KNOWLEDGE, ATTITUDE AND PRACTICES OF MOTHERS WITH MALNOURISHED CHILDREN LESS THAN THIRTY SIX MONTHS REGARDING BREASTFEEDING AND COMPLEMENTARY FEEDING IN KITUI COUNTY HOSPITAL

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DECLARATION

This dissertation is my original work and has not been submitted for a degree in any other university.

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LIST OF ABBREVIATIONSAND ACRONYMS

KAP	Knowledge attitude and practices
FGD	Focused group discussion
MDG	Millennium Development Goals
MUAC	Mid upper arm circumference
IMAM	Integrated management of acute malnutrition
OPD	Outpatient department
MCH	Maternal and child health Feeding

DEFINITIONS OF TERMS

Mother: A woman with child/children in the age group of 0-36 months

Malnourished child: A child less than 36 months old with a mid-upper arm circumference of less than12.5cm or WHZ of less than -2SD.

Knowledge: Refers to familiarity, awareness or understanding gained through experience or study.

Attitude: Refers to a learned tendency to evaluate certain behaviours, it can either be positive or negative judgment towards a given behaviour.

Practices: Something that is done regularly or habitually.

Exclusive breastfeeding: Refers to the practice whereby the Child receives only breast milk, not even water for the first six months of life.

Complementary feeding: Is defined as the feeding process which starts when breast milk alone is no longer sufficient to meet the nutritional requirements of infants and therefore other foods and liquids are needed, along with breast milk.

ABSTRACT

Introduction: Under nutrition remains one of the most common causes of morbidity and mortality among children globally. It causes about 3.5 million deaths, with 35% of the disease burden being in children under five years. Inadequate knowledge on breast feeding, inappropriate practices such as early and delayed introduction of complementary foods, low energy and nutrient density of food offered, feeding thin consistency feeds, small amounts and food restrictions due to cultural beliefs are often greater determinants of malnutrition than even the availability of food. Information on how to feed young children comes from family members, community practices and health workers. Since children are not able to look after themselves, they rely completely on people who are taking care of them, most often the mothers, so their source of nourishment is limited to what their mothers provide. Kitui County has a rapidly growing population, water scarcity, falling food production and low resilience to climate change. The combined effects lead to food insecurity, a major factor determining the children's nutritional status.

Objectives

Primary objective: To determine the knowledge, attitudes and practices of mothers with malnourished children less than 36 months, regarding breastfeeding and complimentary feeding in Kitui County Hospital.

Secondary objective: To determine the socio-demographic factors associated with initiation of complementary feeding**.**

Methodology: This was a cross sectional study design. It was conducted in Kitui County hospital. A total of 108 mothers with malnourished children were enrolled into the study and interviewed using a pretested questionnaire .Focus group discussions were also done to collect qualitative data which was recorded verbatim and later analyzed manually by themes.

Results: The study enrolled 108 mother-child pair. Most of the respondents were aged 22-30years (54.6%) and 75% unemployed. Education level achieved 41.3% had incomplete primary education. Knowledge on appropriate time for initiating breastfeeding after delivery, 46.3% of the respondents said with one hour of birth. On the frequency of breastfeeding, 87.0% said it should be done on demand.

On practices, 64.8% initiated breastfeeding within one hour of birth. But 20.4% of the mothers reported that their babies had been fed on foods and/or liquids prior to initiating breastfeeding. Out of the 81 mothers with children aged more than six months only 51.9% continued with breast feeding after introducing complementary feeding.

On attitude, majority of the respondents (85.2%) agreed or strongly agreed that first milk (colostrum) is very nutritious to the baby. Nutritious foods were considered to be expensive by the majority at 60%.

Association of socio demographic factors with inappropriate initiation of complementary feeding.

Mothers who had failed to complete primary school education or had no formal education were about 80% less likely to have appropriately initiated complementary feeding as compared with their counterparts who had achieved, at least, secondary school education (odds ratio (OR)0.198; 95% confidence interval (CI) 0.048-0.823), p=0.025).

A significantly lower proportion of appropriate initiation of complementary feeding was found among the respondents who were not married when evaluated against their counterparts who were married (40.9% versus 64.0% respectively, OR 0.390; 95% CI 0.150-1.016,p=0.050).

Conclusion: Mothers' nutritional knowledge exists but it is low. There are gaps on the mother's practices on feeding and also negative cultural beliefs towards certain foods. Education positively affects the correct timing of initiation of complementary feeds.

1 BACKGROUND AND LITERATURE REVIEW

1.1 Introduction

Adequate nutrition is essential for normal child's growth and development. Globally, under nutrition affects more than 50% of the children especially those under 5 years of age. Malnutrition remains one of the most common causes of morbidity and mortality[13] and it is an underlying cause of about 3.5 million children deaths each year.

Under nutrition is not simply as a result of food insecurity. Many children in food secure environments and from fair socio-economic backgrounds are undernourished probably as a result of inadequate knowledge of breast feeding and complementary foods, poor feeding practices and food restrictions due to cultural belief. These factors are often greater determinants of malnutrition than even the availability of food itself[13].

In addition to predisposing children to death, under nutrition affects their immune system predisposing them to infections and if the under nutrition is not addressed early and corrected these children could suffer irreversible physical and cognitive damage thereby impacting their future health, welfare and economic well being[17].

Prevention of under nutrition would be averting at least one third of childhood mortality and morbidity[13].

The mother is the main caregiver and she is the one who is the key person in the prevention of under nutrition. Unable to look after themselves, the children completely depend on their mothers for their nourishment which is limited to what their mothers provide.

Mother's chances of preventing under nutrition are likely to be increased if she has the right knowledge or information on how to feed her children.

Successful implementation of nutritional interventions is also an important contributor to the achievement of the Fourth Millennium Goal which is reduction of mortality by two-thirds among children under five[16].

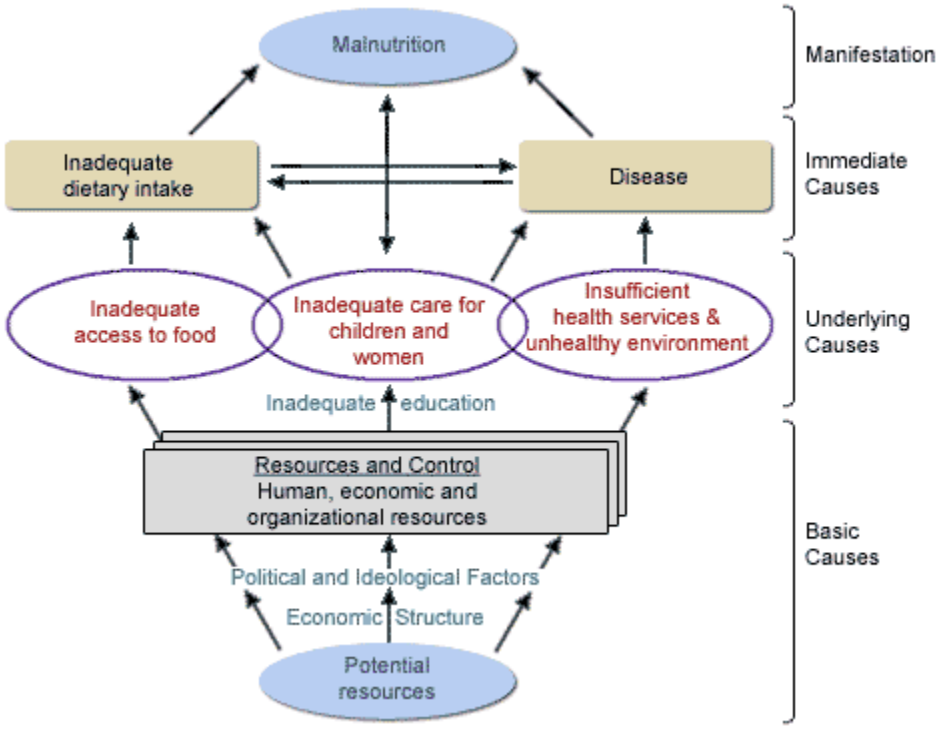
1.2 Literature Review:

The World Health Organization (WHO) defines malnutrition as the cellular imbalance between the supply of nutrients, energy and the body's deman

d for them to ensure growth and maintenance. Malnutrition generally implies under nutrition and refers to all deviations from adequate and optimal nutritional status in infants, children and adults.[20]

Nutrition is essential for child's normal growth and development. It is well recognized that the period from birth to two years of age is a "critical window" opportunity for the promotion of optimal growth, health and behavioral development. After a child reaches 2 years of age, under nutrition can lead to irreversible physical and cognitive damage [17]. Every time an innocent child suffers the scourge of malnutrition the responsibility goes to the mother, the family and to the community due to their lack of knowledge regarding the harmful effects of pre-lacteal feeding, benefits of exclusive breast feeding, timely initiation of complementary feeding and dietary practices.

The UNICEF conceptual framework defines malnutrition and captures the multi-factorial causality of under nutrition[21].



UNICEF; Conceptual Framework of the Cause of Malnutrition

UNICEF classifies the immediate causes of childhood malnutrition as insufficient dietary intake which may result from poor breastfeeding practices, early weaning and delayed introduction of complementary foods. Other factors that influence food intake include health status, food taboos and personal choice related to diet[21].

Optimal nutritional status results when children have access to affordable, diverse, nutrient-rich food, appropriate maternal and child-care practices.

Knowledge

Mothers are the foremost providers of primary care for children. Their understanding of basic nutrition and health measures strongly influence the care they provide. The aspects of nutrition knowledge include: duration of exclusive breastfeeding, appropriate age for introducing solid foods into a child's diet and the type of solid foods to introduce, frequency of child feeding, diet during illnesses and the mother's perceptions of her own child's nutritional status. Mother's practical nutrition knowledge is important for the child's nutritional outcome.

A number of studies have been done to determine mothers' knowledge on exclusive breastfeeding. Some of the studies have showed that 96% of the mothers had good knowledge that exclusive breastfeeding should be practiced for six months and 90.6% knew that colostrum was good for the baby. But despite having the correct knowledge only 68.6% practiced it[1].A study done here in Kenya in Yatta division showed only 1.8% of the mothers exclusively breastfed their children for six months[10]. The low percentages of exclusive breastfeeding in some of the studies have been associated with lack of correct knowledge that exclusive breast milk is sufficient for the first six months[2].When exclusive breastfeeding is not practiced it can contribute to a high prevalence of malnutrition.

