FEEDING PRACTICES AND NUTRITIONAL STATUS OF CHILDREN UNDER FIVE YEARS IN KWARE SLUM, ONGATA RONGAI, KAJIADO DISTRICT, KENYA.

BY

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A Thesis presented in partial fulfillment for the degree of Master of Public Health and Epidemiology of Kenyatta University.

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DECLARATION

I Beatrice Olack do hereby declare that this thesis is my original work and has not been presented for a degree in any other university.

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We confirm that the candidate under our supervision carried out the work in this Thesis.

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DEDICATION

To my Dear Parents, for having faith in me that I can make it.
ACKNOWLEDGMENTS

This study would not have been possible without the assistance of several people to whom I am greatly indebted.

My Supervisors, Professor Judith Waudo and Professor Romanus Okelo for their guidance, encouragement and close supervision. Special thanks to Mrs. Sophie Ochola for her inputs on my research proposal and her commitment to read and correct my work.

I am grateful to the mothers of children under five years in Kware Slum who were sources of these data. Thanks to the staff of Ongata Rongai Health Center for their continued support during the data collection period.

I am very grateful to my parents for their encouragement and willingness to support me in all aspects pertaining to my studies.

Lastly I am greatly indebted to my husband Sam for his patience, financial support and the parental role he played for our children Steve and Lizz while I was busy with my studies.

To you all, I say, Thank you and may God bless you abundantly.
ABSTRACT

A healthy and nutritionally well-fed population is indispensable for economic growth and development. The interaction between inadequate dietary intake and disease leads to malnutrition, disability and death. Insufficient access to food, inappropriate caring practices such as improper feeding practices, poor environment, inadequate health services and low women status play a major role in catalyzing the whole process. Despite numerous nutrition interventions in developing countries, the nutritional status of children under five years of age has continued to deteriorate. Feeding practices have a strong influence on children's nutritional status and are considered to be factors, which can be modified to prevent ill health in children under five years of age.

The purpose of the study was to assess child feeding practices and nutritional status of children under five years of age. The study was carried out in Kwara Slum of Ongata Rongai, Kajiado District. The sample consisted 194 preschool children.

Data were collected using semi-structured interviews, spot observation and anthropometric measurements. Data were processed using the Statistical Package for Social Sciences (SPSS). Descriptive statistics such as means, frequencies and standard deviation were used to describe and summarize the data. Chi-square test and Pearson's correlation coefficient were used to test for association between nutritional status and independent variables of interest.
Anthropometric data were analyzed using the z-scores in relation to the National Center for Health Statistics reference values.

Research findings revealed that malnutrition exists in Kware Slum with 26.8% of the children being stunted, 23.3% children being underweight and 10.8% being wasted. Mothers’ marital status, age and education level were not significantly associated to the nutritional status of the children. Findings of the study revealed that protein intake ($r=0.16, p = 0.04$), type of meal service ($\chi^2 = 5.639, df = 1, p = 0.018$) and the person who feeds the child ($\chi^2 =8.887, df = 2, p = 0.012$) had significant association with the children’s height-for-age.

There is evidence of the critical role of childcare practices as a key input into children’s nutritional status. Optimal child feeding practices contribute to the prevention of growth failure and this benefit may linger long beyond the first five years of a child's life. Good childcare practices also have a positive effect on children’s nutritional status particularly among children from poorer families.
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OPERATIONAL DEFINITIONS OF KEY TERMS USED

i. Dietary intake
Childs diet in terms of quantities and qualities of food eaten by the child such as proteins, fats and carbohydrates.

ii. Education
Number of years of formal schooling

iii. Height:
Referred to how tall the child was.

iv. Income
The amount of money accruing from the family's different sources such as salary from employment or cash from their small businesses.

v. Non-dietary feeding practice
Care practiced when the child is being given food, such as how food is served to the child, where does the child eat, what happens to the child if he/she refuses food, mother-child interaction among others.

vi. Nutritional status
The physical condition of children 6-59 months as influenced by food intake and utilization of the food nutrients. Nutritional status was determined by anthropometric measurements on the indices of weight, height and age.

vii. Occupation:
Any form of paying activity carried out by the respondents
viii. Pre-school child

Refers to a child whose age ranges from 0-59 months. In this study a pre-school child was one whose age was 6-59 months.

ix. Stunting

Defined by height for age at <-2 Z-scores of the reference population. It is growth failure in child that occurs over slow cumulative process as a result of inadequate nutrition or repeated infections. Stunted children are short for their age.

x. Underweight

Defined by weight for age at <-2 Z-scores of the reference population. It is a composite of both stunting and wasting.

xi. Wasting

Defined by height for weight at <-2 Z-scores of the reference population. It is growth failure in child as a result of recent rapid weight loss or failure to gain weight after an illness.

xii. Weight:

Referred to how heavy a child was.
**ACRONYMS**

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Description</th>
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<tr>
<td>FAO</td>
<td>Food and Agriculture Organization</td>
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<tr>
<td>FTT</td>
<td>Failure To Thrive</td>
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<td>GOK</td>
<td>Government of Kenya</td>
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<td>HFA</td>
<td>Height-for-age</td>
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<td>KDHS</td>
<td>Kenya Demographic Health Survey</td>
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<td>MICS</td>
<td>Multiple Indicator Cluster Survey</td>
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<td>WFA</td>
<td>Weight-for-age</td>
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<td>Weight-for-height</td>
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<td>WHO</td>
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<td>RDA</td>
<td>Recommended Dietary Allowances</td>
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CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND OF THE STUDY

The nutritional status of a population is an indicator of the level of development and future potential in the community. This is in view of the fact that a well-nourished population has the capacity to perform and improve their standard of living. On the other hand, malnourished people are unable to give their full potential to foster development. Malnutrition grossly affects the growth and development of children under five years of age (World Bank, 1991). A global assessment of children's nutritional status covering 76 countries indicates that, 36% of children in Developing Countries excluding China were underweight, 39% were stunted and 8% were wasted (World Bank, 1993). In the year 2000 the World Health Organization estimated that 32.5% or 182 million of preschool children in developing countries were stunted while 26.7% children were estimated to be underweight (WHO, 2000). Malnutrition is a product of two major conditions; inadequate food intake and persistent infections. In order to tackle the issue of malnutrition in children, there must be adequate food both in quality and quantity. The overall global food shortage precipitates child malnutrition, but poverty and childcare practices such as feeding practices are major factors contributing to malnutrition (Food Agriculture Organization, 1990). Throughout the 1970's, the population in Sub-Saharan Africa expanded more rapidly than food production. By the end of that decade, the estimated number of people who were undernourished increased from 60 million to 80 million (United
Nations, 1987). Africa’s nutritional situation worsened in early 1980’s with the onset of drought that resulted in further reduction of food production. At this time undernourished population rose to 100 million with a majority of the affected being children (United Nations Children’s Fund, 1985). Sub-Saharan Africa is the only region in which the prevalence of malnutrition has been on the rise; for instance from 1985 to 1995, it increased from 29.9% to 31.1% (Smith and Haddad, 2000).

The Kenyan government has been committed to eradicating malnutrition in order to reduce ill health among her population. Various policy papers have been designed to incorporate nutrition in the overall development plans. In 1979/1983 National Development Plan, the government acknowledged that 30% of the populations suffer from various forms of malnutrition. Besides including issues on nutrition and its related complications in overall development strategies, periodic rural child surveys have been carried out in order to assess the nutritional status of the pre-school children (GOK, 1993). Results from these surveys have indicated no significant improvement in nutritional status of children under five years of age. Available data indicate that 38 percent of total child deaths in the country is attributed to malnutrition and its’ related complications (GOK, 1993). Nation wide, the percentages of children under five years with stunted growth rose from 33% in 1995 to 35% and 23,000 child deaths were associated with moderate to severe malnutrition (GOK, 2001). According to the 2003 KDHS
findings, 31 percent of Kenyan preschool children are stunted, and 11 percent are severely stunted (GOK, 2003).

Kajiado District has been documented as one of the top five districts in Kenya with stunting levels well above 30% for children under five years of age (GOK, 2003). Ongata Rongai is an urban center within Ngong Division, Kajiado District. This urban center has attracted large number of immigrants because of its proximity to Nairobi city. It has experienced rapid population growth due to rural-urban migration and this has led to development of slums such as the Kware Slum. Urban slums in developing countries expand at a high rate of 7% annually. There is evidence to show that these urban new poor are worse nutritionally than their counter parts in the rural areas (World Bank, 1990).

1.2 STATEMENT OF THE PROBLEM

In Kenya the number of children with stunted growth rose from 33% in 1998 to 35% in 2001 and the number of underweight children rose from 22% to 23% during the same period (GOK, 2002). These figures indicate that there has been no improvement in the nutritional status of children under the age of 5 years since 1993. The national nutritional status for children has continued to deteriorate since the beginning of the 1990s, therefore there was need to study and ascertain the present nutritional status of the children under 5 years of age. In most cases children under five years have little or no control over what they eat. Feeding practices play an important role in determining the nutritional status
of pre-school children primarily through supplying qualitatively and quantitatively all the essential nutrients in the child’s diet. A wide range of non-dietary factors contribute to child malnutrition. These include socio-cultural and aesthetic factors on what are to be used as foods, by whom, under what circumstances and in what amounts. The study looked into dietary and non-dietary child feeding practices of mothers or caregivers in order to understand what effect they have on the children’s nutritional status.

1.3 RESEARCH QUESTION
Do dietary or non-dietary child feeding practices of mothers or caregivers affect the nutritional status of children?

