

Knowledge, Attitude and Practice of Mothers on Complementary Feeding among Children aged 6-23 Months at Brikama Gidda

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Abstract

Complementary feeding plays a major role in the health and nutrition of growing children. Here, an attempt has been made to assess the knowledge, attitude and practice of mothers on complementary feeding among children aged 6-23 months at Brikama Gidda. The study adopted a cross-sectional study design and was carried out at Brikama Gidda among 75 mothers of children 6-23, months which were sampled by multi-stage sampling. Data was collected using a structured questionnaire which comprises of both closed-ended and open-ended questions. Data was cleaned, entered and analysed using Microsoft excel (Version 07) and R Statistical software (Version 3.3.1). The respondents were mostly young (mean age 25.89), married (69.3%), housewives (40%) with mainly secondary level of education (33%). 65.3% of mothers had average knowledge on complementary feeding out of the six (6) knowledge questions. Attitude to complementary food was also good as 78.7% of mothers strongly agreed that complementary food should be given in addition to breast milk after six months. As far as mothers' practices of complementary feeding is concerned, 69% of mothers introduced complementary food to their children at 6 months. The knowledge, attitude and practices of mothers regarding complementary feeding is appropriate, but minimal gaps exist.

Therefore, there is a need to educate mothers to ensure better growth and development of their children. Also, there is a need to conduct longitudinal research to establish whole array of factors influencing complementary feeding.

Connaissance, attitude et pratique des mères en ce qui concerne l'alimentation complémentaire chez les enfants âgés de 6 à 23 mois à Brikama Gidda

Abstrait

L'alimentation complémentaire joue un rôle majeur dans la santé et la nutrition des enfants. Dans cet article, on évalue les connaissances, l'attitude et la pratique des mères en matière d'alimentation complémentaire chez les enfants âgés de 6 à 23 mois à Brikama Gidda. L'étude a adopté un schéma d'étude transversal et a été réalisée à Brikama Gidda chez 75 mères de les enfants âgés de 6 à 23 mois qui ont été échantillonnés par échantillonnage à plusieurs degrés. Les données ont été collectées à

l'aide d'un questionnaire structuré comprenant à la fois des questions fermées et des questions ouvertes. Les données ont été nettoyées, entrées et analysées à l'aide de Microsoft excel (version 07) et du logiciel statistique R (version 3.3.1). Les répondants étaient principalement des jeunes (âge moyen 25,89 ans), mariés (69,3%), femmes au foyer (40%) niveau d'éducation (33%). 65,3% des mères avaient une connaissance moyenne de l'alimentation complémentaire sur les six (6) questions de connaissance. L'attitude à l'égard des compléments alimentaires était également bonne, 78,7% des mères étant fortement d'accord pour dire que les compléments alimentaires devraient être donnés en plus du lait maternel après six mois. En ce qui concerne les pratiques d'alimentation complémentaire des mères, 69% d'entre elles introduisaient des aliments complémentaires à leurs enfants à l'âge de 6 mois. Les connaissances, attitudes et pratiques des mères en matière d'alimentation complémentaire sont appropriées, mais il existe encore des lacunes minimales. Il est donc nécessaire d'instruire les mères pour assurer une meilleure croissance et un meilleur développement de nos enfants. Il est également nécessaire de mener des recherches longitudinales pour établir toute une gamme de facteurs influençant l'alimentation complémentaire.

Introduction

The period of complementary feeding, when other foods are added to the diet of breastfed children is a time of particular vulnerability to nutritional deficiencies. As the child grows, the nutritional demands are not met adequately by breastfeeding, hence, a proper and timely transition towards healthy complementary foods is a necessity. From the age of six months, the need for energy and nutrients of infants starts to exceed what is provided by breast milk and complementary feeding becomes necessary to fill the energy and nutrient gap (Dumaguing, Ignacio, Naupal, Apostol, Ilagan and Talavera, 2011).

The first two years of life are a critical window for ensuring optimal growth and development of a child and initiating nutritionally adequate and safe complementary foods at six months is crucial to achieving optimal growth, and health development of an infant (UNICEF, 2012).

If complementary foods are not introduced or are given inappropriately at this age, the growth, health and cognitive development of infants may falter (Srivatsava and Sandhu, 2007). Optimal infant and young child feeding have a great potential impact on child survival. In developing countries, complementary feeding interventions alone were estimated to prevent

almost one-fifth of under-five children mortality (IBFAN, 2010). Good and healthy nutrition during this period of rapid growth is vital to ensure that the infants develop both mentally and physically (Aggarwal, Verma, Faridi and Dayachand, 2008). A critical component for proper growth and development of children is an appropriate diet (Katara *et al.*, 2010). The child has increased nutritional needs to support rapid growth and development (UNICEF, 2013).