The World Health Organization (WHO) and United Nations Children's Fund (UNICEF) recommend that every infant should be exclusively breastfed for the first six months of life, with breastfeeding continuing for up to two years of age or longer[13].

Exclusive breastfeeding is defined as feeding the infant only breast milk, with no supplemental liquids or solids except for liquid medicine and vitamin/mineral supplements.

There is also lack of knowledge on the correct time to initiate complementary foods with some mothers introducing complementary foods before or long after six months of age. The complementary foods may be inadequate for the inappropriate frequency, quality or quantity. Majority of mothers introduce complementary foods before six months of age. In Kenya, complementary foods are introduced as early as the first month and by 6 months 84% of infants are already receiving complementary feeds. Unfortunately, these complementary foods which replace breast milk are low in energy and micronutrients[15].When complementary foods are started there is a reduction in breast milk consumption, which can lead to a loss of protective immunity predisposing the child to infections. Breastfeeding drastically reduces deaths from acute respiratory infections and diarrhea, which are the two major causes of infant mortality worldwide.

Nutritious foods are considered to be expensive by some mothers[5], while traditional locally available foods can provide just as much nutritional value at affordable price.

Source of knowledge also plays a role on the kind of information the mother receives. A study done in Kenya among the Maasai community indicated that only 5.9% of the mothers had received information on feeding their children from the Mother Child Health (MCH) clinic with 81.2% having received it from the relatives[12].

Attitude

Worldwide in every community there are some foods which are thought to be forbidden for children due to cultural or social taboos. These cultural factors and taboos have a powerful influence on feeding practices and eating patterns. Certain foods like meat, eggs and nuts are thought to be too hard for the children to digest[1].Some foods have been associated with causing illnesses. According to a study done in Somalia by the food security analysis found out that most children were put on the breast 2-3 days after delivery and the colostrums was not fed to children by majority of mothers as it is considered heavy, thick, course, dirty, toxic, and harmful to children's health[16].In India feeding bananas and curd to a child in the rainy and winter seasons is thought to cause cold and cough[2].

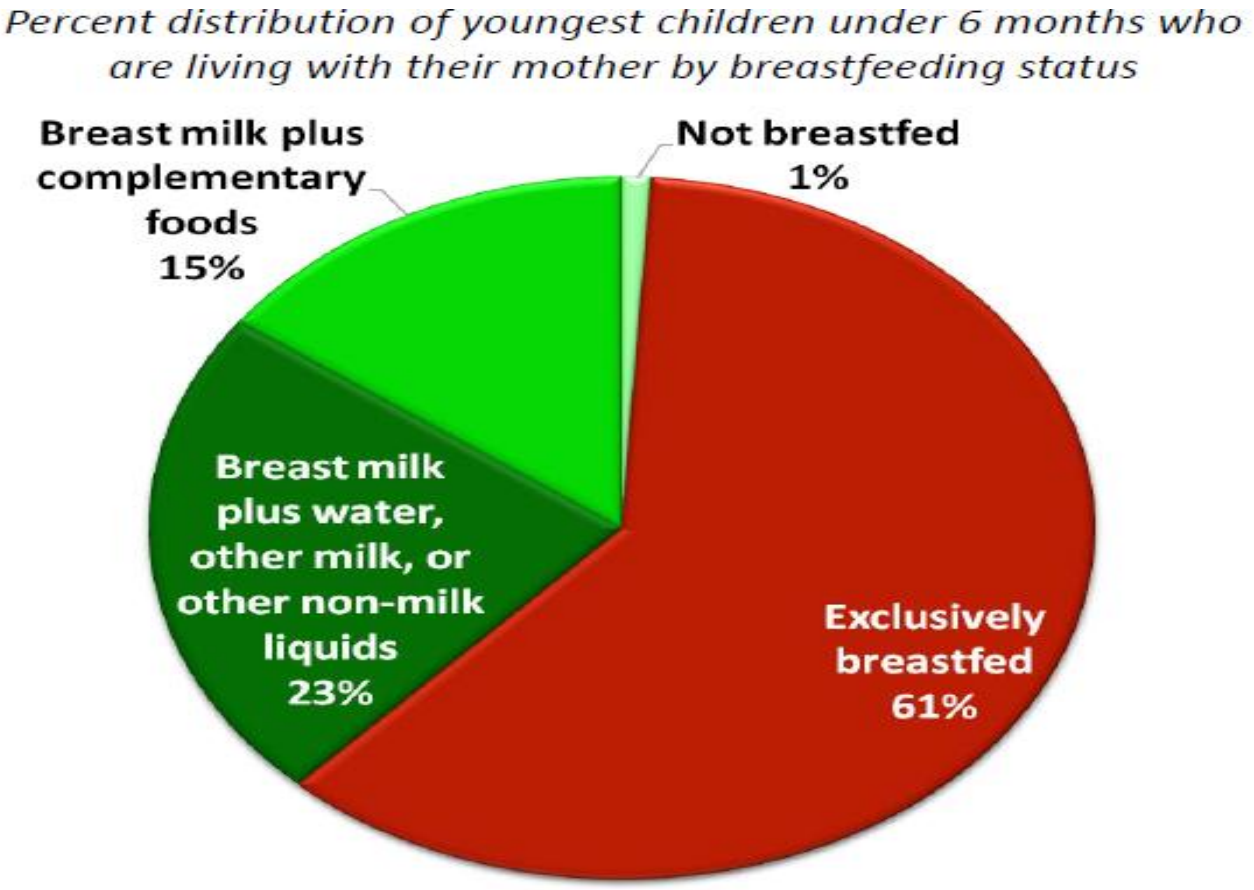
There are different beliefs on causes of malnutrition. In Kenya a study done in Kilifi on Maternal perceptions of factors contributing to severe under nutrition among children, the mothers claimed that long term breast feeding caused under nutrition and ceasing breastfeeding was the appropriate intervention[5]. Maternal gravidity was also raised as a cause of severe malnutrition. The mothers noted that some mothers stopped breastfeeding when they became pregnant. For example according to Mijikenda culture, when a mother with an infant or toddler becomes pregnant, 'the heat' from the unborn child burns the toddler when the child sleeps with the mother and leads to severe under-nutrition[5].

Another study also done in Kenya at Kibera slum areas revealed that in most cases the symptoms of kwashiorkor and marasmus were not associated with inadequate feeding but were seen as being caused by the transgression of sexual taboos by the parents[11].

Inappropriate beliefs led to inadequate diet, thus predisposing the children to under nutrition.

Practices

Globally, the rates of practicing exclusive breastfeeding are still low. Lack of exclusive breastfeeding for the first six months of life can contribute to a high prevalence of malnutrition. In Kenya, according to the 2008-2009 KDHS, only 32% of children were being exclusively breastfed. There has been some improvement in the percentage of children being exclusively breastfed in Kenya from 32% (KDHS 2008-09) to 61% according to the KDHS 2014 report.



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KDHS 2014 report

Pre-lacteal feeding has been associated with increasing the risk of developing malnutrition. A study done at Mbagathi District Hospital revealed that 9.4% of the malnourished children were given pre-lacteal feeds whereas only 1.8% of the well nourished children were given prelacteal feeds. KDHS 2008-09 showed that forty two percent of children are given pre-lacteal feeds with mothers in the rural areas being more likely to practice pre-lacteal feeding than those in the urban areas[14].

Timely introduction of complementary foods promotes good nutritional status and growth in infants and young children. Too early or too late introduction of complementary foods carries the risk of developing malnutrition. In Kenya, complementary foods are introduced as early as the first month.

Different studies have been able to highlight reasons as to why mothers introduce feeds before the age of six months. Reasons given for stopping breastfeeding included: inadequate milk secretion, perception that that breast feeding should stop during illness, perception that the feeds should be reduced during illness, and work commitments[7]. Cultural factors and taboos have powerful influence on feeding practices and eating patterns with young mothers often finding it impossible to ignore their ill-informed elders and peer groups on when to introduce feeds[4].

Reasons for delayed introduction of complementary foods included: vomiting on introduction of complementary foods, lack of knowledge of when to start complementary foods, advice of the mothers-in-law that milk was sufficient for the child till the age of one year[2].

Early introduction of complementary feeds is coupled with unhygienic preparation and storage conditions which predispose many infants to diarrhea and inadequate diets causing a negative impact on growth and development. A study done in India revealed that majority of mothers, 71.1%, were not boiling drinking water and 86% used bottles for feeding[1].

Lack of food fortification, inappropriate quality, inadequate quantity, thin consistency and wrong frequency of meals also affect the nutritional status of the child. A study done in Addis Ababa comparing well nourished and malnourished children after initiation of complementary feeding revealed that the frequency of feeding in the well-nourished households was four times higher than the frequency in the malnourished households in which the children were also fed on enriched porridge. More mothers in the malnourished group practiced bottle feeding of thin porridge than those in the well-nourished households[9].

Time devoted to the children during food preparation and feeding also plays a role in determining their nutritional status. A study done in Kenya Thika town revealed that the children who were malnourished had less time devoted to them for breast-feeding, food preparation and feeding and the frequency of feeds was four times less compared to the well-nourished[8].

Counseling of mothers on nutrition and proper dietary practices can prevent and reduce malnutrition rates among children. In India, a study involving 250 mothers with severely malnourished children in different nutritional rehabilitation centers[3]showed that initially41% of mothers had no correct knowledge of nutrition, 18% had the correct knowledge and 48% of the children had severe malnutrition. At the final stage, after the mothers were counseled about nutrition and dietary practices, 62.5% of the mothers had gained the correct knowledge and the percentage of children with severe malnutrition had dropped to 12%.

2. STUDY JUSTIFICATION AND UTILITY

Malnutrition among children is still one of the most challenging and complex problem worldwide. Kitui County has a rapidly growing population, water scarcity, falling food production and low resilience to climate change. The combined effects lead to food insecurity which greatly influences the children's nutritional status[19]. Under nutrition still remains a challenge in this county with 41% of the children under five years being reported as stunted according to KDHS 2008-09[15] .There has been no improvement with the KDHS 2014 reporting that 46% of the children in Kitui are currently stunted being ranked among the two counties(West Pokot and Kitui) with the highest proportions of stunting[22]. In addition, mortality rates secondary to severe acute malnutrition are still high, according to the IMAM report (2012);Kitui had a death rate of 13.2 % of inpatient management for severe acute malnutrition. This was above the recommended SPHERE standard of less than 10%.

