

Mothers' Knowledge and Practices about Complementary Feeding for their Breast-fed Children at El Behaira Governorate

Abeer Abd El Azziz Mohamed Madian, Lecturer

Community Health Nursing, Faculty of Nursing, Damanshour University

Naglaa Kamel Abdulllah Hussein, Lecturer

Community Health Nursing, Faculty of Nursing, Damanshour University

Abstract

Background: Adequate nutrition is critical to child health and development. Growth during the first year of life is greater than at any other time after birth. Improving infant and young child feeding practices is therefore critical to improved nutrition, health, and development of children. **Objective:** This study aimed to assess mothers' knowledge and practices about complementary feeding for their Breast-fed Children at El Behaira Governorate. **Setting:** The study was carried out at El Behaira Governorate. **Subjects:** The study sample included 400 mothers. **Tools:** Data was collected through face-to-face interviewing questionnaire of mothers' with breast fed children. **Results:** More than half of the mothers (59%) knew that the age of six months is the ideal age for starting complementary feeding, despite that it was practiced by 9% only. The majority of the mothers (95.0%) knew that the cup and spoon are the correct method for food introduction. However 42.8% used bottle with teat in feeding their infants the first feed. More than three quarters of the mothers (79.8%) not able to define complementary feeding as introduction of foods besides breast-feeding. The majority of the mothers (99%) defined weaning as cessation of breast-feeding. More than half of mothers (59%) involved in this work knew that the infant should consume 2-3 meals /day at age of 6-8 months which was correct answer. Less than half of mothers obtained poor score of knowledge regarding complementary feeding. Infant and young child feeding practices in this study were scarce. **Conclusion:** There was general lack of awareness of some major recommended practices regarding complementary feeding. **Recommendations:** This study recommended implementation of health education program in primary health care settings to improve and support the breastfeeding and complementary feeding practices among mothers. Longer paid maternity leave at least for 6 months and reduction in working hours are also recommended.

Keywords: Complementary feeding, exclusively breastfed, Feeding practices.

Introduction

The first two years of life are critical stages for a child's growth and development. Infant feeding from birth up to the first years of life influences an individual's whole life^(1,2). Adequate nutrition during infancy and early childhood is essential to ensure healthy growth and development of children to their full potential. Any damage caused nutritional deficiencies during this period could lead to impaired cognitive development, compromised educational achievement and low economic productivity^(3,4).

The World Health Organization has described breast feeding as unequalled way of providing ideal food for the survival, healthy growth and development of infants and young children; it is also an integral part of the reproductive process with important implications for the health of mothers. (WHO & UNICEF)⁽⁵⁾. Infants are vulnerable during the transition phase from exclusive breast milk to introduction of complementary feeding over and above breast milk. For ensuring the nutritional needs of a young child are met, breastfeeding must continue along with observing the followed practices for appropriate complementary feeding^(6,7).

Complementary feeding means complementing solid/semi-solid food with breast milk after child attains age of six months, because breast milk is no longer sufficient to meet the nutritional requirements of infants. Therefore, other foods and liquids are needed along with breast milk⁽⁸⁾. These foods may be prepared specifically for children, or they may consist of family foods that are served to children^(9,10).

According to the World Health Organization (WHO), complementary foods should fulfill the needs of rapidly growing child; and appropriate meaning that foods should be diverse, of appropriate texture and given in sufficient quantity⁽¹¹⁾. Feeding practices is a critical aspect of caring for infants and young children. These practices stimulate bonding, psycho-social development and lead to improved physical growth, reduced susceptibility to common childhood infections and better resistance to cope with them⁽¹²⁾. Inappropriate feeding practices are a major cause of the onset of malnutrition in infants and young children^(13,14).

Fault feeding practices including lack of breast feeding and early introduction of solid foods have been reported as children health risks⁽¹⁵⁾.

The prevalence of breast and complementary feeding differs from one country to another and from one society to another; this of course is due to cultural and religious factors. Mother's practices related to breast feeding and complementary feeding were not optimum and efforts should be done to change their behaviors and reinforce healthy feeding practices⁽¹⁶⁾.

In Maternal and Child Health centers, nurses play an important and vital role, as they contribute in health promotion and disease prevention. They have an important role in teaching women, providing guidance, giving information and counseling about the benefits and management of breast-feeding, and giving a timely; safe; and adequate complementary feeding with continued breast-feeding^(17,18).

Aim of the Study

To assess mothers' knowledge and practices about complementary feeding for their Breast-fed Children at El Behaira Governorate.

Research Question:

What are the mothers' knowledge and practices about complementary feeding for their Breast-fed Children?

Materials and Method

Materials

Design: A cross-sectional descriptive design was carried out to conduct this study.

Setting: The study was conducted at four Maternal and Child Health centers affiliated to Ministry of Health in El Behaira Governorate, namely, El Halal MCH (Damanhor City), Kafer El-Daowar MCH (Kafer El-Daowar City), El Naser MCH (Abo El Matameer City), and Kom Hamada MCH (Kom Hamada City).

Subjects: 400 mothers attending to well-baby clinics at MCH centers were selected from previously mentioned setting to carry out this study according to the following inclusion criteria: Mothers accompanying their breast-fed children aged less than two years and who started complementary feeding.