1.4 JUSTIFICATION OF THE STUDY
Urban poverty is primarily concentrated in squatter settlement areas. In these areas overcrowding, substandard housing, lack of piped water, uncollected garbage, a high incidence of child mortality, infectious diseases, and malnutrition are the norm (UNICEF, 1994). In many developing countries, the number of malnourished children in urban areas is increasing, both in absolute numbers and as a proportion of all malnourished children (Haddad, Ruel, and Garret, 2000). The problem of malnutrition cannot be fully addressed without looking at some of the child feeding practices being undertaken at the household level that may lead to malnutrition (Cheloti, 2000).
It is hoped that the study will provide information that could be used to influence policy makers on matters pertaining to child nutrition and appropriate intervention programmes. These programmes may then be developed at local and national levels to protect, support and promote good feeding practices in the societies. The study will help to identify some of the key local feeding practices that are extremely favourable or detrimental for children’s nutritional outcome.

The study will indicate the nutritional status of preschool children in Kware Slum. This could be of use to planners and policy-makers in government and non-profit or private organizations dealing with nutrition interventions. The study will also add to the wealth of knowledge available on child feeding practices.

1.5 HYPOTHESIS (NULL)

There is no relationship between child feeding practices and nutritional status of children under five years of age in Kware Slum.

1.6 GENERAL OBJECTIVE OF THE STUDY

To determine the feeding practices and nutritional status of children under five years in Kware Slum of Ongata Rongai.

1.6.1 SPECIFIC OBJECTIVES

1. To assess the feeding practices of children under five living in Kware Slum.
2. To determine the nutritional status of children under five living in Kware Slum.
3. To determine factors affecting nutritional status of children under five years.
CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Malnutrition is a major childhood killer in developing countries (UN, 2000). There is a great deal of evidence that malnutrition even in its mildest form can increase the likelihood of child mortality. This makes malnutrition one of the major public health problems in developing countries (Sanghvi, 1994). Causes of childhood malnutrition include poor child feeding practices, and infections all of which are conditioned by underlying poverty (Administrative Committee on Coordination Sub Committee on Nutrition, 2000).

This review of literature focused on the nutritional status of preschool children, child-feeding practices such as breastfeeding, dietary restrictions and complementary feeding. It also reviewed non-dietary child feeding practices such as, ability to feed child responsively, control of child’s feeding situation, and adaptation to child’s feeding characteristics.

2.2 Malnutrition

Malnutrition is the state in which the physical function of an individual is impaired to a point where he/she cannot maintain adequate body performance process such as growth, physical work, and resistance from disease. In children, it is depicted as growth failure (World Food Programme, 2000).

Stunting is a condition in which children appear short for their age and wasting is growth failure as a result of recent rapid weight loss usually as a consequence of
acute food shortage or severe disease. Underweight may be as a result of both stunting and wasting. Globally there are more than 150 million preschool children who are underweight, and more than 200 million children are stunted (ACC/SCN, 2000). Approximately one-third of children under five years of age have low height-for-age (<-2 Z-scores with respect to reference data) (ACC/SCN, 2000). Childhood malnutrition remains a major health problem in resource poor communities leading to excessive rates of morbidity and mortality, stunted growth and impaired neurobehavioral development.

Children are the primary victims of hunger and malnutrition because unlike adults they are less able to fend for themselves and are likely to lose out in the struggle for scarce resources (GOK-UNICEF, 1993). Preschool children are more susceptible to malnutrition and are more likely to suffer long-term negative effects of these insults physically, cognitively, and in reproductive performances in adulthood (Martorell, 1993). Poor infant feeding and child health practices make child malnutrition worse.

Child malnutrition is cyclical as influences at one stage in life affect the outcome of another stage (UN, 2000). Malnutrition is a violation of the child's human rights (Eide and Eide, Oshaung, 1994). It causes a great deal of human suffering both physically and emotionally. In combating malnutrition the goal is to improve the quality of life rather than deal with the right of survival (World Bank, 1988).
2.3 CONCEPTUAL FRAMEWORK ON CHILD NUTRITION

Child nutritional status

Child's dietary intake

Household food

Resources for food

Food production

Cash income

Food in kind

Resources for care

Caregiver control of resources

Caregiver mental and physical status

Caregiver knowledge and belief

Resources for health

Safe water

Adequate sanitation

Health care availability

Environmental safety

Political and economical structure

Socio-cultural environment

Potential resources

Basic determinants

Immediate determinants

Source: Adapted from UNICEF, 1998.
This framework recognizes three levels of causality corresponding to immediate underlying and basic determinant factors of child nutrition status. It helps in the analysis of information and facilitates better understanding of the factors that interact to influence nutritional status of preschool children.

Immediate determinant of child nutrition status manifest themselves at the level of individuals. This framework describes food, health, and care as the three main underlying preconditions for adequate child nutrition.

2.3.1 Household food security

In simple terms food security is concerned with people's ability to access adequate food to meet dietary needs. Household income, prices in the local market affect food purchases. A child with inadequate dietary intake is more susceptible to disease. Disease suppresses appetite and inhibits absorption of nutrients in foods and competes with child's energy. Dietary intake must be adequate in quantity and quality.

2.3.2 Health and environment

This involves an individual's degree of access to good quality health services. Safe water supplies, adequate sanitation and good housing are preconditions for adequate nutrition. Health and environment influence exposure and incidences of infectious diseases. Key environmental issues are the degree of access to adequate quality of safe drinking water, adequate sanitation and adequate
housing. Important health issues are; existing primary health infrastructure, types of services offered, their accessibility and affordability especially in regard to the vulnerable groups.

2.3.3 Social and care environment

Malnutrition can occur even when access to food and health care is sufficient and the environment is reasonably healthy. The social context and care environment within the local community and household can influence child nutrition. Appropriate childcare practices that include sound feeding practices are essential for good nutrition and health. Cultural factors and values influence the priority of care given to young children. Culturally, preschool malnutrition is widespread where women suffer social and economic discrimination.

2.3.4 Resources and malnutrition

Basic determinants behind insufficient food, health or childcare are the quality and quantity of resources available who controls them and who uses them. Human economic and organizational resources combined form projects or programmes aimed at improving child nutrition.

Political, cultural and economic environment may promote or hinder the efforts of community or household. Political and economic resources determine how problem of child malnutrition is perceived, the degree to which the problem triggers remedial action and nature and extent of such action. Political, economic
cultural and social factors affect utilization of potential resources and how the resources are translated into resources for food security, care and health services.

2.4 Nutritional Status of Children Under Five Years

Nutritional status is the physical condition of an individual usually based on body measurements in relation to a reference population (FAO, 1990). Children's nutritional status is a reflection of their overall health. When children have access to adequate food supply, are not exposed to repeated illness and are well cared for, they reach their maximum growth potential and are considered well nourished (CBS, 2000). Patterns of growth over a period of time and a child's progress are the best measures whether a diet is supplying enough nutrients for growth, development and psychological needs. In 1990, the world summit for children held in New York reflected the world's hope for children. One of the goals that this summit proposed was to reduce malnutrition rates among children under five years of age by 50% by the year 2000. Although this has been achieved in South America the overall rate in most other developing countries has declined by 17%. The goal currently stresses the need to reduce malnutrition rates by half the levels of 1990's by the year 2020 (UNICEF, 2002).

Results from a 1993 demographic and health survey in Turkey on pre-school children revealed that there is continuous deterioration in the nutritional status of pre-school children. This study showed that by the age of 5 years, half of the
children were chronically malnourished indicating inadequate feeding practices in early childhood and presence of recurrent infections (Tunçbilek et al., 1996). In Kenya malnutrition remains a major public health problem amongst the children under five years of age. The nutritional status of the Kenyan children in the year 2001 showed that 35% were stunted, 6% were wasted while 23% were underweight (GOK, 2002). Unsatisfactory feeding practices have been shown to be major factors contributing to poor physical and mental development of a child (WHO, 2000). Impaired growth and development in children can affect the rest of their lives and compromise their academic performance and ability to contribute positively towards society.

2.5 Child Feeding Practices

Child feeding, which includes breastfeeding and complementary feeding practices, is composed of various dimensions namely; the type, quality, texture, nutrient density of food, and the diversity of the diet (Armond and Ruel, 2001). Appropriate child feeding practices are age-specific, and are also defined within narrow age ranges. They follow a continuum from exclusive breast-feeding starting soon after birth to the complete adoption of the child to the family diet. There is need to take into account the various dimensions of child feeding as well as the age-specific requirements of the child in order to characterize the adequacy of child feeding.
2.5.1 Breastfeeding

This is the best mode of caring behavior that provides unequivocal nutritional health and emotional benefits to the child as well as the mother (UN/SCN, 1991). Breastfeeding provides immunity to the child and protection against infectious diseases. The beneficial effect of breastfeeding children is particularly important for children living in contaminated environment such as the urban slums. In these settings where it is almost impossible to prepare complementary liquids or breast milk substitutes hygienically children who are exclusively breastfed have significantly lower diarrhoeal morbidity and mortality compared to those who receive mixed feeding (Brown et al., 1988).

Exclusive breastfeeding is the key feeding practice of concern until 6 months of age. A cross-sectional survey in Ghana by Ruel et al. (2001), found that children 6–18 months of age who had been exclusively breast-fed during their first four months of life were significantly taller than those who had not been exclusively breastfed.

2.5.2 Complementary Feeding

Complementary feeding is progress from milk-based liquid diet to diversified solid-based foods. It is the process when breast milk alone is not sufficient to meet nutritional demands of infants and therefore other foods and liquids are added to the child’s diet along with breast milk (Pan American Health Organization/World Health Organization, 2003). Any non-breast milk foods or
nutritive liquids given to the young children during this period are known as complementary foods. These foods may be foods specially prepared for children or they may consist of family foods that are served both to children and other family members. This change should be part of natural process through which infants adjust to other foods. However, in many cases this becomes nutritional aggression that places the child in a cycle of diarrhoea and malnutrition (Mercedes et al., 2000).