The World Health Organisation (WHO) recommends exclusive breastfeeding for the first six months, introduction of complementary feeding with continued breastfeeding for at least two years (WHO, 2006). The recommended infant and young child feeding practices for children aged 6-23 months include: continued breastfeeding; feeding semi-solid/solid food according to the age of the child; and feeding a variety of foods such as cereals, fruits, vegetables (WHO, 2010).

Knowledge, attitudes and practices are associated with infant and child feeding. These form an essential first step towards any 'need-felt' for an intervention programme to be designed to bring positive behavioural change in the health of infant (Rolfes, Debruyne and Whitney, 2013).

It is very common knowledge that breastfeeding is important for immunological protection and

infant feeding. Breast milk alone should be used for feeding the babies in the first six months of life, but from then on, complementary feeding is essential. As this transition period is critical, it is associated with dramatic increase in malnutrition among the infants. In this transition period, Infants are most vulnerable, when complementary feeding begins.

Appropriate complementary feeding depends on accurate information and skilled support from the family, community, and health care system. Inadequate knowledge about appropriate foods and feeding practices is often a greater determinant of malnutrition than the lack of food (WHO 2010).

Malnutrition has been responsible directly or indirectly for 60% of the 10.9 million deaths annually among children under 5 years in the whole world, where two thirds of these deaths are associated with inappropriate feeding practices in the first year of life (WHO, 2013). In developing countries, malnutrition accounts for 50% deaths of the children under five years (ACC/SCN, 2011). In Africa, malnutrition contributes to half of the 9.7 million annual under five deaths and is a leading cause of diseases and disabilities in children (WHO, 2012, UNICEF, 2009).

In Africa, the common inappropriate complementary feeding practices include; (1) delayed introduction of complementary foods, (2) low energy and nutrient density of foods offered, (3) feeding in small amounts of meal, and (4) food restrictions due to cultural beliefs. Interventions to address child malnutrition show that appropriate complementary feeding practices can save up to 6% of all under-five deaths (Jones, Steketee, Black, Bhutta, Morris, and Bellagio, 2012), and therefore, attention should be given to decisions taken by the mother during complementary feeding (Bereng, Bilkes, and Nxumalo, 2007). Knowledge does not necessarily translate to practice as supported by Sellen (2014), who observed that a combination of mothers' self-perception, assessment of infant's well-being, culture; food availability and financial status influence the actual complementary feeding, hence, the child nutritional status.

In the Gambia, the prevalence of under nourishments among children aged 0-24 months

is much higher than the West African average (14% in 2003-2004) (FAO, 2008). The period from birth to two years of age is a "critical window" for the promotion of optimal growth, health and cognitive development (WHO, 2010).

A study conducted by Njie and Dixey (2013) at Foni Kansala District, the Gambia, found that grand mothers play a major role in influencing the early introduction of complementary foods because they have been found to be very powerful decision makers in the home. In addition to grand mothers, husbands, friends and other family members of breast feeding mothers play an influential role in the early introduction of complementary foods in the District.

Contaminated complementary foods are the major route of transmission of diarrhoea among infants (MOPHS, 2007-2010) and the higher incidence of diarrhoea coincides with the increase in the intake of these foods.

A community baseline survey conducted by NaNA in 2006 on complementary feeding, revealed the following results; according to their mothers/care givers, 65% of the children aged 6-23 months were eating foods other than breast milk at the time of the survey, cereals such as millet, maize and rice), 23% gave fermented *ogi* (a cereal-based porridge), 11% cerelac (an imported dry cereal mix that is prepared by mixing with water) and 9% groundnut porridge, in the seven days preceding the survey. Other foods given by 40% of respondents included custard, rice, meat, bananas, eggs, biscuits, tea, and fish.

Materials and Methods

Description of Study Area

Brikama, the largest town within the Kombo Central is located in West Coast Region with a population of 699,704 people in which 351,482 are males and 348,222 are females with a growth rate of 6.1 (GBoS, 2013).

Brikama is 32 km away from the capital Banjul, and it comprises all ethnic groups in the Gambia which include: Mandinkas, Wollofs, Jola, Sarahule, Serere, Manjago, and Fulas. Brikama is divided into twenty-four (24) wards (kabilos). Each ward (kabilo) is headed by an

Alikalo who is supported by councils of elders. However, all these Alikalos are headed by a supreme Alikalo whom all the various Alikalos are answerable to.

Gidda is a ward among the twenty-four wards in Brikama and the second largest ward within Brikama. Gidda is located on the eastern side of Brikama and is divided into three sub-wards namely Gidda Forest, Gidda Baba njie and Gidda Darsilame. Gidda has a total population of 32,404 inhabitants (GBos, 2013).

