

**FACTORS ASSOCIATED WITH INTRODUCTION OF
COMPLEMENTARY FEEDING OF INFANTS BELOW SIX MONTHS, IN
MACHAKOS DISTRICT, KENYA.**

BY
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**DISSERTATION SUBMITTED IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DEGREE OF MASTER OF SCIENCE IN APPLIED
HUMAN NUTRITION IN THE DEPARTMENT OF FOOD SCIENCE,
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DECLARATION

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DEDICATION

This work is dedicated to my only and beloved daughter, Sarah N. Hassan. She has been my inspiration through my stay at campus. Her encouragement and perseverance have been exemplary. She has gone through the most critical moment of her life by turning 18 while I was at campus. I would like to thank her for enduring this time without complaining and for her courage when she has faced obstacles. I love you Sarah.

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LIST OF ABBREVIATIONS

BMI:	Body Mass Index
DO:	District Officer
EBF:	Exclusive Breastfeeding
FGD:	Focus Group Discussion
GOK:	Government of Kenya
KDHS:	Kenya Demographic and Health Survey
KNH:	Kenyatta National Hospital
MCH:	Maternal and Child Health
MGH:	Machakos General Hospital
MOH:	Medical Officer of Health
NCHS:	National Center for Health Statistics
NGO:	Non-Governmental Organization
SF:	Solid Foods
SPSS:	Statistical Package for Social Sciences
UNICEF:	United Nations Children's Fund
WHO:	World Health Organization
IgA:	Immunoglobulin A
PAHO:	Pan American Health Organization
CPS/DC/HC:	Canadian Paediatric Society, Dietitians of Canada and Health Canada

OPERATIONAL DEFINITIONS

Complementary foods: Complementary food is any nutrient-containing foods or liquids, other than breast milk, that are given to young children during the period of complementary feeding (Brown et al., 1998).

Complementary feeding: Complementary feeding is the art of feeding, during which foods or liquids are provided along with continued breastfeeding to infants.

Exclusive breastfeeding: Exclusive breastfeeding means exclusive feeding of the baby with breast milk only, for the first six months.

Early complementary feeding: Introduction of others foods and fluids to infants less than 6 months old.

Underweight: Underweight is defined as low weight for age at less than 2 standard deviation of the median value of the NCHS international reference.

Morbidity: Refers to the incidence of any illness reported for the infants.

Colic pains: are pains associated with some babies during the first 3-4 months of life.

Symptoms are characterized with: infant crying for long periods despite efforts to console and occur around the same time each day or night, often after meal times and usually ending as abruptly as they begun. There are signs of gas discomfort, abdominal bloating and a hard,

distended stomach, with knees pulled to the chest, clenched fists and an arched back (T.A. Lawrence, 2000).

ABSTRACT

Breastfeeding and complementary feeding practices are crucial for optimal growth and development during infancy. Optimal feeding practice in the first year of life is crucial for the survival and health of infants, and has long-term consequences in later life. However, non-optimal feeding practices exist widely in Machakos. The present study therefore aimed at finding out factors associated with early introduction of complementary feeding for the life of infants in Machakos district, Kenya.

A cross-sectional study was conducted in Machakos district between August and September, 2006. One hundred seventy four mothers who were residents of Machakos district, with infants aged 0-6 months were randomly chosen from Machakos General Hospital.. A structured questionnaire was used to collect data regarding the feeding practices and factors related to early introduction of complementary feeding. Anthropometric measurement consisting of weight and height were taken from mothers and their infants. Data entry, cleaning and analysis was done using SPSS version 12.01 and EPI-NUT version 6 software packages.

The results of the analysis indicated that the prevalence of underweight among infants in the district was 4%, of which 1.1% were male infants and 7.4% female infants. . Among determinants investigated in this study, age of the mother, marital status of the mother and knowledge gained at the MCH clinic were factor found to be significantly associated with introduction of complementary feeding. The study established that higher proportion of younger mothers introduced complementary feeding early compared with the older mothers ($p < 0.05$). It was also noticed that a bigger percentage of single mothers introduced complementary foods early ($p < 0.05$)

compared to the married mothers. The major contributory factors however were experience and knowledge the older and married mothers had gained over time. The study also revealed that the teaching at the MCH clinic touching on breastfeeding and age of introduction of complementary feeding were significantly associated with the early introduction of complementary feeding ($p < 0.05$). Although not significant, data showed that more businesswomen tended to introduce complementary feeding early. The results of the case studies indicated that regardless of the mothers occupation or workload, they all introduced complementary feeding early. Housewives however, introduced complementary feeding both early and at 4-6 months. Slightly high proportion of mothers started introducing complementary feeding at the recommended age when they got information from the MCH clinic. This shows the relevance of intensified training at the MCH clinic.

The main reasons given by the mothers for introducing complementary feeding early were not having enough milk, job employment and reduction of colic pains. It was proposed that further research needed to be done on the colic pains and the “insufficient milk syndrome”

In conclusion, the study revealed that there was a significant association between age of introduction of complementary feeding and the content of lesson learnt at MCH clinic. Therefore, training of mothers at the MCH clinic should be intensified.. Additional time in between the day for training of more mothers at MCH clinic on these optimal infant feeding lessons is highly recommended.

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Adequate nutrition during infancy and early childhood is fundamental to the development of each child's full human potential. It is well recognized that the period from birth to two years of age is a critical window for the promotion of optimal growth, health and behavioral development.

Malnutrition is responsible globally for 60% of deaths among children under 5 years and is often attributed to suboptimal feeding practices (Neil Gupta et al., 2007). According to CPS/DC/HC (1998), the ideal practice for infants is exclusive breastfeeding for the first 4-6 months of life followed by optimal complementary feeding and continued breastfeeding. The period of complementary feeding is one of the most critical times for preventing malnutrition. At the crucial growth period between 4 to 6 months, more energy is needed. However, when complementary foods are introduced at this time it is important to note that the quantity and frequency of added feeds will negatively impact on breast milk intake CPS/DC/HC (1998). Malnutrition in this age health later in life. The interventions to turn the tide are known, it is estimated that 25% of all childhood deaths could be prevented by interventions to improve breastfeeding, complementary feeding, zinc and vitamin A nutrition (SCN News, 2003)

1.2 Problem Statement

Giving complementary foods too early could lead to malnutrition and other problems. If given too early the infant may not be ready to digest the food properly and it may also reduce intake of breast milk thereby losing out on appropriate energy intake for its growth. Early introduction of

complementary food replaces breast milk by food which is usually less nutritious. It increases the risk of diarrhea and other infections. Diarrhea is a major cause of morbidity and mortality among infants and young children in developing countries (UNICEF, 2002). Introduction of complementary foods too late results in an inadequate intake of energy and protein leading to poor growth, and stunting as well as iron and other nutrient deficiencies (BPNI, 2005).

Early introduction of complementary feeding for infants is a common practice in Machakos. for reasons given are still not clear, most mothers claim to introduce complementary foods early because they do not have enough milk, or the baby keeps crying, while others claim alleviation of colic pains. Some are not completely aware of the benefits of breastfeeding, or the fact that breast milk is critically required during the first 6 months. Other unclear reasons could be the workload of the mothers and their nutritional status.

1.3 Justification

The introduction of early complementary feeding implies that exclusive breastfeeding is not well practiced, exposing the infants to many infections. As a result mothers have often come to the clinic citing abdominal, respiratory and other common problems of their infants. Many of these cases on review by the doctor were attributed partly to early complementary feeding. Ignoring such feeding practice can be problematic as it may lead to long-term effects on the growth and future well being of infants. To the best of my knowledge, there has been no previous study conducted in Machakos district addressing the factors associated with early introduction of complementary feeding. To combat the health effects of early introduction of complementary feeding with the right set of interventions, policy makers need to have a better understanding of the factors associated with it. Therefore, this study was conducted to find out the factors associated with early

introduction of complementary feeding so that decision makers and NGO' working in the district will have information on the factors which would enable them to overcome the existing problems.

1.4 Aim of the Study

To reduce the proportion of mothers introducing complementary feeding early in Machakos district, thereby promoting exclusive breastfeeding during the first six months of infant life.

1.5 Purpose of the Study

The purpose of the study is to determine the factors that are associated with early introduction of complementary feeding. The findings of the study will contribute to the efforts being made to increase the proportion of mothers who exclusively breast feed for the first 4-6 months in Machakos district before they start complementary feeding.

1.6 Objectives

1.6.1 Broad objectives

To determine factors associated with early introduction of complementary feeding of infants below six months in Machakos district

1.6.2 Specific objectives

- 1) To assess the socio-economic and demographic characteristics of the study households
- 2) To determine the age of introduction of complementary feeding
- 3) To assess the reasons given for early introduction of complementary feeding
- 4) To assess the typical daily activities of the mother.
- 5) To determine the maternal nutritional status

- 6) To assess the nutritional status of infants
- 7) To determine the morbidity of the children

1.7 Hypothesis

1st Hypothesis: Majority of mothers in Machakos introduced complementary feeding at the recommended age of 4-6 months.

2nd Hypothesis: The problem of early introduction of complementary feeding is attributable to multiple factors.

1.8 Research Questions

- 1) What are the socio-economic and demographic characteristics of the study households?
- 2) At what age was complementary feeding introduced?
- 3) What are the reasons for early introduction of complementary feeding?
- 4) Does the workload of the mother affect the time she introduces complementary feeding?
- 5) Is there an association between the nutritional status of the mother and the age of initiation of complementary feeding?
- 6) What gastrointestinal disease has the infant encountered and the frequency?

1.9 Expected Benefits

The study is expected to improve the quality of life for the infants as they grow, with few interruptions of ill health through proper infant feeding practices. It is also expected to provide information to health workers and other stakeholders, which can be used to complement the efforts being made to entice mothers to breastfeed for a longer period before introducing complementary feeding. The data from the study is expected to lead to further studies if necessary and other

interventions appropriate in Machakos district aiming at maximizing the benefits derived from the study.