Sample size:

Sample size was 400 according to 24% with a precision of 6%, alpha error = 0.05 and design effect = 2 (cluster design effect), so sample size equal 400 mothers.

Sampling technique:

Multistage sampling technique was used to select the subject as follow:

Complementary Feeding of Breast-fed Children

- Four districts were selected randomly using blind paper picking out of 15 districts.
- One center was selected randomly from each district.
- By using equal allocation method 100 mothers were selected randomly from each center.

Tool: A structured interview questionnaire was designed by the researchers to collect the necessary data from mothers. It included three parts:

Part one:

- 1- Concerned with socio demographic characteristics of study subjects including age, sex and birth order of child.
- 2- Characteristics of the parents included: age, level of education, occupation and socioeconomic level of the family was estimated by using Fahmy and EL- Sherbini (1983)⁽¹⁹⁾.

Part two: It was composed of 3 items to assess mothers' knowledge about:

- 1- Complementary feeding.
- 2- Storage of foods & food preparation.
- 3- Methods of storing cooked food.

Part three: Concerned with practices of mothers regarding complementary feeding including:

- a- The age of starting complementary feeding.
- b- Feeding during sickness.
- c- Food preparation and storage.
- d- Mothers' behaviors regarding feeding their infants.

Method

- Permission to conduct the study was obtained from the administrators of the health affair in El-Beheira Governorate.
- Permission from directors of the selected MCH centers was obtained.
- Data collection:
 - 1- The researcher was able to interview about 8 – 10 mothers daily. Each MCH center was visited twice / week, on the scheduled day of vaccination, and also at the time of follow up for age one and two years old. Each sheet took 15-20 minutes to be answered. Data was collected from February 2014 till August 2014.
 - 2- Tool of data collection was tested for its content validity and relevance by a jury consisted of three academic staff in Community Health Nursing from

Alexandria and Damanhour University.

3- A pilot study was carried out in a center not included in the study. The pilot study included 40 mothers (10% from total sample), simple modifications were done.

4- Cronbach Alpha Equation used to test the tool reliability (internal consistency of the tool items was 0.79).

Ethical considerations:

The purpose and the nature of the study were clarified to mothers, for full cooperation. The questionnaire sheet was explained to the participants, verbal consent was obtained from each mother. Privacy was maintained during process of collecting data. Confidentiality of mothers' response was guaranteed during the study.

Statistical Analysis

After collection of data, they were coded and transferred into especially designed formats to be suitable for computer feeding. Following data entry, checking and verifying processes were carried out to avoid any errors during data entry.

Data was analyzed using PC with Statistical Package for Social Sciences (SPSS) version 16.0.

The level of significance selected for this study was 0.05.

The following statistical measures were used:

A- Descriptive statistics:

Count and percentage: Used for describing and summarizing quantitative data, Arithmetic means Standard deviation (SD) and range were used.

B- Analytical statistics:

Chi square test (X^2): it was used to test the association between categories of variables.

Correlation coefficient (rs) was used to test correlation between two quantitative variables not normally distributed.

C- Scoring system:

A) Socioeconomic level of the family was estimated by using Fahmy and EL-Sherbini (1983).⁽¹⁹⁾ The total socioeconomic score summed 50 and classified to the following levels:

	Score
- High	42.5 - 50
- Middle	37.5 - 42
- Low middle	25 - 37
- Low	< 25

B) Scoring system for assessing knowledge of mothers regarding complementary feeding, safe preparation and storage of foods; this section consists of 18 items and the correct answers were pre-determined according to the literature. A score of (2) was given to the correct complete answer, a score of (1) for correct but incomplete answer and a score of (0) for the wrong or missed answers. The total knowledge score was obtained for each mother (0-36). Percent of the total knowledge score was calculated as follows;

Poor knowledge <18 (< 50%)

Satisfactory 18- <27 (50 - <75%)

Good ≥ 27 ($\geq 75\%$)

C) Scoring system for assessing mothers' practices regarding complementary feeding: this section of the questionnaire includes 13 items composed of safe preparation and storage of foods; the items were scoring as following: A score "2" was given to complete correct practice. While, score "1" was given to correct but incomplete practice and a score "0" was given to incorrect or never done. The total practice score was obtained for each participant (0-26). Percent total practice score was calculated as follows; poor practice <13 (less than 50%), satisfactory practice

13-<19.5 (50-<75%) and good practice ≥ 19.5 ($\geq 75\%$).

Results

Table (1) illustrates that the total studied sample reached 400 mother-child pair; boys represented 52.3% and girls 47.7%. The mean age of children was 10.7 ± 4.77 months and more than one third (36%) of them was the second child.

Regarding mothers' age, more than one third (35.5%) of the mothers' sample was 25-<30 years and their mean age was 28.35 ± 5.48 . Regarding parents' education, less than half of them (41.7%) of the mothers and 43% of fathers had secondary education. The table also shows that the majorities (87%) of mothers' sample are not working and 13% are working. Moreover, mothers reported that, more than three quarters (78.2%) of them not receiving health education about breast feeding either during antenatal or postnatal period.

