.9	2.8	24.2	45.5	10.7
Legumes	41.6	1.7	10.7	29.8	16.3
Red or white meat	40.4	0.0	3.4	19.1	37.1
Egg white	88.2	2.2	7.3	2.2	88.2
Egg yolk	85.4	1.7	0.6	10.7	1.7
Whole egg	36.0	1.7	2.8	42.1	17.4

Food item		Received between 0-3 months (%)	Received between 4-6 months (%)	Received between 6-12 months (%)	Received after the age of 12 months (%)
Baby biscuit	65.2	2.2	9.0	20.2	3.4
Salt snacks	27.5	1.7	6.2	41.6	23.0
Ready made baby food	79.8	5.1	5.1	10.1	0.0
Family food	22.5	1.1	6.7	40.4	29.2

Appendix 3

List of tables showing the associations between the different studied variables and children between 6-12 months of age

Table 3.A: Associations between the consumption of different food and beverages between 6-12 months and demographic variables

		Dairy products		**Carbohydrates**		**Eggs**		**Soup**	
		No.=77 (43.3%)		**No.=89 (50%)**		**No.=75 (42.1%)**		**No.=81 (45.5%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Mother's age:									
< 20 yrs	4.5	1.3		2.2		3.4		2.5	
20-35 yrs	87.6	89.6	0.18	91.0	0.28	87.4	0.67	88.9	0.47
> 35 yrs	7.9	9.1		6.7		9.2		8.6	
Mother's level of education									
≤ 6 yrs	7.9	11.7		10.1		5.7		7.4	
7-9 yrs	32.6	41.6	**0.02**	36.0	0.39	41.4	0.08	39.5	0.27
10-12 yrs	46.1	36.4		40.4		39.1		43.2	
High diploma	13.5	10.4		13.5		13.8		9.9	
Number of people living in the house									
< 6 individuals	42.7	36.4	0.17	40.4	0.65	36.8	0.13	37.0	0.17
> 6 individuals	57.3	63.6		59.6		63.2		63.0	

Table 3.B: Associations between the consumption of different food and beverages between 6-12 months and delivery characteristics, the use of pacifier

		Dairy products		**CHO**		**Eggs**		**Soup**	
		No.=77 (43.3%)		**No.=89 (50%)**		**No.=75 (42.1%)**		**No.=81 (45.5%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Education about BF during antenatal visits									
Yes	72.5	70.1	0.61	67.4	0.18	67.8	0.14	75.3	0.50
No	27.5	29.9		32.6		32.2		24.7	
Mode of delivery									
Normal	87.1	85.7	0.66	80.9	**0.02**	86.2	0.83	87.7	1.00
Cesarean	12.9	14.3		19.1		13.8		12.3	
Episiotomy									
Yes	87.1	85.7	0.66	80.9	**0.02**	86.2	0.83	87.7	1.00
No	12.9	14.3		19.1		13.8		12.3	
Use of pacifier									
Yes	43.3	42.9	1.00	42.7	1.00	37.9	0.18	37.0	0.13
No	56.7	57.1		57.3		62.1		63.0	

Table 3.C: Associations between the consumption of different food and beverages between 4-6 months and breastfeeding practices

		Dairy products		**Carbohydrates**		**Eggs**		**Soup**	
		No.=77 (43.3%)		**No.=89 (50%)**		**No.=75 (42.1%)**		**No.=81 (45.5%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Frequency of BF									
Don't Bf	6.2	5.2		5.6		8.0		6.2	
During day and night	91.6	92.2	0.86	92.1	0.95	90.8	0.39	91.4	0.98
Only during the day	2.2	2.6		2.2		1.1		2.5	
When mother knows when to BF									
I don't breastfeed	6.2	5.2		5.6		8.0		6.2	
when the baby cries	62.9	67.5		65.2		50.6		65.4	
when the baby wakes up	13.5	10.4	0.65	12.4	0.93	19.5	0.009	11.1	0.86
Different time intervals	17.4	16.9		16.9		21.8		%17.3	
BF cessation									
Abrupt	53.6	47.7	0.28	46.9	0.19	50.0	0.51	48.8	0.51
Gradual	46.4	52.3		53.1		50.0		51.2	
Age of BF cessation									
< 6 mo	13.7	10.5		14.9		14.1		12.7	
6-12 mo	17.7	23.7	**0.02**	20.7	0.29	21.2	0.26	20.3	0.68
> 12 mo	15.4	22.4		18.4		18.8		17.7	

Table 3.D: Associations between the consumption of different food and beverages between 4-6 months and child's characteristics

		Dairy products		**Carbohydrates**		**Eggs**		**Soup**	
		No.=77 (43.3%)		**No.=89 (50%)**		**No.=75 (42.1%)**		**No.=81 (45.5%)**	
	Total (%)	%	P-value	%	P-value	%	P-value	%	P-value
Gender									
Male	56.7	49.4	0.09	60.7	0.36	62.1	0.18	54.3	0.65
Female	43.3	50.6		39.3		37.9		45.7	
Child order									
1st or 2nd	42.1	39.0		40.4		41.4		34.6	
3rd, 4th or 5th	39.9	41.6	0.75	36.0	0.14	36.8	0.40	43.2	0.14
6th or more	18.0	19.5		23.6		21.8		22.2	

Annex 4: Table of multivariate logistic regression analysis for factors associated with the consumption of selected food items