1.10 Limitation of the study

A comparative study should have been undertaken in one of the sub-hospitals in Machakos in order to get more conclusive results. This was not possible due to shortage of funds and time.

CHAPTER TWO

LITEERATURE REVIEW

2.1. Introduction

Nutrition and feeding practices has great impact in a child's life and on the nutritional status and well being of a child (Malla and Shrestha, 2004). Feeding practices like other forms of behavior are reset of complex personal, social cultural and economic influences, which are the determinants of the nutritional status of the children (Adrian and Danial, 1986). Appropriate feeding practices are extremely important for the growth and development of the child. These practices are age specific, with the proper adhesion to the age brackets for feeding recommended (Kengne Nouemsi et al., 2007).

2.2. Breastfeeding

2.2.1 Optimal Breastfeeding

Breastfeeding gives children the best start in life. It is estimated that over one million children die each year from diarrhea, respiratory and other infections because they are not adequately breastfed. Many more children suffer from unnecessary illnesses that they would not have if they were breastfed. Breastfeeding also helps to protect mothers' health (KNH, 1998). As regards to duration of breastfeeding, PAHO/WHO (2004), UNICEF (2002) and Linkages (2004) recommend that children should be breastfed until they reach 2 years of age, complementing their needs with safe food. Maternal milk would continue to bring energy and essential nutrients to the diet. Even more, breastfeeding will prevent dehydration, contribute IgA and other defense factors, and sustain the postpartum infertility. The prospective growth enhancing effect of breastfeeding continues into the

second year. Breastfeeding should therefore be sustained in the second year but in the low socioeconomic communities in developing countries, child survival may require mother's milk through the third year of life as well. (Cunningham et al., 1991; Lepage et al., 1981; Wojtyniak and Rowland MGM, 1988).

2.2.2 Advantages of breastfeeding

Advantages of breastfeeding and reasons for its recommendation are summarized below according to FAO 1997

- Breastfeeding is a convenient food readily available for the infant, and which needs no special preparation or equipment
- Breast milk provides a proper balance and quantity of nutrients ideal for the human infant.
- Both colostrum and breast milk have anti-infective constituents that help limit infectious.
- Breastfeeding prolongs the duration of post-partum and ovulation, helping mothers to space their children.
- Breastfeeding fosters enhanced bonding and relationship between mother and infant.
- The breastfed infants have lowered risk of allergies, obesity and certain other health problems compared with those who are artificially fed.

2.2.3 The Composition of Breast Milk

Breast milk contains all the nutrients that a baby needs for the first 4-6 months of life.

- It contains the most suitable protein and fat for a baby in the right quantities.
- It contains more lactose (milk sugar) than most other milks and that is what a human baby needs (Savage, 1985).

- It contains enough vitamins for the baby. He does not need vitamin supplement and he does not need fruit juice.
- It contains enough iron for the baby which is well absorbed from the baby's intestine. Breast-feeding babies do not develop iron deficiency anaemia.
- It contains enough water for a baby even in a hot climate.
- It contains the correct amounts of salt, calcium and phosphate (Savage, 1985).

2.2.4 Colostrum

For the first few days after delivery the breasts secrete colostrum. Colostrum is yellow and thicker than later milk, and it contains more antibodies and more white blood cells. It is exactly what a baby needs when he first comes into the world. It gives him good protection against almost all the bacteria and viruses that he will meet. Colostrum is secreted in only a small amount but it is enough for a normal baby. There are some communities in Kenya who do not allow their babies to have colostrum.

2.3 Complementary feeding

2.3.1 Introduction

Inappropriate feeding practices are a major cause of the onset of malnutrition in young children. Children who are not breastfed have repeated infections, grow poorly, are almost six times more likely to die by the age of one month than children who receive at least some breast milk. From six months onwards, when breast milk alone is no longer sufficient to meet all nutritional requirements, infants enter a particularly vulnerable period of complementary feeding during

which they make a gradual transition of introducing the child to semisolids, teaching him new textures and flavors, and they prepare the child to share the family diet.

The incidence of malnutrition rises sharply during the period from 6-18 months of age in most countries, and the deficits acquired at this age are difficult to compensate for later in childhood.

Global monitoring of the timely complementary feeding rate, defined as the proportion of children 6-9 months of age who are breastfed and receive complementary foods, shows that in all regions many children do not yet enjoy appropriate complementary feeding. The indicator is a measure of late introduction of complementary foods or premature cessation of breastfeeding or both.

Many factors contribute to the vulnerability of children during the complementary feeding period. The complementary foods are often low in nutritional quality. The complementary foods are often given in insufficient amounts, and displace breast milk if given too early or too frequently. Gastric capacity limits the amount of food that a young child can consume during each meal. Repeated infections reduce appetite and increase the risk of inadequate intakes (SCN NEWS, 2003).

2.3.2 Recommended intakes of complementary foods for infants

Full term infants, aged 4 to 6 months with appropriate weight-for-age require approximately 95-100 kcal/kg/day or in total 650-700 kcal/day. Infants fed exclusively on breast milk are reported to consume the equivalent of about 600 to 700 kcal/day (FAO/WHO/UNU) (Brown, K et al., 2001). These recommended intakes are based on healthy infants from affluent countries and include a 5% addition to cover any underestimation of breast milk intake. It is after 6 months that a theoretical gap begins to appear between the energy derived from exclusive breastfeeding and the recommended requirements. The evolving nutritional requirements of infants should therefore be

met by nutritionally adequate and safe complementary feed, while breast feeding continues for up to two years of age or beyond.

2.3.3 Controversies surrounding age of introduction of complementary foods

In recent years, the issue of complementary feeding in developing countries has been receiving increased attention in the international nutrition community. A key question relates to the timely introduction of such complementary food. There has been controversy over whether complementary feeding should commence at four or six months of age (UNICEF, 1998). The introduction of solid foods sometime during the second half of the first year for healthy full term infants has become a topic of considerable discussion. . Most Guidelines like those of PAHO/WHO (2004), UNICEF (2002) and Linkages (2004) clearly recommend a gradual introduction "at about six months. Canada's infant feeding position statement (CPS/DC/HC, 1998), drafted by Health Canada, the Dietitians of Canada and the Canadian Paediatric Society remains controversial in its suggestion to introduce complementary feeding at 4 to 6 months..However, in some environments in developed and developing countries alike, giving babies fluids or solids early can increase their risk of infection. Consequently, some authorities argue that solids should not be introduced until "about 6 months". This like many other issues concerning complementary practices is difficult to resolve because the practices are governed by tradition rather than by science.

2.3.4 The problems associated with introducing complementary foods too early

Studies in other mammals suggest that the introduction of foods as well as maternal milk occurs at a particular milestone in neuro-physiological and metabolic development. These changes have not however been well characterized in humans, but by 4 months of age, infants have sufficient neuro-

muscular coordination to swallow pureed foods as well as being able to discriminate between some tastes and textures. However, infant's metabolic and immunological maturity is less clear.

The problems associated with introducing complementary foods too early include satiation of the infant's appetite leading to a reduced intake of breast milk, iron deficiency anemia because solids reduce the absorption of iron from breast milk and increased risk of infections. There are risks of delayed weaning also. These include slower growth, and nutrient deficiencies particularly of iron, zinc, fat-soluble vitamins, and essential fatty acids (Ainciburu M. 2004). Early introduction of complementary foods is reported to decrease the breastfeed intakes (Cohen et al., 1994; Cohen et al., 1995). Hop et al (2000) observed that early introduction of complementary feeds was also associated with poorer growth.

It is not known how infants become immunologically tolerant of proteins in food. The development by babies of allergies and immunological reactions in the intestine are related to the early introduction of complementary foods. It is not clear how breast feeding affects this risk. Some foods are more likely to cause reactions than others. Thus the avoidance of gluten at this stage is based on the association of the intestinal mal-absorption syndrome and coeliac disease with the early introduction of wheat. For this reason barley and oat cereals are usually offered before wheat and mixed cereals. When there is a family history of allergies, the cautious advice is to delay the introduction of foods such as cow milk, peanuts, Soya, egg, fish and chicken, which have a known allergenicity, until at least after six and up to twelve months of age.

Early immunological adverse reactions vary according to local complementary foods. For example, compared with Europe, reactions to rice are common in Japan, while more reactions to peanuts are reported in the USA. Reactions to peanuts and eggs may persist to adulthood, while

those to cow milk, might not. Unfortunately, there is no way to predict reliably the progress of individual children and their susceptibility to allergies and intolerances.

The influence of the early diet on later health may extend also to the metabolism of nutrients and the subsequent risk of conditions such as cardiovascular disease, late onset diabetes and high blood pressure. These and related possibilities show how crucial it is to optimize the introduction of complementary feeding not just with short term goals in mind but also with a view to later health.

2.3.5 Reasons given for early introduction of complementary feeding

One of the most common reasons given for early introduction of complementary feeding is mothers feeling that they have insufficient milk. In a study carried out by Ashene (2006) on factors attributed to the prevalence of early complementary feeding of infants in Eastlands area of Nairobi, insufficient milk was cited as the main reason for early introduction of complementary feeding. In yet another study carried out by Oguta (2002) on infant feeding practices by mothers in Homabay District, again insufficient breast milk to satisfy the infant was given as the main reason for early introduction of complementary feeding. Mothers usually associate their infant crying after breastfeeding as a sign of not having been satisfied. Other reasons given were the infant being thirsty.