As regards to the socio-economic score obtained by the studied sample, **figure (1)** portray that high socio-economic level constituted 20.5% of the sample, middle socio-economic level was 27.0%, low middle was 25.0% and low socio-economic level constituted 27.5%.

Table (2) presents that more than half (59%) of mothers knew the correct age for starting complementary foods of infants. It was also noticed that the majority (93.5%) of the mothers stated that breast-feeding should be continued for two years. It was also found that only 0.5% of mothers defined complementary feeding correctly. The majority (99%) of mothers defined weaning as cessation of breast-feeding. Only 1.0% of them were able to define weaning correctly. The table also shows that more than three quarters (78.7%) of the sample mentioned that, yogurt should be the first food given to the infant at the start of complementary feeding. The majority (95.0%) of women stated that cup and spoon are the appropriate way of feeding infant aged six months. More than half (59.0%) of the women reported that infant should eat 2-3 meals at age of 6- 8 months. Also, mothers' knowledge regarding number of meals required for those aged 12 months where 65.7% of them reported correct answer. Regarding amount of weaning food at age of 6 – 8 months, less than half (48.0%) of mothers reported that infant should intake from 2 – 3 teaspoon – ½ cup.

The table also reveals that about more than one third (35.8%) of the sample

considered that the age of 12 months is the ideal age of the child to be given ordinary family food. More than one third (38.8%) of sample didn't know types of foods forbidden to the child under two years old. The table also points out that 73% of the mothers stated that there is necessity to give vitamins besides complementary feeding.

Table (3) reveals that about 80.3% of mothers had knowledge about washing their hands before both food preparation and feeding the infant. The majority (82.5%) of the mothers stated that the infant's hands must be washed before and after feeding. The majority (98.8%) of the mothers mentioned that the utensils in which the child eats must be washed with soap and water. As regards the water to be used for drinking and food preparation 65.5% of the women mentioned boiled water. The table also reveals that the majority (98.3%) of the mothers stated that the cooked food should be stored at the refrigerator. Also, 88.7% of the mothers reported that the left-over food stored at the refrigerator must be warmed before feeding them to the child while 11.3% stated that left-over food should be thrown and the meal of infant must be fresh and immediately prepared before time of eating.

Figure (2) shows the mothers' sources of knowledge about complementary feeding. The majority (85.5%) of mothers had their information from their relatives and neighbors, and 39.5% of them gain their knowledge from health team members followed by 10.5% from mass media and only 7.7% from reading books or magazines.

Figure (3) shows the mothers' total score of knowledge about complementary feeding. The highest score of mothers (42.75%) indicating poor score of knowledge, and 31.5% of them their knowledge score was satisfactory followed by one quarter of them (25.75%) had good score of knowledge. Their mean was 53.18 ± 15.01 .

Table (4) reveals that, only 9% of the mothers started complementary feeding their infant age of six month, while more than two thirds (67.7%) of them started before the age of three months. It can be noticed that more than two thirds (65.7%) of the mothers started with yanson or karawia and 22.5% of the mothers gave their infants yogurt as the first food. Also more than half (56.2%) of the mothers used tea spoon to introduce their foods and 42.8% of the mothers used the bottle with teat. As regards intervals between

introductions of each new complementary food, more than the half (58.5%) of mothers had no schedule of introducing of each new food while 19.7% of the mothers introduced new food every two weeks or more.

The table also reveals that, the majority (85.7%) of the mothers breast-fed their infants for five times or more / day and nearly three quarters (74.0%) of the infants consumed the ordinary family food. The table points out that 43.5% of the infants consumed two meals/ day. Moreover, about two third (66%) of mothers give breast feeding only to their children during illness.

Table (5) reveals that approximately half of mothers (49.0%) of the mothers washed their hands before food preparation ,before and after feeding their infants. Nearly, half (49.7%) of the mothers washed their infants' hands before and after feeding. All mothers washed the utensils in which the child ate with soap and water. As regards the type of water used for infant drinking and food preparation, the majority of them (80.3%) used tap water. It was also noticed that less than one fourth (23.2%) of the mothers had store the left-over food from their infants at refrigerators.

Table (6) presents that three quarters (75.0%) of the mothers identify that their infant is hungry through infant crying and the majority (97.3%) of the mothers identify their infant's satiety by refusal of food. The table also presents that the majority (88.5%) of the mothers set with their infants during eating their meal. Moreover 72.3% of the mothers left their infants with no food if they refused to eat and about three quarters (76.5%) of the mothers didn't encourage their infants to eat if they refused the food and only 20% of mothers use positive verbalization or playing to the infant for encouraging him to eat.

Figure (4) shows total score of the mothers' practices about complementary feeding. The highest score obtained by mothers (59.1%) indicating satisfactory score of practices, and 26.4% of them their practices score was poor, on the other hand, (14.5%) of them had good score of practices.

Table (7) revealed that, there was no significant difference observed between child birth order and their knowledge and practices. However, there was a negative correlation between birth order of child and practices of mothers ($r_s = -0.124$).

Table (8) reveals that early introduction of complementary foods decreased by increasing the level of mothers' education as it was three quarters (75.0%) of primary or preparatory educated mothers practiced early introduction followed by 70.0% of secondary educated. The percentage of those who started complementary feeding at 6 months was higher among university educated mothers (11.5%) compared to 6.7% among illiterate.

