

**ASSESSMENT OF FEEDING PRACTICES AND THE  
NUTRITIONAL STATUS OF CHILDREN AGED 0 -36  
MONTHS IN YATTA DIVISION, KITUI DISTRICT.**

**BY**

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REQUIREMENTS FOR THE AWARD OF THE DEGREE OF  
MASTER OF PUBLIC HEALTH OF THE UNIVERSITY OF  
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I here by declare that this **thesis is my original work** and has **not** been presented for a degree award in this or any other University.

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**DEDICATION.**

This thesis is dedicated to my wife Hellen Kasyoka, daughter Regina and son Brian.

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## **Table of Contents.**

Declaration.....	ii
Dedication .....	iii
Acknowledgements .....	iv
Table of contents .....	vi
List of tables .....	x
List of figures .....	xi
List of appendices .....	xii
Abbreviations .....	xiii
Definitions .....	xv
Abstract .....	xvi

## **CHAPTER ONE: INTRODUCTION.**

Background.....	1
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## **CHAPTER TWO: LITERATURE REVIEW.**

2.1. Introduction.....	4
2.2. Child Nutritional Status.....	6
2.3. Infant and young child Feeding Practices.....	8
2.3.1. Breastfeeding.....	8
2.3.2. Complementary Feeding .....	11
2.4. Determinants of Infant and Young Child Feeding Practices.....	14
2.4.1. Maternal Factors.....	15
2.4.2. Household Factors.....	18
2.4.3. Health Workers Influence on Infant Feeding practices.....	21
2.5. Child Feeding Practices, Morbidity and Nutritional Status and .....	22

## **CHAPTER THREE: RESEARCH PROBLEM.**

3.1. Statement of the Problem.....	26
3.2. Study Justification.....	28
3.3. Research Objectives.....	28
3.3.1. Specific Objectives.....	28
3.4. Research Questions.....	29
3.5. Research Hypothesis.....	29
3.6. Expected Benefits.....	30

## **CHAPTER FOUR: METHODOLOGY.**

4.1. Study Design.....	31
4.2. Variables.....	31
4.2.1. Dependent Variables.....	31
4.2.2. Independent Variables.....	31
4.3. Study Area.....	32
4.3.1. Kitui District Profile.....	32
4.3.2. Yatta Division Profile.....	34
4.4. Study Population.....	34
4.4.1. Inclusion Criteria.....	35
4.4.2. Exclusion Criteria.....	35
4.5. Sampling Frame.....	35
4.5.1. Sampling Unit.....	35
4.5.2. Sample Size.....	36
4.5.3. Sampling Procedure.....	37

4.6.	Data Collection.....	39
4.6.1.	Preparation.....	39
4.6.2.	Training of Research Assistants.....	39
4.6.3.	Pretesting Questionnaire.....	40
4.6.4.	Ethical and Procedural Consideration.....	40
4.6.5.	Data Collection Instruments.....	41
4.6.6.	Study Limitations.....	46
4.7.	Data Processing.....	46
4.7.1.	Data Quality Control.....	46
4.7.2.	Data Management.....	47

**CHAPTER FIVE: RESULTS.**

5.1.	Introduction.....	48
5.1.1.	Socio- Demographic characteristics of study population.....	48
5.1.2.	Characteristics of Respondents.....	49
5.1.3	Characteristics of Household Heads.....	51
5.1.4.	Profile of study children.....	54
5.1.5.	Feeding Practices.....	55
5.1.6.	Immunization status.....	62
5.1.7.	Growth monitoring.....	63
5.1.8.	Child Morbidity Status.....	65
5.1.9.	Nutritional Status of Study Children.....	67
5.1.10.	Distribution of children nutritional status by age and sex.....	68



**PART II:**

**5.2. ANALYTICAL RESULTS.**

5.2.1. Relationship between feeding practices of children and some child factors .....70

5.2.2. Relationship between Children Feeding Practices and selected Maternal and Household factors.....72

5.2.3. Relationship between mothers Feeding Practices and the Children Nutritional Status.....77

**CHAPTER SIX: DISCUSSION.**

6.1. Infant feeding practices .....79

6.2. Determinants of infants feeding practices.....86

6.3. Nutritional status..... 87

**CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS**

7.1. Conclusions .....88

7.2. Recommendations .....90

References.....94

Appendices .....102

    Appendix I .....102

    Appendix II.....122

    Appendix III.....127

## LIST OF TABLES.

Table 1. Administrative organization of Kitui district .....	32
Table 2. Distribution of mothers by parity .....	51
Table 3. Summary of general characteristic of study population.....	53
Table 4. Actions taken by mothers during illness .....	58
Table 5. Distribution of Immunization coverage by the age .....	63
Table 6. Immunization status of the child.....	63
Table 7. Reasons for stopping growth monitoring attendance.....	64
Table 8. Illnesses suffered during two weeks prior to study.....	65
Table 9. Reasons for withhold breastfeeding .....	66
Table 10. Foodstuffs commonly withheld.....	67
Table 11. Distribution of study children by nutritional status.....	67
Table 12. Distribution of nutritional status by sex of the child.....	68
Table 13. Mode of feeding by age and sex.....	70
Table 14. Mode of feeding by morbidity and immunization status.....	71
Table 15. Mode of feeding by growth monitoring attendance and birth spacing.....	72
Table 16. Mode of feeding by maternal parity.....	73
Table 17. Mode of feeding by respondents' level of Education and occupation.....	75
Table 18. Mode feeding by maternal ANC attendance and access to information on feeding practices. ....	76
Table 19. Relationship between feeding practices and nutritional status of the children.....	78

## LIST OF FIGURES.

Fig. 1. The conceptual frame work.....	5
Fig.2. Malnutrition infection cycle .....	23
Fig.3. Flow chart showing sampling procedure.....	38
Fig.4. Distribution of respondents by age.....	49
Fig 5. Distribution of education level of respondents.....	50
Fig 6. Distribution of household heads by occupation.....	52
Fig 7. Distribution of children by age .....	54
Fig 8. Mode of infant feeding during the first six months of age.....	56
Fig 9. Reason for early introduction of complementary feeds .....	61
Fig 10. Distribution of nutritional status of the children.....	69

## **LIST OF APPENDIXES.**

Appendix 1: Survey Questionnaire.

Appendix 11: Focus Group Discussion and Key informants' interviews

Appendix 111: focus group discussion and KII results.

## ABREVIATIONS

BFHI	-	Baby friendly initiative.
CBS	-	Central Bureau of Statistics
CHEW	-	Community Health Extension Officer
CU	-	Community Unit.
CORPS	-	Community Own Resource Persons.
DMOH	-	District Medical Officer of Health
DMS	-	Director of Medical services.
FAO	-	Food and Agriculture Organization.
FGD	-	Focus Group Discussion.
GOK	-	Government of Kenya.
HFA	-	Height for Age
KDHS	-	Kenya Demographic Health Survey
KII	-	Key Informant Interviews.
MCH/FP	-	Maternal Child Health / Family Planning.
MUAC	-	Mid Upper Arm Circumference
NCHS	-	National Centre for Health Statistics
NGOS	-	Non Governmental Organizations
PEM	-	Protein Energy Malnutrition
PHO	-	Public Health Officer
SD	-	Standard Deviation.
WFA	-	Weight for Age
WFH	-	Weight for Height

- SPSS - Statistical Package for Social Scientists.
- UNICEF - United Nation Children's Fund
- USAID - United States Agency for International Development
- WHO - World Health Organization.

## OPERATIONAL DEFINITIONS.

1. EXCLUSIVE BREAST FEEDING – refers to practice where by all fluids; energy and nutrients are provided for by breast milk only, with exception of small amounts of medicinal supplements and multivitamins during first six months<sup>1, 50</sup>.
2. PREDOMINANT BREAST FEEDING – refers to the practice where all fluids, energy and nutrients are provided for by breast milk, with exception use of small amounts of non nutritive liquids during the first six months of life<sup>1</sup>.
3. MIXED FEEDING – is the practice whereby fluids, energy and nutrients are provided for by breast milk and other additional feeds, drinks and even water during the first six months of life<sup>9</sup>.
4. COMPLEMENTARY FEEDING – refers to the practice where by other foods besides breast milk are introduced to the child's diet after the child attains age of six months<sup>7, 50</sup>
5. HOUSEHOLD – refers to all people who had lived together for more than three months including such members as unrelated servants, labourers and relatives who share food from the same pot<sup>17</sup>.
6. HOUSE HOLD SIZE - refers to the total number of people living in household during the study period. This excludes guests and residents on transit<sup>17</sup>.

## ABSTRACT.

Malnutrition is a multifaceted problem and among the underlying causes is infant and young child feeding practices<sup>22</sup>. The low rate of exclusive breast feeding for six months is a contributor to the future health status of children.

This is a cross sectional study aimed at establishing the relationship between infant and young child feeding practices and maternal, child and households factors, and the nutritional status of children aged 0-36 months in Yatta Division, Kitui District – Kenya. Information was collected using structured questionnaire and focus group discussion guidelines, and included information on socio demographic features, feeding practices and anthropometric measurements of the children.

A total of 340 mothers (with children aged 0 -36 months) were interviewed. Data was analyzed using SPSS and CDC Anthro soft wares to determine relationship between feeding practices, their determinants and nutritional status of children aged 0 – 36 months.

Majority of children 265(78%) were on mixed feeding, 20.2% were predominantly breast fed, while only 6 (1.8%) were exclusively breast fed. Breast feeding initiation was done within an hour after birth by 274 (80.7%) of mothers, and frequency of breast feeding depended on demand. Child related factors associated with feeding practices were age of the child, immunization status and attendance of growth monitoring clinics. Maternal factors associated with feeding practices were age, parity and maternal access to

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information on feeding practices. Morbidity status was not significantly ( $p=0.172$ ) associated with feeding practices. It was also established that, grand mothers and siblings were the principal alternative childcare givers.

In conclusion, the study established there is lack of nutritional knowledge on feeding practices among the mothers. It was also established that, feeding practices of infant and young children are associated with child, maternal and health workers factors. Morbidity status is not associated with feeding practices and the nutritional status of children is not associated with feeding practices.

It is recommended that, community nutrition strategy be established, headed by health workers and all stakeholders in health sector, to promote proper feeding practices and improve the welfare of mothers. This partnership would establish the missing nutritional knowledge, through community based programmes headed by health workers and concerned stake holders, to create awareness on infant and young child feeding practices. It is also recommended that, health workers be updated by the relevant departments on infant feeding policy in order to update their knowledge through continuous medical education. It is also recommended that future research in this area should be conducted taking care of confounding effects.

## CHAPTER 1 : BACKGROUND

Malnutrition has been implicated in more than half of all children's deaths world wide, with more than 500 million children being chronically undernourished<sup>59</sup>. Malnutrition is a global problem with multiple causality, which includes inadequate food intake, diseases, poor child and maternal care. These factors combine in different ways over time and place<sup>24</sup>. In Kenya childhood malnutrition (both macro and micro-nutrition malnutrition) is widespread. According to KDHS 2003, 31% of children were stunted, 11% of children severely stunted, 6% wasted while 20 % of children were underweight<sup>47</sup>.

Inappropriate feeding practices have been identified as a contributor to malnutrition and ill health in children aged less than 3 years<sup>51</sup>. Some 1.5 million children die every year because they are inappropriately fed, exclusive breast feeding is rarely practiced and complementary feeding is always inappropriate and unsafe<sup>16</sup>. Growth failure in children occurs mainly during the first two years of life mostly due to improper feeding practices coupled with diseases, after which average growth tends to be less affected by feeding practices. Therefore to tackle problem of malnutrition, it's important to understand feeding practices and their determinants at local level in the first 3 years of life, which could enhance ability to address chronic malnutrition<sup>62</sup>.

Exclusive breast-feeding for the first six months of life is recommended by (WHO / UNICEF) Technical Consultation team on Infant Feeding in March 2000.<sup>48</sup> This is because breast milk alone contains all the nutrients, antibodies, hormones and antioxidants an infant requires to thrive for the first 6 months.

It also protects babies from diarrhea and acute respiratory infections. It stimulates their immune systems and response to vaccination, after which the child needs to have complementary foods since breast milk alone no longer meets all the child's nutritional requirements and may lead to malnutrition<sup>16</sup>. From about 6 to 24 months of age children need frequent feeding on complementary food dense in energy and nutrients and easy to digest<sup>7</sup>.

Feeding practices are influenced by diverse factors related to mothers' household and child themselves. Maternal factors that have been shown to be associated with infant and young child feeding practices include mothers' age<sup>34, 36</sup>, education<sup>14, 55</sup> parity, occupation<sup>14, 17, 32, 68</sup> and marital status<sup>19, 13</sup>. Household factors associated with these practices include, household size<sup>17, 19, 36, 38</sup> and composition, number of children under five years, income and the education level of the household head. Some child related factors associated with feeding practices of infants and young children include the birth order, age and gender and health status of children.<sup>30, 65</sup>

Reports by UNICEF /MOH showed that, health workers contribute to poor breastfeeding practices, by failing to support and encourage mothers on breastfeeding. They introduce routines and procedures that interfere with the normal initiation and establishment of breastfeeding and lactation, such as separating the mother from the infant at birth and giving infants glucose water before lactation is established, hence discouraging the practice of exclusive breast feeding<sup>68</sup>.

This study assessed breastfeeding and complementary feeding practices of children aged 0-36 months and factors influencing these practices, nutritional status were also assessed for sampled children in Yatta Division of Kitui district.

## CHAPTER 2: LITERATURE REVIEW.

### 2.1. Introduction.

Childhood malnutrition has continued to be a major public health problem of considerable concern in many developing countries. Malnutrition usually arises from a complex situation that is characterized by nutritional, biological, and social deprivation. Malnourished children experience ill health and growth retardation due to weakened immunity and inadequate food intake. They also have functional disadvantages like compromised cognitive abilities and high mortality due to increased infections <sup>14</sup>

Childhood Malnutrition is a global problem with multiple causality, which includes inadequate food intake, diseases, poor childcare and maternal practices<sup>48</sup>. Inadequate food intake and infectious diseases are the immediate causes of malnutrition. However there are other numerous socio-economic and cultural factors that underlie childhood malnutrition such as household food insecurity, inadequate maternal and childcare, health and clean water services, as well as societal factors such as political instability. The interplay of all these factors leads to impairment of health with increased risk of death and increased incidence of chronic diseases as a result of deficiency, excess or imbalance of nutrients leading to long term malnutrition (stunting), short-term malnutrition (wasting) or a combination of the two (underweight) <sup>52</sup>.

Underweight children are usually shorter and lighter than they should be for their definite ages. The causes of childhood malnutrition are well explained in conceptual framework developed in 1997 by UNICEF (Fig 1).

According to UNICEF (1990) report, inappropriate breast-feeding and complementary feeding practices by mothers and other caregivers significantly contribute to the problem of malnutrition in infants and young children in Kenya <sup>66</sup>.

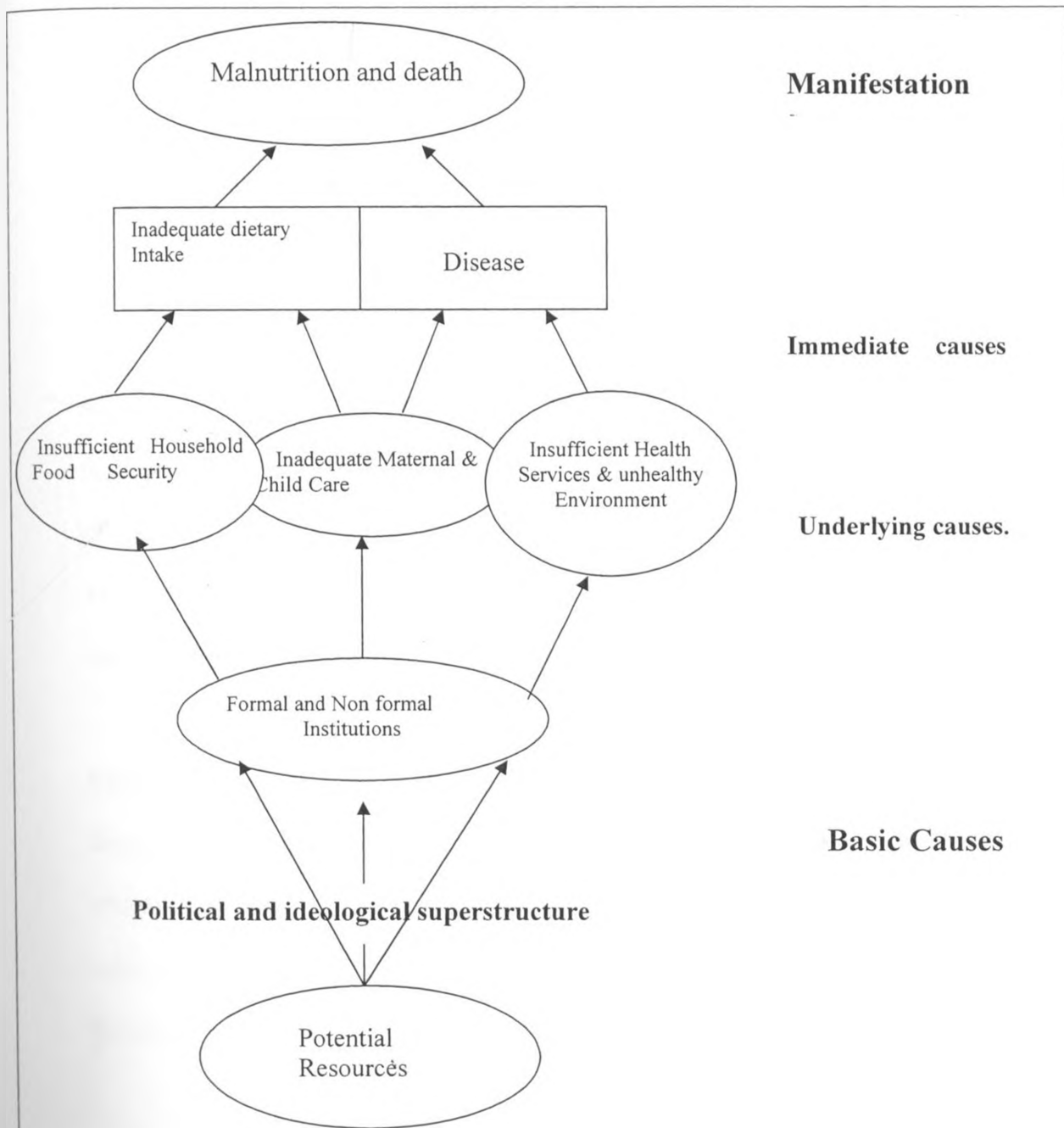


Fig. 1. Conceptual frame work

Source: Situation analysis of children & women in Kenya 1998. GOK /UNICEF.