2.4 Nutritional status during childhood

Chronic growth stunting is a problem that has several implications in the future and quality of life of children. It starts between the third or sixth months and the three years of age. This condition is almost impossible to overcome in adolescence. There are contributing factors to this. The most frequent ones are recurring infections, essential minerals deficiency, low quality of complementary food or a combination of the three of them. There is enough scientific evidence to say that not only

size, but also the working capacity of the future adult will be compromised, and that these children have enormous difficulties in finishing primary school (Ainciburu M, 2004).

2.5 Gaps in knowledge

- Further research on “insufficient milk” is needed.
- Further research on colic pains and how to reduce the pain is also needed

CHAPTER THREE

STUDY SETTING AND METHODOLOGY

3.1 Study area

The study was carried out at Machakos General Hospital in Machakos District (Appendix 1). Machakos is one of thirteen districts that form Eastern Province. Machakos borders Kitui and Mwingi districts to the east, Nairobi and Thika to the northwest, Kajiado district to the west, Makueni and Maragua to the south, and Mbeere district to the northeast. The district covers an area of 6281.4km², most of which is semi-arid. According to the 1999 population and housing census Machakos had a population of 954,082.: Administratively, the district is divided into twelve divisions, sixty two locations and two hundred and twenty five sub locations (GOK, 2002)

Machakos General Hospital caters for Machakos residents as well as serving as a referral hospital for Makueni, Kitui, and Kajiado districts. It has three sub-district hospitals, eleven (11) health centers and 150 dispensaries.

The MCH clinic conducts the antenatal and postnatal clinics at the hospital. Other services offered at the MCH, besides conducting the above clinics, includes nutritional support, growth monitoring, counseling and testing of expectant mothers, to assess their status and family planning services. Training sessions are also conducted in the above areas and this is where breastfeeding and complementary feeding come in.

What goes on at the MCH is also replicated in all the other health facilities.

3.2 Study methodology

3.2.1 Study Population

The targeted study population consisted of mothers as respondents and their infants 0-6 months of age who hailed from Machakos district and were attending postnatal clinic in Machakos General Hospital.

3.2.2 Study Design

The research was descriptive, cross sectional in nature and whose data was collected at the Machakos General Hospital.

3.3 Sample Size

3.3.1 Sample Size Determination

The sample size was determined according to Fischer et al (1991) formula using a prevalence rate of early introduction of complementary feeding of 87% (KDHS, 2003). The formula is :

$$n = \frac{Z^2 pq}{d^2}$$

Where n= the desired sample size

z= the standard normal deviation which is 1.96 for the 95% confidence interval

p=the proportion of mothers estimated to have introduced complementary feeding early, that is before six months at 87% (KDHS, 2003)

q=the proportion of mothers considered to have introduced complementary feeding at 6 months

d =degree of accuracy desired, 0.05

$$\begin{aligned} \text{Therefore } n &= \frac{(1.96)^2 \times (0.87) \times (0.13)}{0.05^2} \\ &= 173.79 \\ &\approx 174 \end{aligned}$$

3.3.2 Sampling procedure

Multistage sampling was used to identify the study population. At stage one, Machakos district was selected using purposive sampling which was followed by selection of Machakos General Hospital using same method. At third stage, mothers with infants 0-6 months were selected at random. At fourth stage, 174 mothers who are residents of Machakos District with infants 0-6 months were selected randomly and ultimately included in the study. The sampling technique used in the selection of the study sample is shown in figure 3.1.

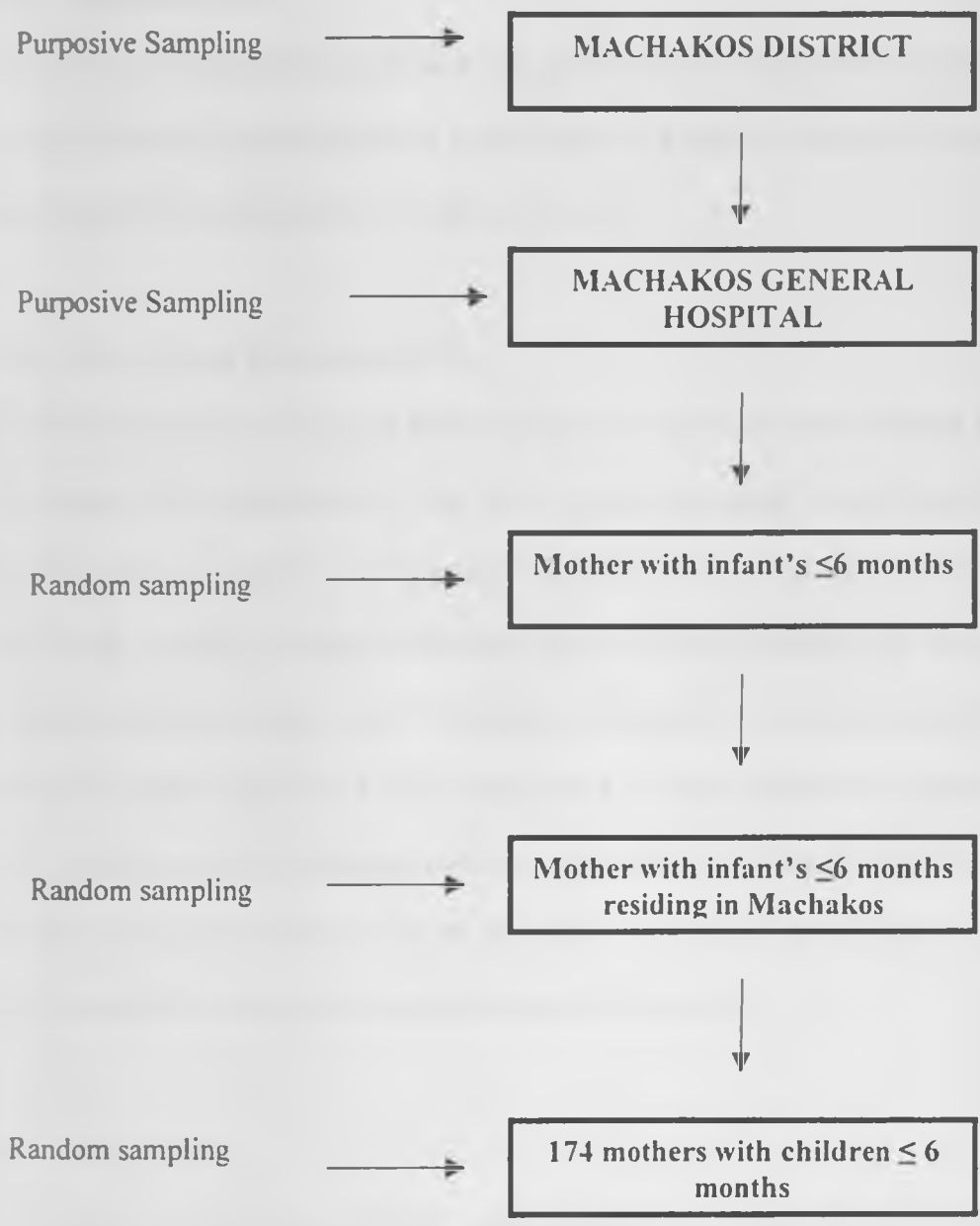


Figure 3.1 Flow chart showing sampling procedure

3.4 Research instruments or tools

3.4.1 Questionnaires

A structured questionnaire (Appendix 2) was used to collect both qualitative and quantitative data. The questionnaire was pre-tested in a pilot study in Kathiani sub-district hospital and adjusted accordingly before its application for data collection.

3.4.2 Focus Group Discussion (FGD)

Two FGD were conducted, one at MGH and the other one at Kimutwa location in central division. The women who participated in the focus group discussions were selected using purposive sampling and most were not among those included in the actual survey. The FGD participants were chosen carefully to represent the entire range of study population, and interviewing was done by the principle investigator. The FGD questions (Appendix 3) were open-ended in order to obtain clear and candid insights. The FGD's were used to verify information collected in the survey. FGD's produce detailed information within a short time. Due to their flexibility, one can discover attitudes and opinions that may not be revealed in a structured questionnaire. They will also be used to answer the whys of the unexplained social phenomena.

3.4.3 Case Studies

Twelve case studies were conducted. Again purposive sampling was used to select the subjects. This is because the case studies were from different socioeconomic classes, different education backgrounds and from different home settings. The aim of the case studies was to determine the mother's typical daily activities and the effect this had on the length of time she exclusively breastfeeds and also timing of complementary feeding.

3.5 Recruitment and Training of field Assistants

Three female research assistants were recruited through liaison with the nutritionist at the MCH clinic. They had a minimum secondary school education-Form IV, with two of them being university students on attachment. One of these two had prior experience in carrying out surveys. They were able to speak the local language (Kikamba), Kiswahili and English.

Training took two days and was conducted by the principal investigator using a training curriculum designed for it (Appendix 4). Consultation continued throughout the data collection, clarifying any issues that came up.

3.6 Data collection

3.6.1 Questionnaire administration

Since a standard questionnaire was used, it ensured that all respondents were asked exactly the same questions, in exactly the same way. 174 structured interviews were the main method of data collection. The results of the FGD and the case studies were the other methods of data collection.

3.6.2 Age determination

Ages of children, in most of the cases were obtained from clinic cards or child health cards. For those without written evidence, direct recall of the date of birth by the mother or respondent was applied.

3.6.3 Anthropometric measurements

Anthropometric measurements were done on mothers and infants, and the data processed using EPI-NUT in EPI-INFO.

3.6.4 Data Quality Control Measures

Proper and close supervision of the interviewers was done to ensure they were doing the right thing and to help clarify any issues that arose. There were daily briefs by the principle investigator to ensure all was well. All the questionnaires were checked for completeness and any anomaly at the end of the day. Calibration of the equipment was done daily to ensure correct measurements were obtained. Pre-testing of the questionnaires was vital to ensure the questions were asked in the right manner, and elicit the right responses.