There is a need to identify knowledge gaps, inappropriate attitudes as well as cultural beliefs and practices that may be contributing to poor nutrition indices in children residing in the County. The results from the study will provide useful information which could be used for planning and implementing better interventions informed by local findings. For instance, the identified knowledge gaps will be addressed by designing an appropriate curriculum for educating mothers about nutrition and proper dietary practices so as to prevent malnutrition and thus aid in reducing child mortality.

There is shortage of literature/data in this area on the mother's knowledge, attitude and practices towards nutrition when feeding their children.

Lastly, the research findings will be used as a stepping stone for future research in this area.

2.1 STUDY QUESTION

What is the level of prevailing knowledge, attitude and practices among mothers with malnourished children less than thirty six months, regarding breastfeeding and complementary feeding visiting Kitui County Hospital?.

2.2 Primary objectives

To determine the knowledge, attitudes and practices of mothers with malnourished children less than thirty six months, regarding breastfeeding and complementary feeding in Kitui County Hospital.

2.3 Secondary objectives

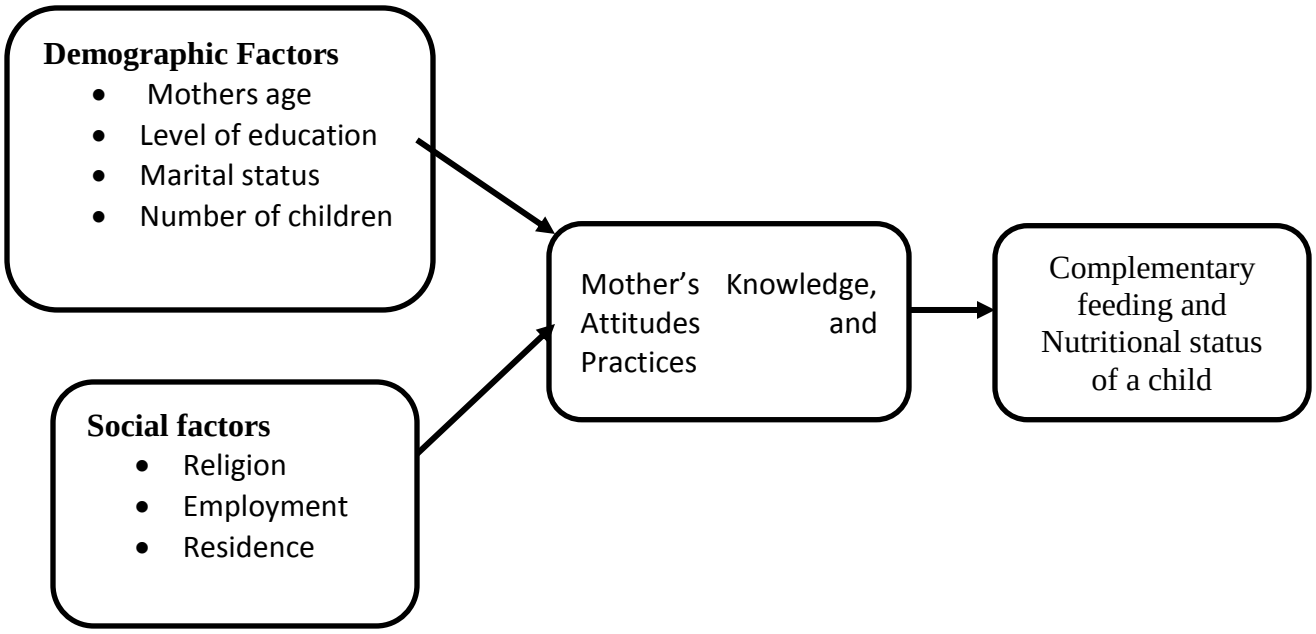
To determine the socio–demographic factors associated with initiation of complementary feeding.

Theoretical Framework

The theoretical approach for this study is the theory of G. Becker's Microeconomic models of household production. Becker's microeconomic models are useful in illuminating the household determinants of nutrition. A 'nutrition production function' relates the child's nutritional status (measured in terms of height for age or weight for age or weight for height) to a set of health 'inputs'. These include the child's nutrient intake, whether the child is breastfed and the duration of breastfeeding, preventive and curative medical care, and the quantity and quality of time of the mother or caregiver devotes to care-related activities. The quality of child care time in turn is likely to be influenced by the caregiver's age, experience, education and own health status. Socio-economic factors also enter the production function. For example a greater income from mother's employment translates into higher consumption of market-purchased inputs such as food and medical care that raise nutritional status, but reductions in the level or the quality of time in health-related activities reduce nutritional status. Therefore the production of child nutrition depends on a set of inputs such as food/nutrient intake, utilization of health services,

child's genetic endowment, gender, age, household and community characteristics, behavioral factors, socio-economic and environmental characteristics.

Operational Framework



3. METHODOLOGY

3.1 Study Design

The study employed a descriptive cross sectional study design.

3.2 Study Area

The study was carried out in Kitui County Hospital located in eastern part of Kenya. The hospital has a bed capacity of 200patients; while the number of cots is44.It serves a population of 1,012,709 with 65,696 of the population being between children within a range of 0-4 years.[15]The hospital has an average of 12 admissions per day in the paediatric wards on a daily basis.

3.3 Study period

The study was conducted over a period of 3 months.

3.4 Study Population

The study population were mothers with children less than thirty six months with malnutrition in Kitui County Hospital's inpatient and outpatient department

3.4.1 Inclusion criteria

- Mothers with malnourished children less than thirty six months (WHZ of less than -2SD).
- Visiting outpatient department or admitted in Kitui County Hospital.
- Mothers who gave consent to take part in the study.

3.4.2 Exclusion criteria

- Mothers who declined to sign the consent.
- Caregivers other than the mother were excluded from the study.
- Mothers with children with other co-morbidities-HIV, cardiac, malignancies, chronic renal disease and chronic diseases.

3.5 Study Variables

The independent variables in this study included socio-demographic characteristics such as age, education level, marital status, religion, number of children in the family and employment.

The dependent variable was initiation of complementary feeding.

3.5 Sample Size and Procedure

3.5.1 Sample size determination

Sample size was calculated using the formula as per Fisher et al

$$n = \frac{z^2(p(1-p))}{d^2}$$

Where:

n-Sample size

z- Standard normal deviate for 95% confidence interval (1.962)

p- Estimated proportion of knowledgeable mothers on appropriate time to initiate complementary feeding (92.4% as reported in study done by Wondu in Ethiopia)

d=precision (0.05)

Thus, n=108

3.5.2 Sampling procedure

Consecutive sampling was used to enroll participants, until the required sample size was attained.

Study procedure

Screening and recruitment

Screening of children was done in the outpatient and inpatient departments daily during the study period. Anthropometric indices of the children were determined after taking the appropriate measurements (height, weight, mid upper arm circumference (MUAC), age).The mothers of children who were found to be malnourished(visible wasting, bilateral edema ,MUAC less than 12.5cm,WHZ less than2sd) were enrolled into the study. Both written and verbal consent were obtained from the mothers and consenting mothers were interviewed using interviewer administered pretested questionnaires.

Focus Group Discussions

Qualitative data on knowledge, attitude and practices was collected using focused group discussions. Eight participants were enrolled from the OPD in a consecutive manner by the research assistant. Informed consent was sought from the mothers and the proceedings of the FGDs were digitally recorded. Three FGDs were conducted. The FGD transcripts were translated from kamba language into English by one of the research assistant who was conversant with the kamba language and a systematic analysis approach was adopted for analyzing the transcripts. This was done by going through the transcripts and selecting the emerging themes which were grouped into the main themes.

No FGDs were conducted in the inpatient department because it would have been unethical to pull away the mothers from giving attention and care to their ill children to conduct the discussions.

Training of Research Assistants

Two research assistants were hired. The assistants underwent one day training. The training curriculum included informed consent taking, interviewing techniques, how to facilitate focus group discussions FGDs and how to take anthropometric measurements.