Data from other parts of the world indicate that complementary feeding practices are sub optimal from several perspectives. In some cases the foods are introduced earlier than is desirable while in other cases their introduction is inappropriately delayed. During their prospective studies of Vietnamese children Hop et al. (2000), showed that early feeding of solid foods to children less than 3 months of age is associated with poor child growth up to 48 months of age. The frequency and amounts of these foods offered may be less than required for normal growth or their consistency or energy density maybe inappropriate in relation to the child’s nutritional needs. Frequent microbial contamination of complementary foods and the associated high rates of diarrhoeal diseases also indicate the need for improved food safety. Finally responsive feeding, maternal encouragement to eat and other psychological aspects of care during feeding are likely to be important for ensuring adequate food and nutrient intake (Ruel et al., 2003).
Mothers accept lack of appetite as normal in childhood illnesses and in most cases various foods are withheld from the sick child. Diet history data revealed that 33% of mothers in slums of Nakuru town omitted milk and beans in child’s diet during episodes of diarrhoea (Mambo, 1990). Withholding food during illness is a practice that can seriously reduce chances of recovery in children and if prolonged this practice leads to malnutrition (Mitzer, 1984).

2.5.3 Dietary Restrictions

The state of nutrition of any community or a group of people depends to a very great extent on the quality and quantity of food its members consume. Socio-cultural and aesthetic factors influence what is to be used as food, by whom, in what amounts and under what circumstances. This commonly affects the vulnerable groups such as the expectant mothers and young children (Jerome et al., 1980). Many problems of childhood nutritional status are encountered during the early years of childhood. Not only is there a transition from infant food to adult food but also a number of food taboos begin to limit the variety of foods available for feeding the child (Ebrahim, 1980).

A myriad of folk beliefs associated with intrinsic and magical properties of food have characterized the rationale behind foods fed to young children. Foods such as cakes are seen to offer prestige while staple foods in most cases offer group identification. Avoidance of various foods may also be viewed as an expression of God’s moral law (Jerome et al., 1980). Examples of food-linked taboos are
virtually limitless. Prohibition of high protein foods such as eggs or chicken in child’s diet is an example of food taboos that eliminate much needed nutrient being fed to the child at a critical period in the child’s growth and development (HEW, 1973).

Inappropriate cultural beliefs often cause families to give their children diets that are less in quality and quantity (Martorell and Ho, 1982). Within the family, patterns of food distribution have nutritional consequences. The order of eating, identity or status of individuals allotted large quantities of food and method of feeding the young children affect the nutritional status of children under five years. In many cases, these children are fed left over adult foods without any special nutrient supplementation (Ebrahim, 1981). Cultural practice of over reliance on a specific staple food leads people to believe that the staple is the best food for children thus the mothers feed their children on diluted forms of these foods which in most cases have little or no nutritive values.

2.5.4 Feeding Interaction between caregiver and the child

Increasingly it is recognized that in addition to dietary aspects of feeding, caregiver child interactions during feeding might critically influence nutrient intakes. Feeding behaviors often occur in ways that can be conceptualized as care-giver" feeding style." Literature conceptualizes three feeding styles as: controlling, laissez-faire, and responsive (Birch and Fisher 1995;Bentley 1999).
In a controlling style of feeding the caregiver seeks to control when and how much the child eats. It has been theorized that children learning to eat in an environment characterized by controlled feeding are at a risk of becoming obese as they cannot recognize their appetite to self regulate their energy intake (Black et al., 2000).

Laissez-faire or passive feeding may be due to lack of time and energy or to various beliefs that children should not be pressurized to eat as the “stomach knows limits” (Bentley et al., 1995). Although this belief may seem reasonable, for a child with anorexia, extra encouragement may be necessary for adequate nutrient intake. Laissez-faire or passive feeding have been documented in diverse cultural settings in developing countries and have been hypothesized to contribute substantially to growth faltering in children 6-24 months of age especially when combined with an environment where the children are frequently ill (Dettwyler, 1986 and Bentley et al., 1991b).

Active feeding refers to the caregivers’ ability to feed responsibly, including encouragement to eat, offering additional foods providing second helpings, responding to poor appetite and using a positive style of interaction while feeding the child. Active feeding is necessary for the anorexic child. But this means having the time, knowledge, resources, self-confidence and support to encourage the anorexic children to eat (Griffith, 1988).

Child and caregiver behaviors that could have associations with child nutrient intake can be categorized into: -
1. Adaptation of feeding to the child’s characteristics including psychomotor capabilities (use of finger foods, spoon handling ability, ability to munch or chew).

2. The caregiver’s ability to feed responsively, including encouragement to eat, offering additional foods, providing second helpings, threats to stimulate eating, timing of feeding and response to poor appetite.

3. The feeding situation including the organization and regularity of the situation, whether the child is supervised and protected while eating, frequency of feeding, with whom the child eats and any distractions during eating events (Engle et al., 1996).

2.5.4.1 Adaptation of Feeding to Child’s characteristics

Caregivers need to be sure that children are capable of self-feeding expected of them. However, children also have a drive for independence and may eat more if they are allowed to use newly learned finger skills to pick up foods. A child’s capacity to process food by sucking, munching or chewing increases with age. For example by 7 months of age the “gag reflex” moves to the posterior third of the tongue, permitting the child to ingest solids more easily (Brown et al., 1995). The duration of feeding decreases with age for solid and viscous foods while the children’s ability to hold a spoon, handle a cup or grasp a piece of solid food increases with age.

Anorexia, described as lack of normal appetite, disinterest in food or refusal to eat has been reported amongst children worldwide. Poor child appetite plays a
major role in inadequate nutrient intake and caregiver's ability to deal with child anorexia is significant for child intake (Piwoz et al., 1994; Bentley et al., 1995). Results from several studies in developing countries have suggested that caregivers respond to acute anorexia with a variety of efforts to encourage children to eat (Almroth et al., 1997). Increased encouragement might occur when children are perceived as anorexic even in a setting where the children are left to feed on their own as they wish (Bentley et al., 1991). Parental help and control over feeding can mitigate the potentially detrimental effect of lack of appetite on children's growth (Dettwyler, 1989).

2.5.4.2 Caregiver's ability to feed child responsively

Feeding can be an active process particularly with young children where caregivers can encourage, offer more food, talk to children while eating, model eating behaviors and monitor how much the child eats. In many societies caregivers are passive feeders, leaving the eating initiative to children (Dettwyler, 1987). At the other extreme are cultural patterns, which support caregiver control of eating characterized by, continued and even intrusive pressure such as force-feeding the children (Brown et al., 1988; Launer and Habicht, 1989). In this case, rather than providing an opportunity for interaction and educational enhancement, feeding becomes a time of conflict with intrusive ineffective caregiver strategies, which result to high levels of child refusal.
In situations in which feeding encouragement is relatively low, increased encouragement was observed on ill children (Bentley et al., 1991) or on children who refuse food (Engle and Bhattarai, 1996). Thus active feeding may have a compensatory role rather than an enhancement role.

The person feeding the child may influence his/her willingness to eat. Children often refuse to eat if preferred caregivers are absent. Patience, understanding, and recognition of the child's need to gain familiarity with the caregiver increase the chances of successful feeding. Caregivers' beliefs about the appropriate level of demand for food by children can result in reduced or increased demand for food. If a caregiver feels that a child should learn not to ask for more food or immediate response to children's request for more food will represent "spoiling" of child, the chances of the child achieving adequate intake are lowered, since the child plays a role in amount of food ingested (Garcia et al., 1990). Studies comparing Failure To Thrive (FTT) children from normally growing children have found differences in the feeding style of the two groups. In the FTT groups, an authoritarian disciplinary approach overrides children's internal regulatory system for hunger and there are low maternal response and sensitivity to children's hunger cues. This style may be combined with family isolation, possibly difficult temperaments or subtle oral/motor feeding problems in children leading to a breakdown of the caregiver child relationship (Black, 1995). Responsive feeding represents an optimal style of feeding to support the short and long term growth

2.5.4.3 Caregiver Control of Child’s Feeding Situation

Children can be fed on a regular basis daily sitting in a prescribed place with food easily accessible or feeding can occur while children wander around at a time and place the caregiver finds convenient. Children are easily distracted by foods that are difficult to eat and if supervision of feeding is inadequate, other siblings or even animals may take advantage of the young child’s vulnerability and take the food away or the child may end up spilling the food to the ground (Engle et al., 1996). Studies in developing countries found associations between specific feeding behaviors e.g. location of feeding, organization of the feeding event, with mothers education (Guldan et al., 1993). These authors concluded that more educated mothers had labour-intensive childcare strategies particularly in selecting a clean and protected location for feeding their children. Feeding from a common pot as in various cultures reduces the chances of a younger child getting enough food. One project found that when mothers paid attention to the quantity children ate, they were surprised by the small amounts and were willing to increase the amounts fed (Dickin et al., 1996). One way of doing this was to have a separate bowl for each child to help determine the quantities eaten.
2.6 Summary of Literature Review

Child health and nutritional status are key indicators of the quality of life in developing countries. Many ethnographic studies have found out that becoming accustomed to food and learning to eat the family's staple diet are important aspects of childhood socialization in Africa. Whereas mothers initiate feeding when their children exhibit cues of hunger (looking or reaching for food) children are usually assumed to know when they are full and thus when eating should stop (Ebrahim, 1981).