3.7 Ethical and human rights consideration

Informed consent was obtained from each respondent before the interview. Confidentiality of the information obtained was assured and respondents were not obliged to give their names. Consent (Appendix 4) to carry out the research was obtained from the Ministry of education in form of a research permit. Further consent was obtained from the Machakos Medical Officer of health (MOH) and the Kathiani medical officer for use of the hospitals' facilities to interview women.

3.8 Data Management and Analysis

3.8.1 Data entry and cleaning

The responses were coded before entry into the computer. Data were entered, cleaned, processed and analyzed using the SPSS (Statistical Package for Social Sciences). Anthropometric data were converted into indices of nutritional status using the EPI-INFO software. Graphs on descriptive information were done using Microsoft excel. Both descriptive and analytical methods were used in the generation of the results of this study.

3.8.2 Plan of data analysis

- ✓ Descriptive statistics such as mean, proportions, standard deviation, cross tabulations, frequency tables and graphs were generated and used to describe the health and nutrition conditions of the study population
- ✓ Epi-info software was used to convert anthropometric measurements (weight) into indices of nutritional status of weight-for-age.
- ✓ Chi-square test was employed to test factors significantly associated with early introduction of complementary feeding. Cross tabulation was also used.
- ✓ The National Center for Health Statistics (NCHS) reference figures and cutoff points were used to translate recorded age and weight (anthropometric measurement) of study children into weight-for-age percentages and Z-scores. These were compared to the NCHS.
- ✓ Charts and tables were employed to describe general characteristics of the study population and households

CHAPTER FOUR

RESULTS

The results of the study are divided in four sections namely:

- ❖ Socio-economic and demographic characteristics of the respondent's households
- ❖ Complementary feeding practices among infants.
- ❖ Demographic characteristics of mothers
- ❖ Maternal and infants nutritional status.
- ❖ Morbidity of infants.

4.1 Socio-economic and demographic characteristics of the respondent's households

Table 4.1 shows the socio-economic and demographic characteristics of the respondent's households. These include gender, marital status, education level, occupation, religion and social economic characteristics.

Table 4.1 Socio-economic and demographic characteristics of respondent's households

Characteristics	Frequency	Percentage
Gender		
Male	614	50.4
Female	604	49.6
Marital status		
Married	499	41
Single	316	26
Widowed	61	5
Divorced	37	3
Not applicable	305	25
Education level		
None	61	5
Not applicable	256	21
Primary	608	50
Secondary	244	20
College and above	49	4
Occupation		
Formal employment	37	3
Business	183	15
Student	390	32
Farmer	364	30
Housewife	244	20
Religion		
Christians	1206	99
Muslim	12	1
Household possessions		
Fridge	6	0.5
Television	24	2
Radio	700	57.5
None	488	40
Type of cooking fuel		
Electricity/Gas	61	5
Stove/ Charcoal	426	35
Firewood	731	60

4.2 Complimentary feeding practices among infants

4.2.1 Age of Introduction of Complimentary Feeding

The study showed that majority (51.7%) of the mothers introduced complementary feeding at 3 months of age. The proportion of mothers who introduced complementary feeding earlier (less than 4 months) was 71.3%, while 28.7% introduced complementary feeding at the age of 4-6 months of age. There were however mothers who introduced complementary feeding as early as one month as can be seen in Table 4.2.

Table 4.2 Age for Introduction of Complementary food

Age in Months	Percent
2 weeks	2.9
1 month	16.7
3 months	51.7
4 months	17.2
6 months	11.5

4.2.2 Reasons given for early introduction of complementary foods

Mothers for early introduction of complementary feeding gave various reasons. Table 4.3 shows reasons offered by the mothers in this regard. As can be seen, majority of mothers introduced complementary feeding early with the biggest proportion being those whose infants had colic pains (22.4%). Mothers who felt they had insufficient milk were relatively many, at 3.8%. It is also evident from the table that a comparatively high proportion of mothers whose infants had colic pains, or were thirsty or the mothers had insufficient milk, introduced complementary feeding at 4-

6 months. It is worth noting that none of the mothers who had to resume work introduced complementary feeding at 4-6 months as they had to resume work.

Table 4.3 Ages and reasons for early introduction of complementary foods

Reasons for introducing complementary foods early	Age for introduction of complementary food		Total N=174
	<4 Months	4-6 Months	
Not having enough milk	13.8	4.0	17.8
Mother was to resume work	1.1	0	1.1
N/A	3.4	2.3	5.7
Child refused to breastfeed	0.6	0	0.6
Milk not yet available from mother	2.3	0	2.3
Baby kept crying	4.0	0.6	4.6
To reduce colic pains	22.4	9.2	31.6
Child felt thirsty	12.6	6.9	19.5
Advised by others	10.9	5.7	16.7
Total	71.3	28.7	100

NB: Figures in the table are percentages

4.3 Demographic characteristic of the mothers

The demographic characteristics of the respondents are shown below. These were the characteristics considered to be significantly associated with early introduction of complimentary feeding. Therefore besides describing the demographic characteristics, the factors have also been analyzed to find out if indeed they are associated with time of introduction of complimentary feeding.

4.3.1 Age of mothers

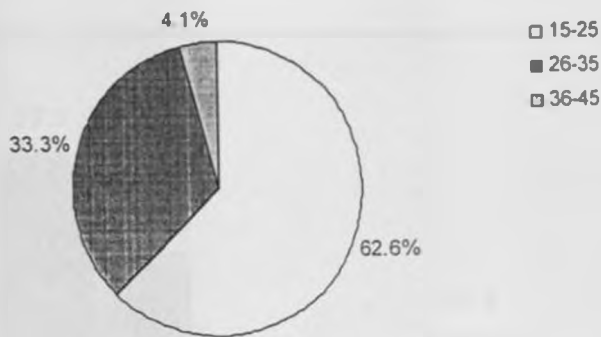


Figure 4.1 Age of mothers

The respondents' ages ranged from 15 – 40 years with a mean of 25 years. The study showed that the majority of the mothers were in the age group 15 – 25 years as shown in fig. 4.1 above.

The age of the mothers and the age at which they introduced complementary feeding is shown in figure 4.2 below.

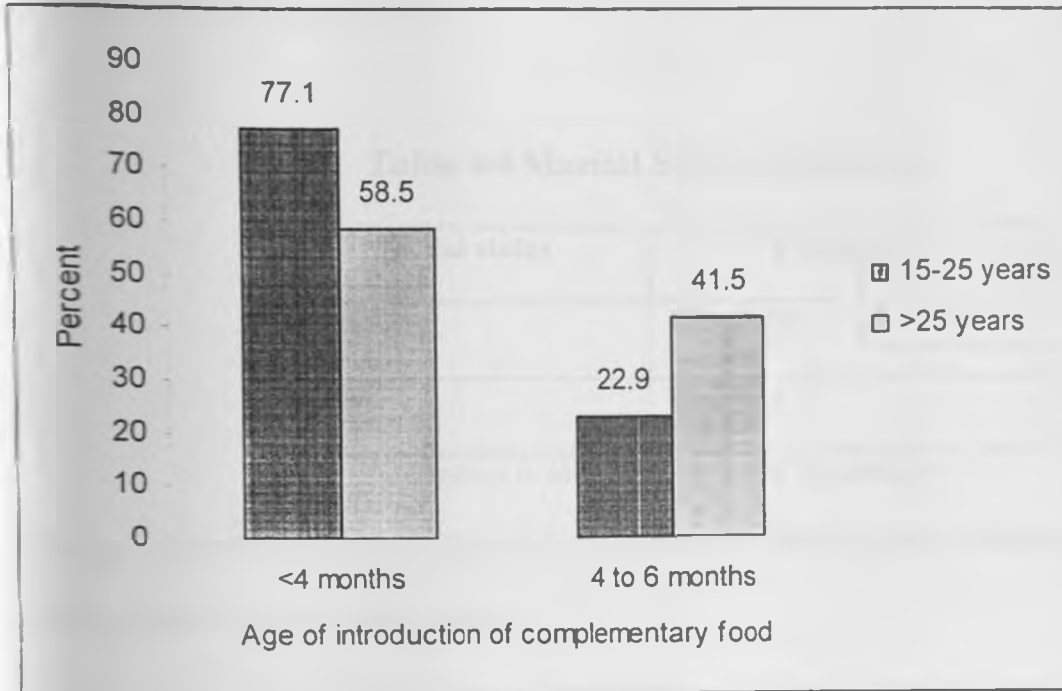


Figure 4.2 Age of introduction of complementary food and age of mother

The association between age of the mother and the age at which complementary feeding was introduced was found to be highly significant ($X^2=6.725$ and $p=0.010$). The study showed that high proportion of younger mothers, aged between 15-25 years (77.1%) introduced complementary feeding early compared with the older mothers of more than 25years (58.5%). On the other hand, high percentage (41.5%) of mothers in the age group of more than 25 years introduced complementary foods at the recommended age of 4-6 months compared to younger mothers at 22.9%.

Age of the respondents was found to have a bearing on the age of introduction of complementary feeding. However, age per say may not be a direct factor associated with age of introduction of complementary feeding.

4.3.2 Marital status of mothers

The marital status of mothers is shown on Table 4.4. Among the respondents, 79.9 % were married while the rest were single (20.1%).

Table 4.4 Marital Status of Mothers

Marital status	Frequency
Married	139 (79.9)
Single	35 (20.1)

** Numbers in the parenthesis are percentage*

The married mothers and the single ones were compared with the age at which they introduced complementary feeding to their infants.

The association of age of introduction of complimentary feeding by marital status is shown in figure 4.3 below.