Islam and Christianity are the two dominant religions practised in this community. Some members of the community are civil servants while others engage in Trading, Farming and other skilled works. There is a nursery and a primary school; Health care services is accessed at Brikama District Hospital which is 1 kilometre from the beginning and four kilometres to the end part of Gidda.

Study Design

A community based cross-sectional study was used. This design was chosen because it is relatively quick, easy to conduct, inexpensive and it gives an overview of what is going on with the variable of interest (Levin, 2006). In this study, it provided information on mother's knowledge, attitude and practice on complementary feeding at Brikama Gidda.

Study Population

The study population comprised mothers who had children aged 6-23 months.

Sample Size

Population size:	32404	Confidence Level	Cluster Size	Total Sample
Expected frequency:	20 %	80%	2	50
Acceptable Margin of Error	10 %	90%	2	50
Design effect:	1.03	95%	3	75
Clusters:	25	97%	4	100
		99%	5	125
		99.9%	8	200
		99.99%	10	250

Epi-info version 7 was used to calculate the sample size

Brikama Gidda has a total population of 32404 (GBoS, 2013), the expected frequency used was 20%, the acceptable margin of error used was 10%, the design effect used was 1.03 and with a confidence interval of 95%, a total of 75 (n=75) respondents of mothers of children 6-23 months were obtained for the study.

Sampling Technique

In this study, the multi-stage sampling method was used because the study population was large and widely scattered. During the multi-stage sampling, selection was done in stages until the final sampling unit (i.e. households or persons) was arrived at. The Primary Sampling Unit (PSU) is the first sampling stage where only compounds are sampled with the aid of the Alikalo's tax payers slip and the Secondary Sampling Unit (SSU) is the second sampling stage where the households are obtained. In a case whereby more than one eligible respondent exist in a compound in different households, simple random sampling is applied with the aid of a random number table. If no eligible respondent exist in a compound from the secondary sampling unit, then convenient sampling is applied, which is done by just entering into the nearest compound to ask whether the study population exist.

Data Collection Tools

Data were collected using a structured questionnaire which comprised of both closed-ended and open ended questions. Close-ended questionnaire was mostly used for the simple fact that it is relatively quick and easy to analyse. The data that arise from this kind of questionnaire and open-ended questionnaire gave an in-depth explanation of the topic. These questionnaire was maintained to avoid inconsistency among the respondents and translated into a language the respondents can understand.

The questionnaire included information on; socio-economic and demographic characteristics, mother's knowledge on complementary feeding, mother's attitude on complementary feeding and complementary feeding practices. Copies of the questionnaire were administered by the principal researcher with the help of a research assistant.

Data Analysis

Raw data was cleaned, coded and entered into Microsoft excel (Version 07) and R Statistical software (Version 3.3.1) for analysis. Socio-economic characteristics, demographic characteristics and maternal attitude towards complementary feeding were analysed using R Statistical software.

Mothers' knowledge on complementary feeding was determined based on six closed questions testing information from the guiding principles of complementary feeding for a breastfed child (WHO, 2001). A correct answer was given a score of '3' while a wrong answer was given a score of '0'. Mothers who scored 1-6 were considered as having low knowledge on complementary feeding; mothers who scored 7-12 were considered as having average knowledge on complementary feeding practices, while mothers who scored 13-18 had high knowledge on complementary feeding practices. The scores were entered, coded and analysed using Microsoft excel (Version 07).

Complementary feeding practices indicators include: meal frequency, dietary diversity, initiation of complementary feeding, safety and mode of feeding and maternal hygienic practices on complementary feeding were entered, coded and analysed using Microsoft excel (Version 07).

Finally, data were presented using bar graphs, tables, means and percentages.

Results

The demographic characteristics of the children is shown in Table 1. Results show that a notable

Table 1: Demographic characteristics of the children

Variables	Sample (%)
Sex	
Male	44 (58.7)
Female	31 (41.3)
Total	75 (100)
Age of the children (months)	
6-12 months	34 (45.3)
13-23 months	41 (54.7)
Total	75 (100)

Table 2: Demographic and socio-economic characteristics of the mothers

Variables	Sample (%)
Maternal age (years)	
17-20	12 (16)
21-30	50 (66.7)
31-42	13 (17.3)
Total	75 (100)
Mean (SD)	25.89 (5.26)
Marital Status	
Married	57 (69.3)
Single	9 (12)
Divorced	7 (9.3)
Widowed	7 (9.3)
Total	75 (100)
Mothers' Educational Status	
No Education	5 (6.7)
Primary Education	15 (20)
Secondary Education	33 (44)
Tertiary Education	3 (4)
Others (Arabic education)	19 (25.3)
Total	75 (100)
Mother's Main Occupation	
House Wife	40 (53.3)
Trader	23 (30.7)
Civil Servant	6 (8)
Private Firm Employee	1 (1.4)
Farmer	5 (6.7)
Total	75 (100)

number of the children were males represented with 58.7% and 41.3% were females.