	Carbohydrates			Fruits			Vegetables			Dairy products			Muhalabieh		
	OR	**95.0% CI**		**OR**	**95.0% CI**		**OR**	**95.0% CI**		**OR**	**95.0% CI**		**OR**	**95.0% CI**	
		lower	upper		lower	upper		lower	upper		lower	upper		lower	upper
Demographic variables															
- Mother's age															
< 20 years	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
20-35 years	2.06	0.51	8.24	0	0		0.64	0.10	4.02	2.83	0.11	70.13	3.84	.55	26.62
> 35 years	2.16	0.29	15.70	0	0		2.85	.065	12.47	3.04	0.25	36.03	2.15	.64	7.19
-Mother's education															
≤ 6 years	1.20	0.19	7.57	0.54	0.06	4.37	0.26	0.02	3.17	0.56	0.03	9.81	0.83	0.13	5.25
7-9 years	2.12	0.51	8.69	0.96	0.17	5.34	0.23	0.02	1.98	0.58	0.06	5.54	1.59	0.46	5.44
10-12 years	0.89	0.26	2.99	0.84	0.16	4.25	0.17	0.02	1.42	0.55	0.06	4.81	2.06	0.63	6.69
high diploma	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
- Number of people living in the house															
<6 individuals	1.0	--	--												
>6 individuals	2.45	**1.04**	**5.76**	5.05	**1.57**	**16.19**	2.38	**1.04**	**5.44**	0.17	**0.03**	**0.84**	1.67	0.84	3.32
Delivery characteristics															
- Education about BF during antenatal visits															
Yes	.43	.14	1.32	.79	.24	2.55	0.85	.34	2.16	.22	.02	1.77	.503	.214	1.18
No	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
- Mode of delivery															
Normal	.84	.23	3.11	.88	.18	4.15	1.14	.35	3.66	.58	.07	4.77	2.210	.875	5.58
Cesarean	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--

- Episiotomy															
Yes	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
No	1.05	0.43	2.53	.95	.33	2.71	1.07	.46	2.49	.87	.25	2.97	1.17	.58	2.38
- Use of pacifier															
Yes	0.72	0.26	2.00	.74	.22	2.48	1.14	.39	3.27	1.17	.24	5.70	.94	.40	2.21
No	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
Breastfeeding practices															
-Frequency of BF															
During day and night	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
Only during the day	0.53	0.05	5.39	0	0	0	1.86	18.	18.84	5.45	50.	58.57	95.	09.	9.46
- When mother knows when to BF															
when the baby cries	0.87	0.26	2.89	99.	25.	3.80	1.07	36.	3.18	1.01	19.	5.24	99.	40.	2.47
when the baby wakes up	0.93	0.31	2.77	77.	14.	4.25	56.	14.	2.14	43.	06.	2.90	1.32	37.	4.73
Different time intervals	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
Child's characteristics															
- Gender															
Male	0.87	0.36	2.07	2.41	86.	6.77	1.49	.65	3.39	1.00	.30	3.34	.84	.42	1.71
Female	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
- Child order															
1st or 2nd	0.32	0.06	1.55	0	0		.45	.11	1.73	.45	.05	4.07	1.49	.57	3.90
3rd, 4th or 5th	037.	0.07	1.80	0	0		.47	.12	1.82	.34	.04	3.06	1.10	.43	2.83
6th or more	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--

	Meat			Formula			Cow's milk			Plain water			Herbal drinks		
	OR	**95.0% CI**		**OR**	**95.0% CI**		**OR**	**95.0% CI**		**OR**	**95.0% CI**		**OR**	**95.0% CI**	
		lower	upper		lower	upper		lower	upper		lower	upper		lower	upper
Demographic variables															
- Mother's age															
< 20 years	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
20-35 years	2.06	0.62	6.80	0.84	0.23	3.03	.62	.12	3.11	0	0	0	.70	.17	2.83
> 35 years	3.85	0.76	19.46	0.60	0.11	3.06	.90	.11	6.95	0	0		.97	.14	6.47
-Mother's education															
≤ 6 years	0.45	0.11	1.72	1.03	0.31	3.35	.82	.22	2.98	.80	.086	7.57	1.49	.34	6.48
7-9 years	1.57	0.57	4.31	1.60	0.50	5.12	1.42	.39	5.22	1.72	.162	18.32	.57	.14	2.30
10-12 years	0.66	0.26	1.68	1.42	0.36	5.58	.66	.15	2.84	E	0		1.16	.22	6.01
high diploma	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
- Number of people living in the house															
<6 individuals	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
>6 individuals	1.08	0.55	2.09	0.67	0.35	1.29	0.95	.46	1.96	1.287	.320	5.16	1.16	.22	6.01
Delivery characteristics															
- Education about BF during antenatal visits															
Yes	.83	.41	1.65	1.42	.70	2.87	.59	.26	1.32	.301	.036	2.51	.50	.21	1.18
No	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
- Mode of delivery															
Normal	1.54	.59	4.00	.92	.33	2.54	.73	.22	2.41	0	0		1.09	.35	3.36
Cesarean	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--

- Episiotomy															
Yes	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
No	1.31	0.68	2.51	1.58	.81	3.08	.59	.29	1.20	1.06	0.26	4.21	.80	.38	1.67
- Use of pacifier															
Yes	0.64	0.30	1.38	4.80	1.86	12.39	.90	.39	2.09	.44	0.10	1.92	1.76	.67	4.64
No	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
Child's characteristics															
- Gender															
Male	1.13	.60	2.112	1.11	.60	2.06	.98	.49	1.92	3.12	0.61	15.96	0.35	**0.16**	**0.77**
Female	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--
- Child order															
1st or 2nd	.28	.10	.784	1.33	.56	3.17	.83	.33	2.09	0.16	0.01	1.89	1.396	.49	3.97
3rd, 4th or 5th	.26	.09	.713	.58	.24	1.36	1.35	.51	3.52	1.14	0.21	6.18	.795	.28	2.18
6th or more	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--	1.0	--	--