## 2.2. Child Nutritional Status in Kenya.

Nutritional status is the physical state of the body resulting from intake, absorption and utilization of food nutrients<sup>47</sup>. Nutrient requirements depend on age, sex, activity and physiological status. Nutritional status of children is a sensitive indicator of changes in health status and food availability. It can serve as an early warning sign of distress and ill health within a population<sup>56</sup>

Reports by KDHS (2003) indicate that, about 31 % of children below 5 years were stunted with about 11 % of these children being severely stunted ( $< -3$  SD), 20 % were underweight and 6 % were wasted with 1 % severely wasted ( $< -3$  SD)<sup>53</sup>. The prevalence of underweight among children aged less than 36 months in most Sub-Sahara Africa is 14- 43%<sup>3</sup>. Therefore Kenya with its level of 20 % underweight lies average compared to other Sub-Saharan countries.

Stunting among children in Kenya begins shortly after birth and rapidly progresses through the first and second year of life to peak at 32% by 24 months. Boys are more affected than girls, as are children of high birth order compared with those of low birth order. Children born after a long birth interval (48 months or more) are less likely to be mainourished than children born after short intervals<sup>53</sup>

Underweight is most common during the age of 6- 23 months indicating inadequate food supplementation during the complementary period. The peak levels of underweight (weight for age, below -2sd) occur during the second and third years of life (12- 35 months). Boys are mostly affected than girls, and underweight increases with the decrease in birth interval from 19% among children with intervals of 48 months or more to 29 % among children with intervals of less than 24months<sup>53</sup>. Similar trends have been observed for stunting, wasting and underweight in Uganda and Tanzania as per their 1995 demographic health surveys.

Despite efforts by the government, NGOS and private sector over the past decade towards the improvement of feeding practices for the infants and young children in Kenya, the period of exclusive breastfeeding remains short, with early introduction of complementary feeds before the recommended age of 6 months<sup>53</sup>. These practices make malnutrition a serious public health problem of considerable magnitude in children aged less than 36 months in Kenya<sup>53, 48</sup>.

Data from most of the developing countries has indicated that, growth rates in heights and weights tend to deviate during the second half of infancy, and are low throughout the second year of life and get much closer to the normal by the age of 36 months<sup>28</sup>. The rates of malnutrition in Kitui district where the study was conducted were 45.8%, 28.3% and 4% for stunting, underweight and wasting respectively.<sup>65</sup>



### **2.3. Infant and Young Child Feeding Practices.**

The pattern of infant and young child feeding practices has been observed as one of the principal determinants of child nutritional status<sup>22</sup>. Poor nutritional status in young children exposes them to greater risk of illness and death. WHO / UNICEF recommend that, children should be exclusively breast fed for a period of six months after which complementary feeds are introduced and breast-feeding continued up to the age of two years<sup>48</sup>. During a UN Systems Standing Committee meeting on nutrition held in Nairobi on 5<sup>th</sup> April 2001, to discuss breast-feeding and complementary feeding, it was agreed that, exclusive breast-feeding should continue up to six months or practiced for 180 days<sup>48</sup>.

#### **2.3.1. Breast-feeding.**

A number of practices during the intrapartum and very early postnatal period may affect breastfeeding initiation. It is a period of time during which care providers can influence what practices take place<sup>67</sup>.

The World Health Organization (WHO) recommends that infants be exclusively breastfed from birth to 6 months of age<sup>1</sup>, followed by the gradual introduction of other forms of foods from 6 months and continued breastfeeding into the second year and beyond.

According to KDHS 2003, breastfeeding practice is nearly universal in Kenya with 98% of children being breast-fed for some period of time after birth. About 58% were breastfed within an hour and 86 % within 24 hours after delivery, though this differs from

province to province<sup>53</sup>. On average Kenyan mothers breastfeed for 21 months with exclusive breastfeeding going only up to around 2.5 months for the majority<sup>53</sup>.

Women's breastfeeding intentions are a strong predictor of breastfeeding outcome. A study done in United States found that, maternal infant feeding intention was a stronger predictor of breastfeeding initiation and duration than the standard demographic factors combined<sup>70</sup>. There is evidence to suggest that many women decide how they will feed their baby before they are pregnant or in very early pregnancy<sup>71</sup> and that the earlier the decision to breastfeed is made, the more likely breastfeeding will be initiated.<sup>70</sup> A decision to breastfeed made before pregnancy may be even more predictive<sup>70</sup>.

In general, initiation of breastfeeding is closely related to social class, income, and education: "despite the widely documented health benefits of breastfeeding, initiation rates remain relatively low in many countries, particularly among women in lower income groups."<sup>68, 72</sup>

Providing foods or liquids in addition to breast milk during the first six months of life has been shown to have no benefits on growth<sup>53</sup>. Giving complementary foods during this time replaces the nutrients provided by breast milk, and increases the risk of diarrhea. When breastfed children become ill they tend to maintain energy intake by sustaining a high frequency of breastfeeding while artificially fed infants often have reduced energy intakes due to loss of appetite<sup>7</sup>.

Breastfeeding continues to be vital once complementary foods are started because many foods offered to young infants have less nutrient density than breast milk. Breastfeeding should be continued into the second year to offer a source of energy, protein and micro-nutrients and protection from diarrhea and other infections<sup>66</sup>.

EBF has been shown to be crucial in reducing infant mortality in low-income communities with poor sanitation in Malawi<sup>27</sup>. In the early months of life, when compared with infants who were breastfed with no milk supplements, those who were not breastfed had 14 times the risk of mortality from diarrhea and four times the risk of mortality from respiratory infections<sup>53</sup>. Breastfeeding is not only a caring practice, but it can also influence other caring practices, affecting children's ability to elicit care and the caregiver's ability to give it<sup>48</sup>.

For example, when a baby is breastfed, the repeated contact with the mother may increase the infant's ability to elicit a strong bond from the mother<sup>71</sup>. Frequent demand feeding is associated with high rates of exclusive breast feeding<sup>53</sup>.

A study done in Sengerema District in Tanzania showed, majority of mothers didn't know the benefits of giving colostrum, because 67 % of mothers expressed out the colostrums and gave prelacteals to infants contrary to recommended exclusive breast feeding for at least six months after birth<sup>9, 34</sup>. Another study done in a poor peri urban community in Kibera, Nairobi showed mothers knew breast milk is the best feed for a

child below six months of age and introduction of any other food stuffs should be done by age of 6 months <sup>21</sup>

A study done in Busia Kenya found out that, termination of breast feeding occurred between ages of 12 – 17 months and exclusive breast-feeding was rarely practiced beyond 3 months<sup>13</sup>. The main reasons given by the mothers for stopping breastfeeding were that the child refused, that they wanted to wean their children and also due to the next pregnancy <sup>13</sup>

A study conducted in Mwea Division of Kirinyaga district Kenya, on the prevalence and risk factors of vitamin A deficiency among pre-school children, found that, only 4 % of the mothers practiced exclusive breast feeding for the recommended 6 months. The mean period of exclusive breast-feeding was 3.19 months. The study showed that 28% of the study children stopped breastfeeding between the age of 19 and 24 months, while 31% of the mothers continued to breast-feed up to 36months <sup>33</sup>.

### **2.3.2. Complementary Feeding.**

From the age of about six months, infants need safe and adequate amounts of complementary foods in addition to breast milk, in order to meet their nutrient requirements for optimal growth and development <sup>63</sup>. Conversely, too much of a poor complementary food could displace the more nutritive breast milk in the child's diet. Other factors, such as the pattern of feeding (e.g., whether to breastfeed and follow it with complementary foods, or vice versa) may effect breast milk intake.

In addition, the nutrient content of these foods may be inadequate or the absorption could be impaired by other components in these foods. Storage safety is important as well<sup>66</sup>.

Due to small size of infants' stomachs, they require to be fed frequently. The frequency should depend on nutrient density of the complementary foodstuffs and the amount consumed every day<sup>66</sup>. Nutrient density refers to the amount of a given nutrient per 100 kcal of food, calculated from the ratio of the amount of each nutrient needed from complementary foods to the amount of energy needed from complementary foods. Nutrient density is an important consideration because it is not high enough in many of the foods available for complementary feeding. This means that, intake of nutrients from such foods will be inadequate, even when the infant's energy needs are met<sup>7</sup>.

Complementary feeding should be *timely*, meaning that all infants should start receiving foods in addition to breast milk from 6 months onwards. It should be *adequate*, meaning that the nutritional value of complementary foods should be adequate to meet babies' needs. Foods should be prepared and given in a *safe* manner, meaning that measures are taken to minimize the risk of contamination with pathogens. And they should be given in a way that is *appropriate*, meaning that foods are of appropriate texture and given in sufficient quantity<sup>67</sup>.

A study done in a rural set up in Busia Sub District of Tororo District, Uganda found out that, the mean age for introducing complementary feeds was 4.9 months.

Reasons given for the early introduction of complementary feeds was that, the breast milk was not enough, the child was old enough and the mother was too busy <sup>13</sup>.

The period when complementary foods are introduced is very crucial to the health and development of the child. Children are very vulnerable during this transitional period, and if their needs are not properly met malnutrition and other diseases set in<sup>49</sup>. Therefore it is essential that complementary feeds are introduced at the right time, and are nutritionally adequate, hygienically prepared and fed in sufficient quantities for optimal utilization<sup>16</sup>.

In Kenya Mixed feeding starts at early age of 2-5 months in 4-6% of the children by taking the infant formula. At above 4 months, two thirds of children are receiving some other types of milk and liquids such as cow milk, juices and water <sup>53</sup>. UNICEF (1999) reports indicated that, there was a higher rate of infection particularly diarrhoea diseases, with introduction of complementary feeds, compared to EBF period that's from birth to age of 6 months among children in Malawi <sup>8, 67</sup>.

The adequacy of complementary feeding not only depends on the availability of a variety of foods in the household, but also on the feeding practices of caregivers. Feeding young infants requires active care and stimulation, where the caregiver is responsive to the child clues for hunger and also encourages the child to eat. This is also referred to as active or responsive feeding<sup>67</sup>.

Malnutrition is also common during this transitional period because caregivers' may not know how to prepare complementary feeds from foods that are locally available or may be too poor to provide appropriate feeds for the young child <sup>67</sup>.

Child care includes the behaviors and practices of caregivers (mothers, fathers, siblings, and child-care providers) in providing food, health care, stimulation, and emotional support necessary for children's healthy, growth and development.<sup>37</sup> Over the past decade, care has been increasingly recognized as a crucial input into child health and nutrition, along with food security, availability of health services, and a healthy environment<sup>71</sup>. Parental food withholding is considered as one of the factors that reduce food intake of children during illness. Today, however, it is recommended that breast feeding foods /or feeding other foods at times of diarrhea or any other illness should be encouraged<sup>70</sup>

#### **2.4. Determinants of Infant and Young Child feeding practices.**

The determinants of initiation, exclusive breast feeding, frequency and duration of breastfeeding have been widely studied. The decline in exclusive, frequency and breastfeeding duration in developing countries has been attributed to a combination of maternal, household, socio-economic factors as well as marketing of breast milk substitutes, the media, modern medical practices and influence and practices of health professionals <sup>1</sup>.

### **2.4.1. Maternal Factors.**

#### **(a). Maternal age.**

Age of a mother may influence care practices, most young mothers are inexperienced in childcare practices, others are too young to bear stress of child bearing<sup>13</sup>. A study done in Uganda however showed that there was no significant association between maternal age and the nutritional status of children aged less than 3 years<sup>30</sup>. The same study found out that stunting and wasting were high among children of young mothers<sup>30</sup>.

This could be attributed to the care givers experience where, younger mothers are more likely to be influenced by older mothers in child care practices. Lack of experience may make them to inappropriately practice exclusive breastfeeding, hence introducing infants to early complementary feeds, which impacts negatively on infants' nutritional status and health<sup>30</sup>.

A different study done in Sengerema District, Tanzania showed that, maternal age was only significantly associated with stunting an indication of young mothers' inability to provide adequate child care<sup>34</sup>.

#### **(b). Marital status.**

It's often assumed that children of single parenthood are more likely to be malnourished compared to those with both parents<sup>19</sup>. However a study done in Kibera slums, Nairobi Kenya found out there was no significant association between marital status of the mother, feeding practices and the nutritional status of the children<sup>21</sup>.



However another study done in a rural set up in Busia Sub District in Tororo District, Uganda showed that, majority of married mothers had high levels of stunting and wasting<sup>13</sup> contradicting the above studies'

**(c). Maternal Education.**

Level of maternal education is expected to influence the level of care provided to children since education increases the ability to appreciate the importance of care giving<sup>7</sup>.

Nutritional survey done by CBS, reported that, educated mothers had better interaction with their children than women with little or no education<sup>55</sup>. The level of maternal education, knowledge, and beliefs of child caregivers are important determinants of children's growth and development<sup>14</sup>.

Several investigators have emphasized the importance of maternal education in relation to the nutrition and general well being of the child. According to a USAID (1997) report, education for women was reported as one of the most important resources that enable them to provide appropriate care to their children<sup>14</sup>. It was suggested that, educated women are able to make use of the health services, provide better child care including feeding, have more hygienic household practices and may have higher status in the family and have more control of family resources<sup>17</sup>.

Other studies have however showed that, education has negative effect on the duration of breast-feeding; where by illiterate mothers tend to breast-feed their children for significantly longer period than the mothers who are educated<sup>32</sup>.

Several studies reviewed indicated that, there's no conclusive evidence as to how a caregiver's education level is associated with childcare and nutritional status, as the available findings are conflicting<sup>32, 35</sup>. But a study done in rural area of Senegal<sup>19</sup> found that prolonged breast-feeding is highly associated with low levels of education and high levels of linear growth but not in weight.

#### **(d). Maternal Occupation.**

Several researchers have showed that, women on average spend more time in work than men do in a day. Besides taking care of the children, women also take care of most domestic chores and farm work and many other productive activities. These commitments have diverse effects on women's ability to effectively care for children<sup>14</sup>. When women work outside their homes, even in their farms, their children are likely to suffer malnutrition, and more so if they don't control the house hold income and the child is below 1 year<sup>14, 23</sup>.

A study done in urban Libya report shorter duration of breast-feeding for employed mothers than that of housewife mothers<sup>17</sup>. Similar study done in the slums of Addis Ababa, Ethiopia in 1998 found that, the children of working mothers had significantly poor nutritional status than those, whose mothers stay at home<sup>24</sup>. However, in contrast, a study carried out in peri urban Nairobi did not show any relationship between maternal occupation and children's nutritional status and their feeding practices<sup>32</sup>.

Other studies have found no negative effects on nutritional status of children of working mothers and some have found positive effects when mothers' work is well paying<sup>68</sup>. Therefore, this review of literature showed there is no conclusive evidence on how maternal occupation influences childcare practices and nutritional status.

#### **2.4.2. Household factors.**

##### **(A). Household Size.**

Several studies have shown significant association between household size, nutritional status and feeding practices of under fives in a household<sup>12, 17, 30</sup>. This is attributed to the inability of mothers to provide adequate care for their young children during the first six months, especially where there is more than one under five year old child in a household.

A study done in Mexico showed that, children from larger households were shorter for their ages and were fed on nutritionally poor quality and less quantity foods than children from smaller households<sup>38</sup>. The same study also showed that, in smaller households the mothers have more interaction with their children unlike in large size households where interaction is minimal with little or no attention for individual child<sup>38, 39</sup>.

Some studies have supported larger households suggesting that, the larger the size of the household, the more economic contribution by the active household members to labour for the household tasks in agriculture and in child care practices<sup>45</sup>.

This was also attributed to the fact that in large households, there's likelihood of adult women being available to take care of the young children <sup>17</sup>.

A study done in Uganda showed that, all the three nutritional indicators revealed higher malnutrition levels in smaller households than in larger households. The difference was only significant in stunting where the levels were 39.2% in smaller households and 22.7% in larger households' <sup>36</sup>. A study done in Siaya district, Kenya, found out that there were more underweight children from families with 5-8 children than those from families with one to four children <sup>35</sup>. It therefore, appears that the effect of household size on childcare is dependent on the age of the mothers and other caregivers and the number of children to be taken care of <sup>35, 36</sup>.

**(b). Household Income.**

The level of household income is assumed to influence the provision of food to the household members, hence households with low income have poor food intake. This leads to poor nutritional status of children especially those under five years.

Studies have shown that, the feeding practices of infants and young children are directly related to household income. According to study done in Botswana, children from households with one or more working adults were more likely to be fed well, hence unlikely to be malnourished <sup>34</sup>.

Another Study done in Mwea Irrigation Scheme Eastern Province, Kenya showed that, there was a strong link between feeding practices, malnutrition, income and expenditure in the household<sup>33</sup>. Another study done in Ethiopia showed relatively higher median duration of breast-feeding among malnourished children, which were mainly from low-income households<sup>17</sup>. This confirms the fact that, mothers in these households have little choice other than depend mainly on breast milk with late start of complementary feeding or introduction of poor complementary feeds<sup>2, 17</sup>.

### **C). Household Food Security.**

UNICEF defines food security as sustainable access to safe food, of sufficient quantity and quality including energy, proteins, and micronutrients in order to ensure adequate intake and a healthy life for all members of the household.

Household food security depends on access to food financially, physically and even socially rather than availability of food. It is important that, the access to food is consistent and sustainable<sup>64</sup>. Many households in Kenya experience both transitory and chronic food insecurity. Transitory food insecurity is caused by the erratic weather especially for those practicing agricultural activities.

The current harsh economic crisis has hit hard the food security at the household level, with devastating effect on the feeding patterns especially for the under fives<sup>58</sup>. yet breast-feeding provides stable food source for 5% of population in Africa and yet has been ignored in current balance sheets and economic assessment of food availability and use<sup>48</sup>

### **2.4.3. The Influence of Health Worker Practice on the Infant Feeding Practice**

Health worker practices especially during the intra partum and early postnatal periods, influence breast feeding initiation by failing to support and encourage mothers to initiate breastfeeding, through introduction of routines and procedures that interfere with the normal initiation and establishment of breastfeeding and lactation. These practices include separating the mother from the infant at birth; giving infants glucose water before lactation is established and retained, hence discouraging the establishment of practice of full exclusive breast feeding <sup>68</sup>.