Also, majority of the children were in the age range of 13-23 months (54.7%) and the remaining children were within 6-12 months (45.3%).

Table 2 shows the demographic and socio-economic characteristics of the mothers.

Majority (69.3%) of the mothers were married; single mothers were 12%, widowed mothers and divorced mothers were equally represented with 9.3%. Over one percent (6.7%) of the mothers had never gone to school, while only 4% acquired tertiary education; also, 44% of the respondents had primary education, a notable proportion had secondary school education (20%); while 25.3%

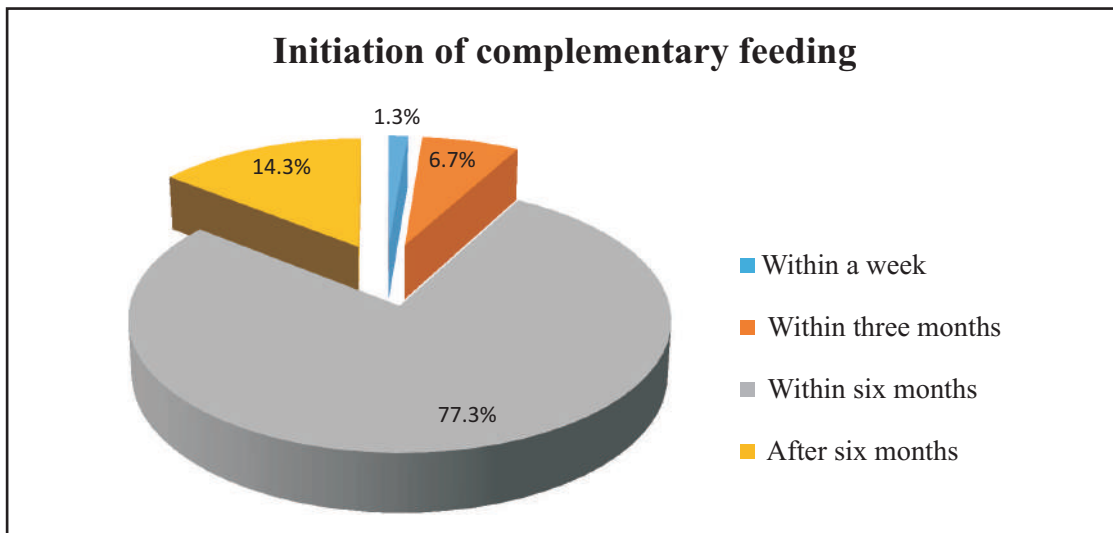


Figure 1: Awareness on the Initiation of complementary feeding

of the mothers had Arabic education.

Also, more than half (53.3%) of them were housewives, 30.7% were engaged in trading, 8% were civil servants, only 1.4% were private firm employees, and 6.7% were farmers.

Figure 1 above shows the time of initiation on complementary feeding: 77.3% of mothers indicated that children should be introduced to complementary feeding within six months of age, while 14.7% believed that children should be introduced to complementary feeding after six months, 6.7% of the study participants replied that children should be introduced to complementary feeding within three months and 1.3% of the participants indicated that children should be introduced to complementary feeding within a week after birth.

Table 3 shows maternal awareness on complementary feeding ; as more than half (60%) of the mothers said children should not be fed on the basis of hunger cues, 89.3% of the mothers knew that children's meals should be balanced, more than three quarters (92%) of the mothers replied that water should be treated before the preparation of complementary foods, more than half of the mothers (74.7%) knew that fruits and vegetables should form part of a child's diet during complementary feeding and more than three quarter of the mothers (76%) stated that breast milk is not adequate in proteins after six months, hence, and hence complementary

foods rich in proteins should be provided.

Figure 2 shows the knowledge score on complementary feeding, 22.7 % of mothers had high knowledge, 65.3% had average

Table 3: Maternal Awareness on Complementary feeding

Variables	Sample (%)
Feed a child based on hunger cues	
Yes	30 (40)
No	45 (60)
Total	75 (100)
A child's main meal should be balanced	
Yes	67 (89.3)
No	8 (10.7)
Total	75 (100)
Water for preparing food and drinks for children should be treated	
Yes	69 (92)
No	6 (8)
Total	75 (100)
Fruits and vegetables are complementary	
Foods	56 (74.7)
Yes	19 (25.3)
No	75 (100)
Total	
Breast milk is adequate in proteins even after 6 months	
Yes	57 (76)
No	18 (24)
Total	75 (100)