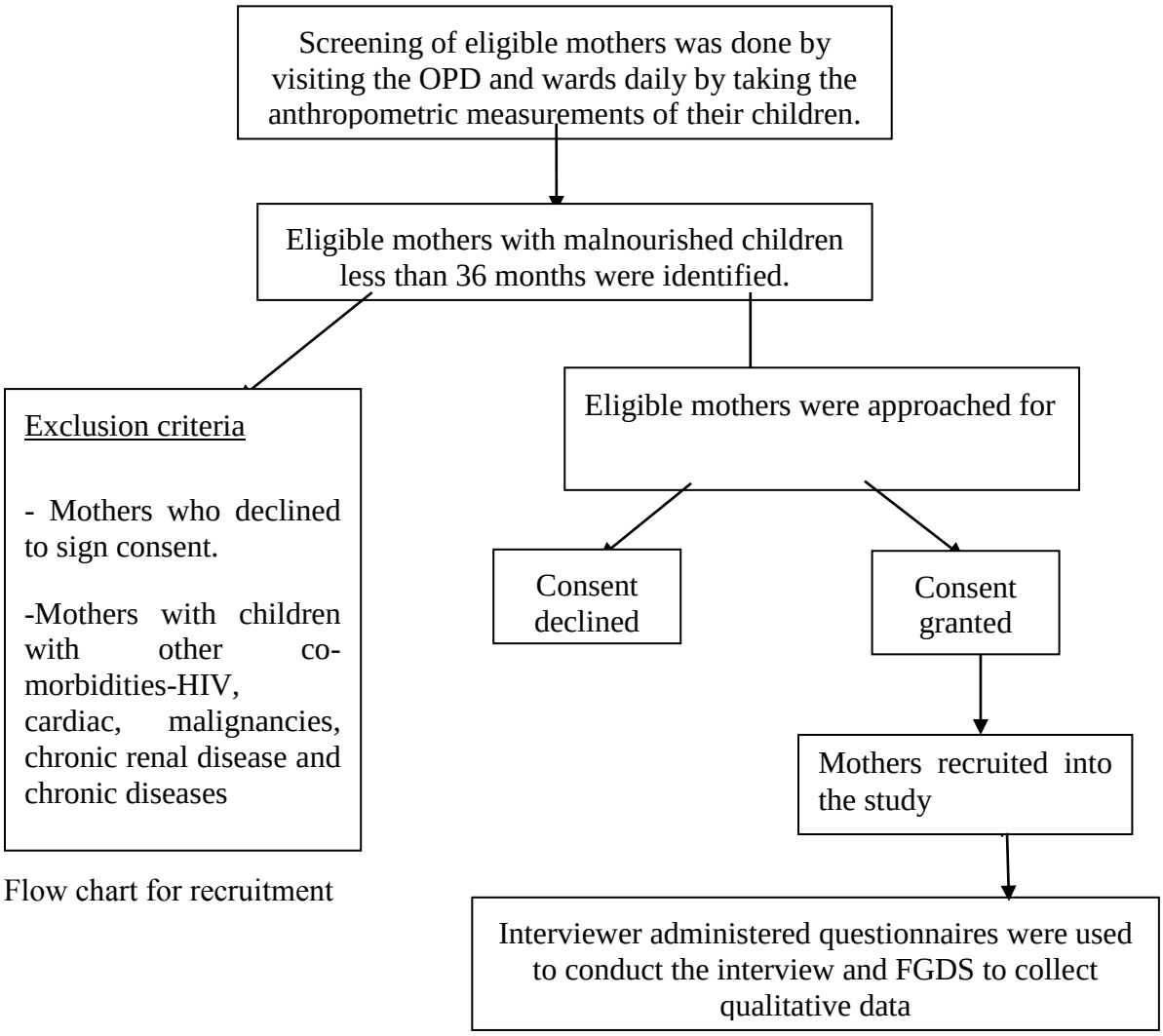


Figure 1: Flow chart for recruitment

3.6 Data Management and planned analysis

The data collected was entered into Microsoft Access database, cleaned and corrected for outliers. It was then analyzed using IBM-SPSS version 22.0 software.The results are presented in forms of narratives, tables, graphs and charts. The association between categorical variables was tested using the chi-square test or Fisher's exact test where appropriate. Continuous data was analyzed using descriptive statistics such as mean, median, standard deviation and standard errors. The independent t-tests and analysis of variance was also conducted on continuous data. The threshold for statistical significance was set at less 0.05. The recorded FGDs was transcribed, coded and analyzed by themes.

3.7 Ethical issues

Informed consent was sought from the study participants. All information was held with confidentially, the participants names were not recorded in any forms or any other documents to ensure anonymity. Ethical approval was sought from KNH/UON ethical committee. Permission to carry out the study was obtained from the relevant County Health Executives and hospital management.

4. RESULTS

The present study enrolled 108 mother-child pairs. Table 4.1a shows the background characteristics of the mother's with malnourished children who participated in the study. Their ages ranged from 16 and 43 years with the median (interquartile range (IQR)) age being 23 (21 - 30) years. Most the respondents were aged between 22 and 30 years (54.6%), married (79.6%), Christians (97.2%) and unemployed (75.0%). The number of children of the respondents ranged from one to nine with a with a median (IQR) of one (one to two) child(ren). Respondents with one and two children were constituted 37.0% and 33.3% of the total respondents.

Table 4.1 a. Background information of the respondents

Characteristic	**Number (n=108)**	**%**
Mother's age (years)		
<21	28	25.9
22 to 30	59	54.6
31 to 40	16	14.8
>40	5	4.7
Religion		
Christian	105	97.2
Muslim	3	2.8
Marital status		
Married	86	79.6
Single	18	16.7
Separated	2	1.9
Widowed	2	1.9
Employment		
Employed (formal)	9	8.3
Employed (self)	18	16.7
Unemployed	81	75.0
No. of children in the family		
One	41	38.0
Two	35	32.4
Three	13	12.0
≥4	19	17.6
No. of living children		
One	40	37.0
Two	36	33.3
Three	12	11.1
≥4	20	18.5

Assessment of the highest level of education attained by the respondents showed that 9.3% had incomplete primary education, 41.7% had complete primary school while 34.3% had attained secondary school education (Figure 4.1).

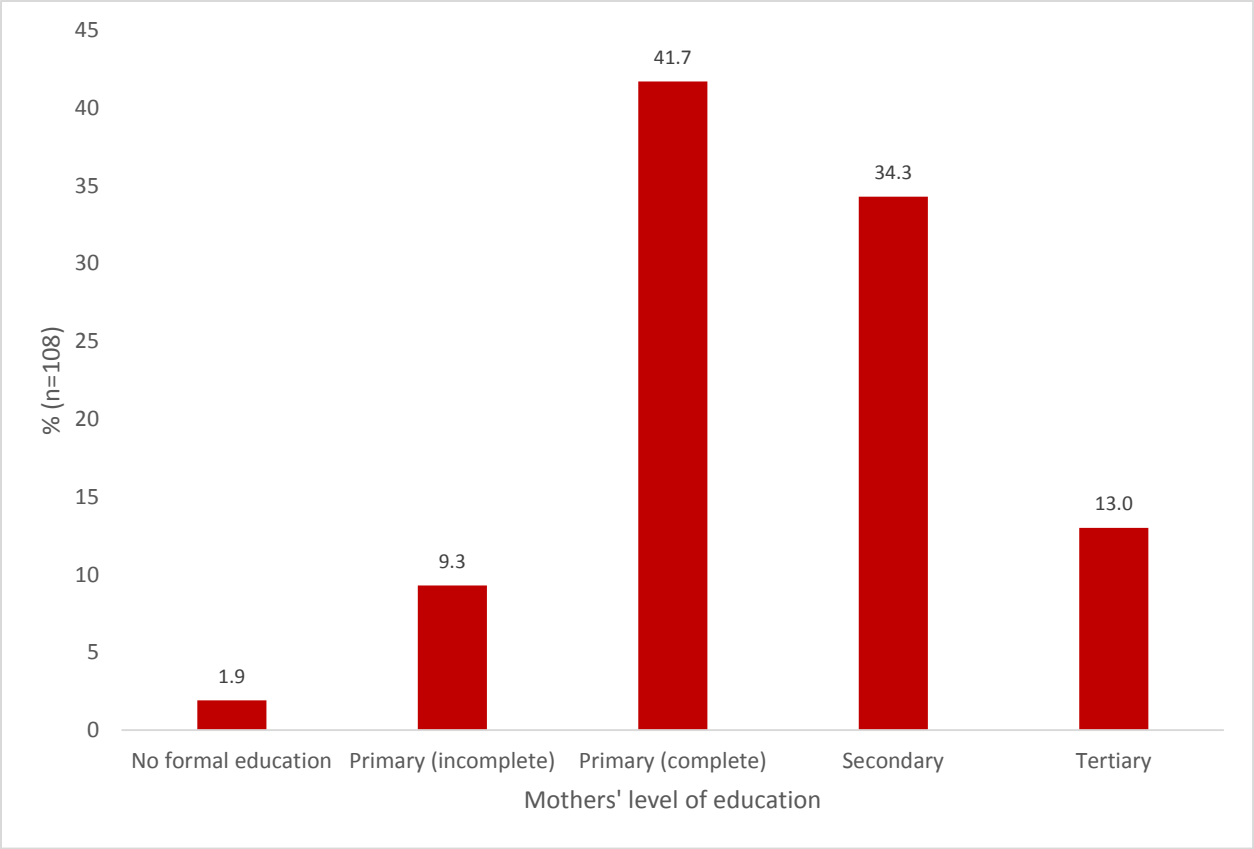


Figure 4.1 Education levels of the mothers

Characteristics of enrolled children

Out of the 108 children recruited into the study, 57.4% were females. The median (inter-quartile range) age of the children was 11.5 (5.3 to 18.0) months. One-quarter of the children were less than six months old while 27.8% and 15.7% were aged, respectively, six to twelve months and more than 24 months. Further, the birth orders for 41.7% and 33.3% children were, respectively, first and second (Table 4.1b).

Table 4.1b. Characteristics of children

Characteristic	**Number (n=108)**	**%**
Gender		
Male	46	42.6
Female	62	57.4
Age (months)		
<6	27	25.0
6 to 12	30	27.8
13 to 24	34	31.5
>24	17	15.7
Birth order		
One	45	41.7
Two	36	33.3
Three or more	27	25.0

Nutritional status of the children

All the children recruited in the study were diagnosed with malnutrition. Further analysis revealed that 41.7% had severe acute malnutrition (SAM) identified by severe wasting (weight-for-height Z-scores (WHZ) < -3). Additionally, moderate acute malnutrition (MAM) identified by moderate wasting (WHZ< -2 z-score and ≥ -3 z-score) was prevalent in 58.3% of the participating children (Table 4.1c).

Table 4.1c. Description of malnutrition in the participating children

Type	**Number (n=108)**	**%**
Severe AM* (WHZ§< - 3)	45	41.7
Moderate AM (WHZ<-2 to ≥ -3)	63	58.3

**Acute Malnutrition; §weight-for-height Z-scores*

Knowledge, Attitude and Practices of Mothers

The present study endeavored to document the knowledge, attitude and practices, with regard to breastfeeding and complementary feeding of mothers who took part in the survey.

Knowledge

On the appropriate time for initiating breastfeeding, 46.3% of the respondents said within one hour of birth. The rest reported the time as after one hour (31.5%) and after one day (9.3%) while 13% said they were not sure or did not know. Further, 84.3% of the respondents knew that infants should be breastfeed exclusively for the first six months of life. On the frequency of breastfeeding, 87.0% of the mothers said it should be done on demand while 6.5% said there should be a schedule that should be followed while breastfeeding. The survey also sought to assess whether the respondents had the knowledge of the minimum recommended duration of breastfeeding following initiation of complimentary foods. The responses were as follows; Less than 18 months (13.9%), 18 months (16.7%) and more than 18 months up to 24 months (47.2%). Moreover, 75.0% of the study participant reported 6 months as the recommended time for initiating to complimentary foods and 9.3% of the study participant reported after 6 months as the recommended time for initiating to complimentary foods (Table 4.2).

The median (IQR) scores for the overall knowledge was 80% (60% – 80%) respectively. The knowledge levels were good (scores ≥70%) for 63 respondents (58.3%) while 45 respondents (41.7%) had poor knowledge with regard to a child's nutrition.

Table 4.2. Assessment of knowledge of the respondents

Attribute	**Number (n=108)**	**%**
Time of initiating breastfeeding		
Within 1hour after birth	50	46.3
After one hour	34	31.5
After 1 day	10	9.3
Don't know/Not sure	14	13.0
Infants exclusive breastfeeding for the 1st 6 months of life		
Yes	91	84.3
No	17	15.7
Frequency of breastfeeding		
On demand	94	87.0
According to the timetable	7	6.5
Don't know/Not sure	7	6.5
Duration of b/feeding after initiating complimentary foods		
Less than 18 months	15	13.9
18 months	18	16.7
>18-24 months	51	47.2
>24 months	24	22.2
Time to initiate to complimentary foods		
<6 months	17	15.7
6 months	81	75.0
After 6 months	10	9.3
Level of knowledge		
Good	63	58.3
Poor	45	41.7

The key sources of information on children's nutrition and related aspects for the respondents were majorly from health workers (75.9%) and family members (47.2%) as presented in Table 4.3.