Malnutrition results from a combination of diseases and dietary inadequacies, interacting in a mutually reinforcing manner. It also lowers immune-competence and increases the risk and severity of infection. The ideal approach in reducing nutritional consequence of infection is to first focus attention on improving children's usual diet and mother's day-to-day child feeding practices (Brown et al., 1988).
CHAPTER THREE: MATERIALS AND METHODS

3.1 STUDY AREA

The study was carried out in Kware Slum, Ongata Rongai Division, Kajiado District. This district is one of the 18 districts within Rift Valley Province. It is located at southern part of the province between longitudes 36° 5' and 37° 5' east and between latitudes 1° 0' and 3° 0' south. It is divided into seven administrative divisions namely: Ngong, Magadi, Isinya, Central, Namanga, Mashuru and Loitoktok. Ongata Rongai is within Ngong Division and borders Nairobi Province at approximately 24 Kilometers from the city center (Appendix 4b).

The Kware Slum is a non-demarcated area in Rongai, which was initially a quarry but is now occupied by informal settlers. Most nutrition surveys in Kajiado District have been concentrated in the arid and semi arid lands leaving out this slum that is growing fast and facing problems such as malnutrition encountered by urban slum dwellers.

3.2 TARGET POPULATION

Children under five years of age living in Kware Slum were targeted. In households where there were two or more children under 5 years of age, the youngest child was enrolled for the study.
3.3 SAMPLE SIZE.

Calculation of the desired sample size was based on 50% for maximum sample size. The following formula was used.

\[ n = \frac{2 \cdot p \cdot q \cdot (Z_\alpha + Z_\beta)^2}{(P_1 - P_0)^2} \]

Where:

- \( n \) = desired sample size
- \( Z_\alpha \) = the standard normal deviate set at 1.96 which corresponds to 95% confidence level.
- \( Z_\beta \) = the standard normal deviate set at 1.28 which corresponds to 90% confidence level.
- \( P_0 \) = the proportion of children under five years who are malnourished. In this case 50% is used to give the maximum sample size.

\[ P_1 = P_0 \times R \]
\[ 1 + P_0 (R - 1) \]

R = Relative risk=2

\[ p = \frac{1}{2}(P_1 + P_0) \]

\[ q = 1 - p \]

\[ n = \frac{2(0.584) (0.416) (1.96 + 1.28)^2}{(0.667 - 0.500)^2} \]

\[ n = 182 \]
A total number of 194 mothers were interviewed to obtain data on child feeding practices and their childrens' anthropometric measurements were noted.

3.4 RESEARCH DESIGN

The study was a Descriptive Cross-Sectional Study. This study design was chosen to allow the researcher to study the respondents within a short period of time in their natural environment, without any manipulation.

3.5 SAMPLING PROCEDURES

Kware Slum is administratively divided into four clusters namely: Kisumu Ndogo, Midika, Kware, Central, and Kamkunji. The researcher was guided into the clusters by the nutritionist at the Ongata Rongai Health Center. Together they marked all the households with children under five years old. Random numbers were allocated to these households and sample size for each cluster was obtained by simple random sampling. Ratio proportionate to size was used to determine the sample size in each cluster.
3.6 DATA COLLECTION

3.6.1 RESEARCH INSTRUMENTS

The instruments used in collecting data included:

a) **Semi structured questionnaires**

Semi structured questionnaires were used to gather data from mothers with children under five years old. The interview guide had three sections: Section one was used to collect demographic characteristics of the mothers. Section two focused on child health and feeding practices. The last section involved the anthropometric measurements of the child. Interviews were carried out in Kiswahili language. The interviews were held inside the houses especially at meal times to allow for observations. Field notes were taken at the same time to help in filling in the gaps of questions not well-answered or incomplete answers.

b) **Spot observation checklist**

Observations took place simultaneously with the interviewing process. The researcher used the checklist (Appendix 2) to check on hygiene, sanitation, and mother-to-child interaction during feeding. There was need to minimize the respondents behavior during observation thus they were not made aware that they were being observed. Detailed account of what was observed in was recorded as soon as possible after the observation.

c) **Focus group discussions**

These were held to address some qualitative research questions. Four focus group discussions were held. Each FGD consisted of 8-10 mothers considered to
be opinion leaders in the Kware Slum. The mothers were invited in advance and the researcher used the discussion guide (Appendix 3) to facilitate the session, which lasted for approximately one hour. The respondents were unwilling to be audio taped, thus the researcher used verbatim quotations from the respondents so as not to loose meaning to the answers the mothers gave on the FGD questions.

**d) Anthropometric measurements**

The nutritional status of the children under five years was obtained by taking the measurements using the three independent variables. That is weight, height and age. These were then compared with National Center for Health Statistics reference norms.

i. Age in months

This was obtained from respondents or documentary evidence of birth (such as growth monitoring cards or baptismal certificates). Where there were no documents, the birth date was estimated using local events occurrence.

ii. Weight measurements in kilograms:

The child was weighed with minimal clothing on to the nearest 0.1 Kilograms. Children who could not stand on their own were weighed using a Salter scale. While the ones who could stand on their own were weighed on a bathroom scale. These scales were calibrated after each measurement. Two measurements for each child's weight was taken and average weight used for accuracy.
iii. Height or length measurements in centimeters

Height was measured using a length board to the nearest 0.1 centimetre. This applied to children above 24 months. For children below this age their length was measured. The young children were made to lie down flat on the length board while the older ones stood straight with their heels, buttock and back of head resting against the length board.

3.6.2 PRETESTING

The above instruments were pre-tested in one of the clusters namely Kware Central. This was important such as to:

i. Determine clarity and comprehensiveness of the questionnaire by both the interviewer and respondents.

ii. Facilitate pre-coding of questions on the questionnaire.

iii. Estimate time taken in administering the questionnaire.

After pre-testing appropriate revision were made before fieldwork.

3.6.3 CONSTRAINTS INTO DATA COLLECTION

i. Most mothers willing to participate in the study demanded instant material gain.

ii. The mothers were quite suspicious when older children had to be weighed, as the norm was that only children under two years are normally weighed in the health centers.
3.7 DATA MANAGEMENT

3.7.1 DATA PROCESSING

Data cleaning was carried out simultaneously as data collection. The interview schedules completed on a particular day were reviewed for completion, consistency and proper recording. Where necessary the relevant corrections were made at the end of the day.

Data were coded, edited and stored into the computer using hard disks and floppy diskettes.

3.7.2 DATA ANALYSIS

Data were analyzed using the Statistical Package of Social Sciences (SPSS). Descriptive statistics such as means, frequencies and standard deviation was used to describe and summarize data on mother’s socio-economic and demographic characteristics as well as child characteristics.

Nutritional status of children was calculated using the Z-scores in relation to the American National Center for Health Statistics reference values. Epi info was used to analyze the nutritional status of the children, to determine whether they were underweight, stunted or wasted. Chi-square test was used to test association between variables.
CHAPTER FOUR: RESULTS

4.1 INTRODUCTION

The study was designed to investigate the feeding practices and nutritional status of children under five years old living in Kware Slum of Ongata Rongai. Three main instruments were used in data collection namely a semi-structured interview schedule, spot observation checklist and focus group discussion guideline. The study sample population consisted of 194 mother-child pairs. The findings of this study were presented under sub-topics that included household and mothers' characteristics, child feeding practices, child morbidity and nutritional status of the pre-school children using the three indicators wasting, stunting and underweight.

4.2 CHARACTERISTICS OF THE HOUSEHOLDS

4.2.1 Type of houses

Most houses (89.0%) in Kware Slum were made of temporary or semi temporary materials. The houses were haphazardly arranged and a majority had poor ventilation. Roofing material consisted mostly of iron sheets or second hand corrugated iron sheets. The floors were mainly earthen with a few of them cemented. The walls were made of stones sequentially arranged and joined with mud. A few houses (23%) had wooden doors while majority (77%) of the doors were made of scrap metal.
4.2.2 Sources of water

A majority of the mothers (90.7%) obtained water from boreholes. Out of the mothers who obtained water from the boreholes, only 4.1% had direct access to the boreholes while the remaining 86.6% of mothers bought the water from donkey handcart pushers at Ksh. 15 per twenty-liter jerry can. A few mothers (9.3%) had running piped water inside or outside their houses.

4.2.3 Environmental sanitation

Houses in Kware were crowded with tiny compounds, which were generally dirty. This was especially so for those with small children where faeces was scattered all over. One respondent had this to say regarding sanitation.

"Toilets are rare and water is scarce. When the children defaecate on the compound it's easy to pour soil over it than when they do it on their clothes as you have to buy water to clean the mess" (Personal interview, mother, Kware, 2002).

There was no planned waste disposal system and everybody disposed garbage in the way they thought was best.

4.2.4 Toilet facilities

Most of the households used public latrines (56.7%), while 12.9% of them had private ones. Lavatories were rare in Kware as only 8.8% owned them. Most of
the public latrines had no roofs, were quite close to the houses and their floors were generally messy covered with urine and faeces. Paper bags or open space substituted for toilets and were used by 21.6% of the respondents. Bathrooms were rare and most of the household members bathed outside at night or inside the house during the day.

4.3 MOTHERS' CHARACTERISTICS.

4.3.1 Population size and structure
A total of 194 mothers were interviewed. Over one third of the mothers interviewed (35.6%) were from Central cluster while Kisumu Ndogo had the least number of mothers (17%). Kamkunji and Midika clusters had 25.8% and 21.6% respondents respectively.

4.3.2 Ethnic distribution of mothers.
The main ethnic group from the sample population constituted of Luos (29.9%), Kikuyus (22.2%), Kambas (22.2%), and Luhyas (15.5%).