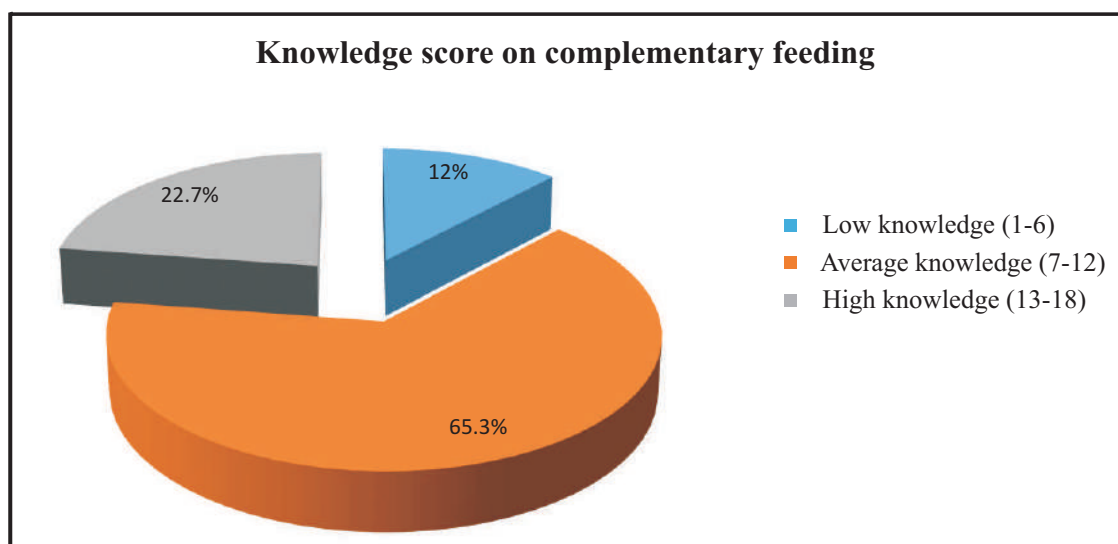


Figure 2: Maternal knowledge score on complementary feeding

knowledge and 12% had low knowledge.

Table 4 shows the respondents attitude towards complementary feeding, 17.3% of the mothers strongly agreed that they provided complementary feeding because it made their child fat, 22.7% agreed, 14.7% disagreed, 30.7% strongly disagreed and the remaining 14.7% replied that they don't know.

Concerning respondents' attitude regarding having enough money to buy complementary

foods instead of suffering on breast feeding, 6.7% of the respondents agreed that even if they have enough money to buy complementary food they wouldn't stress themselves on breast feeding, 17.3% disagreed, 65.3% strongly disagreed and 10.7% replied that they don't know.

Regarding respondents' perception towards adequacy of breast milk and introduction of complementary feeding, 6.7% of the mothers strongly agreed that even if their breast milk is not

Table 4: Attitude of mothers towards complementary feeding

S. No	Statement	SA		A		DK		D		SD	
		n	%	n	%	n	%	n	%	n	%
1.	I provide complementary foods because it makes my child fat	13	17.3	17	22.7	11	14.7	11	14.7	23	30.7
2.	I have enough money to buy complementary food items instead of stressing myself by breast feeding	0	0	5	6.7	8	10.7	13	17.3	49	65.3
3.	My breast milk is not sufficient for my child so just after birth I like to introduce complementary foods to my child	5	6.7	10	13.3	11	14.7	9	12	7	9.3
4.	Since others can help me by providing complementary foods I like it	37	49.3	9	12	5	6.7	17	22.7	7	9.3
5.	Breast feeding makes me loose weight so I like to give complementary foods to my child	9	12	10	13.3	9	12	19	25.3	28	37.3
6.	Providing my child with complementary foods make him/her healthy and strong	68	90.7	4	5.3	1	1.3	2	2.7	0	0
7.	After six months in addition to breast feeding complementary foods are preferable.	59	78.7	11	14.7	4	5.3	1	1.3	0	0

KEY: SA stands for **Strongly Agree**. A stands for **Agree**. DK stands for **Don't Know**. D stands for **Disagree**. SD stands for **Strongly Disagree**.

sufficient for their child after birth they will like to introduce complementary foods to their child, 3.3% agreed, 12% disagreed, 9.3% strongly disagreed and 14.7% replied that they don't know.

Also, about the mothers' attitude towards others providing complementary food and liking it, while 49.3% of the mothers strongly agreed that since others can help them by providing complementary foods, they like it 12% agreed, 22.7% disagreed, 9.3% strongly disagreed and 6.7% replied that they don't know.

On mothers' attitude towards physical appearance during breast feeding, 12% of the mothers strongly agreed that if breast feeding makes them loose weight they will like to give complementary foods to their child, 13.3% however agreed, while 25.3% disagreed, 37.3% strongly disagreed, and 12% replied they don't know.