Table 4.3. Source of information

Source of information	**Number (n=108)**	**%**
Health workers	82	75.9
Family members/Relatives	51	47.2
Media	1	0.9

Practices

Of the 108 respondents interviewed, 64.8% initiated breastfeeding within one hour of birth. In addition, 20.4% of the mothers reported that their babies had been fed on foods and/or liquids prior to initiating breastfeeding as shown in Table 4.4a. The prelacteal feeds included water, honey and glucose water. The median (IQR) score for the overall knowledge was 60% (60% - 80%). Those who practices were rated as favorable (mean score of 70% or more) were 79 (73.1%) while the rest were rated as having unfavorable practices with regard to a child's nutrition (29, 26.9%) as shown in Table 4.4a.

Table 4.4a Practices

Attribute	Number (n=108)	%
Time breastfeeding was initiated		
Within one hour after birth	70	64.8
After one hour of birth	24	22.2
After one day of birth	13	12.0
Other*	1	0.9
Baby fed on food or liquid before initiating breastfeeding		
Yes#	22	20.4
No	86	79.6
Breastfeed exclusively for 6 months		
Yes	47	58.0
No	34	42.0
Practice scores		
Favorable	79	73.1
Unfavorable	29	26.9

**After two days #Honey (1), water (11), glucose water (1)*

Out of a total of 81 women with children aged more than six months, 51.9% responded that they were still breastfeeding (Table 4.4b).

Table 4.4b Practices

Attribute	**Number**	**%**
Still breastfeeding (n=81)		
Yes	56	51.9
No	25	23.1

The reasons cited for stopping breastfeeding before 24 months included: mother not having adequate milk, getting pregnant, baby refusing to breastfeed among others (Table 4.4c).

Table 4.4cReasons for stopping breastfeeding before 24 months

Reasons	**No. (n=25)**	**%**
Did not have enough milk	7	28.0
Got pregnant	3	12.0
Baby refused to breastfeed	3	12.0
Went back to school	2	8.0
Work	2	8.0
Mother HIV positive	2	8.0
Baby was refusing complimentary feeds	1	4.0
Child was sick	1	4.0
Illness of the mother	1	4.0
Wanted child to grow faster	1	4.0
Was big and eating well	1	4.0

Enrichment of the child's food during preparation and/or after cooking was reportedly carried out by 63.0% of the respondents. The most frequently mentioned enrichments involved addition of milk, margarine and vegetables (tomatoes, spinach etc.). The most commonly used utensils to give semi solid food, e.g. porridge, to their children included bottles (26.9%) as well as cups and spoon (64.8%). Overall, 40.7% of the respondents reported that they boiled drinking water. Enquiries on who took care of the child while the mother was away revealed that grandmothers (39.8%), the husband (15.7%) and older children (16.7%) as the caretakers of the child at such times. A substantial proportion of the respondents (38.0%) reported that they always took their child with them and thus did not enlist the help of caretakers (Table 4.4d).

Table 4.4dPractices of mothers

Attribute	Number (n=108)	%
Enriching child's food when preparing it &/or after cooking		
Yes	68	63.0
No	40	37.0
Utensils used to give semi solid food e.g. porridge		
Bottle	29	26.9
Cup & Spoon	70	64.8
Other§	9	8.3
Do you boil drinking water?		
Always	44	40.7
Sometimes	32	29.6
Never	32	29.7
Caretaker of child when mother is away		
Mother takes her child with her	41	38.0
Grandmother	43	39.8
Older children	18	16.7
Husband	17	15.7
Neighbours/friends	5	4.6
Other relative*	5	4.6
House girl	3	2.8

*§Hands(4),plates & hand(5);*aunt (3); sister (2)*

Attitudes

The attitude of the respondents with regard to nutrition of their child and related attributes was appraised using a set of ten statements. The findings are outlined in table 4.5

Table 4.5. Evaluation of the attitude of participating mothers

No	Statement	(Strongly) agree	Undecided/(Strongly) disagree
		n (%)	n (%)
1	First milk (colostrum) is very nutritious to the baby.	92(85.2)	16(14.8)
2	It is not possible for a baby to survive on breastfeeding for six months.	43(39.8)	65(60.2)
3	It is important to give the baby some water, honey and other solid foods during the first six months	45(41.7)	63(58.3)
4	Poor/thin breast milk makes the child prone to malnutrition	69(63.9)	39(36.1)
5	Nutritious foods are expensive	60(55.6)	48(44.4)
6	Malnutrition is caused by witchcraft and evil eye	33(30.6)	75(69.4)
7	Some foods are too heavy for the children to digest e.g. eggs	62(57.4)	46(42.6)
8	When pregnant you should stop breastfeeding	76(70.4)	32(29.6)
9	Breast milk protect your child from illnesses	95(88.0)	13(12.0)
10	Feeding should be stopped during illness	30(27.8)	78(72.2)

On assessment of attitude, two statements '*First milk (colostrum) is very nutritious to the baby*' and '*Breast milk protect your child from illnesses*' were scored as follows; 5=Strongly agree, 4=Agree, 3=Undecided, 2=Disagree, 1=Strongly disagree. The rest of the statements were reverse scored, that is, 1=Strongly agree, 2=Agree, 3=Undecided, 4=Disagree, 5=Strongly disagree. The scores were then converted to percentages.

The mean ± se score on the statement '*First milk (colostrum) is very nutritious to the baby*' was 83±2.1% while that of '*Breast milk protect your child from illnesses*' was 83±1.7%. the lowest mean ± se scores were recorded on the responses to '*When pregnant you should stop breastfeeding* and '*Poor/thin breast milk makes the child prone to malnutrition*' (47±2.1 and 52±2.2% respectively). The Mean ± se scores for the statements '*Feeding should be stopped during illnesses* and *Malnutrition is caused by witchcraft and evil eye'* were, respectively, 73±2.4% and 69±2.4% as shown in Figure 4.3. The overall median score for the attitude was 64% (58% - 72%) with 33 respondents being classified as having favorable attitude (mean score of 70% or more). Further 75 respondents (69.4%) were found to have unfavorable attitude towards their children's nutrition (mean score of less than 70%).

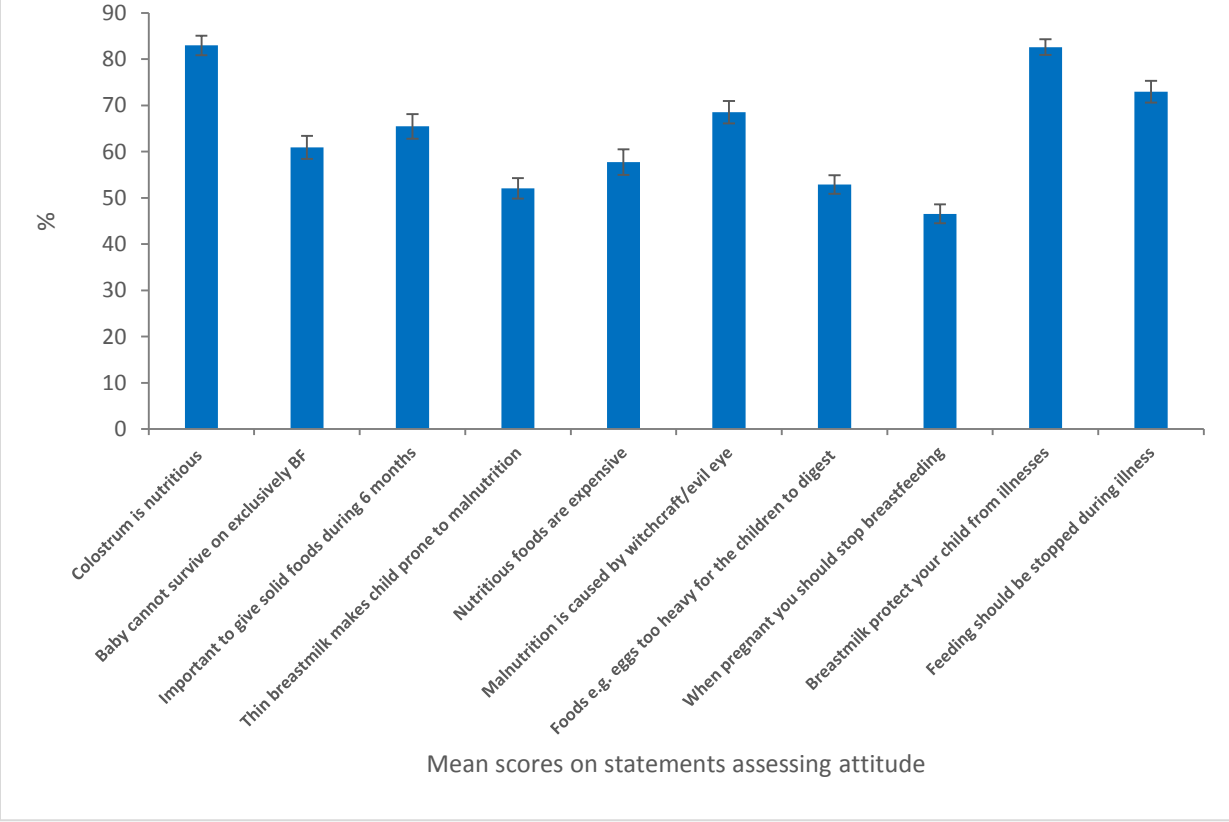


Figure 4.3 Statements assessing attitude of the respondents

4.1 FACTORS ASSOCIATED WITH INITIATION OF COMPLEMENTARY FEEDING

The survey evaluated the relationship between maternal sociodemographic factors and timely introduction of complimentary foods. Education was statistically significantly associated, at least in part, with timely initiation of complementary feeding. Mothers who had failed to complete primary school education or had no formal education were about 80% less likely to have appropriately initiated complementary feeding as compared with their counterparts who had achieved, at least, secondary school education (odds ratio (OR)0.198; 95% confidence interval (CI) 0.048-0.823), p=0.025). On the contrary, no statistically significantly difference was observed, with respect to initiation of complementary feeds in children, between mothers who had completed primary education when compared with those who had secondary school education or higher (p=0.863). A significantly lower proportion of appropriate initiation of complementary feeding was found among the respondents who were not married when evaluated against their counterparts who were married (40.9% versus 64.0% respectively, OR 0.390; 95% CI 0.150-1.016,p=0.050). Other maternal factors assessed including age (years), religion, number of children and employment status were not associated with appropriate initiation of complementary feeding in children as shown in Table 4.6a.