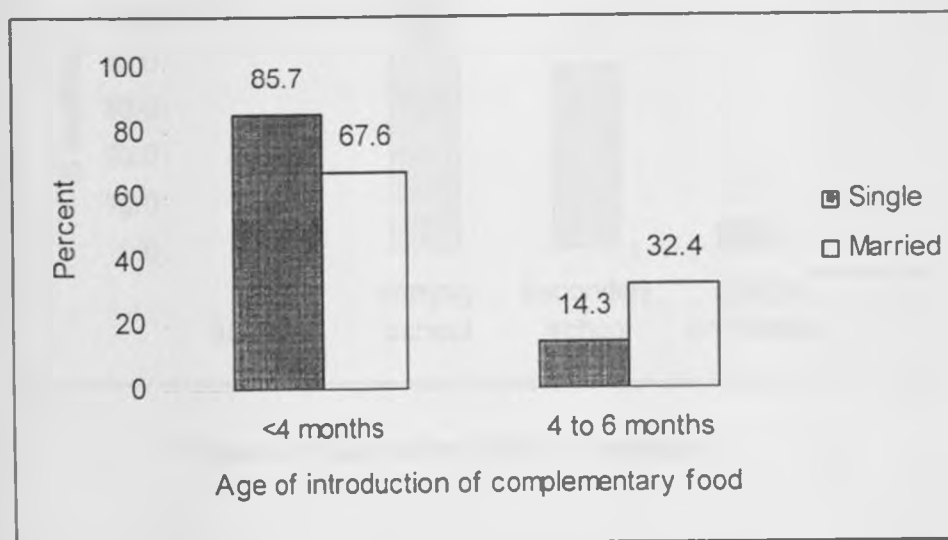


Figure 4.3 Age of introduction of complementary food and marital status

The study showed that more single mothers introduced complementary feeding earlier (87.5%) than their married counterparts (67.6%). The association was found to be statistically significant ($\chi^2 = 4.467$ and $p=0.035$).

4.3.3. Education Status of Mothers

An educated mother is expected to be better informed on infant feeding practices. Level of education for mothers is therefore expected to have an effect on the infant's age of introduction of complementary feeding.

The survey showed that majority of the mothers (55.2%) had primary education. The next level of education attained was the secondary education (39.1%), followed by college (5.1%) as shown in figure 4.4. Only a minority (0.6%) group of respondents had no formal education.

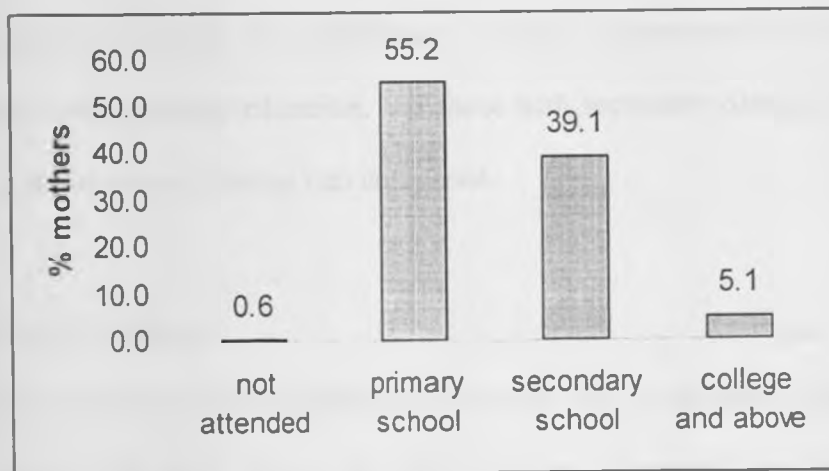


Figure 4.4 Education Status of mothers

Fig 4.5 shows the relationship between the mother's level of education and age at which they introduced complementary foods to their infants

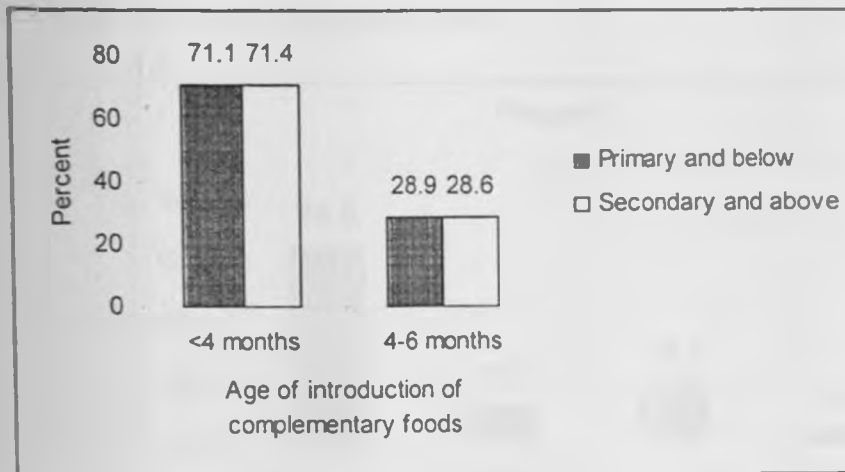


Figure 4.5 Age of introduction of complementary food by education of mother

The analysis showed that there was no significant association between the education status of the mothers and age of introduction of complimentary feeding. This means there was no difference seen between those with primary education, and those with secondary education as far as age of introduction of complementary feeding was concerned.

4.3.4 Occupation of mothers

Occupation of the mothers gives an insight as to how busy they are generally and how much time they have to spend with their infants per day. Mothers occupation can also affect age of introduction of complementary feeding depending on time available to be with their infants. For instance, those with full time jobs and are entitled to maternity leave, may have to introduce complementary foods when they resume work irrespective of the age of their infants.

majority (64.9%) of mothers were housewives, while the rest were either employed (12.7%), businesswomen (18.4%) or categorized as others at 4.0% (represented by pastors, house girls, doctor or farmer) as shown in figure 4.6 below.

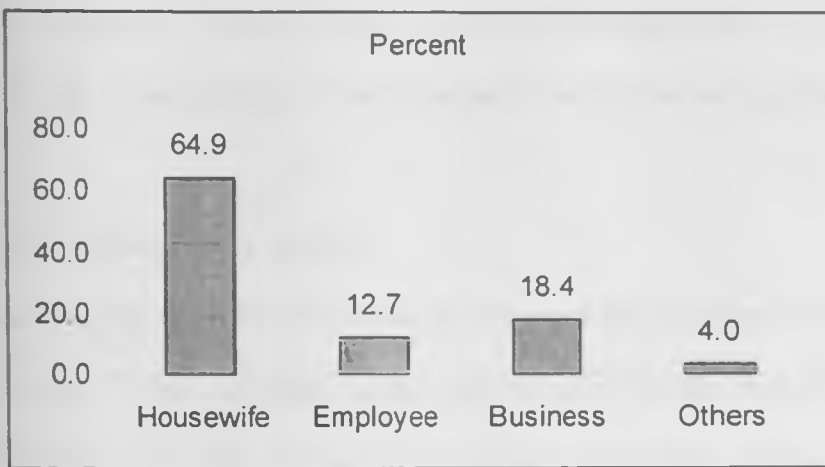


Figure 4.6 Occupation of the respondents

Table 4.5 below shows the association between mother's occupation and age of introduction of complementary feeding.

Table 4.5 Association of mothers' occupation with the age of introduction of complementary feeding

Occupation	Age of introduction of complementary foods		Total
	<4 months	4-6 months	
Housewife	77 (68.1)	36 (31.9)	113 (100.0)
Employee	15 (68.2)	7 (31.8)	22 (100.0)
Business	27 (84.4)	5 (15.6)	32 (100.0)
Others	5 (71.4)	2 (28.6)	7 (100.0)

** Numbers in the parenthesis are percentages*

This data shows that the association between the mothers occupation and the age for introduction of complimentary feeding was not significant ($p>0.05$). However, it was worth noting that among the different occupations more businesswomen introduced complimentary feeding early (84.4%) compared to other occupation. Never-the-less, it is clear that association between occupation of the mothers and the age of introduction of complementary feeding was not significant at $p>0.05$.

4.3.5 Workload of mothers (case studies)

The reason for carrying out the case studies was to find out if the workload of the mothers or the type of occupation they were occupied in had any influence on the time of introduction of complementary feeding. 12 case studies were carried out using mothers from different occupations. There were mothers from formal occupation, housewives, business women and mothers especially from the rural areas who had a heavy workload. There were two mothers who were part of the survey group. As can be seen from table 4.6 below early introduction of complementary feeding, less than 4 months was common practice across all occupations including the ones with a heavy workload. The housewives on the other hand introduced complementary feeding both early (16.7%) and at 4-6 months (33%). The element of influence from their mothers or mothers-in-law also came up in the interview. The mothers would recommend introduction at a certain time and the nursing mothers would comply.

Table 4.6 Age of introducing complementary feeding versus workload

Type of Work	Age of Introduction of complementary food		Total
	<4 Months	4-6 Months	
Formal employment (n=29)	16.7	0	16.7
Business lady (n=29)	16.7	0	16.7
Heavy work (n=29)	16.7	0	16.7
Housewives (n=87)	16.7	33.3	50.0
Total(n=174)	66.7	33.3	100.0

Note: Figures in the table are percentages

The sample size used for the case study was not enough to make a valid conclusion but it is still clear that most mothers introduce complimentary feeding early regardless of the kind of work they do or have.

4.3.6 Knowledge of the mothers acquired at the MCH clinic

This refers to what the mothers were actually taught regarding breast feeding and complimentary feeding. The association between the knowledge they acquired at the MCH clinic and age of introduction of complementary foods is displayed in Table 4.7. The results of the analysis show that there is significant association between the contents of the information acquired at the MCH clinic and age of introduction of complementary feeding ($X^2=8.153$ and $p=0.017$). As can be seen from Table 4.7 significantly higher proportion of mothers (42.2%) introduced complementary feeding at the recommended age when they were taught about importance of breastfeeding and introduction of complementary feeding at 4-6 months. On the contrary, the percentage of mothers who introduced complementary feeding at 4-6 months was significantly less when they were taught about position of breastfeeding (20.4%) and hygiene before breastfeeding (21.2%) only.