On mothers' attitude during complementary feeding and its health effects, 90.7% of mothers strongly agreed that providing complementary foods to a child makes the child strong, 5.3% agreed, 2.7% disagreed and 1.3% of the mothers replied they don't know.

Concerning mothers' attitude on whether after six months, complementary foods are preferable, while 78.7% of the mothers strongly agreed that after six months in addition to breast feeding complementary foods are preferable, 14.7% agreed, 1.3% disagreed and 5.3% replied they don't know.

Table 5: Meal Frequency

Variable	Frequency of feeding	Sample (n)
<i>Age in Months</i>		
6-8 months (n=21)	= 2 times	18 (86)
	< 2 times	2 (14)
9-23 months (n=54)	= 3 times	39 (72)
	< 3 times	15 (28)

Table 5 shows the meal frequency. Eighty six percent of children 6-8 months old had eaten twice or more and 14% of children 6-8 months old had eaten less than twice in a day. 72% of children 9-23 months old had eaten three times or more in a day and 28% of children 9-23 months old had eaten less than three times in a day.

Figure 3 shows the dietary diversity of children aged 6-23 months at Brikama Gidda. 83% of the children had eaten food prepared from grains, tubers and roots, 53.3% took fruits and vegetables, 16% were on flesh meats, 63% on foods made from fat, 67% on dairy products, 25.3% on legumes and 4.4% for legumes and eggs.

From Figure 4, the time in which mother's starts practising complementary feeding on their children is shown. 69% replied that they started practising complementary feeding to the children at six months of age, 12% of the respondents said that they started practising complementary foods to their children at seven months of age, 6% at four months of age, with 5% of the study respondents practising complementary feeding at eight months of age and while 4% started practising complementary feeding to their children at five and nine months respectively.

From the bar graph (Figure 5), maternal hygienic practices during complementary feeding on 29% of the mothers gave two similar views, i.e washing hands with soap and cleaning the environment prior food preparation, 24% of the mothers responded that utensils should be washed prior to food preparation, 11% of the mothers reported that utensils should be covered after washing them and as regards covering of food when cooking and covering of head when cooking, (4%) and (3%) respectively.