Regarding mothers' occupation, the percentage of those who introduced complementary food early (less than 4 months) was higher among non working mothers (69.0% vs. 59.6% of working mothers). Introduction of complementary food at later age of the child (4-<6 months and at 6 months) was higher among working than non working mothers (30.8% vs. 22.1% and 9.6% vs. 8.9% respectively). The table also reveals that younger mothers have more tendency for early introduction of complementary foods as it was 73.1% of mothers aged <25 years and decreased to 63.6% of mothers older than 35 years. The percentage of mothers who introduced complementary food at 6 months was higher among older mothers (13.6% among >35 years vs. 6.7% among <25

years. There is no statistically significant association between infant age at introduction of complementary foods and mothers' age and education.

Discussion

In recent years, the issue of complementary feeding in developing countries has been receiving increased attention. Poor complementary feeding practices contribute substantially to the widespread multiple micronutrient deficiencies in developing countries⁽²⁰⁾. Egypt is one of the developing countries in which it needs to support correct complementary feeding practices, therefore this study aimed to assess mothers' knowledge and practices about complementary feeding for their Breast-fed Children at El Behaira Governorate.

The present study indicated that the majority of the mothers included in the study received their information regarding complementary feeding from their relatives and neighbors. (Figure 2)

A study done in china (2010)⁽²¹⁾ revealed different findings as it was reported that the main source of information on child feeding practices was Maternal and child health clinics.

These differences may be due to cultural differences between developing and developed countries.

Regarding age of mothers in this study, more than one third of the mothers were 25-<30 years.(table 1) It is obvious that women belonging to the age group 15-≤ 25 showed a significantly higher percentage of exclusive breast feeding compared to older group. This could be explained by the fact that the former has eagerness to perform the act of motherhood⁽²²⁾. This was consistent with Nkala and Msuya (2011)⁽²³⁾.

Generally, housewives have unlimited time available to breast feed their children. Although, it was observed in the present study that, early introduction of complementary foods was slightly increased among not working mothers which constituted the majority of the studied mothers.(Table 8) It differs from other study in Kingdom of Saudi Arabia (2004)⁽²⁴⁾ which reported that early introduction of complementary foods increased significantly among employed mothers.

Health education during pregnancy was an important factor that may explain the finding of significant higher

knowledge among women who were exposed to health education during their antenatal visits versus those who did not perform any visit. In the current study, more than three quarters of them not receiving education about breast feeding either during antenatal or postnatal period.(Table1) This may explained that, the majority of mothers in the current study defined weaning as breastfeeding cessation and only 1% defined weaning correctly as introduction of assistant food with breastfeeding (Table2) these findings were much lower than that study done in Nigeria (2006)⁽²⁵⁾ which found that less than half of the mothers defined weaning correctly. In the same concept Amin, Halbas and Abd Al-Qader (2011)⁽²⁶⁾ recommended raising the knowledge of Arabian women through proposed policies to promote breast feeding which will expand the awareness of the benefits of breastfeeding to include a larger sample of the community through social clubs and the curricula of schools.

Timely introduction of solid foods remains an important factor for healthy infant growth⁽²⁷⁾. The premature introduction of complementary food was of great concern in the present study. Even with the efforts of the Egyptian MOH programs, more than two thirds of

mothers in the present study still introduced complementary food before the age of 3 months while only 9% of them start of complementary food at 6 months of age. (Table 4) Despite, more than half, of the mothers in this study being aware of the WHO recommended time to initiate complementary feeding. (Table 2) These results similar with findings from other developing countries such as Kenya⁽²⁸⁾. It may be attributed to more than half of mothers in the current study classified as low and low middle socio economic status.(Figure 1) So they had inadequate breast milk, and insufficient nourishment. A review of breast milk volumes and composition among poorly nourished communities indicated that milk volumes were lowest in communities with poor levels of nutrition and poor living conditions^(29,30).

It has been found in a previous research conducted in Philippines that education plays a significant role in determining the duration of breastfeeding. Increasing level of education also implies adoption of modern ideas while gradually leading to the dereliction of traditional practices regarding child care, thus, a decrease in the rate of Breast feeding⁽³¹⁾.

Majority of the mothers had the knowledge that the cup and spoon should be used and use of bottles is not recommended. (Table 2) They are vehicles for introduction of germs and they are difficult to be cleaned properly (WHO-2011)⁽⁵⁾. The present study revealed immense in feeding the infant. However during practices, nearly half of them used bottle with teat in feeding their infants the first feed.(Table 4) This finding is similar to results of Al-Jassir et al. (2006)⁽³²⁾ as about less than half of lactating mothers in Saudi Arabia cited insufficient milk as a reason for introducing bottle feeding. But this was contradicted with study done in Pakistan (2007)⁽³³⁾ in which a lower bottle feeding rate was reported. It may be attributed to; bottle feeding is easier to be used for early introduction of complementary foods than cup with spoon.