Report by UNICEF/MOH showed that, some health workers did not accept breast-feeding promotion as part of their responsibility, 53 % of health workers supported breast-feeding while 46 % did not support breastfeeding <sup>62</sup>. Training on BFHI was subsequently undertaken and many health workers trained on lactation management. Later evaluation by UNICEF/ MOH showed that 86 % of health workers had started accepting their role as breastfeeding promoters and 90 % highly discouraged bottle-feeding. The study also found that, health workers had increased knowledge on how to promote breast-feeding and solving breastfeeding-related problems <sup>62</sup>

According to Kenya Demographic Health Survey (2003), complementary feeding starts early by the age of 2-5 months in 4-6 % of children, and health workers encouraged these practices <sup>53</sup>. A study conducted in Kenyan maternity units showed that 67 % of the health workers advised mothers on early introduction of complementary feeding, 13 % advised complementary feeding to start after six months <sup>46</sup>

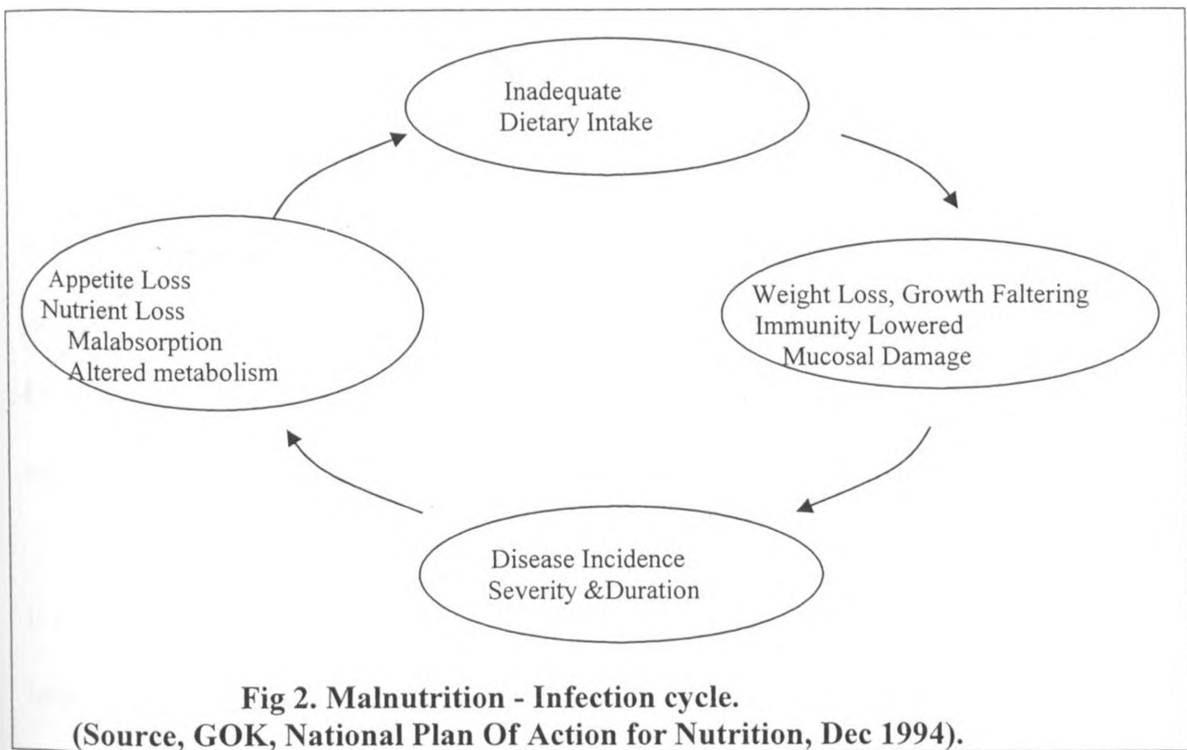
A study conducted in Mbeere district on perception and practices of breast-feeding by Catholic Relief Services, in conjunction with Mbeere Diocese Child Survival Project (2004), found that, health professionals in policy implementation level were aware of Ministry of Health Policy on Breast-Feeding. However there was confusion at the lower level of district health practitioners, as to the exact period of exclusive breast-feeding practice and what it actually means. The nurses were not updated on new Ministry of Health Policy on Breast-Feeding, that requires exclusive breast-feeding for 6 months and not 4 months as reported by nurses in Mbeere District <sup>23</sup>

## **2.5. Child Feeding Practices, Morbidity and Nutritional Status.**

The "Malnutrition-infection" complex remains the most prevalent public health problem in the world to day <sup>43</sup>. Out of 13 million infant and children who die each year in developing countries, majority of the deaths are due to infections and parasitic diseases and most of them die malnourished <sup>43</sup>.

According to a WHO report, communicable diseases take the first 4 positions among the 5 top causes of mortality, morbidity and disability in Kenya. When they occur, either precipitate or aggravate malnutrition especially in young children aged 0-36 months affecting their feeding patterns<sup>49</sup>. Evidence shows that malnutrition, even in its milder forms can increase the likelihood of morbidity and mortality from a number of different disease entities and is associated with up to 56 % of all childhood mortality <sup>43</sup>. A study done in Slums of Mbarara Municipality, Uganda showed that, during illness mothers and caregivers tended to withhold breast-feeding and giving other foods<sup>30</sup>.

Reduced food intake during the period when calories and proteins are required most, due to increased depletion of body nutrient stores by increased metabolism such as fever, loss of appetite and reduced nutrient intake. There is increased demand for nutrients and direct loss through vomiting, diarrhea, malabsorption and altered metabolism<sup>30</sup>. Therefore interactions between malnutrition, poor feeding practices and infections are closely linked as depicted in fig.2.



A sick child requires surplus food intake so that, he can withstand infections without depleting his reserves. Mothers and caregivers may mistakenly believe sick child needs little or no food, which is due to loss of appetite<sup>8</sup>. A study done in Kenyan Hospitals showed that, sick child needed to continue eating regularly during illness and required one extra meal each day for a week following an illness<sup>46</sup>.



Onset of infection leads to poor food intake, malabsorption and nutrient loss leading to inadequate dietary intake, weight loss lowered immunity and mucosal damage which in turn increases incidence, severity and duration of disease. It is recommended that breast-feeding should continue even if the child has diarrhea. Additional fluids should be given. They should also receive small frequent meals, since infections affect appetite. Children suffering from measles, diarrhea, respiratory infections and other serious infections should be given plenty of foods rich in vitamin A<sup>7</sup>.

A Study done in Uganda, found that, food withholding during illness was reported in 50.5% of mothers and only 10% of the mothers were reported withholding milk during diarrhoea<sup>13</sup>. The basic essential of good health is the ability to access curative and preventive health services, that are affordable, accessible, acceptable and of good quality. UNICEF recommended that families should have access to a health center within a reasonable distance and families should seek health on time<sup>64</sup>.

It is of great importance for mothers to be able to recognize early signs of illness and seek help early enough, because proper utilization of health services ensures that the family remains healthy. In addition, immunization against diseases such as measles may prevent growth faltering<sup>43</sup>. At the moment the immunization coverage for major childhood illnesses is improving and is standing at around 65 % in Kenya<sup>35</sup>, though this may be a limited benefit if the environmental factors which influence infection and malnutrition status of children are not properly tackled.

A study carried out in Gambia found out that, despite high rates of immunization and high levels of medical care, the infant mortality rate was still high and nutritional status of the children was still very poor <sup>68</sup>.

Another study done in Uganda, Busia Kenya found the occurrence of malnutrition was significantly lower in children who were fully immunized for age than those who were not. It was observed that, there were more sick children (92.5%) among those who were not fully immunized for age as compared to 68.7 % sick children among those who were not fully immunized for age <sup>35</sup>.

In Siaya District Kenya, it was found out that when children were ill, the family sought for treatment from government health facilities, private practitioners, and traditional herbalists while others purchased self prescribed drugs over the counter. Another group resorted to prayers if they cannot afford the medical expenses <sup>35</sup>.

## **CHAPTER 3: RESEARCH PROBLEM.**

### **3.1. Statement of the Problem.**

Children aged less than 36 months are particularly vulnerable to malnutrition due to increased nutritional requirements due to rapid growth coupled with their total dependency on a caregiver to provide for all their needs <sup>55</sup>. Young children also bear the burden of diseases, especially malaria, acute respiratory infections, intestinal worms and diarrhea that may affect their feeding practices and nutritional status due to loss of nutrients and increased metabolic demand <sup>57</sup>.

The consequences of malnutrition early in life are serious and include stunting, wasting, underweight, lowered immunity, cognitive disability and functional and developmental disabilities which end up effecting the productivity of the individual and the society at large<sup>63</sup>. Despite spirited efforts by the government and other agencies to control malnutrition in Kenya, the prevalence of both acute and chronic malnutrition still remains high at 6% and 35% respectively. About 22% of children under 5years are underweight reflecting high levels of stunting and wasting, though the problem is most pronounced among children aged less than 36months. The biggest proportion of malnourished children is found in rural areas where poverty, low levels of education of the mothers and poor health are widespread <sup>53</sup>.

Malnutrition rates are very high in Kitui district, 45.8% of the children was stunted, 4% wasted and 28.3% underweight<sup>53</sup>. This is reflected in the all year round state of alert for humanitarian aid, necessitating provision of emergency relief food to most households in Kitui district<sup>53</sup>.

Recommendations to ensure optimal growth and development of infants and children are enshrined in the National Policy on Infant and Young Child Feeding<sup>55</sup>. Evidence from National Child Nutritional Surveys over the past decade however indicate that prevailing infant and young child feeding practices in many parts of the country are far from optimal. Early introduction of complementary feeds, which is against recommendations, is wide spread. Such feeding practices negatively impact on the health, growth and survival of infants and young children. Factors influencing infant and young child feeding practices are diverse and largely area specific<sup>55</sup>.

This study examined current feeding practices, their determinants and their influence on the nutritional status of children 0-36 months in Yatta division, Kitui district. The study also evaluated extent to which prevailing infant and young child feeding practices comply with policy recommendations. This information can be used in the design of relevant nutrition and health interventions geared at improving nutritional status of children through improved feeding practices. This information is currently not available in the study area.

### **3.2. Study Justification.**

Kitui district is one of the areas with the highest rates of malnutrition countrywide, with stunting rates at 45.8%, wasting rate at 4% and underweight rate at 28.3%. These figures show that malnutrition is still a major problem in this part of the country<sup>57</sup>.

Findings of the study will be useful in generating information on feeding practices. This can be used in formulating relevant intervention measures to tackle the problem of malnutrition in the study area, through improved infant and young child feeding practices.

It can also be used in formulating relevant strategies in dealing with problem of malnutrition by supporting appropriate feeding practices for children aged 0 – 36 months.

### **3.3. Research Objectives.**

#### **3.3.1. Aim:**

To describe infant feeding practices, their determinants and the nutritional status of children aged 0-36 months in Yatta Division, Kitui District.

#### **3.3.2). Specific Objectives:**

- 3.3.2.1.** To determine breast-feeding and complementary-feeding practices of children aged 0-36 months.
- 3.3.2.2.** To determine factors influencing infant and young child feeding Practices in the study area.
- 3.3.2.3.** To determine morbidity patterns and their possible association with

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feeding practices among children in the study area.

**3.3.2.4.** To determine the nutritional status of children aged 0-36 months using anthropometric measurements.

### **3.4. Research Questions.**

**3.4.1.** To what extent do infant feeding practices of children aged 0-36 months in Yatta divisions comply with policy recommendations.

**3.4.2.** What factors influence feeding practices of children 0-36 months in the study area.

**3.4.3.** What is the nutritional status of children 0-36 months in the study area.

**3.4.4** To what extent do feeding practices contribute to the nutrition status of children 0-36 months in the study area.

### **3.5. Research Hypothesis.**

**3.5.1.** The nutritional status of children aged 0-36 months in Yatta division is not related to the breastfeeding and complementary feeding practices.

**3.5.2.** Feeding practices of mothers in Yatta division is not related to the socio demographic characteristics of the study households.

**3.5.3.** There is no relationship between level of maternal knowledge

on feeding practices and actual feeding practices of infants and young children.

**3.5.4.** There is no relationship between age of the child and feeding practices.

### **3.6. Expected Benefits.**

The findings of this study will act as a baseline data for other studies and for planning of health and nutritional interventions targeting young children. The results will be useful in assisting policy makers, NGO'S and other stakeholders in planning and implementation of relevant activities for alleviation of malnutrition and improved feeding practices among young children. The information will also be useful to health planners in devising appropriate interventions to improve child nutritional status through improved feeding practices. The findings of this study will provide information to field nutritionist, health workers and other stakeholders in area of nutrition when setting intervention measures to improve feeding practices and improve nutritional status of the children.

These results are of great public importance especially when putting up intervention measures in the community, to tackle the problem of infant and young child feeding practices. The results can be useful in formulating relevant strategies in dealing with the problem of malnutrition by supporting relevant strategies in dealing with problem of malnutrition by supporting appropriate feeding practices. The results can also act as a base line for other studies. The findings especially on health workers roles on poor feeding practices, can act as an eye opener among the health workers, to take their roles more seriously especially in implementing BFHI.

## **CHAPTER 4: RESEARCH METHODOLOGY:**

### **4.1. Study Design:**

The study was a cross sectional descriptive study. Both qualitative and quantitative methods were used in data gathering.

### **4.2. Variables.**

#### **4.2.1. Dependent Variables.**

##### **Nutritional Status of Study Children:**

1. Wasting. (Weight for height).
2. Underweight. (Weight for age).
3. Stunting. (Height for age)

##### **Feeding Practices**

1. Breast-feeding
2. Complementary feeding.
3. Duration.

#### **4.2.2. Independent Variables.**

1. Age and sex of the index child.
2. Age of mother.
3. Education level of mother
4. Occupation of mother.
5. Marital and parity of mother.



### 4.3. Study Area

#### 4.3.1. Kitui District Profile.

Kitui District is one of the thirteen (13) districts of the Eastern Province. The district is located to the Southern part of Kenya bordering Machakos and Makueni district to the West, Mwingi district to the north, Tana River to the east and Taita Taveta to the south. The district covers an area approximately **20,402km sq.** including **6,290.3km sq.** occupied by uninhabited Tsavo National Park. Majority of the population is concentrated in the high potential areas of Central division, Chuluni, Mutonguni, Matinyani, while the low population densities are in Yatta, Mutitu, Mwitika, Mutha, Mutomo and Ikutha divisions attributed to low potential <sup>54</sup>.

**Table 1. Administrative Organization of Kitui District**

Division Name	No. of Locations	No. of Sub-locations	Area (sq. km).
Central	7	25	765.48.
Chuluni	4	17	539.2
Mutitu	3	12	614.45
Mutomo	5	20	5287.42
Yatta	5	11	1.166.14.
Kabati	9	27	795.69
Mwitika	3	12	3.249.01
Ikutha	4	14	1.829.01
Tsavo National Park.			6.3309.01
<b>Total</b>	<b>40</b>	<b>138</b>	<b>20,555.74</b>

*Source: -Kkitui District Development Plan 1997-2002*

#### **4.3.2. Division Profile.**

Yatta division was created in 1993. It is a strip of land 25-km wide between the Tiva and Athi rivers with a total population of approximately 45,000 people in its five locations i.e. Kanyangi, Kwavonza, Kiseuni, Nthongoni and Yatta.

The entire division is semi arid area receiving < 500mm of rainfall a year. The division's main source of water is rivers (Tiva and Athi) which are usually polluted. Food security in the division is precarious due to recurrent droughts leading to severe food shortage, which in turn affects the feeding practices of young children in the area<sup>61</sup> These being the main focus of the study, will try to establish the feeding practices their determinants and determine the nutritional status of children aged 0-36 months in the Yatta division.

The area was selected for study due to its poor climatic conditions with limited land use, recurrent food shortages and low socio-economic status, in order to determine whether such factors influence breast feeding and complementary feeding practices among children aged 0-36 months.

#### **4.4. Study Population.**

According to 2002-population projection<sup>57</sup> the district had a population of 550,678 persons. The population growth rate was 2.23 per annum. There were 97,196 households in 2002 and is projected to increase to 118,537 in 2008. Yatta division had a population of 44,495 people according to 2002 projections with 21,388 males and 23,107 females<sup>57</sup>.

The study population included all the children aged less than 36 months in the Yatta division, of Kitui district.

#### **4.4.1. Inclusion Criteria.**

Households with children aged less than 36 months were eligible for inclusion for the study. The respondents were the mothers of all children included in the study.

#### **4.4.2. Exclusion Criteria:**

All the children who were: -

- (i). Older than 36 months.
- (ii). Not born and brought up in the study area.

#### **4.5. Sampling Frame.**

The sampling frame was all the households with children aged 0-36 months in the study area and whose parents consented to participate in the study.

#### **4.5.1. Sampling Unit.**

It consisted of all the households with an eligible child and parents who consented to participate in the study. This constituted a unit of analysis and had an equal probability of inclusion in the study.

#### 4.5.2. Sample Size:

The minimum sample size for the study was computed using the rate of stunting in Kitui district (45.8%) among children aged less than 5 years<sup>55</sup>. For the purpose of sample size determination, the following statistical formula was used as recommended by Fisher et al, (1991).

$$n = Z^2(pq) / d^2 .$$

Where n= desired sample size.

Z =standard normal deviate, set at 1.96 and associated with 95%

confidence level, at an alpha level of 0.05.

p= proportion of children under 5years estimated to be stunted in Kitui district (0.458)

q= 1-p (denotes population of children who are well nourished i.e. with normal height for age. (0.542)

d= degree of accuracy or precision which is significant at an alpha level of 0.05.

Taking the proportion of malnourished children as 0.458, z statistic as 1.96 and desired accuracy as 1.96 at 0.05 level the sample size was calculated as below:

$$n = 1.96 \times 1.96 (0.458 \times 0.542) / 0.05 \times 0.05 = 381.$$

The study population in Yatta division of Kitui district was 2,549 children, who were up to 48 months of age according to 2002 population projections<sup>54</sup>. Therefore, the actual sample size was calculated by using the following statistical formula by Fischer, et al (1998), because the study population was less than 10,000<sup>57</sup>.

$$nf = n/1 + (n/N)$$

Where: - **nf** is the adjusted sample size when the study population is less than 10,000.-

**n** is the sample size when the study population is more than 10,000.-

**N** is the estimated total study population.

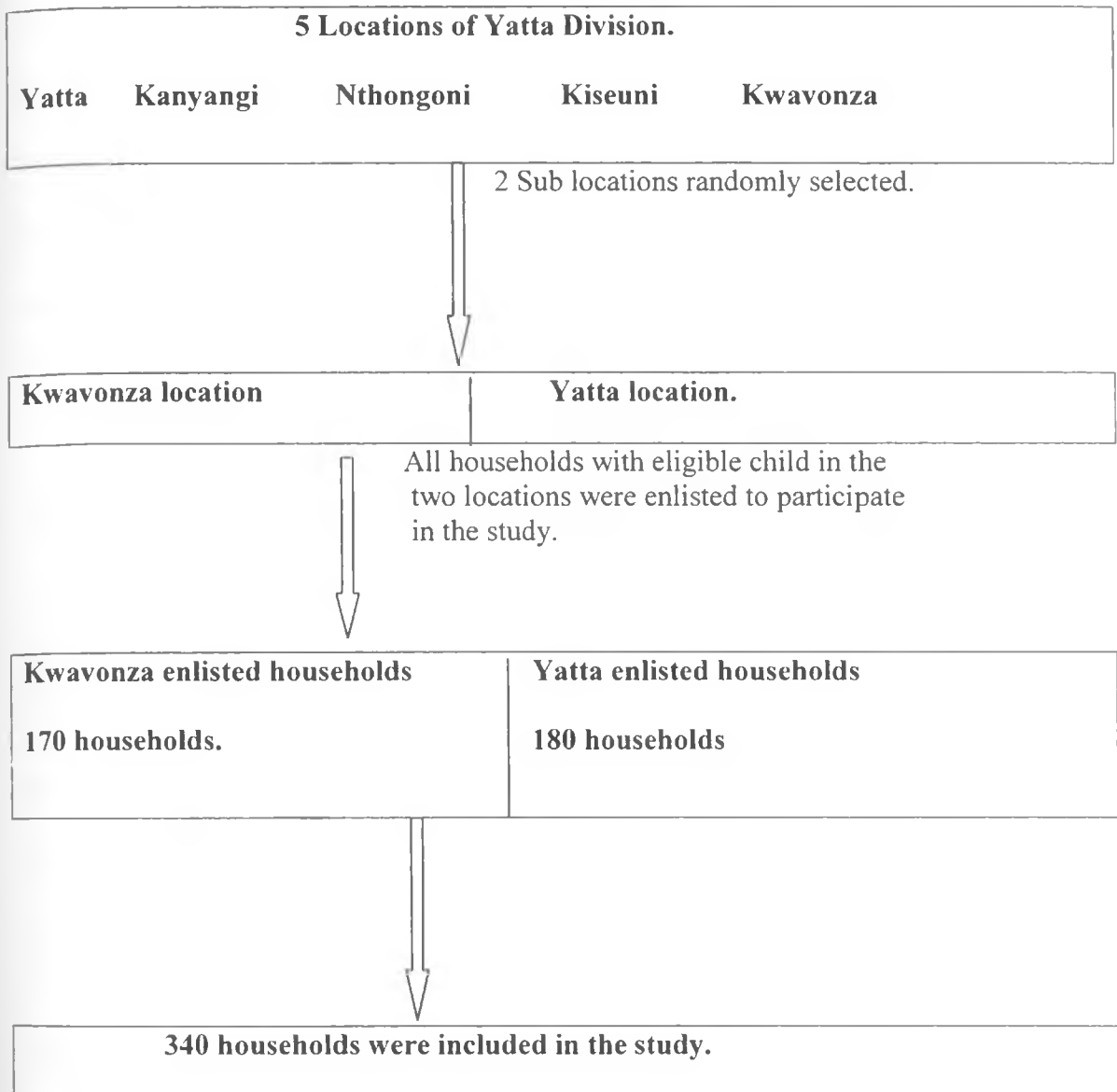
**nf** =  $381/1 + (381/2,549) = 331$ . The minimum sample size was therefore expected to be 331 children aged 0-36 months.