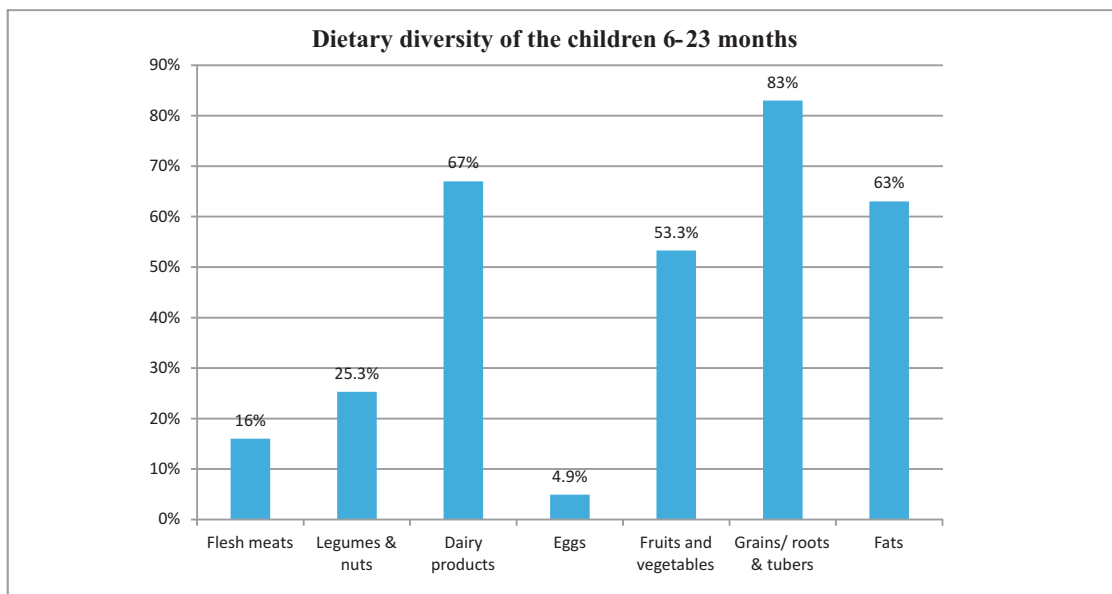


Figure 3: Dietary diversity of the children 6-23 months

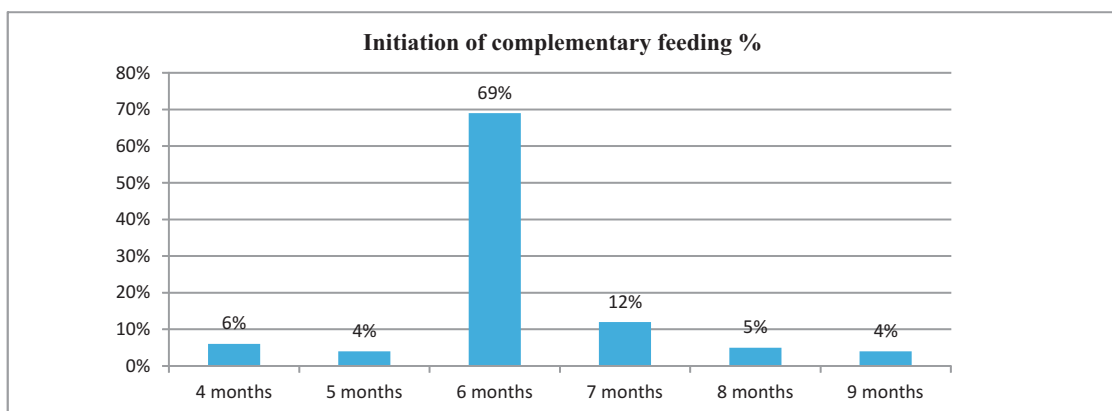


Figure 4: Initiation of complementary feeding

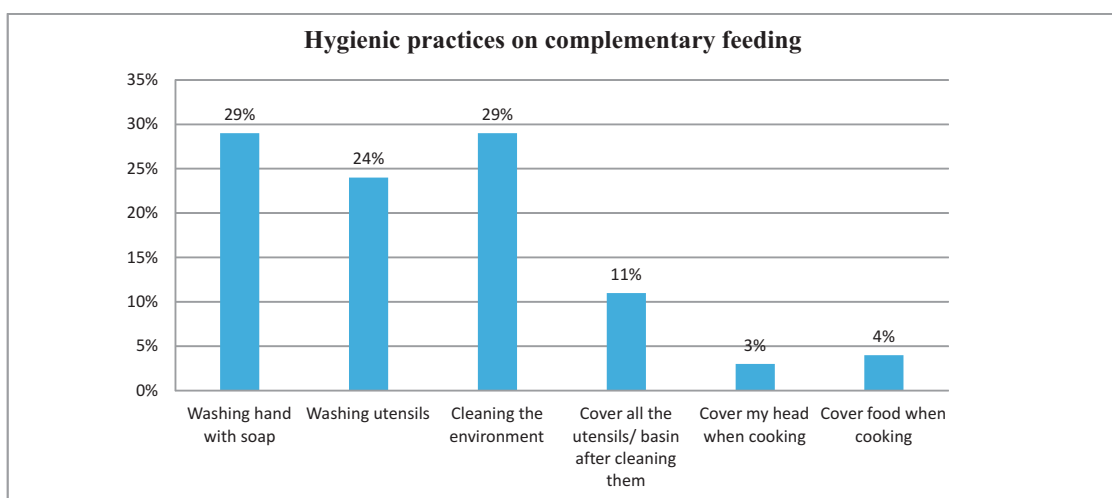


Figure 5: Maternal hygiene practices during complementary feeding

Discussion

In this study, majority of the mothers were young with low level of education and were housewives. These findings are comparable to those by Murage *et al.*, (2011) and Ochola (2008) conducted in Kibera slum, Nairobi. Education is one of the most important resources that enable women to provide appropriate care for their children, which is an important determinant of children's growth and development (Engle *et al.*, 2011). In the present study, low level of education may have probably contributed to most of the mothers being housewives. A mother who spends most of the time at home with her child may be available to practise optimal feeding practices on her child (Leslie, 2008).

In this study, many of the respondents (77.3%) indicated that they started giving complementary foods to their children within six months of age. This finding was also supported by WHO global infant feeding recommendations (WHO, 2002), which states that complementary feeding should be started within six months of age.

Mother's knowledge on complementary food frequency. (60%) in this research indicated that children should not be fed based on hunger cues. Ideal complementary feeding practices comprises adequate meal frequency depending on whether the child shows hunger cues or not. This findings are in accordance with WHO (2001) which reveals that children should not be fed based on hunger cues since some children may not necessarily show hunger cues.

Majority of the mothers (89.3%) were aware of the importance of enriching and balancing complementary foods and providing a diverse diet to their children. This is in line with UNICEF and WHO recommendations which stipulate that children's meal should be balance and at least contain the four recommended classes of foods (WHO, 2006a). This is an important aspect in the infant and young child feeding practice as evidenced in Korogocho slum (Kipruto, 2013).

Concerning the attitude of mothers towards complementary feeding on the developmental effects, many of the respondents (30.7%) strongly disagreed with the item that states that complementary foods make their children fat.