4.3.3 Age distribution of mothers
The mean age of the mothers was 27 years. As shown in Table 1, a majority of the mothers (36.6%) were between 25-29 years old. A few mothers (6.7%) were less than 19 years old and the same proportion of mothers were more than 36 years old. Other mothers (18.1%) were between 30-35 years.
Table 1: Age distribution of mothers

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Distribution of mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>&lt;19</td>
<td>13</td>
</tr>
<tr>
<td>20-24</td>
<td>62</td>
</tr>
<tr>
<td>25-29</td>
<td>71</td>
</tr>
<tr>
<td>30-35</td>
<td>35</td>
</tr>
<tr>
<td>≥36</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
</tr>
</tbody>
</table>

4.3.4 Marital status of the mothers

Figure 1 shows that a majority of the mothers were married (82%) and lived with their spouses and children. Two percent of the mothers were widows while 16% were single.

Figure 1: Marital status of the mothers
4.3.5 Education level of mothers

A majority of the mothers (72.2%) had primary education, 16.5% attained secondary education while 1.5% of the mothers had college or post secondary education and 9.8% had no education at all (Figure 2).

Figure 2: Mothers’ level of education

4.3.6 Occupation of the Respondents

A majority of the mothers (86.8%) were involved in small businesses such as selling handicrafts, selling groceries in kiosks, selling fruits and vegetables by the road sides, fetching water and laundering clothes for cash. A few (13.2%) were comprised of professionals such as teachers and secretaries (Table 2).
Table 2: Distribution of mothers by occupation

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Distribution of mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Selling handicrafts</td>
<td>15</td>
</tr>
<tr>
<td>Shopkeeper</td>
<td>20</td>
</tr>
<tr>
<td>Street vendor</td>
<td>33</td>
</tr>
<tr>
<td>Household servant</td>
<td>16</td>
</tr>
<tr>
<td>Fetching water</td>
<td>26</td>
</tr>
<tr>
<td>Laundering clothes</td>
<td>48</td>
</tr>
<tr>
<td>Professional employees</td>
<td>24</td>
</tr>
<tr>
<td>Total</td>
<td>182</td>
</tr>
</tbody>
</table>

4.3.7 Household Income

Table 3 shows that a majority of the households (73.1%) had an income of between 1001-3000 ksh per month. A quarter of the households (25.3%) had an income more than 3000 ksh, and only 1.6% earned less than 1000 ksh per month.
Table 3: Household Income

<table>
<thead>
<tr>
<th>Income in Kenya shillings</th>
<th>Distribution of households</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>≤1000</td>
<td>3</td>
</tr>
<tr>
<td>1001-3000</td>
<td>133</td>
</tr>
<tr>
<td>&gt;3000</td>
<td>46</td>
</tr>
<tr>
<td>Total</td>
<td>182</td>
</tr>
</tbody>
</table>

4.4 CHILD FEEDING PRACTICES

4.4.1 Breastfeeding Patterns

Of all the mothers interviewed, 99% had breastfed the index child. Of the mothers who breastfed their babies, 69.6% initiated breastfeeding within the first hour after delivery while 30.4% initiated breastfeeding after the first hour. The main reason cited for the delay was that mothers felt that they did not have milk during the first day after delivery. At the time of the interview, 61.3% of the mothers were still breastfeeding. The median duration of breastfeeding was 18 months.

As shown in Table 4 a majority of the mothers (72.2%) gave their babies pre-lacteal feeds during the first three days after delivery. Asked what they gave to their babies 22.1% reported that they gave goat's and cow's milk, or infant...
formula. The mothers felt that their babies cried a lot within the first days, so they thought breast milk alone was not sufficient and they needed to supplement it with some other milk. Some mothers (21.4%) who gave sugar and salt solution because they believed that it relieved the babies of stomachaches. Glucose solution and plain water were also used as pre-lacteal feeds.

Table 4: Pre-lacteal feeds given to newborn babies

<table>
<thead>
<tr>
<th>Pre-lacteal feeds</th>
<th>Distribution of mothers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Milk other than breast milk</td>
<td>31</td>
</tr>
<tr>
<td>Plain water</td>
<td>23</td>
</tr>
<tr>
<td>Glucose/sugar solution</td>
<td>23</td>
</tr>
<tr>
<td>Gripe water</td>
<td>19</td>
</tr>
<tr>
<td>Sugar-salt solution</td>
<td>30</td>
</tr>
<tr>
<td>Fruit juice</td>
<td>4</td>
</tr>
<tr>
<td>Honey</td>
<td>4</td>
</tr>
<tr>
<td>Diluted porridge</td>
<td>6</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
</tr>
</tbody>
</table>

4.4.2 Complementary feeding practices

Most mothers (71.1%) initiated complementary feeding at an early age, between 0-3 months. At least 28.4% weaned their children between 4-6 months and only (0.5%) weaned their children after 6 months. Mothers, who initiated complementary feeding early, felt that babies needed more food to fill their
stomachs so that they could sleep soundly as mothers went ahead in search of incomes (Table 5a).

**Table 5a: Age of introduction of complementary feeding**

<table>
<thead>
<tr>
<th>Age in months</th>
<th>Distribution of children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>0-3</td>
<td>138</td>
</tr>
<tr>
<td>4-6</td>
<td>55</td>
</tr>
<tr>
<td>7-9</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
</tr>
</tbody>
</table>

Table 5b shows that diluted porridge was commonly used as a complementary food by 59.3% of the mothers. The porridge had a thin consistency and was made from sorghum, millet, maize flour or a mixture of the flours. Fruits such as pawpaw, avocados and bananas were also given to children by 17% of the mothers. Mashed foods (bananas, potatoes and pumpkin) were used by 13.9% of the respondents. Other complementary feeding foods used included cow’s milk used by 9.8% of the respondents.
Table 5b: First complementary foods given to children

<table>
<thead>
<tr>
<th>Complementary food</th>
<th>Distribution of children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Diluted porridge</td>
<td>115</td>
</tr>
<tr>
<td>Mashed bananas/potatoes/pumpkin</td>
<td>27</td>
</tr>
<tr>
<td>Cow's milk</td>
<td>19</td>
</tr>
<tr>
<td>Fruits</td>
<td>33</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>194</td>
</tr>
</tbody>
</table>

4.4.3 Quality of children’s diet

A 24-hour diet recall was administered to mothers of the index children in order to establish the type of foods eaten and determine the quality of the diet in terms of protein and energy adequacy. The findings revealed that the most consumed foods were milk and milk products (95.4%), grain and grain products (94.8%), green leafy vegetables (82.0%), and roots and tubers by 60.3% of the children. Meat, fish and poultry were consumed by (23.7%) the children. Legumes such as beans, peas and green grams were the least consumed by only 20.1% of the children despite the fact that the researcher observed that these foods were plenty in the market. Fruits were considered a luxury and only 31.4% of the children had been given fruits during the 24 hour preceding the interview.
4.4.3.1 Energy intake

The adequacy of energy intake was determined by calculating the mean intake for various age groups and comparing that with the recommended dietary intake. The results revealed that most of the children did not meet their daily requirements apart from those in the age group 6-11 months who consumed 106.1% proportion of the recommended intake (Table 6a).

The proportion of kilocalories consumed by the children reduced with age and children in age group 48-59 months consumed the least proportion (76.0%) of recommended kilocalories.

Table 6a: Children’s energy intake as a proportion of the recommended energy intake

<table>
<thead>
<tr>
<th>Age</th>
<th>RDA Energy (kcal)</th>
<th>Mean energy Intake (kcal)</th>
<th>Proportion of RDA met (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-11</td>
<td>820</td>
<td>870</td>
<td>106.1</td>
</tr>
<tr>
<td>12-23</td>
<td>1150</td>
<td>1066.2</td>
<td>92.7</td>
</tr>
<tr>
<td>24-35</td>
<td>1350</td>
<td>1055.6</td>
<td>78.2</td>
</tr>
<tr>
<td>36-47</td>
<td>1550</td>
<td>1182.2</td>
<td>76.2</td>
</tr>
<tr>
<td>48-59</td>
<td>1550</td>
<td>1179.7</td>
<td>76.0</td>
</tr>
</tbody>
</table>

*Source of RDA (WHO 1985).
4.4.3.2 Protein intake

The adequacy of protein intake was calculated in the same way as energy intake. The findings revealed that all the children consumed more than the RDA. Children in the age group 6-11 had the highest (171.7%) proportion of protein intake and those 36-47 months consumed the least (113.8%) proportion of the RDA (Table 6b).

**Table 6b: Children’s protein intake as a proportion of the recommended protein intake**

<table>
<thead>
<tr>
<th>Age</th>
<th>RDA Protein (grams)</th>
<th>Mean protein intake (grams)</th>
<th>Proportion of RDA met (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-11</td>
<td>12</td>
<td>20.6</td>
<td>171.7</td>
</tr>
<tr>
<td>12-23</td>
<td>23</td>
<td>28.25</td>
<td>122.8</td>
</tr>
<tr>
<td>24-35</td>
<td>23</td>
<td>29.2</td>
<td>127.0</td>
</tr>
<tr>
<td>36-47</td>
<td>26</td>
<td>29.6</td>
<td>113.8</td>
</tr>
<tr>
<td>48-59</td>
<td>26</td>
<td>33.5</td>
<td>128.8</td>
</tr>
</tbody>
</table>

*Source of RDA (WHO 1985).

4.4.4 Food prohibition

Mothers were asked to indicate if they prohibited or denied some foods to their children. Food was prohibited mainly to children less than two years old as reported by 12.4% of the mothers. Eggs were the most commonly prohibited food
by 58.3% of the mothers, as they believed that eggs interfered with the child’s speech.

In illness, it was noted that 23.7% prohibited their children from eating certain foods. Of the foods denied to the child during illness, 80.3% were protein foods such as milk, beans, beef, and eggs and yet they are known to play a major role in building and repair of worn out tissues. The prohibition of these foods could have a devastating effect on the ailing child. Mangoes were not given to children suffering from malaria. A Majority of the mothers reported that the foods denied to the children during illness interfered with drug function in the child’s body. In one of the Focus Group Discussions most mothers shared the same opinion as depicted below.