#### **4.5.3. Sampling Procedure.**

Yatta division of Kitui district has 5 locations, Kanyangi, Kiseuni, Nthongoni, Kwavonza, and Yatta. Kwavonza and Yatta locations were randomly selected for the purpose of the study. Preliminary survey for identification and registration of all households with children aged 0-36 months of age and consenting mothers was carried out. Three hundred and fifty households were identified and registered in the two locations. One hundred and eighty homesteads were registered in Yatta location and one hundred and seventy were registered in Kwavonza location. All the homesteads were each allocated an identification number.

A register for all households was prepared in each location and used as the sampling frame. The desired sample size was selected from sampling frame. In the homesteads, questionnaires were administered to mothers and anthropometric measurements of sampled children aged less than 36 months taken and recorded. In homesteads where there was more than one eligible child, the youngest child in the homestead was included in the study.

**Fig 3. Flow Chart Showing Sampling Procedure.**



## **4.6. Data Collection.**

### **4.6.1. Preparation.**

Formal consent from the Ministry of Education research section was obtained and permit issued to carry out the study. Permission was also sought from the area provincial administration through the District Commissioner Kitui District to allow and inform members of the public in the district and location level about the study for maximum cooperation.

### **4.6.2. Training of Research Assistants:**

Four research assistants were recruited and trained on data collection and interviewing techniques. Criteria used in selection included, these were local form leavers with minimum of B- in their KCSE. They resided in the study area and understood the study area very well, besides having done a similar study with ADRA an NGO operating in the area. Priority was given to candidates who had good education and good command of English, Kiswahili and Kamba languages.

Two day training was conducted for the enumerators. The purpose and general procedures of the survey were explained to the assistants. The training focused on sampling methodology, administration of questionnaires, interviewing techniques and taking of anthropometric measurements. An orientation to data collection using qualitative methods such as focus group discussions was also done. A question-by-question review of the questionnaire was done. Also learnt were methods of recording

responses and the meaning of the different codes in the questionnaires. The questionnaire was administered in Kamba language.

#### **4.6.3. Pre-Testing the Questionnaire.**

Pre-testing the questionnaire was conducted in 30 households over a period of 5 days. This was done to impart practical experience to enumerators in administration of the questionnaire and taking anthropometric measurement. Pre-testing was carried out at Kyusyani Sub location of Yatta Division. The principal researcher and research assistants administered questionnaires to eligible mothers who were willing to participate in the pre testing exercise. To get adequate practice, each enumerator administered questionnaires and took anthropometric measurements of children in 7 households. Difficulties and ambiguity of questions and procedures were noted and corrections done in the process of finalization of questionnaires and procedures after pre testing exercise.

#### **4.6.4. Ethical Consideration.**

Ethical clearance was granted by Kenyatta National Hospital Ethical Clearance committee. Consent to participate in the survey was sought from respondents before administration of the questionnaires. The research assistants explained to respondents the purpose of the research, and that the information obtained would be kept confidential and was to be used for research purposes only.



## **Protocol of Taking Weight.**

The weights were taken using a Salter scale calibrated to 25kg with increment of 100g as described by WHO, 1983<sup>6</sup>.

- ✓ The scales were fixed on either a wooden part of the house, suspended from a tree branch in the compound or the scale lifted by a member of the research team, ensuring the feet of the child were clearly off the ground, and child was freely suspended.
- ✓ All the scales were adjusted to zero, while the weighing pant or infant sling was still on hook before reading the measurements.
- ✓ Two readings were taken to the nearest 0.1kg and recorded. The average was computed later for every child. The child was weighed with minimum clothes on. To ensure accuracy the measurements were taken by a team of research assistants who had previous experience in taking anthropometric measurements <sup>6</sup>.

## **Protocol for Taking Height /Length.**

### **Measuring Length for Infants and Children 6-23 Months.**

Measuring boards suitable to take the length of children were used.

- The measuring board was placed on a hard surface ground, floor, or steady table.
- Then the assistant knelt on both knees behind the base of the board. The measurer also knelt on the right side of the child to be able to hold the foot piece with the hand.

- With the mother's help, a child was laid on the board by supporting the back of the child's head with one hand and the trunk of the body with the other hand and gradually lowering the child onto the board.
- The mother knelt on the opposite side of the measurer in order to keep the child calm.
- The assistant cupped his hands over the child's ears with the arms comfortably / straight to place the child's head against the base of the board so that the child is facing straight up.
- The measurer used to make sure the child was lying straight on the board and the heels were firmly on the foot piece.
- Then the measurer would take two readings to the nearest 0.1 cm by repeating all the steps above. After the final reading the children were released<sup>6</sup>.

### Measuring Height for Children 24 Months and Older.

The measuring boards suitable to take the height of the children were used.

- The measuring board was placed on a hard flat surface against a wall, table, tree or other firm surface.
- The mothers were required to remove shoes and undo the hair of their children that might interfere with height measurements.
- The children were then placed against the measuring board and the mother knelt in front of the child.
- The assistant knelt with both legs on the right side of the child.
- The measurer knelt on his/her right knee on the child's left side to allow maximum mobility.
- The assistant placed the child's feet flat and together in the center of and against the back and base of the board.
- The assistant placed his/her right hand just above the child's ankles on the shin, the left hand on the child's knees and push against the board. The assistant made sure the child legs were straight and the heels and the calves are straight against the board.
- Then assistant informed the measurer after he had finished positioning the feet and the legs.
- The measurer used to tell the child to look straight ahead at the mother who stood in front of the child, making sure the line of the child's sight was level with the ground.

- The measurer placed his left hand under the chin and gradually closed the hand, making sure the shoulders were level and the hands were at the child's side, and head, shoulder blades were against the board.
- With the right hand, the measurer lowered the headpiece on top of the child's head making sure it didn't push through the child's hair.
- The measurer read and called out the measurement to the nearest 0.1 cm. The headpiece was then removed and the child released, and then recorded the measurement <sup>6</sup>.

***Focus Group Discussions and Key Informant Interviews (Appendix II).***

Qualitative data on infant and young child feeding practices was collected using focus group discussions and key informant interviews. Four focus group discussions and two key informant interviews were conducted with mothers of children aged 0-36 months in the study area. Two FGD for young mothers aged 18- 24 years and two FGD for mature experienced mothers aged 25 - 35 years were done. A question guideline developed in line with survey objectives was used in facilitating the focus group discussions and results analyzed (appendix iii).

FGDs were held with 8-12 participants. Key informant interviews were conducted with women group leaders in the community. This assisted in finding out the existing feeding practices and the reasons behind these practices.

The discussions were facilitated by a trained facilitator using a discussion guide to capture aspects of infant and young child feeding practices that would be difficult to assess using questionnaire such as traditional beliefs and cultural aspects. Information got on child care was cross checked by interviewing health staff in Yatta Health Centre.

#### **4.6.6. Study Limitations:**

The study had a retrospective component in recalling events like the time of starting complementary feeding, duration of breast-feeding etc, it was likely to be prone to reporting errors due to memory lapse, but interviewers tried to minimize the errors through in depth interviews to get quality data. The hot and dry climatic conditions and insecurity limited the study to more accessible locations of Yatta Division which were earlier randomly selected.

#### **4.7. Data Processing.**

##### **4.7.1. Data Quality Control,**

To ensure completeness and internal consistency of data, the principal researcher crosschecked completed questionnaires daily. The weighing scales were standardized before commencement of weighing and random checks in the course of data collection were done to ensure quality of data collected. The research assistants were re- trained after the pre-testing exercise to ensure quality data was collected.

#### 4.7.2. Data Management

The data collected was counter checked, entered in computer with SPSS and CDC Athro program soft ware. These programs were used for data entry, cleaning, and analysis.

(a). The quantitative data was entered and analyzed by use of SPSS software.

(b). The CDC Anthro program was used to convert raw anthropometric data into nutritional indices (height/age, weight/age & weight /height) and then compared with the WHO recommended National Center for Health Statistics (NCHS) reference standards. Children were then stratified by their nutritional status.

Nutritional status data has been presented using Z scores with cut off points of - 3 sd for severe malnutrition and -2 sd for moderate malnutrition.

(c). Graphs on descriptive information were done by use of SPSS.

Contingence tables were generated for those variables that show statistical association with feeding practices and nutritional status.

(d). The statistical package for social scientists (SPSS) was used for comparison of various factors affecting child-feeding practices in the study area. This was done by administering chi-square or Fischer's exact test where figures are too small to perform chi-square test. The confidence interval was set at 95 % and p value of 0.05.

## **CHAPTER 5: RESULTS.**

### **5.1. Introduction.**

The results of this study present information on the feeding practices of children aged 0-36 months, factors affecting the practices and the nutritional status of the sampled children. The results are presented as per the data collection tool and study objectives with descriptive and analytical results.

#### **5.1.1. Socio -Demographic Characteristics of the Study Population.**

The study sample consisted of 350 households; only 340 were included in the study giving a response rate of 97.1%. The total population in the 340 households was 1834 people. A total of 340 mothers of children aged 0-36 months were interviewed. Anthropometric measurements of 340 children aged 0 -36 months in sampled households were taken. More than a half of total population 1055 (57.5 %) was aged below 15 years and over 65 years, whereas 779 (49.8 %) were aged 15 – 65 years of age, giving a dependency ratio of approximately 1:1.4. The average household size was 5.4 (sd = 1.6) members. A large proportion of household heads in the study area were males 321(94.4 %) with only 19 (5.6 %) of females being heads of household. Most people in the households were members of nuclear family with few members of extended family.

## 5.1.2. Characteristics of the Respondents.

### 1. Age.

The mean age of the mothers interviewed was 25.3 (sd 4.2), with the youngest being 15 years while the oldest mother was 45 years. Slightly over a half of the mothers 182 (53.5 %) were young women aged less than 25 years, only 29 (8.5 %) were aged more than 35 years (Fig. 4).

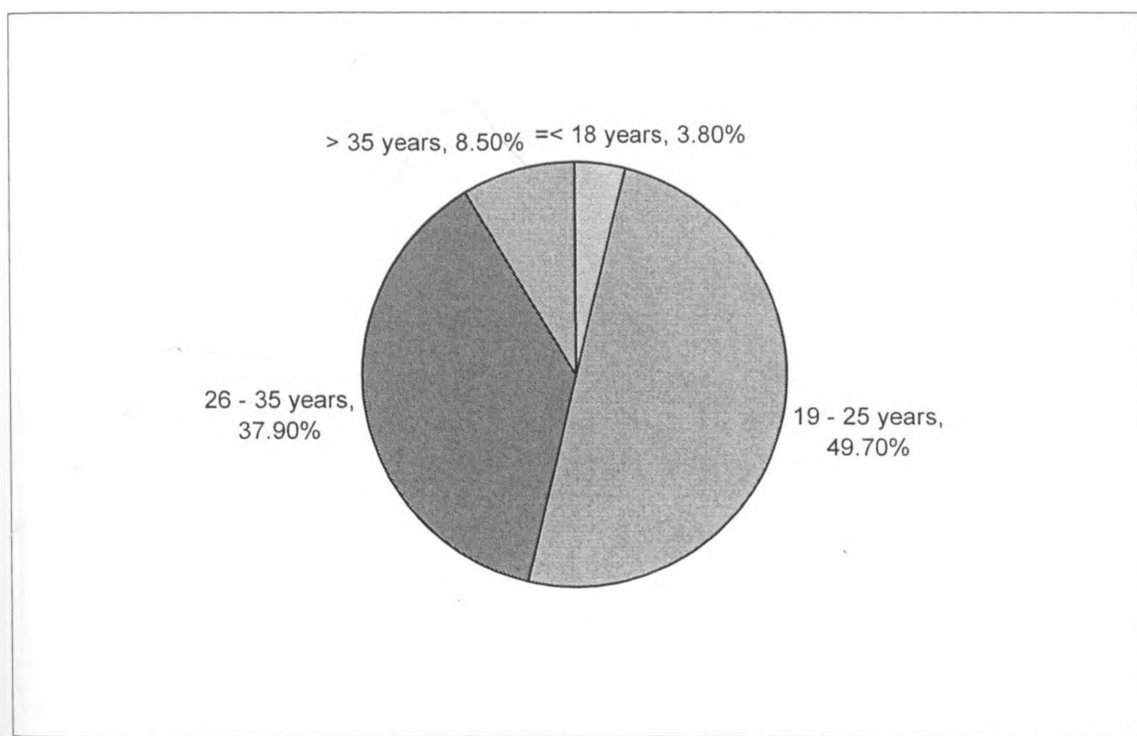
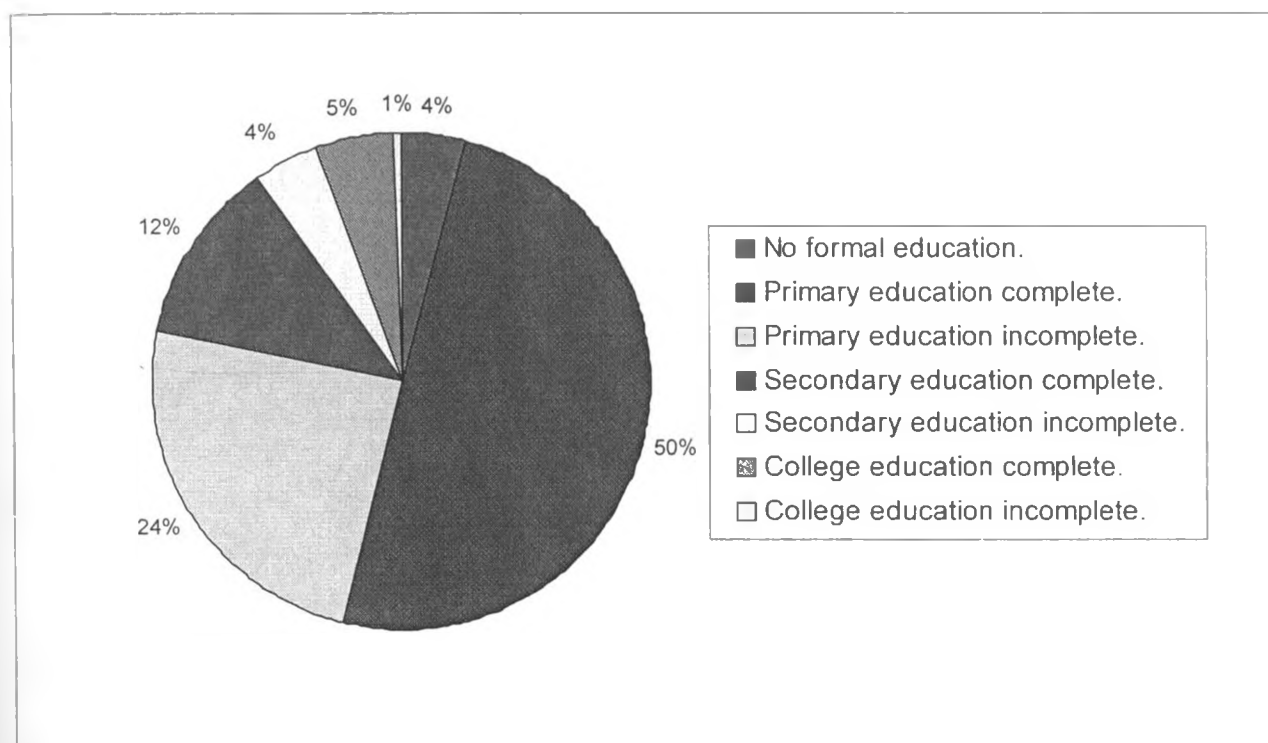


Fig 4. Distribution of Respondents by Age.



## 2. Education Level.

Respondents were asked for the highest level of education attained in school. About a half of the mothers 169 (49.7 %) had completed primary school, while 83 (24.4 %) had not completed primary education and 14 (4.1%) had no formal education. Only a small proportion 41 (12.1 %) had attained secondary education level while 19 (5.6 %) had college education (Fig. 5).



**Fig.5. Distribution of Education Level of Mothers.**

## 3. Mothers' Occupation and Marital Status

The respondents were asked about their current occupation. Majority of respondents interviewed 200 (58.8 %) were housewives, 79 (23.2 %) were farmers, 18 (5.3 %) were self employed, 16 (4.7 %) were unemployed, 14 (4.1 %) were on salaried employment and only 2 (0.6%) were business ladies. Majority of the mothers 279 (82.1%) were married, 52 (15.3 %) were single, 8 (2.3 %) were separated and 1 (0.3 %) was a widow.

#### 4. Parity of Respondents.

The study included 340 mothers who had a total of 975 children with an average of 3 (sd = 1.9) children per mother. Majority 532 (54.6 %) of the children were under five years. Less than half of the mothers 94 (27.4%) had at least 2 living children (Table.3).

**Table 2:- Distribution of Mothers by Parity.**

Parity.	Proportion reporting ( N= 340)	
	number	percentage
1 – 3 Children	241.	70.9
4 – 6 Children	78.	23.2
> 6 Children.	21	5.9
<b>Total</b>	<b>340</b>	<b>100</b>

#### 5. Religion of Respondent.

Majority of the respondents were Christians 339 (99.7%) and there was only 1 respondent who was a traditionalist (0.3%).