Table 4.7 Association between knowledge acquired at the MCH clinic and age of introduction of complementary feeding

Information acquired as reported by mothers	Age of introduction of complementary foods		Total
	<4 month	4-6 months	
Importance of BF and Introduction of complementary feeding at 4-6 months	37 (57.8)	27 (42.2)	64 (100.0)
Position of BF	43 (79.6)	11 (20.4)	54 (100.0)
Hygiene before BF	26 (78.8)	7 (21.2)	33 (100.0)

BF stands for Breast Feeding

** Numbers in the parenthesis are percentages*

It is thus very useful to have lessons at MCH, but they should be all inclusive.

4.3.7 Household Size

The household size refers to all the people living in the same compound who eat from the same pot.

The household size varied from 2-9 persons with a mean of 4.9 persons per household (S.D-1.65).

Most households were male headed (87.4%) with only 12.6% being female headed. The male heads of the households were either the husband, father or father-in-law. The study further showed that 63.8% of the male heads were husbands

Household, the size and the age of complimentary feeding was analyzed as shown in table 4.8.

Table 4.8 Association of household size with age of introduction of complimentary feeding

Household size		Age of introduction of complementary foods		Total
		<4 month	4-6 months	
Household size	2-5	60 (72.3)	23 (27.7)	83 (100.0)
	6-9	64 (70.3)	27 (29.7)	91 (100.0)

The association was found not significant. Majority of the respondents introduced complementary feeding early, at less than 4 months irrespective of the size of their households

4.4 Maternal and infants nutritional status

Nutritional status of mothers was assessed using Body Mass Index (BMI) using the cutoff points proposed by WHO (1995). On the other hand, the nutritional status of the study children was assessed using indicator of weight-for-age. The study children who fell below -2SD were considered to be underweight and those who fell above or equal to -2SD were considered normal.

4.4.1 Levels of malnutrition in the mothers

The aim of conducting this study was to find out the nutritional status of the mothers. The nutritional status of mothers according to the different BMI categories is shown in Table 4.9. Out of the 174 mothers assessed only 2.3% were underweight. The majority (67.2%) were normal, while slightly less than one-third (30.5%) were found to be overweight.

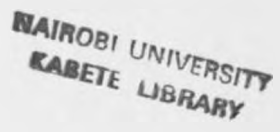


Table 4.9 Nutritional status of mothers

BMI classification	Frequency
<18.5	4 (2.3)
18.5-24.99	117 (67.2)
≥25	53 (30.5)

▪ Numbers in the parenthesis are percentages

Table 4.10 below compares the nutritional status of the mothers with the age of introduction of complementary feeding.

Table 4.10 Nutritional status of mothers and age of introduction of complementary feeding.

Age of Introduction of Complementary feeding	Nutritional status of mothers (BMI)			Total
	<18.5	18.5-25.0	>25	
<4 months	2.3	47.1	21.8	71.3
4-6 months	0	20.1	8.6	28.7
Total	2.3	67.2	30.5	100.0

NB: The figures in the table are percentages

As can be seen from the table above, none of the mothers who were underweight introduced complementary feeding at 4-6 months. About half of the normal weight mothers introduced complementary feeding at 4-6 months and the other half, though with a slightly higher margin,

roduced early. For the overweight mothers, approximately one third introduced complementary feeding at 4-6 months, while two thirds introduced early.

4.4.2 Nutritional status of infants

This study was conducted to determine the nutritional status of the infants. Table 4.11 shows the distribution of the study children by sex and weight-for-age. Out of the 174 study children, 7 (4.0%) were underweight. Among the underweight children one was male and six female. The difference in the nutritional status (underweight) between male and female children was statistically significant at 5% significance level ($p < 0.05$). 96% of the infants were found to be normal.

Table 4.11 Nutritional status of children

Sex	Weight-for-age	
	Underweight (<-2SD)	Normal (\geq -2SD)
Male (N=93)	1 (1.1)	92 (98.9)
Female (N=81)	6 (7.4)	75 (92.6)
N=174	7 (4.0)	167 (96.0)

- Numbers in the parenthesis are percentages

The nutritional status of the infants was compared with the time of introduction of complementary feeding in table 4.12 below.

4.12 Nutritional status of infants and age of introduction of complementary foods

Nutritional status of children	Age of introduction of complementary foods		Total
	<4 Months	4-6 Months	
Underweight	2.9	1.1	4.0
Normal	68.4	27.6	96.0
Total	71.3	28.7	100.0

Note: The figures in the table are percentages

As can be seen from the table above, majority of both normal and underweight infants were given complementary food early

4.5 Morbidity of the Infants

Morbidity among the infants in form of diseases such as diarrhea and vomiting is reported to be associated with early introduction of complementary feeding. This is usually attributed to infections while using bottle-feeding where hygiene is not assured and also reduced ingestion of protective factors present in breast milk.

4.5.1 Common ailments among the infants

Figure 4.8 presents various illnesses reported among the study children in Machakos. 34.5% of the mothers interviewed reported that their children had never fallen sick since birth, while the rest of them reported various illnesses. The most common ailment was cough (24.7%), followed by common cold (17.8%), malaria (6.9%) and pneumonia (6.3%). The other illnesses reported were fever (4%), diarrhea (3.4%) and vomiting (2.3%) as shown in figure 4.7. Out of all the infants who got sick 97.5% were taken to a health facility for treatment, while the rest (2.5%) were never taken to any health facility any time they were unwell. The data indicates that despite the fact that

majority of mothers introduced complementary feeding early, very few infants suffered from diarrhea and vomiting.

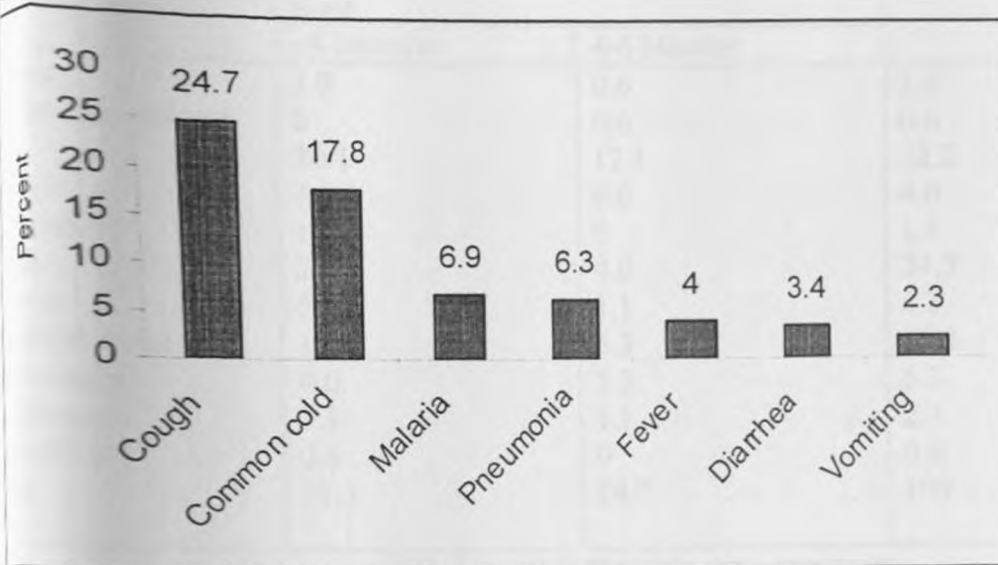


Figure 4.7 Common ailments among infants

Table 4.13 below shows the morbidity of the infants and the age of introduction of complementary feeding. Some of the illnesses associated with early introduction of complementary feeding are diarrhea and vomiting which as shown in table 4.13 where those who introduced complementary feeding within the first two weeks had diarrhea and vomiting. Diarrhea and vomiting are associated with infections attributed to unhygienic conditions brought about especially by bottle-feeding.

Table 4.13 Morbidity and age of Introduction of complementary foods

Disease	Age of introduction of complementary food		Total
	<4 Months	4-6 Months	
Diarrhea	2.9	0.6	3.4
Ulcer in the mouth	0	0.6	0.6
WVA	20.1	12.1	32.2
Fever	3.4	0.6	4.0
Colic pains	1.1	0	1.1
Cough	20.7	4.0	24.7
Malaria	5.2	1.1	6.3
Common cold	12.1	6.3	18.4
Pneumonia	4.0	2.3	6.3
Vomiting	1.1	1.1	2.3
Bronchitis	0.6	0	0.6
Total	71.3	28.7	100

NB: Figures in the table are percentages

4.6 Focus Group Discussion

Focus group discussions are held so as to validate and supplement any data that was obtained from questionnaires. These focus group discussions were held primarily to find out what induced mothers to start complimentary feeding early.

Two focus group discussions were held, one at the hospital and the other one in Kimutwa location in Central division.

The results from the FGD for early introduction of complementary were however similar to what was obtained from the questionnaire and the case studies.

CHAPTER FIVE

DISCUSSION

Introduction

The findings of the study showed that majority of the study population interviewed at the MCH clinic in Machakos general hospital introduced complementary feeding before 4 to 6 months as recommended by CPS/DC/HC (1998) and UNICEF (1998). These results are fairly consistent with the findings of a study in Eastland area of Nairobi, with 92.3% of mothers introducing complementary foods before six months (Ashene, 2006) with most mothers introducing complementary feeding at 3 months. In addition, the prevalence of early introduction of complementary foods in Kenya is 87% (KDHS, 2003).