Table 4.6a Association between sociodemographic factors and initiation of complementary feeding

Characteristic	Total	Initiation of complimentary foods		OR† (95% CI§)	P-value
		Appropriate	Inappropriate		
		n (%)	n (%)		
Education					
No formal/Incomplete primary	12	3(25.0)	9(75.0)	0.198(0.048-0.823)	0.025
Complete primary	45	29(64.4)	16(35.6)	1.076(0.468-2.477)	0.863
Secondary +	51	32(62.7)	19(37.3)	1.000	
Age (years)					
≥21	28	19 (67.9)	9(32.1)	1.299(0.397-4.250)	0.665
22 to 30	59	32(54.2)	27(45.8)	0.729(0.263-2.020)	0.543
>30	21	13(61.9)	8(38.1)	1.000	
Marital status					
Not married	22	9(40.9)	13(59.1)	0.390(0.150-1.016)	0.050
Married	86	55(64.0)	31(36.0)	1.000	
No. of children					
One	41	28(68.3)	13(31.7)	1.900(0.730-4.946)	0.186
Two	35	19(54.3)	16(45.7)	1.048(0.401-2.740)	0.924
Three or more	32	17(53.1)	15(46.9)	1.000	
Religion					
Christian	105	62(59.0)	43(41.0)	0.721(0.063-8.203)	0.998
Muslim	3	2(66.7)	1(33.3)	1.000	
Employment					
Employed (self or formal)	27	15(55.6)	12(44.4)	0.816(0.339-1.968)	0.651
Unemployed	81	49(60.5)	32(39.5)	1.000	

† Odds ratio §confidence interval

A higher proportion of appropriate initiation of complementary feeding was observed in girls when assessed against boys (64.5% versus 52.2% respectively). Nevertheless, the association was not significant, statistically (OR 0.600 (95% CI 0.276-1.306), p=0.197). Likewise, birth order was not associated with appropriate initiation of complementary feeding as shown in Table 4.6b.

Table 4.6b Association between demographic factors of the child and initiation of complementary feeding

Characteristic	**Total**	**Initiation of complimentary foods**		**OR (95% CI)**	**P-value**
		Appropriate	**Inappropriate**		
		n (%)	**n (%)**		
Sex					
Male	46	24(52.2)	22(47.8)	0.600(0.276-1.306)	0.197
Female	62	40(64.5)	22(35.5)	1.000	
Birth order					
One	45	29(64.4)	16(35.6)	1.450(0.547-3.841)	0.454
Two	36	20(55.6)	16(44.4)	1.000(0.366-2.730)	1.000
Three or more	27	15(55.6)	12(44.4)	1.000	

Risk factors for pre-lacteal feeding

A higher proportion of women who were not married practiced prelacteal feeding when compared to their counterparts who were married (41% versus 15% respectively). Indeed, being not marred was associated with a 3.9-fold increased likelihood of engaging in prelacteal feeding (OR = 3.88 (95% CI 1.38-10.94), p=0.007). Besides, being employed (self or otherwise) was associated with increased likelihood of engaging in prelacteal feeding (OR = 0.11(95% CI 0.01-0.86), p=0.012). Other factors including age of mother, number of children, educational, gender of the child and religion were not associated the practice of prelacteal feeding as shown in Table 4.6a.

Table 4.6a Association between sociodemographic factors and prelacteal feeding

Factor	Prelacteal feeding		OR† (95% CI§)	P-value
	Yes (n, %)	No (n, %)		
Age of mother				
≥21	6(21.4)	22(78.6)	0.68(0.18 - 2.52)	0.565
22 to 30	10(16.9)	49(83.1)	0.51(0.16 - 1.64)	0.253
>30	6(28.6)	15(71.4)	Reference	
Marital status				
Not married	9(40.9)	13(59.1)	3.88(1.38-10.94)	0.007
Married	13(15.1)	73(84.9)	Reference	
No. of children in the family				
One	7(17.1)	34(82.9)	0.74(0.23 - 2.36)	0.605
Two	8(22.9)	27(82.9)	1.06(0.34 - 3.35)	0.923
Three +	7(21.9)	25(78.1)	Reference	
No. of living children				
One	7(17.5)	33(82.5)	0.85(0.22 - 3.33)	0.813
Two	9(25.0)	27(75.0)	1.33(0.35 - 5.04)	0.671
Three	2(16.7)	10(83.3)	0.80(0.12 - 5.20)	0.999
≥4	4(20.0)	16(80.0)	Reference	
Educational level				
No formal/Incomplete primary	3(25.0)	9(75.0)	1.56(0.35 - 6.92)	0.684
Complete primary	10(22.2)	35(77.8)	1.33(0.49 - 3.65)	0.574
Secondary +	9(17.6)	42(82.4)	Reference	
Employment				
Employed (formal/self)	1(3.7)	26(96.3)	0.11(0.01-0.86)	0.012
Unemployed	21(25.9)	60(74.1)	Reference	
Child's sex				
Male	12(26.1)	34(73.9)	1.84(0.71-4.72)	0.204
Female	10(16.1)	52(83.9)	Reference	
Birth order				
One	10(22.2)	35(77.8)	1.26(0.38 - 4.17)	0.773
Two	7(19.4)	29(80.6)	1.06(0.30 - 3.80)	0.999
Three or more	5(18.5)	22(81.5)	Reference	
Religion				
Christian	22(21.0)	83(79.0)	0.79(0.72 - 0.87)	0.999
Muslim	0(0.0)	3(100.0)	Reference	

4.2 FOCUSED GROUP DISCUSSIONS RESULTS

1. Feeding in the first six months of life.

There was positive attitude among the mothers that it's possible to breast feed for six months without giving anything else.

> *<<Before we used to think that it was impossible but we have been taught in the clinics that your baby can survive for six months with breast milk only and we have practiced it and it is possible>>*

A few of the mothers in all the three FGDs felt it was important to give the baby water on top of the breast milk during the first six months of life.

> *<<Water is good it prevent the child from getting constipation and it's ok to give as long as you continue breastfeeding and you don't give anything else>>*

One of the participants in the 3rd FGD revealed that the mothers get considerable pressure from the elderly women and peers to discard colostrum and initiate feeds before six months.

<< In my case for instance, I could not feed colostrum to my children because my mother-in-law forced me to discard colostrum before starting the breastfeeding>>

2. Complementary feeding initiation

The mothers seemed to have the correct knowledge that complementary feeding should start at 6 months and not earlier. At the same time, they gave more reasons why they are forced to introduce complementary feeding earlier. These reasons included, not having enough milk, going back to work, having to go looking for odd jobs and the baby's refusal to latch on the breast.

<<when you don't have enough milk the baby cries a lot due to hunger and you are forced to feed him, I know it's not right but sometimes you feel obliged to feed>>

Cultural beliefs also constrained the provision of balanced meals because some foods, such as eggs, were considered to be taboo for children.

<<It's not advisable to give the young children eggs because it's hard to digest and it makes them overweight>>

The nutritious foods were considered to be expensive an issue that rose in all the three FGDs. When asked to name the foods they thought to be nutritious the most mention were fish, cows meat and chicken meat. Majority didn't consider grains to be very nutritious.

<< We know fish is good it makes you child clever and healthy but the problem is it's too expensive we cannot afford it, the little money our husbands give us it's just not enough>>

3. Causes of malnutrition:

Inadequate financial resources were identified in all the focus groups as a cause of severe under-nutrition because they associated healthy foods to being expensive.

< You, see we rely on what our husbands give us to buy food and most of the time this money is not enough to buy this health foods. Most of our husbands here are either farmers or casual laborers.>

Maternal gravidity (close Spacing) was also reported a to be a cause of malnutrition because the pregnant mother is forced to stop breastfeeding because they believed if the child continues breastfeeding it will take up all the nutrients needed for the unborn child.

There was also the self condemnation by the mothers, where a few mothers in all the three FGDs reported that the mothers' breast milk can make the child thin if it's thin in composition.

<<If the mother's milk is weak and thin, the child will be thin and will have poor weight gain>>

Certain illnesses were also mentioned as a cause of malnutrition, commonly mentioned was malaria. Teething was also associated with malnutrition because they associated it with diarrhea.

<<When teething the child develops fever, diarrhea and even refuses to feed causing them to lose a lot of weigh>>

5. DISCUSSION

The objectives of the study was to determine the knowledge, attitudes and practices of mothers with malnourished children under thirty six months of age regarding breastfeeding and complementary feeding and the socio–demographic factors associated with initiation of complementary feeding.

The demographic and socioeconomic characteristics identified in the study population were; marital status of the mothers, Age composition of the study population, Mothers occupation (employment), and education level of the mothers. The study has shown that the majority of the women are married (79.6%) hence upholding the moral values of the family and this creates a conducive environment for upbringing of children.

KNOWLEDGE:

Mother's practical nutrition knowledge is important for the child's nutritional outcome. On initiation of complementary feeding majority had the correct knowledge at 81(75%) that complementary feeding should be started at six months, but compared to a study done in Nairobi the percentage in Kitui was low. The study was on maternal knowledge on complementary feeding practices and nutritional status of children aged 6-23 months[23]. It was conducted at a public health centre in Kahawa west Nairobi, which showed that 90.9% of the mothers had the correct knowledge on when to initiate complementary feeding. The lower knowledge level found could be attributed to the fact that our study was in a rural setting while the Nairobi study was in an urban setting. People in rural areas generally have less access to health care compared to their urban counter parts. Urban population has better access to hospitals, primary care and other health services in terms of geographical distribution and professional personnel[24], which in turn reflects favorably in the provision of health information to the mothers. The mothers in the rural areas are also more likely to have limited infrastructure for accessing health care information. For example, lack of electricity in some areas of Kitui limits the access to health information/promotions passed through the media via television, radio and internet. In the current study majority of the respondents 75.9% reported health workers to be their source of information. This reflects positively in terms of the knowledge the mother has because chances

of getting the correct information on how to feed their children will be correct compared to information obtained from the relatives. In comparison to a study done in Kenya among the Maasai community there is a big difference, while in Kitui it at 75.9% at the Masaai community only 5.9% of the respondents got information from the health workers, majority of them 81.2% having gotten the information from relatives.[12]The difference in the percentages can be attributed to the fact that the Maasai culture is often described as strongly conservative, patriarchal and monotheistic, and despite pressures from modern society, the Maasai continue to observe long-held beliefs, values and cultural practices[27]. Therefore they may cline more towards the relatives and family members as their source of information.