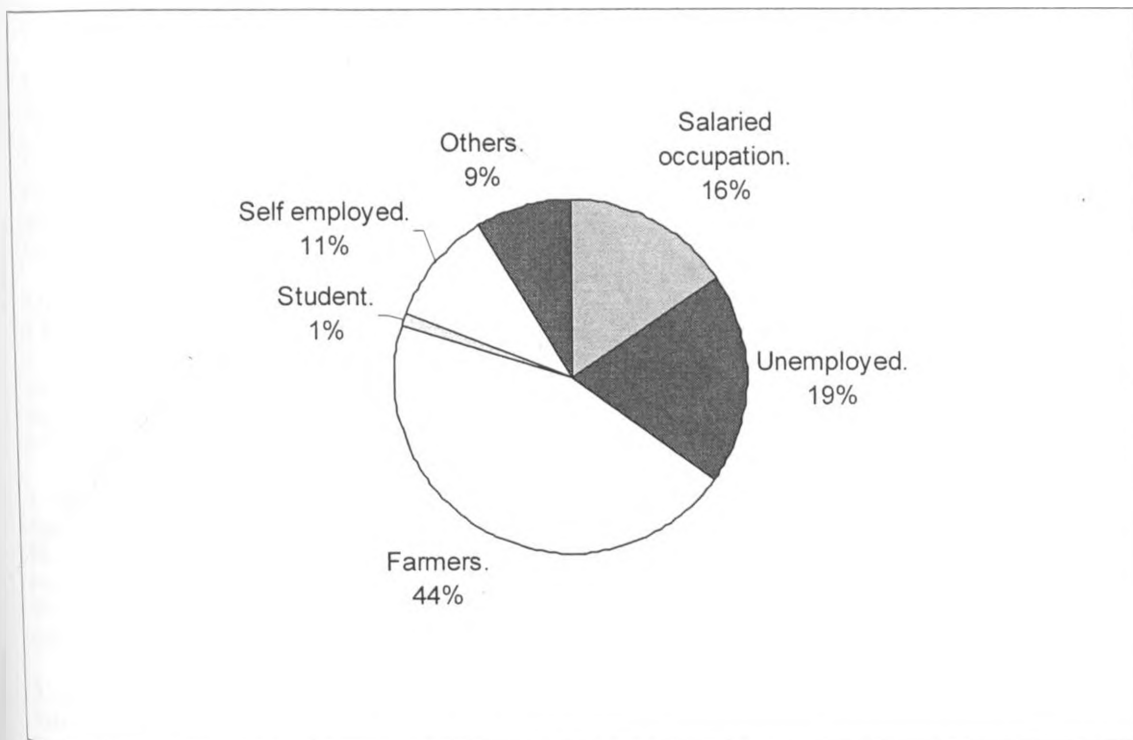
##### 5.1.3. Characteristics of the Household Heads.

###### 1. Education Level and Occupation of Household Heads.

The respondents were asked to state the highest level of education attained by household head. Out of the 321 male heads of households, 22 (6.5 %) had no formal education, 141

(41.5 %) had not completed primary school, while (15.6 %) had completed primary education, 92 (27.1 %) had secondary education and 32 (9.4 %) had college education. The respondents were asked the occupation of the household head. It was found that, 44.7% of household heads were farmers, 19.5 % were unemployed, 15.6% were on salaried employment, 10.7% were self employed and 9.5% were students and other miscellaneous occupations

(Fig 6).



**Fig 6: Distribution of Household Heads by Occupation.**

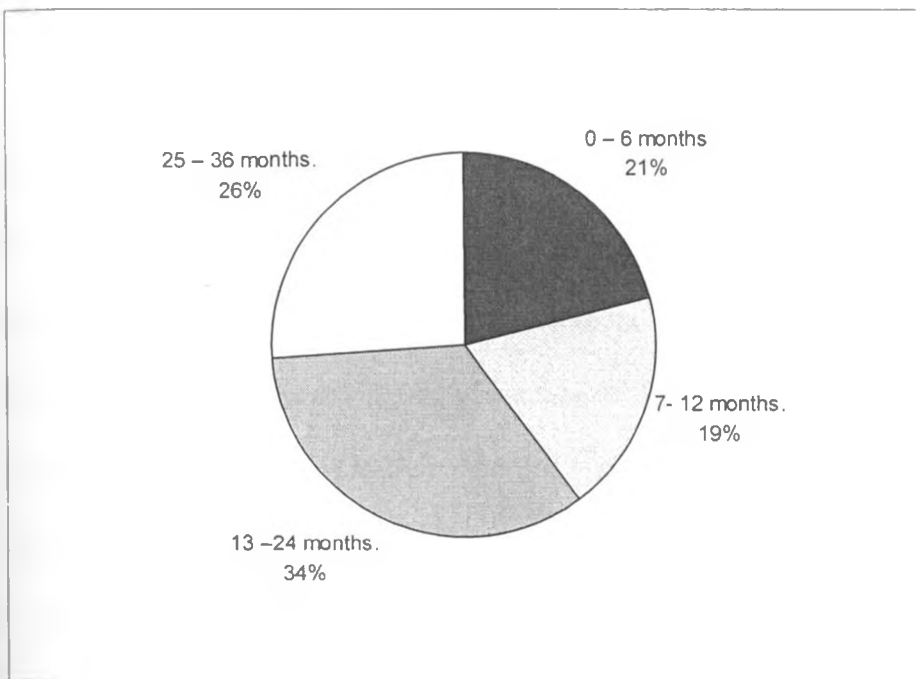
**Table 3. Summary Of The General Characteristics Of The Study Population.**

<b>Characteristic.</b>	<b>Number.</b>	<b>Percentage.</b>
No. Of household in the study.		
Population size.	340	
	1834	
<b>Household characteristic:</b>		
Mean size of the family.	5.4	
<b>Characteristics of HH/ head</b>		
<b>1. Education level.</b>		
No formal education.	22	6.5
Primary complete.	141	41.5
Primary incomplete.	53	15.6
Secondary complete.	70	6.5
Secondary incomplete.	22	20.6
College complete.	30	8.8
College incomplete.	2	0.6
<b>2. Occupation</b>		
Salaried employment	54	16
Unemployed	65	19
Self employed	37	11
Farmer	149	44
Student	3	0.9
Others.	31	9
<b>Maternal characteristics</b>		
<b>1. Maternal age</b>		
< 18 years	13	3.8
19 – 25 years	169	49.7
26 – 35 years	129	37.9
> 35 years	29	8.5
<b>2. Marital status.</b>		
Single.	55	15.3
Married.	279	82.1
Separated.	5	1.5
Widowed.	1	0.2
Others.	3	0.9
<b>3. Occupation .</b>		
Salaried employment.	14	4.1
Self employed.	18	5.3
Unemployed.	16	4.7
Farmer.	281	82.6
<b>4. Education level of respondents.</b>		
No formal education.	14	4.1
Primary complete.	169	49.7
Primary incomplete.	83	24.4
Secondary complete.	41	12.1
Secondary incomplete.	14	4.1
College complete.	17	5.0
College incomplete.	2	0.6

#### 5.1.4. Profile of Study Children.

##### 1. Age and Sex Distribution of Index Children.

A total of 340 children aged 0- 36 months were covered in the study. The distribution of the study children by age is shown in Fig 7. Of these 168 (49.4%) were males while 172 (50.6%) were females. The mean age of the children was 15.9 months (sd=10.0) with median of 15.7 months. The male to female ratio was 1:1



**Fig 7. Distribution of children by age.**

## **2. Birth Spacing and Birth Order of Index Child.**

Close to a half of the children 165 (48.5%) were first-borns, with the rest having a range of 11 to 135 months of birth spacing with the next child. The mean duration of birth spacing was 30.4 months (sd= 29.5) with median of 27.5. Less than a third of children (28.8 %), had spacing of < 12 months, 16.5% were spaced 12-24 months and 54.7% were spaced more than 24 months. With regard to birth order of the study children, it was found out that 93 (27.4%) of these children were first-borns, 91 (26.8%) were second borns, 155 (45.7%) were 3<sup>rd</sup> and above birth order.

## **3 Antenatal Clinic Attendance.**

Respondents were asked whether they attended ANC during the pregnancy of these children, and at what gestation they started attending. If they did not attend they were asked reasons why they didn't attend. It was found that; most mothers 333 (97.9%) attended the ANC clinic during the pregnancy of the index child. Over a half of respondents 196 (58.80 %) started attending clinic at gestation of 4-6 months, less than a half of them 120 (36 %) attended the clinic at least 4 times and others once 11 (3.2%), twice (7.9%), thrice (15.9%), five times (21.5%), and more than 5 times (14.1%).

### **5.1.5. Feeding Practices.**

The study sought to establish the key issues in breast feeding practices, these included initiation of exclusive breast feeding and its continuation. In complementary feeding the frequency, quality, quantity, feeding during illness and the cadre of care givers were explored.

## 1. Breast Feeding Practices.

The respondents were asked how soon after delivery did they initiate breastfeeding.

Majority of mothers 274 (80.7 %) reported initiating breast-feeding within an hour after birth.

Only 28.2% (8.3 %) reported initiating breastfeeding between 2-6 hrs, while 11 %

initiated breastfeeding more than 6hrs after delivery. Mothers were asked how they

breastfed the index child during the first six months. It was found out that, 69 (20.2 %)

practiced predominant breastfeeding, 6 (1.8 %) exclusive breast-feeding and 265 (78 %)

practiced mixed feeding (Fig.8). The study sought to establish the number of mothers

who were still breastfeeding the index children at the time of the study. About two thirds

of mothers 228 (67.1 %) were still breast-feeding their index children.

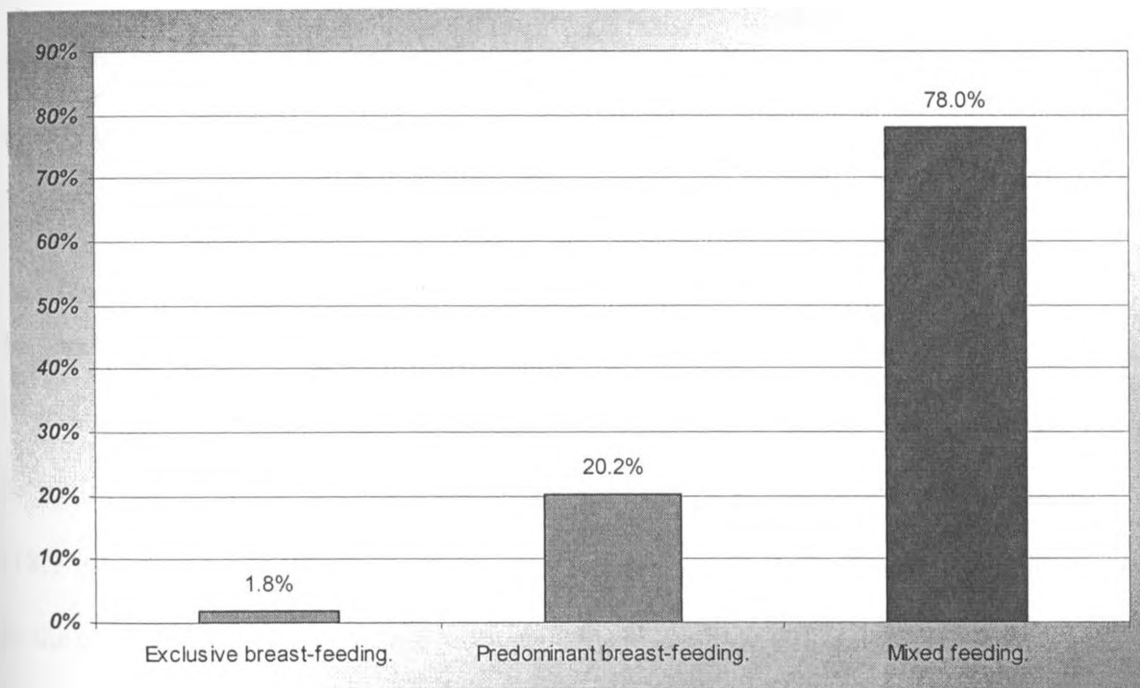


Fig 8. Mode of infant feeding during the first six months of age

Only 148 (43.6%) of respondents knew that six months is the recommended duration for exclusive breast feeding, while 191 (56.1 %) had no knowledge on the duration recommended for exclusive breastfeeding. A large proportion of the mothers interviewed 313 (92 %) reported that, they normally prepared special quality meals for their children during the first year of life and fed them on adequate quantities.

The survey finding showed that, the community didn't have significant food taboos; though some mothers 43 (12.6%) believed that young children should not be fed on ugali, eggs, cow milk and millet porridge. The mothers believed infants should not be fed on these foodstuffs till the age of 3 months. The focus group discussion revealed that, mothers avoided the foodstuffs because they believed the children would develop hard stool, grow big stomachs or develop grey hair and diarrhea. During illness few mothers among those who had sick children 14 (11.6 %) reported having stopped breastfeeding.

Mothers were asked who normally provides care to the index child in their absence.

Grandmothers emerged the main substitute caregivers, with 185 (54.4 %) indicated they normally left the index child under the care of grandmothers while away. Siblings 102 (18.9 %) were also reported to provide care, but fathers 93 (17.2 %) rarely provided care to the children in absence of their mothers. This was highly supported in focus group discussions and in key informant interviews.



## 2. Problems Mothers Experienced During Breast-Feeding.

The respondents were asked whether they experienced any problems while breast-feeding their index children. Only 25 (7.4%) of respondents reported having experienced problems while breast-feeding the index children. The problem most commonly mentioned was insufficient milk 16 (64.0 %). Breast disease was reported by 7 (28.0 %) while baby refusing to breast-feed was reported by 2 (8.0 %). Slightly over a half 14 (56.0 %) of the mothers reported having sought medical treatment and other remedies.

The respondents were asked measures taken, to tackle the above-mentioned problems. Over half of the respondents reported having sought medical treatment (56.0 %) with 36.0 % saying they did self-medication. Only 4.0 % of mothers stopped breast-feeding, while a small proportion of mothers (4 %) sought advice from neighbors and TBAs (Table 5). During focus group discussion mothers reported having had similar problems and took similar remedial measures.

**Table 4. Actions Taken By Mothers.**

Remedial measures taken.	Proportion reporting ( N= 25)	
	number	percentage
Medical treatment.	14	56
Self-medication.	9	36
Stopped breast-feeding.	1	4
Sought advice from neighbors and TBAS	1	4
<b>TOTALS</b>	<b>25</b>	<b>100</b>

### 3. Complementary Feeding.

Among the study children, a large proportion of children 327 (98.2 %) were introduced to other liquids other than breast milk early in life, sometimes as early as during the first week of life. The beverages commonly introduced were plain water 266 (78.1%), water and glucose 70 (20.7 %), porridge 1 (0.3 %) and animal milk 3 (0.9 %).

Semi solids feeds introduced in order of priority were porridge 241 (71.1 %) enriched with fat and milk, mashed foods 74 (21.7 %), mashed fruits and animal milk 22 (6.5 %). The children were fed commonly using cup spoon/ bowl mode of feeding 196 (58.1 %).

At the age of 1½ month to 3 months majority 296 (87.2 %) of the children were fully on other foodstuffs besides breast milk in form of mashed foods 224 (65.8 %). The study sought to establish types of food used for complementary feeding and quality, quantity and frequency. This was meant to establish the respondents' knowledge on feeding practices. Less than half of respondents 19(41%) had knowledge on recommended duration of exclusive breast feeding.

Milk and milk products were highly consumed, at least once to thrice by 261 (77.2 %) while legumes (beans and peas) were consumed at least once to thrice 84 (24.9 %) in a day. Fats /oils /margarine were also consumed at least once to thrice by 167 (50.4 %). Fruits and vegetables were rarely consumed in the community, 147 (43.2 %) ate fruits occasionally 21. (6.2 %) ate at least once to thrice in a day.

Vegetables were regularly eaten by 10 (2.9 %) and occasionally by 148 (43.5 %). Most of the mothers 265 (77.9 %) said beans were the best food for children 0-36 months of age. Measures taken when a child refused to eat included, mothers looking for something the child likes 125 (36.8 %), persuade the child to feed 108 (31.8 %), stopped feeding and tried to feed later 56 (16.5 %) and 44 (12.9 %) forced to feed and 2 (0.6 %) changed feeding time. Focus group discussion brought out the many types of complementary feeds, frequency and to some extent the quality and quantity of food stuffs given to the study children.

#### **4. Feeding Methods.**

The commonest feeding methods reported were cup/spoon 232 (71.6 %) and sprout cup 220 (67.9%). Bottle-feeding 58 (10%) and cup feeding 48 (9 %) were the least favorable. The mothers reported that, they were the ones who fed the children mostly 118 (34.7%), with only few fathers 46 (13.5 %) and siblings 15 (4.4 %) feeding index children. During focus group discussion it strongly emerged that cup/ spoon was most popular method of feeding whereas mothers disliked bottle-feeding. Over three quarters of the children 278 (81.8 %) were fed at least four or more times in a day and 278 (81.8 %) of the children were fed mainly on cereals (maize, millet, sorghum) at least once to thrice 274 (80.6%) in a day.

### 5. Reasons for Early Introduction of Other Feeds.

Mothers gave various reasons for introducing the beverages and semi solids besides breastfeeding during the first six months of life. The commonest reasons cited were, advised in the hospital /ANC 154 (45.3 %) or by parents / grand parents / relatives and neighbors 97 (28.5 %). A small proportion reported breast milk was not enough 68 (20.0 %) while others reported they were going back to work 6 (1.8 %) and child was considered old enough 12 (3.5 %) (Fig.9). Focus group discussion results supported these findings.