Several authors stated that the best first solid food to be introduced is single-grain iron-fortified infant cereal mixed with breast-milk, usually rice cereal is offered first because it is the least likely to cause an allergic reaction⁽³⁴⁾. In the present study, more than two thirds of the mothers were used decoctions such as anise and caraway as a first feed.(Table 4) It differs from a study in Egypt (2014)⁽³⁵⁾

in which Yogurt and juice were considered suitable main diet for weaned infants by more than two third of women. However, Walkers et al. (2006)⁽³⁶⁾ reported that cow's milk was considered suitable as the main drink for weaned infants.

More than half of the mothers in the present study knew that the suitable age for starting complementary feeding is after 6 month compared to 44.6% as reported by Kishore (2008)⁽³⁷⁾.

Regarding safe preparation and storage of complementary foods the present study revealed that the majority of the mothers had the correct knowledge regarding food hygiene, (Table 3) however a half of them practiced that. (Table 5) Severi et al, (1997)⁽³⁸⁾ revealed that hands should be kept clean and washed immediately before, during and after food preparation.

Safe water is just as important for food preparation as for drinking. If there is any doubts about the water supply, water must be boiled before adding it to food⁽³⁹⁾. In the present study despite that about two thirds of the mothers stated that boiled water must be used for child drinking and food preparation,(Table 3)

the majority of the sample used tap water without boiling. (Table 5) Moreover, current study showed that, nearly one tenth only of the mothers stated that they thrown the left over foods and prepared immediate food to their children. (Table 3) the same percent of mothers reported that in their actual practices in which nearly one tenth of them disposing the remind food. (Table 5) in a study done in Alexandria, Egypt by Fouda (2000)⁽⁴⁰⁾ it was reported that about one third of mothers stated that they boiled left over foods before they fed their children. Which corresponding to our study (Table 5) It may be attributed to their lack of their awareness regarding immediate preparation of children food.

WHO recommended increasing fluid intake during illness, including more frequent breastfeeding, and encouraging the child to eat soft, varied, appetizing, favorite foods⁽²⁰⁾. While in the present study about one tenth only of the mothers agree with that recommendation,(Table 4) this may be attributed to the lack of health education sessions about infant feeding during illness in the maternal and child health centers.

The style of child feeding may be an important determinant of child nutrition

and health outcomes^(8,9). The present study revealed that the majority of mothers were present with their children during the feeding,(Table 6) this in line with study done in Malawi (2000)⁽⁴¹⁾. It may be attributed to increasing awareness of mothers regarding bonding with her infant during feeding practices. Additionally, nearly three quarters of the sample left the child without food if he refused it; (Table 6) the corresponding figures for Malawi (2000)⁽⁴¹⁾ was only 20%. Moreover, more than three fourths of the present sample did not encourage their children to eat if they did not want to. (Table 6) A similar study was done in Central Mali (1996)⁽⁴²⁾ on introducing complementary foods to the infants. They reported that the majority of mothers did not encourage their infant to eat if they did not want to.

Unfortunately, infant and young child feeding practices worldwide are not optimal. Global monitoring indicates that only 39% of all infants are exclusively breast-fed, even when the assessment is made in children less than 4 months of age. The timely complementary feeding rate is similarly low with a global average of 60% in 2012 complementary feeding practices of infant and young child are often inadequate in developing

countries⁽⁴³⁾. Egypt is no exception, as the study which have been conducted in different parts of the country indicated that mother's practices related to breast feeding and complementary feeding were not optimum and efforts should be done to change their behaviors and reinforce healthy feeding practices. Also efforts are needed for the training of all health care-staff and the establishment of breast-feeding support groups⁽⁴⁴⁾.

Conclusion

Surprisingly, infant and young child feeding practices in this study were scarce. Mothers had poor score of knowledge and lack of awareness of regarding practices of complementary feeding.

Recommendations

So, this study recommended implementation of health education program in primary health care settings to improve and support the breastfeeding and complementary feeding practices

among mothers. Longer paid maternity leave at least for 6 months and reduction in working hours are recommended. Interventions to improve exclusive breastfeeding should target family and community members and include training of health workers in counseling to resolve breastfeeding problems.

Moreover, the results of this study suggest an urgent need to target breastfeeding education campaigns directed to adolescent girls, young adult girls and newly married women to decrease health risk among children in Egypt.

Acknowledgement

The authors thank the Directories of the Maternal and Child health centers and their special gratitude goes to the nursing staff Centers for their assistance and valuable information. A word of thanks goes also to the mothers who gave their valuable time and participated in the survey.

Table (1): Distribution of mothers regarding their socio-demographic characteristics

Socio-demographic characteristics of the family	No (n =400)	%
Child age (months)		
6-	144	36.0
9-	110	27.5
12-24	146	36.5
Mean= 10.7± 4.77		
Child sex		
Boys	209	52.3
Girls	191	47.7
Child Birth order		
Single &1 st child	141	35.3
2 nd child	144	36.0
3 rd child	79	19.7
4 th child	22	5.5
5 th child & more	14	3.5
Mother's age (years)		
15-	10	2.5
20-	109	27.3
25-	142	35.5
30-	95	23.7
35-	30	7.5
40& more	14	3.5
Mean= 28.35± 5.48		
Mother's education		
Illiterate or read &write	89	22.3
Literate/Primary	38	9.5
Preparatory	54	13.5
Secondary	167	41.7
University	52	13.0
Mother's occupation		
House wives	348	87.0
Working	52	13.0
Father's education		
Illiterate or read &write	90	22.5
Literate / Primary	29	7.3
Preparatory	58	14.5
Secondary	172	43.0
University	51	12.7
Father's occupation		
Not working	5	1.3
Working	395	98.7
Mothers receiving health education about breast feeding		
Yes	87	21.8
No	313	78.2