ATTITUDE:

In this study, majority of the mothers agreed that colostrum was very nutritious to the baby, unlike a study done in Somali where colostrum was considered to be harmful to the baby and it was discarded[16]. This can be attributed to the fact that the percentage of women in Kenya attending ANC and delivering at the health facilities has increased and is higher compared to their counterparts in Somalia where in some rural areas ANC attendance was reported to be as low as 20%. According to KDHS report 2014[22], 96% of women with a live birth in the five years preceding the survey received antenatal care from a skilled provider and sixty-one percent delivered in a health facility. At the health facilities they are educated on the importance of colostrum and breastfeeding. The current study also identified some similar negative attitudes towards nutrition also identified in other studies done globally. For example, Most of the mothers (62%) also agreed that some foods are too heavy for the child to digest. This was similar to a study done in India where the mothers (62%) avoided certain foods which they thought were too hard for the children to digest and in some cases certain foods were also associated with illnesses[4].The aspect that majority (60%) believed that nutritious foods were expensive, Similar to a study done in Kilifi[5].Inappropriate beliefs and attitudes towards certain foods, lead to inadequate and unbalanced diet predisposing the children to under-nutrition.

PRACTICES:

Globally, over one million newborn infants could be saved each year by initiating breastfeeding within the first hour of life. In developing countries alone, early initiation of breastfeeding could save as many as 1.45 million lives each year.[28]Of the 108 respondents interviewed, 64.8% initiated breastfeeding within one hour of birth despite only 46.3% having the correct knowledge that breastfeeding should be initiated within one hour after birth. This is almost similar to the KDHS 2014 report, which states that 62% percent of the neonates are breastfed within one hour of birth[22].Compared to other parts of the world the rates in Kitui are higher, for example in Eastern Europe and Central Asian countries the rates are extremely low at 17% but this can be as a result of the misconception by mothers in this parts of the world where infant formula is thought to be equivalent to breast milk in terms of its health benefits[29].

Pre-lacteal feeding has been discouraged because of its negative effect on the duration of breastfeeding. The practice of giving pre-lacteal feeds is a key determinant of early cessation of full breastfeeding. Unfortunately pre lacteal feeding is still practiced in Kenya, in Kitui 20.4% of the mothers reported that their babies had been fed on foods or liquids prior to initiating breastfeeding. These included water, glucose water, sugar and honey.

Another study done in Kenya, at Naivasha County Hospital, on breastfeeding practices during the neonatal period among mothers delivering at the facility[25], revealed that 30.4% of the babies received at least one pre-lacteal feed before initiation of breastfeeding. This emphasizes the need to improving knowledge and confidence of mothers through appropriate prenatal counseling and support, with the ultimate goal of stopping pre-lacteal feeds completely.

Socio–demographic factors associated with initiation of complementary feeding:

The current study indicates that majority of the mothers are unemployed (75%) therefore they are solely dependent on their spouses to provide money for essential basic needs like food, shelter and clothing. This highlights the need to empower women, so that they can be able to contribute to the family basket, reducing straining in the household basic needs. KDHS 2014 shows that stunting in children decreases as household wealth increases.

On the mothers education level the study has highlighted that mothers who had failed to complete primary school education or had no formal education were about 80% less likely to have appropriately initiated complementary feeding as compared with their counterparts who had achieved, at least, secondary school education .Parental illiteracy is found to be associated with a higher risk of children's poor nutritional status. This was observed in a case-control study done in Bangladesh[26], where the maternal illiteracy was associated with a fourfold increase in the risk of severe acute malnutrition in their children. Another study carried out in Kwale[27]observed that the mother's education level is closely linked to nutritional status of the children. It revealed children of non educated mothers were more likely to be underweight than those of secondary-educated mothers ($p<0.05$) which is consistent with this study therefore showing the importance of maternal education for child health and nutrition. KDHS 2014[22] also reports that Children of mothers who did not complete primary school or who have no education are more likely to be stunted than children of mothers with a secondary or higher education.

Conclusion:

The study has shown there are some gaps in terms of knowledge and practices towards nutrition.

For example only 50 women out of the 108 had the correct knowledge on initiation of breastfeeding after birth. Inappropriate beliefs towards certain foods do exist. Nutritious foods are considered expensive and some foods being avoided for example eggs as they are thought to cause illnesses, contributing to the increasing percentage of under nutrition in this region.

Level of education achieved has shown to have an influence on initiation of complementary feeds, with mothers who had failed to complete primary school education or had no formal education being more likely to initiate inappropriate complementary feeding.($p=0.025$).This in turn reflects poorly on the nutritional outcome of the children.

Limitation the study

The limitation of this study was the recall bias; the study relied on the mother's memory

On the information provided. Whether the information was correct or not the researcher had no means to verify.

This being a hospital based survey, the information given by the mothers may have been socially correct. They may have answered correctly from the education/information they had obtained from the clinics.

Being a hospital based study it only captured mothers of children who were brought to the facility for medical attention and could have missed out on the mothers out there in the community with malnourished children.

Recommendations

To reduce childhood Under-nutrition in this County which has been on the rise, emphasis should be given in improving the knowledge, attitude and practices of mothers on appropriate infant and young children feeding. For example by, giving key messages on the promotion of appropriate IYCF practices by the Ministry of Health through outreach campaigns at the community level ,health facilities and through the media(for example local radio stations and televisions).

Health workers during the ANC, child welfare and nutritional clinics should educate, enhance positive cultural beliefs on exclusive breastfeeding and complementary feeding practices and discourage the negative beliefs and practices practiced in the county as identified in the study.

Empowering women in terms of formal education as seen in the current study, education positively affects the correct timing of initiation of complementary feeds.

Community based study in order to capture the women in the community with undernourished children for a more comprehensive picture of the general population.

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APPENDIX 1A: INFORMED CONSENT FORM

Study Title: Knowledge, Attitude and Practices of Mothers with Malnourished Children less than thirty six months regarding breastfeeding and complimentary feeding in Kitui County Hospital

Investigator: Dr. Josphine Kabura Imera

Introduction

My name is Dr. Imera. I am currently a postgraduate student in the University of Nairobi, Department of Paediatrics. I would like to request you and your child to participate in my research study. The purpose of this study consent form is to give you information you will need to help you decide whether to participate in the study. Please read this form carefully. You are free to ask any questions about the study. The investigator will be available to answer any questions that arise during the study and afterwards.

PURPOSE OF THE STUDY

To determine the knowledge, attitude and practices of mothers with malnourished children less than thirty six months, visiting Kitui County Hospital.

STUDY PROCEDURE

If you agree to participate in the survey, the researcher /research assistant will examine your child and also take various measurements including height, weight and mid upper arm circumference. You will be asked some questions about the way you have been feeding your child. These will take about fifteen minutes.

CONFIDENTIALITY AND PRIVACY

Any information you provide including you and/or your child's identity will be treated with utmost confidentiality. The information will only be used only for the purpose of this study.

BENEFITS

Nutritional advice will be given to you on how to feed your child/children free of charge.

RISK OF THE STUDY

No invasive procedures will be carried out on you or your child as part of the study.

VOLUNTARISM

Participation in this study is voluntary and you are free to withdraw from the study if you wish without any penalty.

COMPENSATION

No compensation will be offered for participation in the study.

CONTACT INFORMATIONS

If you have any questions about the study or your participation in the study now or later you may contact:

Principal Investigator: Dr. Josphine Kabura Imera Tel: 0726389196 Email: josphineimera@hotmail.com

Or

The lead supervisor: Professor Ezekiel Wafula

Tel :0722366077

Or

Supervisor: Dr. Daniel Njai

Tel:0722682929

If you have any questions on your rights, you as a research assistant or as a participant you can contact the:

Kenyatta National Hospital Ethics Committee and Research committee/ The University of Nairobi P. O. Box 20723-00202, Nairobi, Tel. 7263009 extension 44355.

APPENDIX 1B: CONSENT FORM

Mother No…….

CONSENT FORM

I have understood the study aim and procedures. I do hereby agree and give permission for me and my child to be included in this study as explained to me. I understand that I can withdraw from the study at any stage and that this will not affect me/ my child in any way.

Mother's signature……..Date……

Doctor's signature……...Date……....

APPENDIX 2: SWAHILI VERSION OF CONSENT

SEHEMU A:MAELEZO KUHUSU UTAFITI

TAFADHALI SOMA KWA MAKINI MAELEZO YAFUATAYO KABLA YA KUJAZA NA KUTIA SAHIHI SEHEMU B

Jina langu ni Dkt. Josphine Kabura Imera. Mimi ni mwanafunzi anayesomea shahada ya Udaktari wa watoto katika chuo kikuu cha Nairobi.

Utafiti huu una husu ujuzi, mtazamo na mazoea kuhusu lishi kwa wamama waliona watoto chini ya miezi thelathini na sita na wenye utapiamlo.

Ukikubali mtoto wako ahusike katika utafiti huu wewe mzazi utaulizwa maswali machache Kuhusu wewe mwenyewe, familia yako, na mtoto mwenyewe. Mtoto atapimwa vipimo kama vile uzito, urefu na pia ataangaliwa kama ana tatizo lolote la kiafya. Utafiti huu hauna madhara yoyote kwako wewe na hata kwa mtoto.

Watakao shiriki katika utafiti huu haku takuwa na nyongeza yoyote.

Unayo haki ya kukubali/kukataa kushiriki katika utafiti huu na hata kama ukikataa bado mtoto Wako atapata huduma zote anazostahili kupata bila tatizo lolote.

Jina la mtoto wako ama lako halita andikwa katika makaratasi ya utafiti na pia mambo yote yanayo husu wahusika yatawekwa vyema.

Ukiwa na maswali yoyote unaweza kuniuliza saa hii au wakati wowoteu kutumia anwani Na nambari yangu ya simu ya rununu iliyopo hapa chini. Pia unaweza kuwasiliana na ofisi ya Chuo Kikuu cha Nairobi ukitumia nambari iliyopo hapa chini.