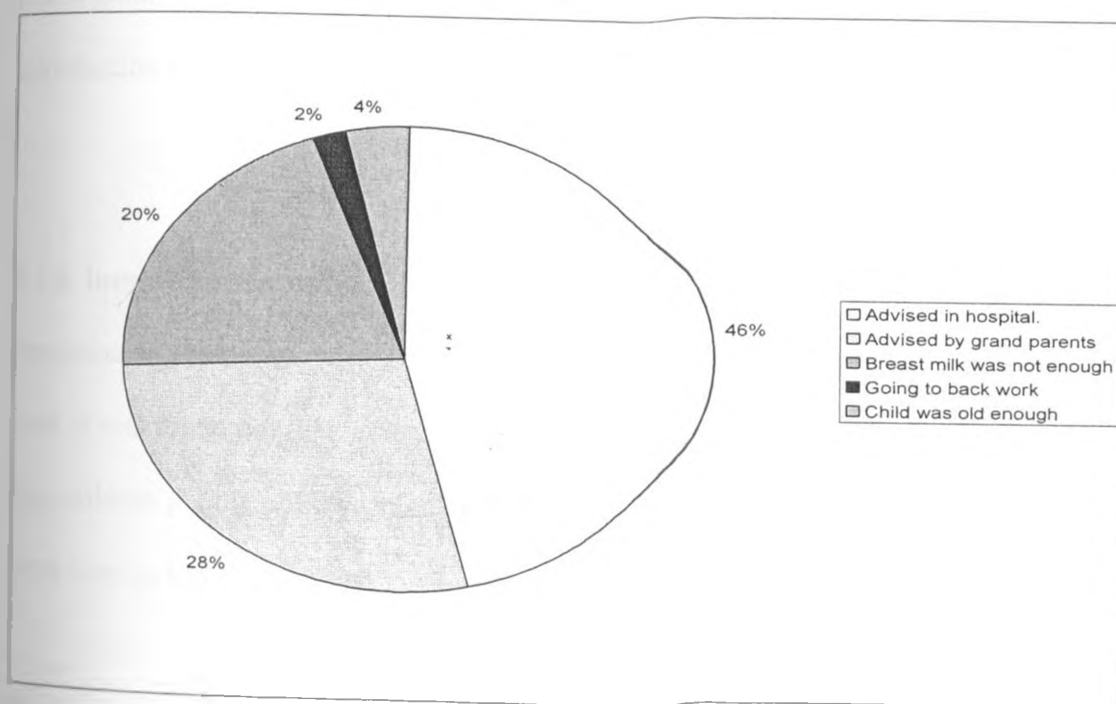


Fig 9. Reasons for early introduction of complementary feeds.

## **6. Source of Information on Infant Feeding.**

Respondents were asked whether they received any information on infant and young child feeding practices while attending ANC. A half of the mothers 168 (50.8 %) had not received any information on infant feeding, while 164 (49.2%) said they received information on infant feeding during visit to ANC. The mothers who did not receive the information from the clinic end up getting this information from other sources.

Three quarters of the respondents 257 (75.3 %) received information from relatives neighbours 18 (5.3 %), TBAS (2.1 %), learning in school and reading books 15 (4.4 %). Focus group discussion results strongly supported these findings on reasons for earthly introduction of complementary feeds.

### **5.1.6. Immunization status.**

Immunization status of index children was assessed using records of immunization clinic card. It was found out that, at least 69 (20.3%) babies got the BCG vaccine at birth. Very few children got the polio vaccine 58 (17.1%) at birth despite the fact that, 98 (28.8%) were born in health facilities.

The number of those who got polio vaccine at 6 weeks increased to 90 (26.5 %) compared to the initial vaccinations 58 (17.1%). DPT vaccination was only administered to 89 (26.2 %) at 6 weeks (Table 6).

The polio vaccination at 10 weeks of age declined to 88 (25.9%) and DPT vaccination for age at 10 weeks declined to 88 (25.9%). The polio vaccination for age at 14 weeks

declined to 84 (24.7%) while DPT vaccination for age declined to 83 (24.4%). Only 96 (28.2%) children received measles vaccination at age of 9 months (Table 6).

**Table 5. Distribution of Immunization Coverage by the Age.**

VACCINE.	Birth. (n=127)	6 WEEKS. (n=178)	10 WEEKS. (n=176)	14 WEEKS (n=167).	9 MONTHS (n=96).
BCG	69(20.3%).				
POLIO.	58(17.1%).	90(26.5%).	88(25.9%).	84(24.7%).	
DPT.		89(26.2%).	88(25.9%).	83(24.4%).	
MEASLES.					96(28.2%).

The immunization status of the children for the whole schedule for each of completed immunization in time, according to information obtained from immunization cards (Table 7).

**Table 6. Immunization Status of the Child.**

Status.	Proportion reporting ( N= 340)	
	number	percentage
Complete for age.	211.	62.0.
Not complete for age.	129.	37.1.
<b>Total.</b>	340.	100.

### 5.1.7. Growth Monitoring.

The study sought to establish extent to which growth of infants and young children in the study area is monitored. At the time of this study, only 157 (46.2 %) of the index children were still attending the growth-monitoring clinic.

Results indicate that attendance of the well baby clinic for growth monitoring started to decline as soon as the baby got the last measles vaccination 137 (64.9 %) at the age of 9 months. During FGD it emerged that, most mothers actually stopped taking their children for growth monitoring after getting the last measles immunization. The mothers gave various reasons for stopping growth monitoring attendance (Table 8).

**Table 7. Reasons for Stopping Growth Monitoring Attendance.**

Reasons.	Proportion reporting ( N= 189)	
	number	percentage
Child old enough.	90	49.2
Mother busy.	56	30.6
Clinic far.	24	13.1
Advised in clinic.	2	1.1
Mother lacked knowledge.	11	6
Totals.	189	100

### 5.1.8. Child Morbidity Status.

The mothers two weekly morbidity recall indicated that 123 (36.2%) of the sampled children had some form of illness two weeks prior to the study (Table. 9).

**Table 8. Illnesses Suffered During Two Weeks Prior To Study.**

Illness.	Proportion reporting ( N= 123)	
	number	percentage
1. Fever.	38	30.9
2. Running nose.	25	20.4
3. Febrile convulsions.	4	2.9
4. Cough.	30	25.0
6. Malaria.	18	14.7
7. Diarrhea.	7	6.1
Totals.	123	100

#### 1. Remedial Measures Taken During Illness.

Respondents were asked what action they took when the index child was taken ill.

Mothers took different remedial measures to treat the ailments. More than half of the mothers (53.2 %) reported taking the child to a health facility for treatment, with only one mother (0.6 %) giving the child home remedies. Less than half of the mothers (45.6 %) bought drugs for the sick child while 0.6 % said prayers for the sick child.



## 2. Breastfeeding Practices during Illness.

During illness few mothers among those who had sick children 14 (11.6 %) reported having stopped breastfeeding. The mothers gave various reasons for withholding breast feeding (Table 10).

**Table 9. Reasons For Withhold Breastfeeding (N=14)**

Reasons.	Proportion reporting ( N= 14)	
	number	percentage
Child vomiting.	7	50.0
Child too sick	2	14.3
Advised by relatives.	2	14.3
Child refused.	3	21.4
<b>Total.</b>	<b>14</b>	<b>100</b>

## 3. Complementary Foods Commonly Withheld During Illness.

About a third of mothers who had sick children 36 (29.3%) reported withholding foodstuffs during the duration of child's illness (Table 11). Various reasons were cited including child's refused to feed (60.3 %), child was too sick (27.6 %) and child was vomiting was reported by 8.6 % of the mothers. A small proportion of respondents 3.4 % said they were advised not to give some foods by health workers.

**Table 10. Complementary Food Stuffs Commonly Withheld.**

Foods withheld.	Proportion reporting ( N= 36)	
	number	percentage
Plain porridge.	14	38.4
Enriched porridge.	5	13.0
Mashed food	10	28.8
Animal milk	7	19.5
<b>Total.</b>	<b>36</b>	<b>100</b>

#### 5.1.9. Nutritional Status of Study Children.

All the children whose height for age, weight for age and weight for height fall below 2sd of the reference children of the same age are stunted, underweight and wasted respectively. Where by <-2 sd HAZ means stunting, <-2 sd WAZ means underweight, <-2 sd WHZ means wasted, <-3 sd HAZ means severe stunting, <-3 sd WAZ means severe underweight, <-3sd WHZ means severe wasting. Overall 33.5 % of the children were stunted, 6.8 % were wasted and 20.3 % were underweight (Table 12).

**Table 11. Distribution of Study Children by Nutritional Status.**

Indicator.	Nutritional status		Nutritional status	
	<- 2sd**		<-3 sd ***	
	n	%	n	%
HAZ (stunted) (n= 114)	78.	22.9	36	10.6
WAZ (underwt) (n=69)	52	15.3	17	5.0
WHZ (wasted) (n=23)	17	5.0	6	1.8

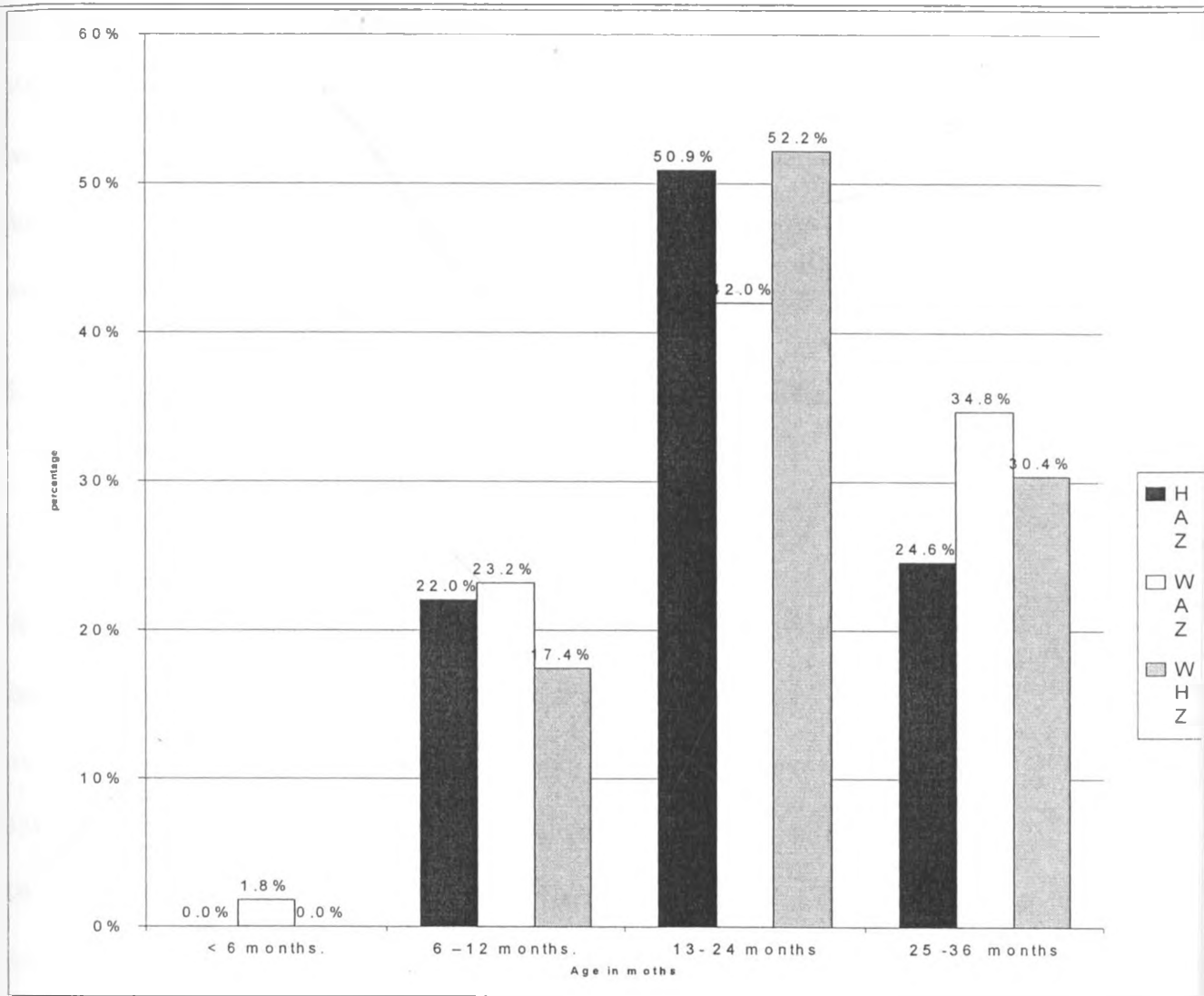
### 5.1.10. Distribution of Child Nutritional Status by Sex.

More girls were undernourished compared to boys (Table. 13). This difference in distribution of nutritional status was however not significantly ( $p > 0.05$ ) associated with sex of study children. .

**Table 12. Distribution of Nutritional Status by Sex of the Child.**

Gender of children.	HAZ (stunted) <-2sd (N=114)		WAZ (underwt) <-2sd (N=69)		WHZ (wasted) <-2sd (N=23)	
	n	%	n	%	n	%
<b>Male.</b>	(56)	49.1	(34)	49.3	(10)	43.5
<b>Female.</b>	(58)	50.9	(35)	50.7	(13)	56.5
<b>Total.</b>	(114)	100	(69)	100	(23)	100

Overall, the highest prevalence of malnutrition (stunting, wasting and underweight) were observed in children aged 13 -24 months (Fig.10).



**Fig 10. Distribution of nutritional status of study children by age.**

## 5.2. Analytical Results

Variables on exclusive breast feeding, predominant breast feeding and mixed feeding were cross tabulated with selected household, maternal and child variables. Since the number of mothers who exclusively breast-fed were too few for cross tabulation, they were grouped together with those who predominantly breast fed for analysis.

### 5.2.1. Relationship Between Feeding Practices Of Children In The First Six Months and Selected Child Factors.

#### 1. Age and Sex of Index Child.

A large proportion 54 (73 %) of children on predominant breast-feeding were aged less than 6 months at the time of study. Slightly over a half of children 136 (51.6 %) who were on mixed feeding were also aged less than 6 months by the time of study. This distribution of feeding practices by age of children was statistically significant ( $P=0.012$ ). The hypothesis was rejected.. However the difference in distribution of predominant breast-feeding and mixed feeding practices by sex of index children was not significant ( $P= 0.885$ ) (Table 14).

**Table.13. Mode of Feeding By Age and Sex.**

Mode of feeding	Age of child	Sex	
	< 6 months.	Male. n=166	Female. (n=171)
Exclusive/ Predominant breast feeding.(n=54)	54 (73 %)	37(50.0%)	37(50.0%)
Mixed feeding.(n=136)	136(51.6 %)	129(49.0%	134(51.0%)
	$X^2 = 10.8.$ P Value = 0.012.	$X^2 =0.208.$ P value = 0.885.	

## 2. Child Morbidity and Immunization Status.

Over a half of children 42 (56.8 %) who were predominantly breastfed had not suffered any illness within past two weeks before the study was done. Two thirds of children 172 (65.4 %) on mixed feeding did not have any illness two weeks prior to the study. Feeding practices were no significantly ( $p=0.172$ ) associated with morbidity status of child.

Over half of children who were predominantly breastfed 59 (79.7%), were fully immunized for age. Slightly over half of those on mixed feeding were also fully immunized 152 (57.8 %). This difference in distribution of feeding practices was significantly ( $P= 0.001$ ) associated with immunization status of children (Table 15).

**Table 14. Mode of Feeding By Morbidity and Immunization Status.**

Mode of feeding.	Morbidity status		Immunization status.	
	Children sick n=123	Children not sick n =214	Complete immunization n= 211	Incomplete immunization n=126
Exclusive / Predominant breast feeding (n=74)	32 (43.2 %)	42 (56.8%)	59 (79.7 %)	15 (20.3 %)
Mixed feeding. (n=263)	91 (34.6%)	172 (65.4 %)	152(57.8%)	111(42.2%)
	$X^2= 1.861$ . P value= 0.172.		$X^2= 11.869$ . P value= 0.001.	

### 3. Growth Monitoring and Birth Spacing.

Predominant breastfeeding 43 (58.1%) rates were higher among children who were taken for growth-monitoring clinics, while mixed feeding rates were higher among children who did not attend growth-monitoring clinics 151 (57.4 %). High rates of predominant breastfeeding were significantly ( $P=0.018$ ) associated with attendance of growth monitoring clinics. Predominant breast-feeding was not significantly ( $p= 0.87$ ) associated with birth spacing (Table 16).

**Table 15. Mode of Feeding By Growth Monitoring Attendance And Birth Spacing.**

Mode of feeding.	ANC attendance.		Birth spacing.		
	Attended ANC	Not attended ANC	< 12 months	12-24 months	>24 months
Exclusive /predominant breast feeding (n=74)	43 (58.1%)	31 (41.9 %)	20 (27 %)	14 (16.9 %)	40(54.1%)
Mixed feeding (n=263)	112 (42.6 %)	151 (57.4%)	72 (27.4%)	43 (16.3 %)	148 (56.3 %)
	$X^2=5.60$ P value= 0.018.		$X^2=0.27$ p value=0.870		

#### 5.2.2. Distribution of Feeding Practices And Selected Maternal and Household Factors.

Selected maternal and household factors were cross - tabulated with feeding practices of index children to ascertain whether there was any relationship.

## 1. Age and Parity of Respondents.

Predominant breast-feeding rates were significantly ( $P = 0.021$ ) higher among young mothers (19-25 years) (56.8 %), compared to old mothers (26 – 35 years) (40.5 %). It was also found that, mothers of low parity (<3) significantly ( $p=0.013$ ) practiced predominant breast-feeding (83.8 %), more than mothers of high parity (>3) (16.2%) (Table 17).

**Table 16. Mode of feeding by maternal parity.**

Mode of feeding.	Maternal parity		
	< 3 children	4-6 children	>6 children.
Exclusive/Predominant breast feeding(n=74)	62 (83.8%)	11 (14.9 %)	1(1.4%)
Mixed feeding.(n=263)	176 (66.9%)	68 (25.9%)	19 (7.2%)
$X^2 = 8.567$ . P value=0.013.			

## 2. Marital Status of Mother.

Predominant breast-feeding rates were high among married respondents (79.7 %) compared to the singles (14.9 %) and widowed / separated (5.4 %) respondents. Mixed feeding rates were also high among married respondents (82.5 %) compared to singles (15.6%) and widowed/ separated respondents (1.9 %) who practiced mixed feeding. However this difference in distribution of feeding practices by respondents' marital status was not statistically significant ( $P=0.255$ ).



### 3. Maternal Level of Education and Occupation.

Among the respondents who practiced predominant breast-feeding, 29 (39.2 %) of mothers had attained complete primary education, 15 (20.3%) had complete secondary education and 14 (18.9 %) had incomplete primary education. A few mothers with no formal education 8 (10.8 %), college education 23 (6.8 %) and incomplete secondary education 14 (4.1 %) also practiced predominant breast-feeding.

Mixed feeding was also practiced more by respondents with lower level of education (primary education) 211 (62.2 %), compared to those with secondary and post secondary level of education 70 (20.6%), but was low among respondents with college education 34 (9.9%), incomplete secondary education 25 (7.3 %) and no formal education 16 (4.6 %). However there was no significant association ( $p=0.30$ ) between distribution of feeding practices and maternal level of education (Table 18).

Rates of predominant breast-feeding were high among respondents with salaried occupation (37.8%), self employed (20.3%) and farmers (21.6 %) but low among house wives (unemployed) (18.9 %) and those of other various occupations (1.4%).

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MEDICAL

Mixed feeding rates were also high among house wives who were unemployed (25.5%), employed respondents (18.9 %) and self employed respondents (17.5 %) but low among respondents who were farmers (12.9%) and other occupations (2.3 %) (Table 18).

However there was no significant association between feeding practices and maternal occupation ( $P=0.32$ ).