“If the child is sick and is given some antibiotics to swallow, you don’t give the child milk or else the antibiotics do not work. A child who has malaria should not take mangoes as this will increase the child’s fever” (Mother, FGD Kware, 2002).

4.4.5 Non-Dietary Feeding Practices

4.4.5.1 Order of meal service

A Majority (76.1%) of the respondents indicated that they served their husbands food first when they were present at meal times as this was viewed as a sign of respect. In one incidence a mother responded by saying,

“Most of the times we feed from hand to mouth. There is barely enough food to eat. Thus I serve my husband first as the head of the house followed by my
In 22.6% of the households the children were given the first priority in meal service. Mothers reported that since the children were young and impatient they had to be fed first. Only 1.3% of the mothers reported that they served themselves first as this allowed them to devote enough time in feeding their children.

4.4.5.2 Type of meal service for the children

A Majority of the mothers (80.4%) appreciated the fact that small children should be served on their own plates. Other mothers (11.3%) especially those with children being weaned felt that food was scarce and so it should not be wasted, thus they ate from the same plate as their children. Some mothers (8.2%) felt that it was best when children shared plates with their siblings (Table 7a). One mother reported,

"He is a poor eater thus when I let him share a plate with the others he will know that food is not a toy and will also compete to have his share or sleep hungry" (Personal interview mother, Kware, 2002).
Table 7a: Type of meal service for children

<table>
<thead>
<tr>
<th>Meal service</th>
<th>Distribution of children</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shares plate with other children</td>
<td>n</td>
</tr>
<tr>
<td>Eats from individual plate</td>
<td>16</td>
</tr>
<tr>
<td>Eats from same plate as mother</td>
<td>22</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
</tr>
</tbody>
</table>

### 4.4.5.3 Action taken to induce children to eat

Mothers were asked to indicate what action they took to induce children to eat during illness or when the children had no appetite. Many (39.7%) mothers reported that they did not take any action until the next meal, 22.2% of the mothers would change the food to see whether the child would eat it, 20.6% encouraged the child to eat by engaging the child in some conversation or play and 17.5% practically forced the food down the child’s mouth. Methods of forcing the child to eat varied from beating the child to forcing the food down the child’s throat (Table 7b).
Table 7b: Action taken to induce children to eat

<table>
<thead>
<tr>
<th>Action</th>
<th>Distribution of children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>No action taken</td>
<td>77</td>
</tr>
<tr>
<td>Encourage</td>
<td>40</td>
</tr>
<tr>
<td>Change food</td>
<td>43</td>
</tr>
<tr>
<td>Forced feeding</td>
<td>34</td>
</tr>
<tr>
<td>Total</td>
<td>194</td>
</tr>
</tbody>
</table>

4.5 Child morbidity

In this study 95.4% of the children were reported to have been sick in two weeks preceding the interview. The most common illnesses were coughs, fever and diarrhoea as shown in Table 10a.

Table 8a: Child morbidity rates

<table>
<thead>
<tr>
<th>Illness</th>
<th>Distribution of children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Diarrhoea</td>
<td>48</td>
</tr>
<tr>
<td>Cough</td>
<td>68</td>
</tr>
<tr>
<td>Difficult breathing</td>
<td>3</td>
</tr>
<tr>
<td>Fever</td>
<td>49</td>
</tr>
<tr>
<td>Convulsions</td>
<td>1</td>
</tr>
<tr>
<td>Vomiting</td>
<td>16</td>
</tr>
</tbody>
</table>

* Multiple responses allowed
4.5.1 Child feeding during illness

As shown in Table 8b, a majority (74.7%) of the mothers reportedly gave children less food than usual during illness because of lack of the child's appetite or child's refusal to eat. Some mothers (13.9%) reported that they gave the same amount of food during illness. Only 1.5% of the mothers fed their children food more than usual during illness. Few (9.8%) mothers did not feed their children during illness.

**Table 8b: Amount of food given to children during illness**

<table>
<thead>
<tr>
<th>Food amount</th>
<th>Distribution of children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Less than usual</td>
<td>145</td>
</tr>
<tr>
<td>Same amount</td>
<td>27</td>
</tr>
<tr>
<td>More than usual</td>
<td>3</td>
</tr>
<tr>
<td>Not fed</td>
<td>19</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>194</strong></td>
</tr>
</tbody>
</table>

4.6 Nutritional Status of Pre School Children

The z scores or standard deviations were used to determine the nutrition status of the children using the NCHS reference standards and cut off points recommended by WHO. Children who were <-2 z scores of standard deviations were considered malnourished. The indices height-for-age, weight-for-age and height-for-weight were used to measure stunting, underweight and wasting respectively. Figure 3 shows that, of the children surveyed 26.8% were stunted, 23.2% were underweight and 10.8% were wasted.
4.6.1 Stunting (Height-for-age)

The height-for-age indicator revealed that 26.8% of the children in Kware Slum were stunted. The prevalence of stunting was highest (28.8%) between 12-23 months and lowest (13.5%) between 6-11 months (Figure 4a). Half of the stunted children (13.4%) suffered from severe stunting (z<-3sd).
Of the stunted children 52% were male while 48% were females (Figure 4b).

Figure 4b Stunting by sex
4.6.2 Underweight (Weight-for-age).

The weight-for-age indicator revealed that 23.2% of the children in Kware Slum were underweight. As with the case of stunting a majority (31.1%) of underweight children were in the age bracket of 12-23 months. The age group 36-47 months had 24.4% underweight children while 17.7% of the children 24-35 months were underweight. Children in age groups 6-11 months and 48-59 months each had 13.3% underweight children (Figure 5a).

**Figure 5a: Prevalence of underweight by age**

More boys (67%) were underweight compared to 33% underweight girls as shown in Figure 5b.
4.6.3 Wasting (Height-for-Weight)

The weight-for-height indicator revealed that (10.8 %) of the children in were wasted. More males (76.0%) were wasted compared to 24.0% females. The prevalence of wasting was highest in children between 6-11 months while it was 19.0% for each of the age groups 12-23 months and 24-35 months. The level of wasting was lowest 14.3% in the age group 36-47 months and 48-59 months (Figure 6b).
Figure 6a: Prevalence of wasting by sex

![Pie chart showing prevalence of wasting by sex](image)

24% male 76% female

Figure 6b: Prevalence of wasting by age

![Bar chart showing prevalence of wasting by age](image)

<table>
<thead>
<tr>
<th>Age in months</th>
<th>Percentage of wasted children</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-11</td>
<td>40</td>
</tr>
<tr>
<td>12-23</td>
<td>30</td>
</tr>
<tr>
<td>24-35</td>
<td>20</td>
</tr>
<tr>
<td>36-47</td>
<td>10</td>
</tr>
<tr>
<td>48-59</td>
<td>0</td>
</tr>
</tbody>
</table>
4.7 Determinants of nutritional status

Statistical analyses were carried out to establish determinants of nutrition status of the children. The results are as presented in Tables 9a to 9c.

4.7.1 Determinants of stunting

Among the socioeconomic and childcare practices tested, type of meal service (p=0.018) and the person who feeds the child (p=0.012) were associated with the nutritional status of the child. Children who received higher proportions of the recommended protein intake (r=0.16, p=0.04) were better nourished than their counterparts who received less proportions. The children who shared their plates of food with their mothers or older siblings were likely to be stunted. As mothers leave their homes daily in search of some labour or employment in order to meet their basic needs, they leave the young children under the care of older children or another adult. Results show that there was an association (p=0.012) between children cared for by older children and stunting. Mothers' education level, marital status and age were not associated with the nutritional status of their children.

4.7.2 Determinants of underweight

Mother's income (p=0.041), sex of the child (p=0.017), type of meal service (p=0.002) and mothers involvement when feeding the child (p=0.004) were significantly associated with the nutritional status of the children. Children of mothers with more income were more likely to be well nourished compared to those whose mothers had low incomes. More male children were observed to be
malnourished than their female counterparts. Due to their large workload mothers involved themselves in other activities while feeding their children. Mothers who encouraged their children to eat had well nourished children than the mothers who were involved in other household activities while the same time feeding their children.

4.7.3 Determinants of wasting
The only variables associated with wasting were sex of the child (p=0.015) and the type of meal service (p=0.024) (Table 9c). Boys tended to be more malnourished than girls. This could be explained by the fact that two weeks preceding the survey (56%) of the boys had been sick compared to (44%) girls who had been sick. More girls (53.1%) had a higher feeding frequency at least four times daily compared to (46.9%) boys who were fed three times daily. Children who were served from their own plates were better nourished than their counterparts who shared their plates of food with their older siblings or their mothers.
<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Chi square</th>
<th>Pearson's Correlation r value</th>
<th>Significance p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital status</td>
<td>2.032</td>
<td>-0.005</td>
<td>0.154</td>
</tr>
<tr>
<td>Education level</td>
<td>3.103</td>
<td></td>
<td>0.212</td>
</tr>
<tr>
<td>Mothers age</td>
<td></td>
<td>-0.005</td>
<td>0.944</td>
</tr>
<tr>
<td>Income</td>
<td>2.843</td>
<td>0.139</td>
<td>0.053</td>
</tr>
<tr>
<td>Sex</td>
<td>0.023</td>
<td>0.16</td>
<td>0.880</td>
</tr>
<tr>
<td>Energy intake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Protein intake</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Type of meal service</td>
<td>5.639</td>
<td>0.16</td>
<td>0.018*</td>
</tr>
<tr>
<td>Action taken when child refuses food</td>
<td>3.469</td>
<td>3</td>
<td>0.325</td>
</tr>
<tr>
<td>Person who feeds the child</td>
<td>8.887</td>
<td>2</td>
<td>0.012*</td>
</tr>
<tr>
<td>Mothers involvement when feeding the child</td>
<td>3.314</td>
<td>2</td>
<td>0.191</td>
</tr>
<tr>
<td>Child morbidity</td>
<td>0.339</td>
<td></td>
<td>0.056</td>
</tr>
</tbody>
</table>