DR. JosphineKaburaImera

Nambari ya simu: 0726389196

Barua pepe: josphineimera@hotmail.com

AU

Msimamizi: Profesa Ezekiel Wafula

Tel:0722366077

AU

Msimamizi: Daktari Daniel Njai

Tel:0722682929

KAMATI YA HAKI/USALAMA KATIKA UTAFITI
CHUO KIKUU CHA NAIROBI/HOSPITALI KUU YA KENYATTA
SANDUKU LA POSTA 20723-00202, NAIROBI
NABARI YA SIMU 020 2726300-9
Baruapepe: KNHplan@ken.Healthnet.org

SEHEMU B

CHETI CHA RIDHAA:

Nimeelezwa na nimesoma maelezo haya kwa makini sana. Na pia nimeuliza maswali yangu na yame jibiwa vizuri kwa ufasaha. Hivyo nimekubali mimi na mwanangu kwa ihari kushiriki kwenye utafit ihuu.

Sahihi ya mama .....Tarehe……

Sahihi ya daktari.....Tarehe.....

APPENDIX 3: QUESTIONNAIRE

Instructions to the interviewer

Ensure that the respondent has understood clearly all the pertinent details of this study by answering all her questions before taking consent.

Study Title: Knowledge, Attitude and Practices of Mothers with malnourished children less than thirty six months, regarding breastfeeding and complementary feeding in Kitui County Hospital

Investigator: Dr. Josphine Kabura Imera

Interview date……. Study no……

Introduction

My name is Dr. Imera. I am a postgraduate medical student at the University of Nairobi. As part of my studies, I am carrying out a research on the knowledge, attitudes and practices of mothers whose children are malnourished. The information obtained will be used in coming up with solutions to this problem.

If you agree to take part in this research together with your child, we will take some measurements from your child so as to check his/her nutritional status. If the child is found to be malnourished, we will ask you a few questions about how you feed the child. You and your child's participation in this research is entirely voluntary. You may change your mind later and stop participating even if you agreed earlier. Any information you provide including you and/or your child's identity will be treated with utmost confidentiality. The information will not be used for purposes other than the ones disclosed in this study.

Section A: Socio demographic Information

Mother's bio data

1. Mother's age (years)……

2. Marital status: single…….. Married …….. Separated

……divorced…….Widowed……

3. Mothers religion: Christian…….. Muslim…….. ……..others…….Specify ……..

4. Number of children in the family……

5. Number of living children including the current one: ……..

6. What was the highest educational level you attained?

a) No formal education

b) Incomplete primary education

c) Complete primary education

d) Secondary education

e) Tertiary education

7. Employment 1. Employed (formal) 2.Employed (self) 3.Unemployed

Child's bio data

8. Age of the child (months)……..

9. MUAC……Length (cm)……..Weight (kg)…….Height (cm)……..

10. Sex of the child a) male…….b) female…….

11. Birth order……

B: Knowledge on nutrition

1. At what time should the newborn be initiated to breastfeeding?

   Within one hour after birth

   a. After one hour following birth
   b. After one day after birth
   c. Other. Specify …..
   d. I don't know/Not sure

2. How often should you breastfeed your baby?

a) On demand

b) According to the timetable

c) Not sure

3. How long should you breast feed before giving other feeds? …….. months.

4. When should a mother start adding foods to breastfeeding? …….months.

5. After introducing other solid foods, how long should you continue breast feeding? …...months

6. What is your source of information on feeding your child? Tick all that apply

a) Family members

b) Relatives

c) Medical staff

d) Media

e) Other (specify)

C: Feeding Practices

1. When did you initiate breastfeeding?

a) Within one hour after birth

b) After one hour following birth

c) After one day after birth

d) Other (Specify)

e) Doesn't know/Not sure

2. Did your baby receive anything else before receiving breast-milk (any food or liquid other than breast milk)?

a) Yes

b) No

If yes, specify ……

3. Did the baby receive the first milk (colostrum)?

a) Yes

b) No

4. Did you breastfeed exclusively for six months?

a) Yes

b) No

5. At what age did you start feeding the baby on complimentary foods? …..

6. If introduced earlier than six months, what were the reasons for introducing complementary foods…….

a) Baby was crying a lot

b) Work

c) Mother didn't have enough milk

d) Illness

e. Others (specify)

7. Are you still breastfeeding?

a) Yes

b) No

If no, at what age did you stop breastfeeding your child? ……

8. What were the reasons for stopping breastfeeding before twenty four months?

9. Describe the types and amounts of food eaten by the child in the previous 24 hour period……

10. Do you add anything to the child's food when preparing it or after cooking ……..?

If yes specify what is added……

11. How many times per day do you feed your child…….?

12. What do you use to give semi solid food e.g. porridge…….?

a) Bottle

b) Cup and spoon

c) Others (specify)

13. Do you boil drinking water?

a) Always

b) Sometimes

c) Never

14. Do you wash your hands with soap before feeding the baby? ….

15. Who takes care of baby when you are away from home/work? *Tick all that apply*

a) Mother takes her child with her..... e) Other relative (specify).....….....

b) Husband..... f) Neighbours/friends.....

c) Older children..... g) Shared care arrangement..……

d) Grandmother …… h) Other (specify).....

D: Attitudes

	Statement	**Strongly Agree**	**Agree**	**Undecided**	**Strongly Disagree**	**Disagree**
1	First milk (colostrums) is very nutritious to the baby**.**					
2	It is not possible for a baby to survive on breastfeeding for six months.					
3	It is important to give the baby some water, honey and other solid foods during the first six months after birth.					
4	Poor/thin breast milk makes the child prone to malnutrition.					
5	Nutritious foods are expensive.					
6	Malnutrition is caused by witchcraft and evil eye.					
7	Some foods are too heavy for the children to digest e.g. eggs.					
8	When pregnant you should stop breastfeeding.					
9	Does breast milk protect your child from illnesses?					
10	Feeding should be stopped during illness.					

APPENDIX 4: CONSENT FORM FOR THE FOCUS GROUP DISCUSSIONS

PURPOSE OF THE STUDY

To determine the knowledge, attitude and practices of mothers with malnourished children less than thirty six months regarding breastfeeding and complementary feeding, visiting Kitui County Hospital.

CONFIDENTIALITY AND PRIVACY

Any information you provide including you and/or your child's identity will be treated with utmost confidentiality. The information will only be used only for the purpose of this study.

BENEFITS

Nutritional advice will be given to you on how to feed your child/children free of charge.

RISK OF THE STUDY

No invasive procedures will be carried out on you or your child as part of the study.

VOLUNTARISM

Participation in this study is voluntary and you are free to withdraw from the study if you wish without any penalty.

COMPENSATION

No compensation will be offered for participation in the study.

If you have any questions you may ask now or later, even after the study has started. If you wish to ask questions later, you may contact:

Investigator: Dr. Josphine Kabura Imera Tel: 0726389196 Email: josphineimera@hotmail.com

Or

The lead supervisor: Professor Ezekiel Wafula

Tel:0722366077

Or

Supervisor: Dr. Daniel Njai

Tel:0722682929

Or

The University of Nairobi/Kenyatta National Hospital Ethics Committee, P. O. Box 20723-00202, Nairobi, Tel. 7263009.

APPENDIX 5: FOCUS GROUP DISCUSSION

Focus Group Discussion Checklist

Start time_____ End time _____

Focus Group Introduction

Welcome

Thanks for agreeing to be part of the focus group. We appreciate your willingness to participate.

Introductions

Moderator; Assistant moderator; participants

Purpose of Focus Groups

I am conducting this focus group discussion as part of my research to be presented in fulfillment of the degree of Master of Medicine in Paediatrics and Child Health at the University of Nairobi. The purpose of these focus groups is to get an in-depth understanding of the knowledge, attitude and practices of mothers with malnourished children less than thirty six months regarding breastfeeding and complementary feeding in Kitui County Hospital. The information collected will be used in designing an appropriate curriculum for educating mothers about nutrition and proper dietary practices so as to prevent malnutrition.

We need your input and would like to urge you to share your honest and open thoughts with us.

Ground Rules

1. We would like everyone to participate.

2. You will do the talking, we will do the listening.

3. I may call on you if I haven't heard from you in a while.

4. There is no right or wrong answers.

5. Every person's experiences and opinions are important.

6. Speak up whether you agree or disagree.

7. We want to hear a wide range of opinions.

8.Talk one person at a time. Everyone will be given an opportunity to talk.

9. What is said in this room stays here.

-We will not identify anyone by name in our report, you will remain anonymous.

10. We shall record the proceedings of the group so as to capture everything you have to say.

Insert Ice breaker here (to increase comfort and level playing field)

The main FGD questions are:

1. Discuss feeding of the child in the first six months of life.

2. Complementary feeding initiation.

3. Causes of malnutrition in children below five year**.**

Conclusion: Thank you so much for spending time with us and agreeing to share your insights on this important topic.

END

Thank you

APPENDIX 6: WORK PLAN

	TIME PERIOD									
ACTIVITY	Nov 2014 -Jan 2015	March 2015	May 2015	July 2015	November 2015	January-February 2016	March 2016	April 2016	May	June
Literature review and Concept development	xx									
Written Research Protocol and 1st submission to KNH-REC		Xx								
2nd submission and corrections			xx							
Final submission and expected				xx						

approval										
Data collection					Xx					
Data analysis						Xx				
Poster presentation							Xx			
Submission of 1st internal marking								xx		

APPENDIX 7: BUDGET

ITEM	**Quantity**	**Unit Price (Ksh)**	**Total (Ksh)**
Writing Pens	1box	300 .00	300 .00
Notebooks	5pcs	80.00	400.00
Files	8pcs	100 .00	800 .00
Printing Paper	5rims	500 .00	2,500 .00
Cartridge	1pc	8 000 .00	8,000 .00
Flash discs	2pcs	2 000 .00	4,000 .00
Printing drafts and final proposal	10 copies	500 .00	5,000 .00
Photocopies of questionnaires	500 copies	20 .00	10,000 .00
Photocopies of final proposal	6 copies	100 .00	600 .00
Binding copies of proposal	6 copies	600 .00	3,600 .00
Ethical review fee	1	1 000 .00	1,000 .00
Subtotal			**45,200 .00**

Personnel

Research Assistant	2	10,000.00	20,000 .00
Biostatistician	1	25,000 .00	25,000 .00
Subtotal			**45,000 .00**

Data Collection, Data Analysis and Thesis Development

Printing of thesis drafts	10 copies	1,000 .00	10,000 .00
Printing final thesis	6 copies	1,000 .00	6,000 .00
Binding of thesis	6 copies	300 .00	1,800 .00
Transport cost			10,000 .00
Subtotal			**27,800 .00**
Contingency (10% of total budget)			**10,900 .00**
GRAND TOTAL			**128900**