**Table 17. Mode of Feeding By Respondents' Level of Education and Occupation.**

Maternal characteristics.	Mode of feeding	
	Exclusive /pred.B/feeding n=74	Mixed feeding n=263
<b>Education.</b>		
No formal education	8(10.8%)	12(4.6%)
Primary complete	29(39.2%)	112(42.7%)
Primary incomplete	14(18.9%)	39(19.5%)
Secondary complete	15(20.3%)	54(20.6%)
Secondary incomplete	3(4.1%)	19(7.3%)
College education.	5(6.8%)	26(9.9%)
$X^2 = 6.06.$		$P \text{ value} = 0.300.$
<b>Occupation.</b>		
Salaried	28(37.8%)	14(18.9%)
Unemployed	14(18.9%)	67(25.5%)
Self employed	15(20.3%)	46(17.5%)
Farmers	16(21.6%)	34(12.9)
Others.	1 (1.4%)	6(2.3%)
$X^2 = 4.68.$		$P \text{ value} = 0.320.$

#### 4. ANC Attendance.

Large proportion 72(97.3%) of mothers who practiced predominant breast feeding attended ANC, where as a large proportion of mothers who practiced mixed feeding 258(98.1%) also attended ANC (Table 19). This difference in distribution of mothers feeding practices by respondents ANC attendance was however not significant ( $p=0.669$ ).

#### 5. Access to Information on Infant Feeding Practices.

High rates of predominant breast-feeding were found among respondents who had access to information on feeding practices 234 (68.9 %). Mixed feeding was highly practiced by mothers who got information on infant feeding 186 (54.6 %) (Table 19).

The observed difference in feeding practices among mothers during the first six months of baby's life was significantly ( $P < 0.05$ ) associated with information access by respondents on feeding practices.

**Table 18. Mode Feeding by Maternal ANC Attendance and Access to Information on Feeding Practices.**

mode of Feeding.	ANC attendance		Access to feeding information.	
	Attended	Did not attend .	Access to information.	No access to information.
Exclusive / Predominant breast-feeding. (n=74)	(72) 97.3 %	(2) 2.7 %	(51) 68.9 %	(23) 31.1 %
Mixed feeding.(n=263)	(258) 98.1 %	(5) 1.9 %	(144) 54.6 %	(119) 45.4 %
	$X^2 = 0.182.$ P value = 0.669.		$X^2 = 12.75.$ P value = 0.0004.	

## 6. Feeding Practices and Sex of Household Head.

Predominant breast-feeding rates were higher among mothers from male-headed households 308(90.5 %), compared to 32(9.5 %) in the female-headed households.

Mixed feeding was also highly practiced among mothers from male-headed households 324(95.4 %), compared to only 16(4.6 %) from female headed households. However there was no significant ( $p = 0.107$ ) association between mode of feeding practiced by mothers and the sex of the household head.

## **7. Number of Children Less Than Five Years in the Household.**

Respondents who predominantly breast-fed their children, had at least one child less than 5 years 179 (52.7 %), and only 161 (47.3 % of mothers had 2-3 children less than 5 years. High rates of mixed feeding were found among respondents with 2-3 children 176 (51.7 %), compared to only 162 (47.5 %) of respondents with one child less than 5 years. However this observed difference feeding practices among children aged less than five years was not statistically significant ( $P = 0.576$ ).

### **5.2.3. Feeding Practices and Nutritional Status of the Children.**

It was observed that, only 33.3 % of children who practiced predominant breastfeeding were stunted, while 35.5% on mixed feeding were stunted (Table 20). Only 20.5 % of children who practiced predominant breast-feeding were underweight, while 20.2 % of children on mixed feeding were underweight (Table 20). A very small proportion (4.1 %) of children who practiced predominant breast-feeding was wasted, while only 7.9 % of children on mixed feeding were wasted (Table 20). This difference in distribution of nutritional status of children by feeding practices was however not significant. ( $P = 0.27$ ). Therefore the research hypothesis was accepted ( $p > 0.05$ )

**Table 19. Relationship between Feeding Practices and Nutritional Status of the Children.**

Score	Exclusive/ Predominant breast-feeding. (n= 72)		Mixed feeding (n= 251).		X <sup>2</sup>	p value.
	n	%	n	%		
<b>HAZ (-2)</b>						
Stunted.	24	33.3	89	35.5	0.111	0.74.
Normal.	48	66.7	162	64.5		
<b>WAZ</b>						
Underweight.	15	20.5	53	20.2	0.006	0.94
Normal.		58	79.5	210		
<b>WHZ</b>						
Wasted.	3	4.1	20	7.9	1.245	0.27
Normal	70	95.9	233	92.1		

- Stunted, Underweight, Wasted defined as -2SD HAZ, WAZ & WHZ respectively.

## **CHAPTER SIX: DISCUSSION.**

This chapter discusses the findings on infant and young children (0- 36 months) feeding practices, nutritional status and the factors determining these feeding practices.

Inferences and comparison with other studies from elsewhere is done to explain these results.

This study showed that, exclusive breastfeeding is rarely practiced contrary to Infant and Young Child Feeding Policy recommendation. Other feeds are introduced early before age of six months. The reasons given for this early introduction of feeds vary across cultures. Therefore it is not practically possible for mothers to practice exclusive breastfeeding for as short as six months without introducing other fluids including water and semi solid foods.

### **6.1. Infant And Young Child Feeding Practices.**

Nationally the rate of exclusive breast feeding by six months is 2.7%, with early introduction of other feeds including water and semi solid foods<sup>53</sup>. According to focus group discussion, it was established that, exclusive breast feeding is only practiced for less than a month, with introduction of other feeds at 1-2 months by most mothers in this community. The mothers gave various reasons for this failure to practice exclusive breast feeding. These included inadequate milk, advice by the health workers, relatives and friends. Continued breast feeding to the age of 2years was practiced and some times practiced up to 3 years and beyond.

Food stuffs commonly used for complementary feeding include porridge, fruit juices, vegetables, mashed foods, cow milk and beverages. The mothers reported that, the children were not fed on ugali, eggs and millet to avoid the children developing hard stool, growing big stomachs, grey hair and diarrhoea.

The practice of giving early feeds, such as teas, sugar water, and juices to breastfed infants in the first months is widespread throughout the world. This practice often begins in the first month of life. Research conducted in the outskirts of Lima, Peru showed that 83 percent of infants received water and teas in the first month<sup>37</sup>. Studies in several communities in Gambia, the Philippines, Egypt, and Guatemala reported that over 60 percent of newborns were given sugar water and / or teas<sup>1, 4</sup>.

A study done in Malawi found that, majority of Malawian children are given complementary food much too early<sup>33, 48</sup>. In the same study only 3% of children under the age of six months were exclusively breastfed. Solid or mushy food was introduced as early as one month to about 25% of children, contrary to WHO recommendations<sup>33</sup>.

This study was carried out in a rural set up, where mothers' typically breast feed their children for long periods compared to their urban counter parts. There is evidence to suggest that urban mothers or those with some years of education breastfeed for shorter durations than do rural or uneducated mothers<sup>26, 33</sup>. But, even though they may breastfeed for shorter durations, educated mothers often have an economic advantage

over their counterparts, which enables them to provide more nourishing food, so that their children tend to be better nourished<sup>23</sup>. Some mothers misguidedly introduced other foods very early, for fear their children are not adequately fed on breast milk alone<sup>44</sup>

Some health workers in the study area recommend early introduction of complementary feeds, especially when mothers express concerns about inadequate milk production<sup>41</sup>.

Maternity based ad hock evidence also suggests that, some health workers recommend early introduction of complementary feeding, especially when mothers express anxiety about the adequacy of their milk flow. The advice of health care providers may also have influenced the use of water. For example, a study done in a Ghanaian city found that 93 percent of midwives thought that water should be given to all infants beginning on the first day of life. In Egypt many nurses advised mothers to give sugar water after delivery<sup>17,49</sup>.

Early introduction of complementary food is undesirable, because it interferes with breastfeeding. Breast milk is the balanced food for the human infant before the age of 6 months. Infants who are given complementary food too early may not feed at the breast vigorously because they may be too full, and therefore they may get fewer nutrients than recommended. This is especially true in many developing countries, where the complementary food is often of lower nutritional value than breast milk<sup>44</sup>



Another risk of early introduction of complementary food is that of infection from contaminated food or feeding utensils. Some of the long-term risks of early complementary feeding are obesity, hypertension, and food allergies<sup>10, 27, 37</sup>.

Cultural and religious beliefs also influence supplementation in early infancy. Proverbs passed down from generation to generation advise mothers to give babies water. Water may be viewed as the source of life a spiritual and physiological necessity. Some cultures regard the act of offering water to the newborn as a way of welcoming the child into the world<sup>23</sup>.

With this kind of trend, the role of exclusive breast-feeding in providing adequate nutrition, reducing infant morbidity and mortality during the first six months cannot be over emphasized. Therefore there is need to focus on strategies of improving exclusive breast feeding through implementation of National Infant and Young Child Feeding Policy, which discourages introduction of complementary foods before age of six months<sup>50</sup>.

This study found out that, stunting, underweight and wasting rates were not associated with mode of feeding practiced during the first six months of life ( $p$  value  $> 0.05$ ) among the sampled children. Therefore research hypothesis was not rejected ( $p > 0.005$ ). These findings support research findings suggesting early introduction of complementary feeds before six months has no added advantage to nutritional status of children<sup>6</sup>.

The mothers had different reasons for introducing these foodstuffs at this early age, majority claimed were advised in the hospital 154(45.3 %), advised by parents/relatives and neighbours 97(28.5 %) with few claiming the milk was not enough 68 (20 %)<sup>13</sup>.

A large proportion of mothers 148(43.6 %) had the knowledge on the recommended duration of exclusive breast-feeding despite introducing early complementary feeds. The complementary feeds introduced were given at relative good frequency to match demands of the child. This probably led to few undernourished children despite the early introduction of complementary foods before age of six months.

A similar study done in Malawi found that, mothers had the right knowledge on breast feeding, but due to their commitments could not practice exclusive breast feeding<sup>11</sup>. In the Malawi Demographic and Health Survey (2003), 7% of those children who were still breastfeeding had their frequency of feeding reduced, when they had diarrhea, and about 25% of all children who had diarrhea were given less fluid than normal<sup>11</sup>.

Liquid, solid or mushy food is introduced as early as first or third week of life in about 98.2% of children, contrary to WHO recommendations. The timing of introducing complementary food was not significant, and children who were not given food according to the timing recommended by WHO tended to be better nourished than children who were on exclusive breast feeding for 6 months. Ideally after 6 months of age, the infant needs other food in addition to breast milk, and a delay in the introduction of complementary feeds may have undesirable consequences, such as growth faltering<sup>5</sup>.

It is possible that, because of the high awareness of the problem of under nutrition, mothers misguidedly introduce complementary food very early to prevent their children from being undernourished<sup>17</sup>. The most common type of complementary feeds in Kitui was plain water (78.1%), water glucose (20.7 %), porridge (0.3%) and animal milk (0.9 %). The food is very low in protein and energy. Nutritionist recommend that groundnut powder, eggs, milk, ground fish, or oil be added to enrich the porridge, but many families cannot afford these or not readily available. Infants and young children may also be given soft fruits that are in season, such as mangoes, papayas, oranges, and bananas.

At around 6 months, the child is introduced to the complementary diet, and by 18 months the child eats the same diet as adults<sup>27</sup>.

Another important variable measured in the study is the frequency of complementary feeding. Preparing a child's food separately requires time and extra fuel for cooking, but many rural mothers cannot afford these, so the frequency of the child's feeding depends on the number of times that the family has its meals. During focus group discussion it was established that, mothers in this community like mothers in most developing countries are engaged in many other activities besides providing care to the children. Traditionally, mothers used to cook food to be used by young children before leaving for their gardens, but this practice seems to have died out<sup>69</sup>. The qualitative findings indicated that, mothers in the study area didn't prepare any special meals for their children.

Breastfeeding beyond infancy was associated with poor nutritional status for these children. Similar results have been documented for many sub-Saharan African countries<sup>5, 11, 44</sup>. One reason could be that, when mothers are busy or away from home, they may use breastfeeding as a substitute for a regular meal. Also, older babies may sometimes refuse to eat their meals and prefer instead to latch onto the breast for a long time. Another explanation for the observed adverse association of breastfeeding and nutritional status beyond infancy is that of reverse causality, where mothers continue to breastfeed children who appear small for their age. However, the fact that children who were breastfed beyond two years were from poorer socio-economic subgroups suggests selectivity rather than reverse causality<sup>5</sup>.

During focus group discussion it emerged that, key impediments to exclusive breastfeeding cited included : -

- Maternal workload apart from nursing their babies.
- Perception that, breast milk is inadequate to meet all needs of a baby.
- Mothers have been down trodden by low economic status and heavy workloads making them unable to produce enough breast milk and concentrate on nursing the baby only.
- Mothers poor health status and with less quantities of milk.

These challenges should form the basis of implementation and support for exclusive breast feeding programme in our communities at large.

## 6.2. Determinants of Infant Feeding Practices.

The study has shown that, infant and child feeding practices are influenced by socio demographic characteristics such as, age of child, level of immunization and attendance of growth monitoring clinics. This showed that, as the child advanced in age, mothers tended to shift them from exclusive breast-feeding and introduce them to other foodstuffs in form of complementary feeds, though this introduction of complementary feeding was some times done very early in life. This was mainly due to the advice mothers received from health workers and close associates while attending antenatal clinic, immunization clinics and growth monitoring clinics or due to lack of knowledge all together.

The findings of this study suggest that breastfeeding patterns, morbidity, and socio-economic conditions are not important determinants of nutritional status for children in Yatta division, Kitui district. Further, the results confirm the finding from other studies that, the majority of African children are given complementary food much too early against the WHO recommendations <sup>26, 29</sup>.

In contrast, in areas where breastfeeding durations are shorter, such as Latin America and some Asian countries, the duration of breastfeeding seems to have a positive effect on child nutrition and survival <sup>29, 37</sup>. Others have found that, the beneficial effect of breastfeeding on child survival tends to be stronger within poorer subgroups <sup>37, 41</sup>. A study done in the poorer Dodoma region of Tanzania supports this; adverse effects of short durations of breastfeeding on nutritional status were found in this area, where most of the children were from low socio-economic subgroups <sup>27</sup>.

## Nutritional Status.

They found that girls were better nourished compared to boys, especially weight-for-height, particularly for the 6- to 12-month age group, but high levels of malnutrition for all nutritional indices were observed among the age group >12 – 24 months. Similar results were observed for Malawian pre-school children aged >12 – 24 months. However, studies from other countries found the opposite to be true<sup>20, 29</sup>. It is possible that, the observed sex differences could be due to the biological frailty of boys, which has been observed in many countries<sup>29</sup>.

The nutritional status of children deteriorated rapidly with age, especially during the first two years of life. The age pattern of underweight observed in this study is similar to that of other countries, such as Ghana, Togo, Zimbabwe, and Bolivia<sup>42, 44</sup>. It is clear that the nutritional status of children starts to deteriorate when they are first introduced to complementary food<sup>44</sup>.

The socio-economic status of a family is important because it determines, in most cases, the availability and quality of food for the children. The level of maternal education is also important, since educated mothers tend to follow instructions about feeding and caring for children much better than their uneducated counterparts. Educated women are more likely to use curative and preventive health services more than uneducated women<sup>4</sup>.

## CHAPTER SEVEN: CONCLUSION AND RECOMMENDATIONS.

### Conclusion.

Proper Infant and young child feeding practices are dismal through out the world and are so in developing countries. The findings of this study suggest that, Infant and young child feeding practices in Yatta division of Kitui District are improper compared to Kenya National Policy recommendations on Infant and Young Child Feeding practices<sup>56</sup>, despite the mothers level of knowledge. The infants and young children are introduced to other foodstuffs too early before age of 6 months, making them more likely to be malnourished or be exposed to infections associated with contamination, than those who are introduced after six months of age according to WHO-recommended timetable<sup>25</sup>.

It was also concluded that, the majority of mothers had the right knowledge on proper infant feeding practices, but they did not apply the knowledge to feed their infants.

This led to early introduction of other feeds, thus interfering with the practice of exclusive breast feeding. The same finding were observed in other parts of Africa like Nigeria, Zimbabwe, Tanzania and Ethiopia and parts of Latin America where exclusive breast feeding is minimally practiced with majority of mothers practicing early introduction of other feeds besides breast milk<sup>22,27, 69</sup>.

In a rural set up, the mothers are overburdened with many other domestic chores making it difficult for them to practice recommended feeding practices. The mothers also have the perception that, breast milk alone is inadequate to meet all nutritional needs of the

They found that, exclusive breast feeding is rarely practiced; only 1.8% of mothers practiced exclusive breast feeding, 20.2% practiced predominant breast feeding and 78.0% practiced mixed feeding. Breast feeding was also continued up to 2 years besides complementary feeding by majority of mothers. This is the common observed trend in the developing countries, and especially in the rural areas where mothers live in extreme poverty, poor sanitation and poor nutritional status. These extremes most often compel the mothers to introduce their children to early complementary feeding. The same findings were observed in other studies conducted in Tanzania, Zimbabwe and Uganda.<sup>30, 34, 41,44,50,69</sup>

It was concluded that, infant and young child feeding practices are significantly associated with age of child, immunization status and growth monitoring. Maternal factors also significantly ( $p < 0.05$ ) associated with infant and young child feeding practices are maternal parity and access to information on infant feeding.

It was also established that, some children suffered some ailments, over a half of whom sought medical treatment from a health facility, but morbidity status was significantly ( $p > 0.05$ ) associated with feeding practices of the children.

It was established that, malnutrition is still a major problem in Kitui district. The malnutrition status was determined using the Z- score, where all the children whose indices



fall below – 2sd were classified as malnourished. The study found out that, 33.5% of children were stunted, 6.8% were wasted and 20.3% were underweight.

## **7.2. Recommendations.**

In order to achieve optimal infant and young child feeding practices, it's important to support the mothers, community and health workers by empowering them with proper skills on infant and young child feeding practices. The following recommendations have been derived from the findings of this study.

1. Mothers practiced improper infant and young child feeding practices. It is recommended that, health workers working in maternity units, MCH/FP clinics and also community health workers and public health officers in the field should spearhead the process in advocating and encouraging mothers to practice the recommended infant and young child feeding practices despite their social status.
2. The study also established that, majority of mothers have the right knowledge on infant and young child feeding practices, but they rarely practiced it. Therefore, it is recommended that, the nutritionists, health workers and other stake holders should continue the advocacy on the appropriate feeding practices and encourage mothers to form mother to mother support groups on breast feeding and infant feeding within the community. This will encourage the mothers to practice appropriate infant and young feeding practices.
3. Mothers introduced their children to other feeds too early before the age of six months recommended for exclusive breast feeding. It is recommended that, nutritionist, health workers and other stake holders should vigorously advocate

the importance and benefits of exclusive breast feeding for six months and discourage early complementary feeding by pointing out its disadvantages to both the mother and the child.