Level of significance:

* p<0.05
** p<0.01
*** p=0.000
Table 9b: Determinants of underweight

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Chi square</th>
<th>Pearson's Correlation</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(\chi^2)</td>
<td>df</td>
<td>r value</td>
</tr>
<tr>
<td>Marital status</td>
<td>0.245</td>
<td>2</td>
<td>0.054</td>
</tr>
<tr>
<td>Education level</td>
<td>3.323</td>
<td>2</td>
<td>0.190</td>
</tr>
<tr>
<td>Mothers age</td>
<td>0.054</td>
<td>0.455</td>
<td>4</td>
</tr>
<tr>
<td>Income</td>
<td>4.162</td>
<td>1</td>
<td>0.096</td>
</tr>
<tr>
<td>Sex</td>
<td>5.732</td>
<td>1</td>
<td>0.139</td>
</tr>
<tr>
<td>Energy intake</td>
<td>9.485</td>
<td>1</td>
<td>0.096</td>
</tr>
<tr>
<td>Protein intake</td>
<td>5.027</td>
<td>1</td>
<td>0.096</td>
</tr>
<tr>
<td>Person who feeds Child refuses food</td>
<td>1.040</td>
<td>2</td>
<td>0.595</td>
</tr>
<tr>
<td>Mothers involvement when feeding the child</td>
<td>11.148</td>
<td>2</td>
<td>0.004**</td>
</tr>
<tr>
<td>Child morbidity</td>
<td>0.346</td>
<td>1</td>
<td>0.566</td>
</tr>
</tbody>
</table>

Level of significance

* p<0.05
** p<0.01
*** p=0.000
### Table 9c: Determinants of wasting

<table>
<thead>
<tr>
<th>Independent variables</th>
<th>Chi square</th>
<th>df</th>
<th>Pearsons Correlation r value</th>
<th>Significance p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marital status</td>
<td>0.225</td>
<td>1</td>
<td></td>
<td>0.636</td>
</tr>
<tr>
<td>Education level</td>
<td>0.239</td>
<td>2</td>
<td></td>
<td>0.887</td>
</tr>
<tr>
<td>Mothers age</td>
<td></td>
<td></td>
<td>0.067</td>
<td>0.350</td>
</tr>
<tr>
<td>Income</td>
<td>1.256</td>
<td>1</td>
<td></td>
<td>0.262</td>
</tr>
<tr>
<td>Sex</td>
<td>5.965</td>
<td>1</td>
<td></td>
<td>0.015*</td>
</tr>
<tr>
<td>Energy intake</td>
<td></td>
<td></td>
<td>0.042</td>
<td>0.560</td>
</tr>
<tr>
<td>Protein intake</td>
<td></td>
<td></td>
<td>0.041</td>
<td>0.566</td>
</tr>
<tr>
<td>Order of meal service</td>
<td>5.121</td>
<td>1</td>
<td></td>
<td>0.024*</td>
</tr>
<tr>
<td>Action taken when child refuses food</td>
<td>0.577</td>
<td>3</td>
<td></td>
<td>0.902</td>
</tr>
<tr>
<td>Person who feeds the child</td>
<td>0.361</td>
<td>2</td>
<td></td>
<td>0.830</td>
</tr>
<tr>
<td>Mothers involvement when feeding the child</td>
<td>1.933</td>
<td>2</td>
<td></td>
<td>0.380</td>
</tr>
<tr>
<td>Child morbidity</td>
<td>1.051</td>
<td>1</td>
<td></td>
<td>0.305</td>
</tr>
</tbody>
</table>

**Level of significance**

* p<0.05  
** p<0.01  
*** p=0.000
CHAPTER FIVE: DISCUSSION

The study set out to assess child feeding practices and the nutritional status of pre school children. The study was carried out in Kware Slum of Ongata Rongai Kajiado District. Random sampling was used to select the participants. A total of 194 mothers were interviewed and anthropometric measurements of the same number of children, 99 boys and 95 girls taken. The research instruments included semi-structured interview schedule for mothers, an observation checklist. A Salter scale, bathroom scale and a length board were used to take anthropometric measurements. Anthropometric measurements data were entered into the Epi info programme and nutritional status of the children analyzed using the Z-scores in relation to the NCHS reference values. The chi square test and Pearson’s correlation coefficient were used to test for association between nutritional status of the children and the independent variables of interest.

5.1 Mothers characteristics

From the findings of the study the mothers interviewed were relatively young as the majority of them were below 30 years old. The mean age of the mothers was 27 years. This could be explained by the fact that only households with children under five years were targeted. Most of the respondents belonged to Luo, Kikuyu, Kamba and Luhya ethnic groups. A majority of the mothers (82 %) were married and lived with their spouses and children. Nearly all the mothers (90.2%) had some formal education. A majority (73.1%) of the mothers were engaged in
some income generating activities. Households had incomes of between 1001-3000 Kenya Shillings however these incomes were erratic.

5.2 Dietary Feeding Practices

Breast milk is known to provide immunity and the essential nutrients requirement for the first six months of life. Thereafter it contributes significantly to overall nutritional status of the child well into the second year of life. The median duration of breastfeeding in the study area was 18 months and majority of the mothers breastfed their babies up to two years. This could be mainly because most of the mothers are the main caretakers of the children and they spend a lot of time with them. Breastfeeding should be the babies’ first food, but it was observed that many mothers in the study area gave prelacteal feeds of sweetened water, sugar salt solution, and diluted cow’s milk to the newborns. This undesirable behavior is not unique, in Uganda studies show that it is common for women to give sugar water solution to their children during the first days after delivery (WHO, 1999). Most (72.2%) mothers in study area felt that children who are fed a meal will be more calm and sleepy and this would help mothers carry on with their work.

Most (71%) of the children in the study area were weaned early at age less than 3 months old. This corresponds to reports by KDHS, 1998 (GOK, 1998) and KDHS preliminary report (GOK, 2003). The common reason for cessation of breastfeeding and complementary feeding onto the adult diet was perceived milk insufficiency. This perception was based on the crying infant.
Breastfeeding alone is sufficient for the baby up to 6 months old. Early complementary feeding is discouraged because it does not increase caloric intake but only displaces adequacy of breast milk. The likelihood of contamination in complementary feeding foods is high and the child's digestive system is still premature to handle bulky food. Complementary feeding foods constituted mainly of diluted forms of the mothers staple diet. Diluted porridge consisting of sorghum, millet and maize flour was a popular first complementary feeding food consumed by 59.3% of the children in the study area.

The children had fairly diversified diet. Consumption of milk and milk products, roots and starchy tubers and green leafy vegetables was high. Grains and cereals contribute to a major part of the diet as in most cases rice is boiled and consumed with black tea.

Optimal feeding of young children changes rapidly during their first two years of life. The key recommendation is that for the first six months there is exclusive breast-feeding. After six months it is expected that the infant will start receiving a variety of complementary foods. By the age of nine months it is expected that the child will be receiving a variety of complementary foods including animal products and micronutrient rich foods. As the contribution of the complementary foods to the child's energy and nutrient intake increases the quantity and variety of food are expected to increase.

Appropriate timing of introduction of complementary foods is not sufficient to meet his/her daily nutrient requirement. Complementary foods must have the
right energy and nutrient density and provided with sufficient frequency to respond to children's needs at different ages.

5.3 Non-dietary Feeding Practices
Wide range of non-dietary factors contribute to nutritional adaptation and malnutrition. Within the family patterns of food distribution have nutritional consequences on the child's' nutritional status. In the studied population children are viewed as the least productive members of the society. Special foods for the children under five years are seldom realized by this community that lives from hand to mouth and whose choice of food is limited. The best meals are reserved for the breadwinner in most cases these are the men. This study revealed that men were given priority in food allocation.

5.4 Hygiene and Sanitation
Problems encountered by the population living in the Kware Slum include lack of clean water, overcrowding, improper waste disposal, and poverty all of which aggravate the problem of malnutrition. The hygiene condition outside the rooms is deplorable as the children defecate outside and are exposed to parasitic infections due to human excreta. Majority of the respondents 87 percent bought their water from donkey carts. The researcher observed that the water vendors hardly washed their jerry cans nor covered them. This easily led to the possibility of cross contamination. This explains the reason why child morbidity in the study
area is high. The common ailments are coughs, diarrhea and fever caused by malaria.

5.5 Nutritional Status Of Pre School Children

5.5.1 Stunting (Height-for-Age)

This is an indicator of long-term nutritional status of children. Children with height for age<-2SD are stunted. They suffer chronic malnutrition associated with poverty, frequent infections and poor feeding practices (UNICEF, 1992). In the study 26.8% of the children were stunted and 13.4 % were severely stunted. These findings revealed that the level of severe stunting in the slum was high as compared to the national figure, which stands at 11% (GOK, 2003). A survey carried out by Maina, 1998 in Koroghocho Slum showed 27% of the children were stunted. This is more or less similar to the findings of this study. A study by Mukoma, 2000 showed stunting at 21% at the Kibera Kianda Slum and Kakai, 2000, showed stunting to be higher among the children of Mukuru slum at 32%. The study also shared the same views as other researchers that stunting was highest in the ages between12-23 months. Stunting levels were also slightly higher for boys as compared to girls.

5.5.2 Underweight (Weight For Age)

Indicates past and present nutritional status of children widely used in Kenya for growth monitoring (CBS, 1993). Peak levels of low WFA occur during 12-36
months (GOK, 2003). Of the children 23.2% were underweight. Mukoma reported 22% wasting in Kibera, 40.7% was reported by Kakai and Maina reported 36.2% underweight among the children in Korogocho Slum. Currently the percentage of underweight children is 20% (KDHS, 2003).