1.1 Educational Status

The study indicated that most mothers had not gone beyond primary education. This could be due to economic and social – cultural factors, which include inability to pay tuition fees, lack of interest in schooling and failure to achieve sufficient grades in primary school. Pregnancies and early marriages also contribute to school dropouts (GDK/UNICEF, 1992). However, the higher a mother's educational level, the greater her aptitude to adapt healthy complementary feeding practices and ignore the effects of harmful advice from her family, friends or the media (WHO, 1999). The findings of the study in Machakos somehow contradicts the above report.

The study shows that, there is no significant association between mother's education and age of introduction of complementary feeding ($p > 0.05$). This means that the mother's education status does not influence the time for introducing complementary foods. Similar findings are reported in a study carried out in Eastland's area of Nairobi (Ashene, 2006).

Occupation/ workload of the respondents

result of the study indicated that occupation of the respondents was not significantly associated with age of introduction of complementary foods. It was worth noting that irrespective of their occupation or workload, mothers introduce complementary foods early. This is confirmed by examples from other countries quoted below. Never-the-less a high proportion of housewives introduced complementary feeding at 4-6 months. The possible reason for this occurrence is the fact that the mothers do not have any other work but to look after their infants.

4 Nutritional status of respondents and the infants

The number of underweight mothers and infants were negligible. For the infants, the number of underweight children was small. However, the difference in the nutritional status (underweight) between male and female children was statistically significant. There were more female children who were underweight than male children. This could have been maybe due to the old habit of valuing male children more than female children.

Nationally, 20 percent of children under five are underweight (KDHS, 2003) The proportion of underweight children is negatively correlated with the level of education of the mother. Children whose mothers have no education have the highest levels (33%) of being underweight.

5.5 Morbidity of the infants

From the results, mothers who introduced complementary foods to their infants before 4 months, resulted with their infants having diarrhea, vomiting as well as respiratory problems. Many studies have shown prevalence of diarrhea and respiratory illnesses are higher in infants receiving solid foods or fluids other than breast milk. Moreover, the negative nutritional impact of illness is reduced when the infants are exclusively breast-fed. Therefore avoidance of other fluids and foods

The first months of life is essential to optimize breast milk production (WHO, 1999). Further studies well indicated that the incidence of diarrhea diseases is especially high after complementary feeding is initiated (Barrel and Rowland, 1979).

Age of introduction of complementary feeding

A study revealed that majority of the mothers introduced complementary feeding at 3 months. a (29%) introduced at 2 weeks while others within the 1st day of birth. The age of introduction complementary foods has previously been shown to vary in different localities. A study done in Niger (Oumarou et al., (1993) highlighted that 40% of mothers believe that complimentary foods must be given during the first 3 months, while about 50% of infants in that age group received complementary foods .In Mali, children are not given solid foods before the age of 8 months since there is a common belief that when children are hungry they will eat. Low exclusive breastfeeding rates are a distinct feature of West African countries, with a mean rate of 7%. However exclusive breastfeeding rates are highest in Ethiopia, Rwanda and Burundi. The proportion of infants fed on complimentary foods before four months is especially high in Malawi (40%), followed by Togo (38%) and Zimbabwe (37%). In Congo complimentary foods are introduced very early at 0 to 2 months. In Palestine qualitative data indicates that a large proportion of infants are already receiving complimentary foods before 4 months (WHO, 1999).

5.7 Reason given for early introduction of complementary feeding.

The mothers revealed that when their infants cry a lot, they assume they are hungry and are not getting satisfied with their breast milk . This however is not confirmed by weight loss. A study by Crocetti et al., (2004) on parental beliefs and practices regarding early introduction of solid foods to their children also came up with similar findings of insufficient milk supply and called it the

“insufficient milk syndrome”. Another major reason why mothers introduce complementary feeding early is colic pains. The infants cry a lot when they get colic pains. This is a subject that needs further research so that mothers can know how to deal with the crying infants.

5.8 Factors associated with early introduction of complementary feeding.

The study examined different determinants of early complementary feeding introduction. The age of the mother, the marital status and the knowledge acquired at the MCH clinic, were significantly associated with early introduction of complimentary feeding. In this study young mothers tend to introduce complementary feeding early compared to the older mothers. This may be because older mothers have more experience and more knowledge.

Further results showed that marital status was significantly associated with early introduction of complementary feeding. Higher proportion of single mothers started complementary feeding early as compared to married ones. Hence, experience and knowledge could be possible factors associated with early introduction of complementary feeding. The knowledge the mothers obtained from the MCH clinic was found to be significantly associated with the age of introduction of complementary feeding. In Machakos District hospital, teaching of mothers at the MCH clinic takes place relatively early, every morning (0800 hours). At this time, many mothers have not yet arrived. These mothers end up getting this information from other mothers. It is well known that this information could possibly be distorted.

CHAPTER SIX

6.0 CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

The following conclusions can be deduced from this study;

1. Majority of the mothers introduced complementary feeding early
2. The factors found to be associated with complementary feeding were knowledge the mothers had acquired and the experience they had.
3. The main reasons given by the mothers for early introduction of complementary feeding were insufficient milk and to reduce colic pains.
4. Household size, education and occupation had no effect on age of introduction of complementary feeding.
5. Giving infants complementary foods early predisposes them to infections such as diarrhea and vomiting and respiratory infections

RECOMMENDATIONS

More mothers should benefit from the teaching at the MCH through additional training in between the day.

2. "Insufficient milk syndrome" – this needs further research.
3. "Colic pains" is another topic that needs further research.
3. Expression of milk should be encouraged.
4. The ten steps to successful breastfeeding that formed the basis of the BFHI have been extremely useful in guiding policy makers, programme planners and hospital managers to identify the essential actions they should take in order to protect, promote and support breast feeding. -(SCN NEWS 2003)- This could be an option worth trying.

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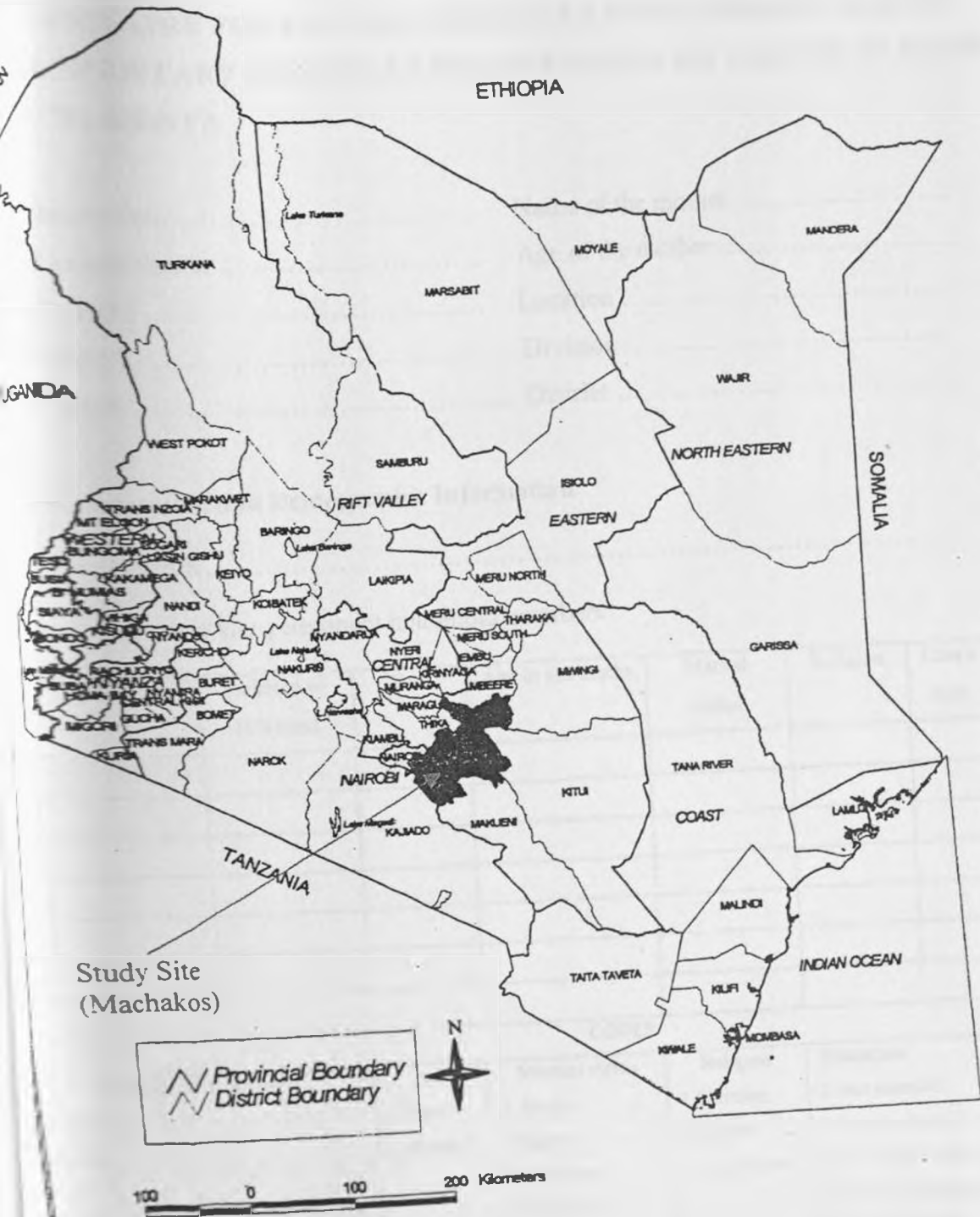
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Index 1 - Location of Machakos District in Kenya