But in contrast to this, the findings by (Ekelund, 2006) found that there is highly significant positive associations between growth during infancy because of complementary foods and the risk of being fat/overweight later in life.

In this study, 78.7% of the participants strongly agreed that complementary foods in addition to breast milk after six months were preferable. These findings is in concord with the study conducted by (WHO, 2001) that about six months onward, breast milk alone is no longer sufficient to meet all the nutritional requirements, so children should be introduced to complementary feeding (as cited in Schwartz, 2008).

In this study, majority of the children attained the recommended meal frequency; children aged 6-8 months (86%) and children aged 9-23 months (72%). This finding is in agreement with that of a study conducted in Kibera, Nairobi (Adere, 2006). Frequent meals are required to ensure the child receives enough energy (PAHO/WHO 2003).

The consumption of a variety of diet suggests a possibility of a child to have taken a balanced diet which is an important aspect in the child's diet. Dietary diversity was established based on the number of food groups the child consumed in the previous 24 hours prior to the data collection. Seven food groups as recommended internationally by WHO (2007) were considered in the study. The food groups were: grains, roots and tubers; legumes and nuts; dairy products; meat and animal products; eggs; vitamin A rich fruits and vegetables, as well as other fruits and vegetables.

Majority of the children in this study, had eaten food prepared from grains, tubers and roots like porridge, rice, bread, potatoes, and cassavas. This is in concord with a study by Amanda (2011) in Rift Valley and Ekese *et al.*, (2011) in Butembo-Democratic Republic of Congo. Both findings in the different geographical regions revealed that grains, tubers and roots were the highest consumed complementary foods. This can be related to the fact that in Brikama Gidda, being an average income community, the mothers would go for the cheaper foods which are usually grains/roots /tubers and their products and the fact that cereals form the staple food of any community in the Gambia. Porridge was also taken by

almost all the children in this study since this is a common complementary food. These is in line with a study by Mbagaya (2009) in the rural western Kenya which reveals that porridge was the highest intake complementary foods.

The study also revealed that the intakes of vitamin A rich fruits and vegetables were not adequate. Vitamin A deficiency is among the nutritional deficiencies of greatest public health significance in the world today. Almost one third of children in developing countries are affected to some degree by vitamin A deficiency, which impairs their growth, development, vision and immune function, and in extreme cases, leads to blindness and death (Sommer and West, 2011).

The consumption of proteins was highest from dairy products mostly milk, concurring with the findings of Hellen Keller International (2010) in Batudu District of Nepal and Ekesa *et al.*, (2011) in Gitega (Burundi), and Butembo (Democratic Republic of Congo). The lower consumption of legumes and at least for fleshy meats and eggs could be as a result of financial constrains. From the findings of this study, the mean dietary diversity was below the recommended ≥ 4 food groups (WHO, 2007).

In relation to the practices of initiation of providing children with complementary foods, more than three quarter of the participants (69%) were initiated to give complementary foods to their children at six months of age. This is similar with the World Health Assembly recommendation that mothers should start to feed their children with appropriate complementary foods within the age of six months (WHA, 2009).

According to WHO (2003), one of the guiding principles of complementary feeding is good hygiene. Hygienic practiced on complementary feeding is critical for prevention of gastrointestinal illness (WHO, 2001).

Maternal practices regarding complementary feeding are; washing hand with soap, washing utensils, cleaning the environment, covering all the utensils/ basins after cleaning them, covering head when cooking and covering food when cooking.

According to the findings of this study, 29% of the mothers indicated that they washed their hands with soap prior to preparation of the

complementary foods of their child and 29% of mothers also revealed that they clean their environment prior to complementary food preparation respectively.

The least (3%) emerged from mothers who revealed that they cover their head when cooking complementary foods. These findings go hand in hand with WHO (2003) guiding principles of complementary feeding on good hygiene.

Conclusion

Maternal knowledge on complementary feeding was on the whole appropriate; but gaps were identified in the advantages of complementary feeding to mothers. Mothers had positive attitudes about complementary feeding. Also, Complementary feeding practices were on the whole appropriate; in terms of introduction of solids, semi-solids and soft foods to children 6-8 months and minimum meal frequency especially for the breastfed children. Dietary diversity was low because of the limited socio-economic capability of the respondents to purchase a variety of foods. Gaps were identified in the hygienic practices; mother's hygienic practices on the whole was just average and not satisfactory.

This paper recommends need for proper health education of mothers on the importance of complementary feeding. Messages on the promotion of hygienic practices during complementary feeding should be promoted. There is need to conduct a longitudinal study to establish the whole array of factors that influence complementary feeding practices and over a period of time since this study only focused on mothers' knowledge, attitude and practice on complementary feeding.

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