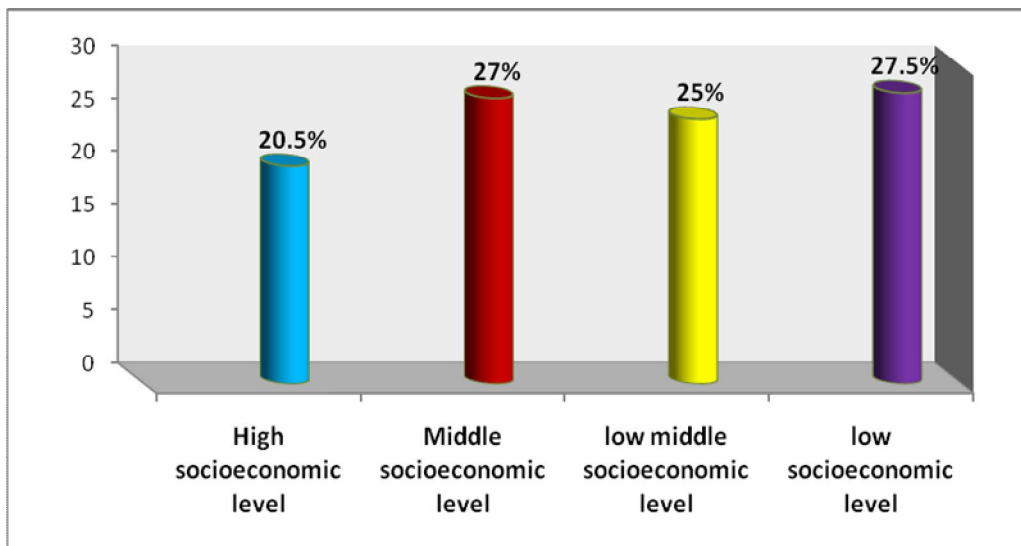


Figure (1): Socio-demographic score of studied sample

Table (2): Distribution of mothers regarding their correct knowledge about complementary feeding.

Knowledge items	No (n =400)	%
Age of starting of complementary feeding		
▪ Incorrect (2, 3 , 7 months)	164	41.0
▪ Correct 4- 6 months	236	59.0
Period of breast feeding		
▪ Incorrect (12 months – 18 months)	26	6.5
▪ Correct (2 years)	374	93.5
Definition of complementary feeding		
▪ Incorrect (start feeding at 1 or 2 years)	319	79.8
▪ Correct (introduction of foods beside breast feeding gradually &at 6 months)	2	0.5
▪ Don't know	79	19.7
Definition of weaning		
▪ Incorrect (cessation of breast feeding)	396	99.0
▪ Correct (gradual addition of solid foods to the infant's diet and gradual diminution of breast feeding)	4	1.0
First type of food given to the infant		
▪ Incorrect (yogurt)	315	78.7
▪ Correct (mahalabia- cereals)	85	21.3
Ways used to introduce food		
▪ Incorrect (using bottles with teat)	20	5.0
▪ Correct (cup and spoon)	380	95.0
Frequency of complementary feeding considered to infant aged 6-8 months		
▪ Incorrect (one meal – 4 meals – 5 meals)	164	41.0
▪ Correct (2 – 3 meals / day)	236	59.0
Amount of weaning food at age of 6 – 8 months		
▪ Incorrect (1/2 cup – 1 cup)	199	49.7
▪ Correct (2 – 3 tbsf – ½ cup)	192	48.0
▪ Don't know	9	2.3
Meal frequency after age of 12months		
▪ Incorrect (2-3 meals / more than 6 meals / day)	128	32.0
▪ Correct (3-4 meals / day)	263	65.7
▪ Don't know	9	2.3
Ideal age of introduction of ordinary family food/months		
▪ Incorrect (6month – 18month – 3 years)	257	64.2
▪ Correct (at one year of age)	143	35.8
Foods forbidden to child under two years old		
▪ Incorrect (fish – meat – chicken)	51	12.8
▪ Correct (spicy- fatty food –sweets)	194	48.4
▪ Don't know	155	38.8
Importance of vitamins beside complementary food		
▪ Incorrect (no importance of vitamin)	99	24.7
▪ Correct (necessity to give vitamins besides complementary) feeding	292	73.0
▪ Don't know	9	2.3

Table (3): Distribution of mothers regarding to their correct knowledge about safe preparation and storage of complementary foods.