Appendix 2 - Survey Questionnaire

QUESTIONNAIRE FOR FACTORS ASSOCIATED WITH INTRODUCTION OF COMPLEMENTARY FEEDING OF INFANTS BELOW SIX MONTHS IN MACHAKOS DISTRICT, KENYA

Date of interview Name of the mother.....
 Name of interviewer Age of the mother
 Name of child Location
 Sex of child Division
 Date of birth District

A) Socioeconomic and Demographic Information

1 No. of children

2 Please tell me about permanent household members

No.	Name	Relation to H/h head	Sex	Age in yrs/months	Marital status	Religion	Education	Occupation
1								
2								
3								
4								
5								
6								
7								

CODES

Relation to H/H head	Sex	Marital status	Religion	Education	Occupation
1. H/H head	1. Male	1. Single	1. Christian	1. Not attended	1. unemployed household wife
2. Spouse	2. Female	2. Married	2. Muslim	2. Primary school	2. Gov't employee
3. Son		3. Widowed	3. Buddhism	3. Secondary school	3. Business
4. Daughter		4. Divorced		4. College and above	4. Private sector employee
5. Cousin		5. Not Applicable		5. Not applicable	5. Casual laborer
6. Brother/sister					6. Other (specify)
7. Nephew/niece					
8. Other (specify)					

3. What do you possess?

1. T.V, Fridge
2. T.V, Radio
3. Radio
4. None

4. What do you use for Cooking?

1. Electric/Gas Cooker
2. Gas, Stove and Charcoal Jiko
3. Firewood and Charcoal Jiko
4. Stove and charcoal Jiko

5. How much do you spend on food in a month? _____

B. Breast feeding practice

6. Are you breastfeeding your child?

1. Yes
2. No

7. When did you initiate breastfeeding?

1. First hour after delivery
2. Within first day of delivery
3. After one day
4. One week after delivery

8. How do you decide when to breastfeed during the day?

1. When the child starts crying
2. When child wakes-up
3. Timing - after some time if not asleep
4. When the child tries to look for the breast
5. When the milk starts oozing

9. How many times do you breastfeed your child during the day?

1. On demand
2. 4 times a day
3. 1-2 times day
4. Rarely

Do you breastfeed your child at night?

1. Yes
2. No

If yes, how do you decide when to breastfeed the child at night?

1. When the child starts crying
2. When the child wakes-up, during diapers change
3. Timing - after sometime
4. When the child tries to look for the breast

2. If no why don't you breastfeed?

13. Why do you breastfeed?

1. Mother milk is nutritious
2. Gives immunity to the child
3. For healthy growth and development of the child
4. For baby to get satisfied
5. Breast milk is only food for the baby at that time
6. For bonding with the baby
7. Its child right to be breastfed
8. To avoid breast engorgement

14. Do you breastfed your child when you are in public places?

1. Yes
2. No

15. Your answer being no give a reason

1. Shy
2. Embarrassed
3. There is no place
4. Fear for bad omen
5. Not applicable

16. At what age did you start giving the child something else apart from breast milk?

1. With in the first day
2. 1-2 weeks
3. 1-3 months
4. 4-6 months
5. Not applicable

What was the first food/fluid given to the child?

1. Plain Water
2. Cow's milk
3. Infant formula
4. Solution of water, salt & sugar
5. Solution of water and salt
6. Solution of water & glucose
7. Porridge
8. Paw paw
9. Not applicable

C. Complementary feeding practice

18. Have you started giving your child any other food apart from breast milk?

1. Yes
2. No

If yes, go to next question

19. At what age did you start giving the child additional food or fluid in addition to breast milk?

1. At two weeks
2. At 1 month
3. At 3 months
4. At 4 months
5. At 6 months

20. What was your reason for introducing complementary feeding?

1. Not having enough milk
2. To reduce colic pains
3. Information acquired
4. Working mother
5. Baby should learn how to eat
6. Not applicable

21. Did you consult at the clinic when you started giving food/fluid to your child?

1. Yes
2. No

Breast feeding knowledge

13. Have you had any lesson on breastfeeding?

1. Yes
2. No

14. Where did you get this information?

1. CHN clinic/labor ward

2. Read poster/observation

3. Friends

4. Relatives [mother/mother-in-law/sister]

5. College

6. Not applicable

15. When was this done?

1. Ante-natally

2. Post-natally

3. Both ante-natally and post-natally

16. What did you learn from these lessons?

1. Importance of BF to the baby and exclusive breastfeeding up to 6 months

2. Position of breastfeeding

3. Keep trying to breastfeed when no milk

4. Hygiene before breastfeeding [Wash breast before suckling]

5. Exclusive breastfeeding up to 4 months

6. Start giving milk and graduate to porridge at 4 month

7. Its good to test for HIV before breastfeeding

8. Not applicable

17. Did you have a special diet?

- | | |
|--------------------------------------|-----|
| 1. Ante-natally yes and post-natally | yes |
| 2. Ante-natally yes and post-natally | no |
| 3. Post-natally yes and ante-natally | no |
| 4. Ante-natally no and post-natally | no |

18. Has your child ever fallen ill after delivery up to now?

1. Yes
2. No

What was the problem?

1. Diarrhoea

2. Fever

3. Colic pains

4. Cough

5. Malaria

6. Common cold

7. Pneumonia

8. Vomiting

9. Bronchitis

10. Ulcer in the mouth

11. Not applicable

29. About how many times since delivery have you had to bring the child to the clinic because the

child was ill

1. More than 10 times

2. More than 5 times

3. Less than 5 times

4. Once

5. None

6. Not applicable

30. What was the most common ailment?

1. Diarrhoea

2. Fever

3. Colic pains

4. Common Cold

5. Malaria

6. Cough

7. Pneumonia

8. Vomiting

9. Ulcer in the mouth

10. Not applicable

Anthropometrics measurements

1. Name of the child

2. Age (months).....

ex 1. Male 2.Female

Measurements	First Reading	Second Reading	Average
3. Weight (kg)
34. Height (cm)

35. Name of the mother

36. Age (years)

Measurement	First Reading	Second Reading	Average
37. Weight (kg)
38. Height (cm)

Interviewer: Thank the respondent for her co-operation

Appendix 3 - FGD Guideline

1. What is the importance of breastfeeding?
2. Have you ever received any training on breastfeeding?
3. Who trained you?
4. Where did you get information on breastfeeding/complementary feeding?
5. At what age do you think a child should be offered complementary foods?
6. What are the reasons for introducing complementary foods in this area?
7. Which diseases are common to children under six months in this area?

Appendix 4 - Training Curriculum

Training	Teaching method	Teaching aids	Day
<p>Subject matter</p> <ul style="list-style-type: none"> - Study title, objectives, aims and purpose - Questionnaire contents. - Coding - Interviewing skills and questionnaire administration; - Probing clarification of answers, filling the responses 	<ul style="list-style-type: none"> Lecture Discussion Role play Discussion Lecture 	<ul style="list-style-type: none"> Hand outs, sample Questionnaires Notes Copies of questionnaires 	<p>Day 1</p>
<ul style="list-style-type: none"> - Anthropometric measurements, - Use of weighing scale, Salter scales, length board and recording of findings - Growth monitoring chart. interpretation of graph. recording findings - Ethics during field work consent, confidentiality - Evaluation of the training 	<ul style="list-style-type: none"> Demonstration Asking and answering questions Lecture Discussion Role play 	<ul style="list-style-type: none"> Salter scale Length measuring Measuring board Notes Copies of growth monitoring chart Questions for 	<p>Day 2</p>

Appendix 5 - Research Permit

MINISTRY OF SCIENCE & TECHNOLOGY

Telegrams: "SCIENCE TEC", Nairobi

Fax No.

Telephone No: 318581

When replying please quote

MOS&T 13/001/36C 440/2



REPUBLIC OF KENYA

JOGOO HOUSE "B"
HARAMBEE AVENUE
P.O. Box 60209-00200
NAIROBI
KENYA

5th June 2006

Lucia Mutindi Ndolo
University of Nairobi
P.O. Box 30197
NAIROBI

Dear Madam

RE: RESEARCH AUTHORIZATION

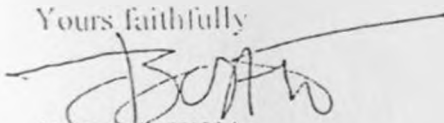
Following your application for authority to carry out research on **Factors associated with introduction of Complementary Feeding of Infants below six months in Machakos District Kenya**

I am pleased to inform you that you have been authorized to carry out research in Machakos District for a period ending 30th August 2006.

You are advised to report to the District Commissioner, the District Education Officer Machakos District before commencing your research project.

On completion of your research, you are expected to submit two copies of your research report to this office.

Yours faithfully



B. O. ADEWA

FOR: PERMANENT SECRETARY

Copy to:

The District Commissioner - Machakos District
The District Education Officer - Machakos District

Appedix 6 – Consent from MGH

UNIVERSITY OF NAIROBI

18/7/06
Checked for D.D.
Signature

Lucia M. Ndolo
University of Nairobi
Kabete Campus
UTHIRU

9th June 2006

perm. granted
hospital
14/06/06

The Medical officer of Health
P.O. Box 19
MACHAKOS

RE: PERMISSION TO DO RESEARCH AT THE MACHAKOS GENERAL HOSPITAL

I am an in-service student at Nairobi University, Kabete campus doing a Masters in Applied Nutrition. I work with the Ministry of Agriculture Machakos

I intend to do my research, which will be on exclusive breast feeding, at the Machakos general Hospital

This will be from July to August I am therefore requesting to be granted permission to do my research at the MCH clinic, at Machakos General Hospital

Thank you

Yours faithfully,

LN
Lucia M. Ndolo

Trs Tangotika (D.D.)
kindly take up the
Request in per D.D.
approval
signature
17/7/06

NAIROBI UNIVERSITY
KABETE LIBRARY