4. These being a rural set up mothers are over burdened with many domestic chores and poor economic status, making it difficult for them to practice exclusive breastfeeding for the first six months. It is recommended that, through the Ministry of Culture and Social Services, mothers be empowered by supporting them to establish income generating activities in order to improve their economic capability and the ability to make the right choices when feeding their children.
5. Exclusive breast feeding was rarely or not practiced at all by the mothers. It is recommended that, nutritionists, health workers in MCH/FP clinics and maternity units and other stakeholders should promote and protect the practice of exclusive breast feeding by advocating the advantages of the practice to the breast feeding mothers.
6. Mothers who took their children for immunization, growth monitoring and attend ANC, and had access to information on infant feeding, practiced appropriate feeding practices. It is recommended that, public health officers, field nutritionists, community health workers and health workers in hospitals and all other stake holders should strive to make immunization services, growth monitoring and ANC services accessible to community.
7. Children suffered some ailments which required attention at health facilities. It is recommended that, public health workers through the provincial administration should sensitize the community on optimal utilization of existing health facilities

for treatment of common childhood ailments, antenatal clinics, immunization and growth monitoring services.

8. Childhood malnutrition is still a major problem in this part of the country. It is recommended that, public health officers, nutritionists and field health workers establish growth monitoring centers in order to do early detection, rehabilitation and sentinel surveillance.
9. Some health workers encouraged the practice of early introduction of other foods before the age of six months. It is recommended that, the department of nutrition and reproductive health in Ministry of Health, should sensitize health workers especially those working in MCH/FP clinics and maternity units through:-
  - Continuous education to update them on current knowledge on breast feeding and complementary feeding practices.
  - Creating awareness on BFHI, to protect, promote and support breastfeeding and discourage bottle-feeding by training health workers on exclusive breast feeding and complementary feeding, as stated by WHO / UNICEF in 1992 during launch of Baby Friendly Hospital Initiative.
  - Establishing comprehensive antenatal and postnatal clinics for women and children, providing curative, prophylactic and disseminating information on feeding practices and growth monitoring.
  - Establishing level of knowledge of health workers who are responsible for teaching mothers about feeding and caring for their children, because properly trained health workers are vital to any programme involved in

improving mothers' knowledge of appropriate feeding practices. Very few mothers in Kenya follow the recommended practice of exclusive breastfeeding of infants under the age of 6 months, so this is one area where efforts should be concentrated.

10. This study did not control for confounding effects, which I acknowledge must have played a role in the out come of these results. It is recommended that, further studies on the same should be carried out by future researchers controlling for the confounding effects in order to control for the validity of study results.
11. The study found out that, boys was more malnourished compared to girls and especially in terms of weight for age Z score. It is therefore recommended that, further studies by other researchers need to be carried out to establish whether there are other factors favoring this kind of phenomenon.

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**ENDIES.**

**QUESTIONARE.**

**UNIVERSITY OF NAIROBI.**

**DEPARTMENT OF COMMUNITY HEALTH.**

**ASSESSMENT OF NUTRITIONAL STATUS AND FEEDING PRACTICES OF  
CHILDREN AGED 0-36 MONTHS IN YATTA DIVISION OF KITUI DISTRICT.**

**QUESTIONNAIRE.**

**QUESTIONNAIRE NO** [ ] / [ ]

**HOUSEHOLD NUMBER** [ ] / [ ]

**AREA** \_\_\_\_\_

**INTERVIEW DATE.** DD \_\_ M \_\_ YR \_\_\_\_\_

**INTERVIEWER'S NAME** \_\_\_\_\_

**INSTRUCTION TO INTERVIEWERS.**

Ensure that the respondents to this questionnaire are the biological mothers of the children who at the moment have a 0-36 months old child.

For questions with alternatives fill in the number bearing the responses in the boxes provided.

Don't suggest responses for respondent.

Anthropometric measurement will be taken for all children aged 0-36 months.

**SOCIO -DEMOGRAPHIC INFORMATION:**

Date-----/-----/2003.

1. Name of household head \_\_\_\_\_

2. Name of respondent \_\_\_\_\_

3. Sex of respondent: 1= Male, 2=Female, [ ]

4. Age of respondent: [ ] years.

5. Religion of respondent:

1=Christian, [ ]

2=Moslem,

3= Traditionist

6. Marital status of respondent:

1= Married.

2=Single.

3=Widowed.

4= Divorced.

5= Separated.

6= *iwetto* (woman married by a woman).

[ ]

### 7. HOUSEHOLD COMPOSITION.

NO.	SEX.	AGE.	RHH/H	EDUC.	OCCUP.

**CODES.**

**SEX**

1= Male.  
2= Female

**R/HH/H**

1 = wife.  
2 = Son. .  
3 =Daughter  
4 = Grandchild.  
5 = Parents of HH/H  
6 =Niece.  
7 = Nephew.  
9 = head of household.  
10 = cousins.

**OCCUPATION.**

1=Salaried employment.  
2 = Unemployed.  
3 = self-employed.  
4 = Farmer.  
5 = Student.  
6 = None.  
7 = housewife.  
8 = business lady  
[ ]

**EDUCATION.**

0 = No formal education.  
1 = Primary complete.  
2 = Primary incomplete.  
3 = Secondary complete  
4 = Secondary incomplete.  
5 = College complete.  
6 = College not complete.

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## INDEX CHILD HISTORY.

8). Date of birth DD \_\_\_ MM \_\_\_ YY \_\_\_\_\_ (Age in months) [     ].

9). Where was the child born?

1 = Public hospital/Health center.

2 = Private hospital.

3 = At home alone.

4 = At home assisted by TBAS.

5 = At home assisted by neighbors. [     ].

10) The duration of birth spacing between this child and the immediate older child is [     ] (months).

11). What is the birth order of this index child? [     ]

# UTILIZATION OF MOTHER AND CHILD

12). Check for  Prim  Sec

Vaccination	
BCG.	Bir
POLIO.	
DPT.	
MEASLES.	*** ***

13). Is the child fully immunized?

- 1 = Yes
- 2 = No (child)

14). Is the child still attending?

- 1 = Yes.
- 2 = No.

(15). If NO at what age did you stop?

- 1 = 2-3 months.
- 2 = 3-5 months.
- 3 = 6-7 months.
- 4 = 8-9 months.

**UTILIZATION OF HEALTH SERVICES AND MORBIDITY PROFILE OF MOTHER AND CHILD IN THE PAST TWO WEEKS.**

12). Check for primary immunization (Please tick).

Vaccination	Birth	6 weeks	10 weeks	14 weeks	9 months
BCG.		****	****	****	****
POLIO.					****
DPT.	****				****
MEASLES.	****	****	****	****	

13). Is the child fully immunized for age?

1= Yes    2=No (check immunization card)    [   ]

14). Is the child still attending well baby clinic?

1= Yes.    2= No.    [   ]

(15). If NO at what age did you stop taking child for growth monitoring?

1 = 2-3 months.

2 = 3-5 months.

3 = 6-7 months.

4 = 8-9 months.

5 => 9 months.

[ ]

16). Why did you stop at that age?

1 =. Child was old enough.

2 =. Advised by TBAS.

3 =. Advised in the clinic.

4 =. Clinic too far.

5 =. Mother too busy.

6 = mother lacks knowledge.

[ ]

17). Does this child suffer from any chronic illness?

1= Yes.

(1). Asthma. [ ]

(2). Epilepsy. [ ]

(3). T.B. [ ]

(4). Diarrhoea. [ ]

2= No.

18). Has the child suffered from any disease in the past two weeks (2weeks).

1= Yes,

2= No.

[ ]

(IF NO TO QUESTION 18, SKIP TO QUESTION 26).

19). (If yes in 18), which illness,

- 1 = Diarrhea. [ ]
- 2 = Fever. [ ]
- 3 = Running Nose. [ ]
- 4 = Cough. [ ]
- 5 = Vomiting. [ ]
- 6 = febrile convulsions. [ ]
- 7 = Malaria. [ ]

20). What action did you take?

- 1 = bought drugs. [ ]
- 2 = took child to hospital. [ ]
- 3 = gave home remedies. [ ]
- 4 = I prayed. [ ]
- 5 = took the baby to traditional healer. [ ]

21). Did you withhold breastfeeding this child during that period?

- 1 =. Yes.
- 2 =. No. [ ]

22). If yes in (21), why? Give reasons.

- 1 =. Child refused. [ ]
- 2 =. Too sick. [ ]
- 3 =. Vomiting. [ ]
- 4 =. Advised in the clinic. [ ]
- 5 =. Advised by the relatives. [ ]

23). Where there any foodstuffs withheld during the illness?

1= Yes.

2= No [ ]

24). If yes in (23), which foodstuffs?

- 1=. Porridge plain. [ ]
- 2=. Enriched porridge. [ ]
- 3=. Mashed potatoes. [ ]
- 4=. Mashed fruits. [ ]
- 5=. Animal milk. [ ]

25). Why did you withhold these foods?

- 1= the child refused [ ]
- 2= child too sick. [ ]
- 3= cultural practice. [ ]
- 4= child was vomiting. [ ]

5= advised at the clinic. [ ]

6= advised by relatives. [ ]

**MATERNAL CHARACTERISTICS.**

26). How many children (alive) do you have? [ ]

27). How many of your children are under five years of age? [ ]

28). Did you attend the ANC clinic during the pregnancy of this index child?

1= Yes.

2= No. [ ]

If yes 28, name of the facility \_\_\_\_\_

29). If Yes (28), at what gestation did you start attending the ANC clinic?

1=. 1-3 months.

2=. 4-6 months.

3=. 7- 9 months.

4=. Didn't attend. [ ]

30). How many times in all did you attend the ANC clinic?

1=. Once.

2=. Twice.

3=. Thrice.

4=. Four.

5=. Five.

6 =. More than five times. [ ]

31). At the ANC clinic were you given information on infant feeding?

1= Yes.

2= No. [ ]

32). What is/ are your main source/s of information on child feeding?

1= relatives. [ ]

2=ANC clinic. [ ]

3= TBAS. [ ]

4= Neighbours. [ ]

5= read books. [ ]

6 = I learned in school. [ ]



33). Who mainly takes care of the child when you are away from home?

1= father. [ ]

2= siblings < 12 yrs. [ ]

3= siblings > 12 yrs. [ ]

4= grandmother. [ ]

5= friends. [ ]

6= house help. [ ]

7= Neighbors. [ ]

8= normally goes with the mother. [ ]

9= the baby is left alone at home. [ ]

**BREASTFEEDING AND COMPLEMENTARY FEEDING PRACTICES.**

34). Are you currently breastfeeding the index child?

1= yes.

2= no. [ ]

35). How soon after birth, did you breastfeed your baby?

1= within 1/2 hour.

2= 1<sup>st</sup> hour.

3= 1- 6 hours.

4= > 6 hours.

5 = 2 days. [ ]

36). Did you experience any problem (s) while breast-feeding the index child?

1= Yes.

2= No. [ ]

**(IF QU. 36 NO, SKIP TO QU 39)**

37). Which problems did you experience while breastfeeding your index child?

1= insufficient milk. [ ]

2= insufficient time to breastfeed. [ ]

3= baby crying a lot and refusing to breastfeed. [ ]

4= baby choking while breastfeeding. [ ]

5= diseases of the breasts. [ ]

6= none. [ ]

38). What did you do?

1= sought medical treatment. [ ]

2= stopped breastfeeding. [ ]

3= self-medication. [ ]

4= advised by grand mother/ neighbour/ relatives. [ ]

5= attended by TBAS.. [ ]

6= gave supplements. [ ]

7= sought assistance of traditional healers. [ ]

39). How did you breastfed this child in the first 4 months?

1= Exclusive breast-feeding.

2= predominantly breastfeeding.

3= Mixed feeding.

4= predominant feeding. [ ]

40). Why did you feed your child as you indicated above?

1= advised in the ANC clinic.

2= advised by friends.

3= advised by TBAS.

4= advised my mother/ mother in law.

5= learned in school. [ ]

41). Has this child been introduced to other foodstuffs?

1= Yes.

2= No. [ ]

42). What foods and drinks was the child first introduced, at what age, and what method of feeding did you use?

TYPE OF FOOD.	METHOD.	AGE.
Beverages.		
1.		
2.		
Semisolids.		
1.		
2.		

Types of food

Age food introduced.

Method of feeding..

1= plain water.

1=1/52 -3/52

1 = sprout cup.

2= water + glucose. (Sugar). 2= 4/52- 6/52.

2 = cup.

3= porridge (enriched).

3= 1 1/2 -3 months

4= mashed foods 3= cup spoon/bowl.

4 =hand feeding.

5=mashed fruits

5= feeding with

bottle.

6= animal milk.

43). Why did you decide to introduce food at that age?

- 1 = advised at the hospital/ ANC clinic. [ ]
- 2 = advised by grand parents/ relatives/ neighbour. [ ]
- 3 = breast milk was not enough. [ ]
- 4 = going back to work. [ ]
- 5 = mother was sick. [ ]
- 6 = child was old enough. [ ]
- 7 = child crying a lot. [ ]
- 8 = child not growing fast enough. [ ]
- 9 = child started to feed with the others. [ ]

44). How long should a child be exclusively breastfed only?

- 1. 1 month.
- 2. 2 months.
- 3. 3 months.
- 4. 4 months.
- 5. 5 months.
- 6. >\_ 6 months. [ ]

45). Did you prepare special meals for this child during the first year of life?

1 = Yes.

2 = No.

[ ]

46). (If yes 45) how often?

1 = Always.

2 = Sometimes.

[ ]

47). Are there any foods that are not given to children at any age for any reason in this community?

1 = Yes.

2 = No.

[ ]

48). If (47) yes which foods and why?

FOODS.

AGE

REASONS.

1= Ugali

1= < 12 months. 1= The stomach will grow big.

2= Eggs

2= < 3 months. 2= The hair will become grey.

3 = Millet porridge.

3= > 3Months. 3= Develop hard stool.

4 = Cow milk.

4= develop diarrhea.

FOOD

AGE

REASON

[ ]

[ ]

[ ]

[ ] [ ] [ ]  
[ ] [ ] [ ]

49). How is the child's food mostly served and eaten?

- 1 = feeds self. [ ]  
2 = fed by the sibling. [ ]  
3 = fed by mother and others. [ ]  
4 = fed by father. [ ]

50). Apart from breast milk, how often is the child fed in a day?

- 1 = once.  
2 = twice.  
3 = thrice.  
4 = four times.  
5 = > four times. [ ]

(51). How often is the baby fed on foods from the following food groups in a day?

**FOOD**

**CODES**

- |   |                   |
|---|-------------------|
| Animal feeds (eggs, meat, ofals) [ ]          | 1 = once daily.   |
| Milk and milk products (cow milk, mala,) [ ]  | 2 = Twice daily   |
| Cereals (maize, millet, sorgum) [ ]           | 3 = thrice daily  |
| Legumes (beans, peas, ) [ ]                   | 4 = once a week.  |
| Roots & tubers. (Sweet potatoes, cassava) [ ] | 5 = twice a week. |

Fruits (mangoes, oranges, lemons) [ ] 6 = 3 times a week.

Vegetables (cabages, spinach, green leaves [ ] 7 = occasionally.

Fats/ oils / magarine (blue band, cream, )[ ] 8 = never.

(52). In your opinion, what foods do you consider best for children under 36 months?

1. Beans. [ ]

2. Rice. [ ]

3. Ugali. [ ]

4. Milk. [ ]

5. Porridge. [ ]

(53). What do you do when the index child refuses to eat?

1= force to feed. [ ]

2= give some thing they like. [ ]

3= stop and try feeding later. [ ]

4= persuade to feed. [ ]

5= change the feeding time. [ ]



**PART II**

DOB: - DD \_\_\_\_\_ M \_\_\_\_\_ YR \_\_\_\_\_      AGE IN MONTHS [    ]

DOI: -    DD \_\_\_\_\_ M \_\_\_\_\_ YR \_\_\_\_\_

**ANTHROPOMETRIC MEASUREMENTS.**

**Tolerance levels**

Wt= 0.1kg

Ht= 0.5cm.

Measurement.	1 <sup>st</sup> reading.	2 <sup>nd</sup> reading.	Average.
Weight in kg.			
Length/ height (CM).			
MUAC in CM.			

**APPENDIX II: FOCUS GROUP DISCUSSION AND KEY INFORMANT INTERVIEWS.**

Name of the moderator \_\_\_\_\_

Name of assistant moderator \_\_\_\_\_

Venue of FGD \_\_\_\_\_

Date of FGD \_\_\_\_\_

Time of FGD. \_\_\_\_\_

Time FGD ended \_\_\_\_\_

Number recruited for FGD \_\_\_\_\_

Number attending \_\_\_\_\_

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### Demographic Characteristics of Discussants.

Name.	Age	Religion	Education.	Parity.	Occupation.

### FGD GUIDELINES.

1). What activities are mothers involved in this community?

(Probe: How these activities influence care especially feeding of young children).

2). Who cares for children in this community

(Probe: How fathers provide care).

3). What are the commonest childhood diseases in this community?

(Probe: What's done when the child is sick).

4). For how long do mothers in this community breastfeed their children?

(**Probe:** Reasons for duration stated).

5). For how long do mothers exclusively breastfeed their babies in this community?

(**Probe:** Reasons for duration stated).

6). At what age of the child do mothers in this community introduce others foods other than breast milk? **WHY?** Probe for fluids and foods first introduced.

7). What problems do mothers in this community face while breastfeeding?

8). Which foodstuffs do you give to children aged 0- 36 moths in this community?

(**Probe** for reasons).

9). What are the sources of information on infant and young child feeding in this community?

10). Are there cultural beliefs or customs that regulate feeding of infants and lactating mothers in this community?

## KEY INFORMANT INTERVIEW.

1). What activities are mothers involved in this community?

(**Probe:** How these activities influence care especially feeding of young children).

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(**Probe:** How fathers provide care).

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(**Probe** for reasons).

### Appendix III: Focus Group Discussion and Key Informant Interviews Results

FGD and KII questions	Responses.
What activities are mothers involved in this community?	Farming, looking after children, looking for food and water, collecting fire woods. Business.
Who cares for children in this community?	Mothers, siblings, grand mothers, relatives and fathers rarely.
What are the commonest illness in this community & remedy?	Fever, malaria, colds, diarrhea, worms, cough, vomiting. Buy drugs; take to health facility, home remedy, .
How long mothers' breast feed in this community and why?	2-3years and introduce other feeds. Milk not enough, advised by health workers.
How long is exclusive done in this community?	2-4 months, milk not enough, advised in clinic, advised by relatives.
When do mothers introduction of other food stuffs?	1-2 months, start with plain water, cow milk, mashed foods and juices.
What problems are encountered during breast feeding?	Inadequate milk, breast diseases, inadequate time to breast feed, blockage of child nose and chocking.
What foodstuffs are given to children aged 0-36 months?	Porridge, fruit juices, ugali, vegetables, mashed foods, cow milk, beverages. Reasons, breast milk inadequate, demand from child. Advised to give by health workers, relatives and peers.
What are the sources of information on infant and young child feeding?	Clinics, relatives, neighbors, peers, school.
Do you have any cultural or customary taboos on foods fed on children aged 0-36 months?	Not fed on ugali, eggs, cow milk and millet to avoid developing hard stool, grow big stomachs, grey hair and diarrhea.
Age of delivering the first child in this community,	18-20 years.
Do mothers attend ANC clinic as required?	Majority attends, but majority deliver at home.

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