Knowledge items	No (n =400)	%
Timing of washing mother's hands		
▪ Incorrect (after feeding of infant only)	79	19.7
▪ Correct (before food preparation and after feeding of child)	321	80.3
Timing of washing infant's hands		
▪ Incorrect (after feeding only)	70	17.5
▪ Correct (before and after feeding)	330	82.5
Method of washing feeding utensils		
▪ Incorrect (rinsing with water only)	5	1.2
▪ Correct (with soap and water)	395	98.8
Water to be used for drinking & food preparation		
▪ Incorrect (tap water)	138	34.5
▪ Correct (boiled water)	262	65.5
Method of storing cooked food		
▪ Incorrect (at room temperature)	7	1.7
▪ Correct (in refrigerator)	393	98.3
Left-over refrigerated food should be		
▪ Incorrect (warmed before using it)	355	88.7
▪ Correct (left-over food should be thrown)	45	11.3

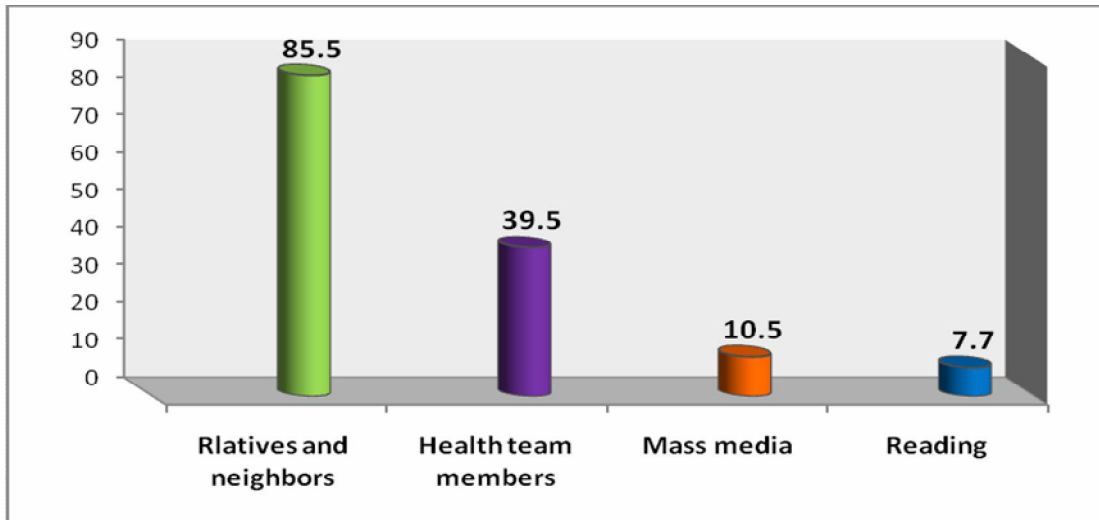


Figure (2): Sources of mothers' knowledge about complementary feeding.

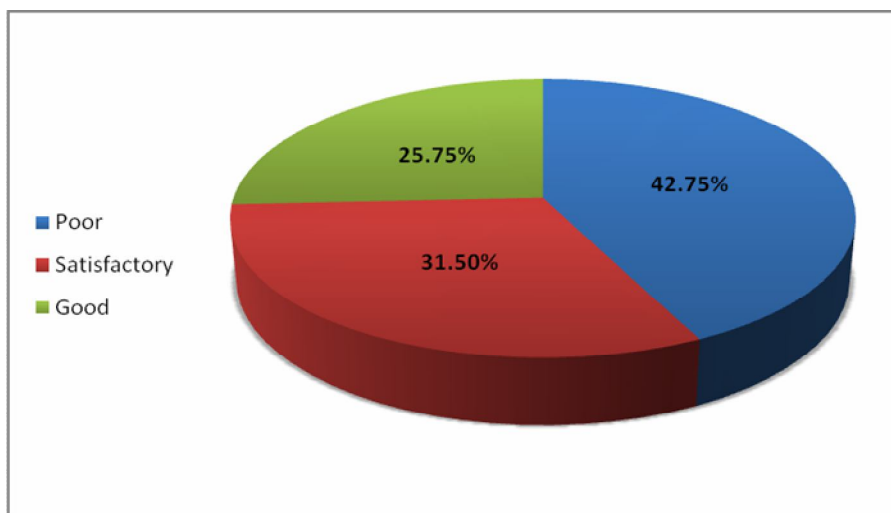


Figure (3): Total score of mothers' knowledge about complementary feeding.

Table (4): Distribution of mothers regarding to their practices of complementary feeding.

Complementary feeding practices	No (n =400)	%
Start of complementary feeding by age (months)		
≤ 3	271	67.7
4-5	93	23.3
6#	36	9.0
The first food given to your infant		
Yogurt	90	22.5
Cerilac- mehalabia #	16	4.0
Sugary fluids (yanson- karawia)	263	65.7
Others	31	7.8
Ways used to introduce first food		
Bottle with teat	171	42.8
Spoon #	225	56.2
Other (syringe)	4	1.0
Intervals between introduction of each new complementary food		
Every day	45	11.3
Every three days to one week #	42	10.5
Other (every two weeks or more)	79	19.7
No schedule	234	58.5
Frequency of daily breastfeeding		
Once	3	0.8
Twice	7	1.8
3-4 times	47	11.7
5 times and more #	343	85.7
Type of food introduced to infant		
Specially prepared food#	104	26.0
Family food	296	74.0
Number of meals consumed / day		
1 meal only / day	100	25.0
2 meals/ day	174	43.5
3 meals/ day	103	25.8
4 and more /day #	23	5.7
Feeding the infant during illness		
Breast-feeding only	264	66.0
Breast-feeding, fluids and yogurt only	78	19.5
Increase breast-feeding, vegetable soup, fluids #	44	11.0
Breast-feeding and the usual food	14	3.5

Correct practices.

Table (5): Distribution of mothers regarding to practices of safe preparation and storage of complementary foods.

Practices of safe preparation of foods	No (n =400)	%
Timing of mother's hand washing		
Before food preparation only	65	16.3
Before feeding the infant only	139	34.7
Before food preparation and after feeding the infant #	196	49.0
Timing of infant's hand washing		
Before feeding	89	22.3
After feeding	86	21.5
Before and after feeding #	199	49.7
Not done	26	6.5
Washing the utensils which your child eats in it		
With soap and water #	400	100.0
Type of water used for infant drinking & food preparation		
Tap water	321	80.3
Boiled water #	79	19.7
Dealing with left-over		
Eat again	262	65.5
Throw it #	45	11.3
Store it at refrigerator	93	23.2
Dealing with refrigerated left-over (no=93)		
Boiled	34	36.5
Warmed only	22	23.7
Given cold	37	39.8

Correct practices.

Table (6): Distribution of mothers according to their behaviors during their infants' feeding.

behaviors of mothers during feeding	No (n =400)	%
How do you know that your child is hungry		
Infant crying	300	75.0
Infant request	70	17.5
Mother schedule	30	7.5
Ideal answer all of the above	0	0.0
How do you know that your infant is satisfy		
Infant refused food	389	97.3
Infant sleep	11	2.7
Do you sit with your infant during eating his meal		
Yes	354	88.5
Sometimes	46	11.5
Mother's behavior when infant refused the food		
The infant left with no food	289	72.3
Forcing to eat	21	5.2
Encouraging to eat	90	22.5
Methods for encouraging the infant to eat		
Nothing	306	76.5
Positive verbalization (talking and singing)	10	2.5
Playing to him	70	17.5
Try to give other types of food	14	3.5

Correct practices.

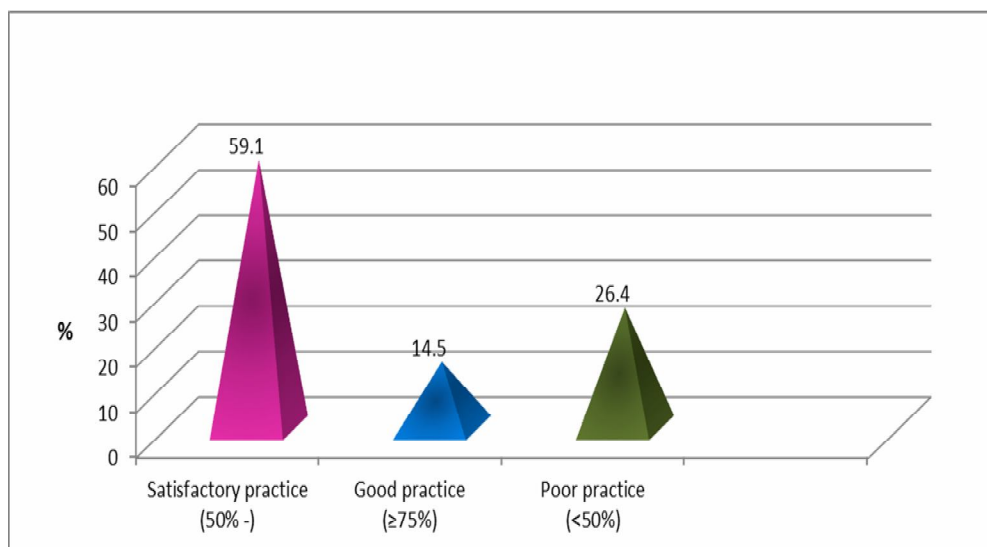


Figure (4): Total score of mothers' practices about complementary feeding.

Table (7): Correlation between mother' knowledge and practices, with their education and child birth order.

	Practice		Knowledge	
	r_s	p	r_s	p
Child Birth order	-0.124	0.299	0.144	0.136
Mother's education	0.037	0.715	0.017	0.904

r_s : Correlation coefficient

Table (8): The children age at introduction of complementary foods according to mother's socio-demographic variable.

Mothers' socio-demographic variable	Infant age at first introduction of complementary foods						Test of significance
	<4 months		4-<6 months		At 6 months		
	No	%	No	%	No	%	
Mothers' education							
Illiterate	57	64.0	26	29.2	6	6.7	$X^2 = 10.33$
Primary/preparatory	69	75.0	16	17.4	7	7.6	$P = 0.1116$
Secondary	117	70.0	33	19.8	17	10.2	
University	28	53.8	18	34.6	6	11.5	
Mothers' occupation							
Working	31	59.6	16	30.8	5	9.6	$X^2 = 2.06$
Not working	240	69.0	77	22.1	31	8.9	$P = 0.356$
Mothers' age							
<25	87	73.1	24	20.2	8	6.7	$X^2 = 3.27$
25-35	156	65.8	59	24.9	22	9.3	$P = 0.5138$
>35	28	63.6	10	22.7	6	13.6	
Total	271	67.8	93	23.2	36	9.0	

X^2 = Chi-Square Test

*: Statistically significant at $p \leq 0.05$

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