5.5.3 Wasting (Weight-for-Height)

A child's WFH is an indicator of wasting reflecting short-term food deprivation like during episodes of diarrhea or food shortage. The level of wasting in Kenya is 6%. Wasting is common in 6-11 months indicating supplementation during complementary feeding is inadequate. In this study 10.8% of the children were wasted and 3.1% are severely wasted. The figure is higher than national average of 6%. Other studies in the slums of Nairobi have reported a lower wasting rate. A study by Mukoma, 2000 reported that 6% of the children in Kibera Kianda Slum were wasted, whereas studies by Kakai, 2000 revealed that 14.3% of the children in Mukuru Slum were wasted.

5.6 Determinants of nutritional status

Type of meal service showed a strong statistical association with all the three nutrition indicators. Children who ate from their individual plates and had better nutritional status than their counterparts who shared their plates with others. This association could be explained by the young child's inability to maximize the scarce resource in this case it is food.
With the high cost of living it is not unusual to find both parents working and the care of the young children is delegated to the older siblings. This causes feeding problems. In this study, feeding by an older child was associated with poor child's nutritional status. It may be that when the older children are left to feed the young ones they take this chance to fulfill their hunger as in a number of cases they normally go hungry or have very little to eat. Leslie (1987) in her study in forty developing countries shared the same views that children fed by older children had poor nutritional status than their counterparts who were fed by their mothers or other older adults.

Dettwelyer, (1989) on a study of styles of feeding infants argued that the nature of caregiver control of feeding might be as important as food availability or socio-economic status in determining the nutritional status of young children. This study showed that mothers who monitored the child when he/she was eating had children with better nutritional status than their counterparts who were left to feed on their own. Proper feeding of infants involves more than supplying adequate nutrients. Successful feeding requires an establishment of cooperative relationship between mother or caregiver and infant.

The households' erratic income meant that mothers could only plan for the meals of the children after obtaining money and in most cases the food planned for had to be one that could be consumed by all family members. There was no statistical significance between income and height-for-age or income and weight-
for-height, however for households with more than 3000 Kenya Shillings there was association between income and weight-for-age.

The proportion of the family budget needed to provide the children with adequate diet is likely to be relatively small and thus one would not expect household income to be a major limiting factor to providing adequate nutrition to the children at this age. What seemed to be of utmost importance in this population were the choices that mothers made regarding foods used for feeding their children.

Inequitable use of resources rather than outright poverty or absolute lack of resources is the main constraints to adequate nutrition among preschoolers in Accra (Maxwell et al., 2000). This study share the same views as it was observed that majority of the mothers had some income which in most cases was spent on snacks such as mandazis and juices rather than buying nutrient rich foods for their children. A study in Bangladesh showed that higher income status was of greater benefit to the children of literate mothers (Biraigi, 1980). However a study in Tanzania showed that improving family income neither improves the household food intake nor the nutritional status of the small children as the older family members may benefit more (Olenja, 1991).

The FAO food composition table was used to derive the recommended dietary intake for each of the children's age. The findings of this study show that lack of adequate intake of energy giving foods was one of the factors that contributed to stunting. The trend observed is that as the children ages increased the proportion of their energy intake decreased. Results from the study indicate that children in
all age groups were meeting their protein requirements. When protein intake was associated with stunting there was a significant relationship indicating that children who were consuming adequate protein were less likely to be stunted than those receiving inadequate intake.

In most situations the protein intakes of infants are adequate especially if they are consuming some breast milk. Despite the protein intake of the children being adequate linear growth faltering was prevalent amongst the children.

There is ample literature showing the importance of maternal schooling for child health and nutritional status (Cladwell and Macdonald, 1982; Alderman, 1990). These studies show that maternal education is associated with improved child nutritional status.

Education is associated with attainment of employment and improved economic status. This translates to better living conditions and thus higher nutritional status for the children. However, increasing socio economic status alone does not always improve nutritional status of the children (Pellet, 1987). This study shared the same views as large proportion of children had mothers with some basic formal education yet this was not statistically related to the children’s nutritional status. However it should be noted that very few children of mothers with more than eight years of education suffered under nutrition.

These findings may also reflect the inadequacy of relevant nutrition and health information in educational curriculum particularly in primary school level.
CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

Malnutrition exists in Kware Slum with 26.8% of the children being stunted, 23.3% being underweight and 10.8% being wasted.

Majority of the mothers (81.5%) depend on whatever income is derived from day labour to feed their children. The limited purchasing power of the mothers greatly influenced the nutritional status of the children. Low income meant that the mothers had to make wise choices on purchase of sufficient and nutritious foods for their children.

The absolute level of nutritional improvement depends on to what extent to which income gains can be translated into dietary, health and child care benefits.

Non-dietary child feeding practices such as mother to child interaction are largely functions of practices and behaviours that are not necessarily functions of resources.

Majority of the mothers (78.6%) did not practice non-dietary feeding practices, which were seen to influence their children nutritional status.

There is evidence of the critical role of non dietary feeding practices on the child's nutritional status. Optimal child feeding practices contribute to the prevention of growth failure and the benefits linger well beyond first years of a child's life.
6.2 Recommendations

There is need to establish intervention strategies that aim at educating the mothers on the importance of proper dietary and non-dietary child feeding practices. These formal and non-formal education programmes should be geared toward behaviour change.

The promotion of exclusive breastfeeding should be definitely prioritized message targeting even mothers who don’t visit health centers. The benefits of this type of programme would be substantial especially if it targeted the poor less educated mothers.

Further research should continue to explore the importance and the magnitude of the association between child-mother (caregiver) feeding interactions and child nutritional status outcome. This would help determine how crucial this information is for nutrition intervention programmes.

The government should implement the poverty alleviation programmes in this slum by providing the mothers with sustainable income generating projects that will enable them increase their income thus improving the nutritional status of their children. Plans should be made to provide the residents of this slum with clean water and better sanitation facilities.

Findings of the study suggest that specific training in child feeding and use of preventive health services for mothers with basic formal education could have a large impact on the nutritional status of children living in impoverished environments.
References


Ebrahim, G. J. 1980. Practical Mother and Child Health in Developing Countries. Macmillian Press Ltd.


Gabr, M. 1990. Urban nutrition in developing countries special emphasis on pre school children.


UN ACC/SCN (United Nations Administrative Committee on Coordination- Sub Committee on Nutrition)1991. Briefs on policies to alleviate underconsumption and malnutrition in deprived areas. Geneva:UN ACC/SCN


APPENDIX 1

INTERVIEW SCHEDULE ON FEEDING PRACTICES AND NUTRITIONAL STATUS FOR CHILDREN UNDER FIVE YEARS OF AGE IN KWARE SLUMS

<table>
<thead>
<tr>
<th>IDENTIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>CLUSTER NUMBER</td>
</tr>
<tr>
<td>HOUSEHOLD NUMBER</td>
</tr>
<tr>
<td>RECORD NUMBER</td>
</tr>
</tbody>
</table>

ALL QUESTIONS ARE TO BE ADDRESSED TO MOTHERS WITH A CHILD UNDER 5 YEARS OF AGE

<table>
<thead>
<tr>
<th>INTERVIEW DATE</th>
<th>RESCHEDULE INTERVIEW</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

INTERVIEWER’S NAME__________________________

ETHNIC GROUP OF MOTHER

<table>
<thead>
<tr>
<th>AGE OF THE MOTHER</th>
<th>SEX OF CHILD (1=MALE, 2=FEMALE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>...........YEARS</td>
<td></td>
</tr>
</tbody>
</table>

CHILD’S DATE OF BIRTH

<table>
<thead>
<tr>
<th>DAY</th>
<th>MONTH</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### IDENTIFICATION

<table>
<thead>
<tr>
<th>Factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cluster Number</td>
</tr>
<tr>
<td>Household Number</td>
</tr>
<tr>
<td>Record Number</td>
</tr>
</tbody>
</table>

### AGE OF CHILD IN MONTHS

- [ ]

### SEX OF CHILD (1=MALE, 2 = FEMALE)

- [ ]

## 1A. RESPONDENT BACKGROUND INFORMATION

<table>
<thead>
<tr>
<th>No.</th>
<th>Questions</th>
<th>Answers</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>For how many years have you lived in this location?</td>
<td>Less than 1 year, 2 years, 3 years, More than 3 years</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.</td>
<td>What is your educational level?</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Primary</td>
<td>[ ]</td>
</tr>
<tr>
<td></td>
<td>Secondary</td>
<td>[ ]</td>
</tr>
<tr>
<td></td>
<td>College</td>
<td>[ ]</td>
</tr>
<tr>
<td></td>
<td>University</td>
<td>[ ]</td>
</tr>
<tr>
<td></td>
<td>No schooling</td>
<td>[ ]</td>
</tr>
<tr>
<td>3.</td>
<td>What is your marital status?</td>
<td>Married, Single, Divorced, Widowed</td>
</tr>
</tbody>
</table>
4. Do you work outside of the home to earn money?
   If YES, what kind of work do you do?
   - No outside work
   - Sell Handicrafts
   - Shopkeeper/Street Vendor
   - Servant/Household worker
   - Salaried Worker
   - Other (Specify)

5. What is your approximate income per month?
   - Below Ksh. 1000.
   - 1001 – 3000.
   - 3001 and above

6. How many siblings does this child have?
   - None....
   - 1........
   - 2........
   - More than 3........

1B. BREASTFEEDING AND INFANT/CHILD NUTRITION

<table>
<thead>
<tr>
<th>NO.</th>
<th>QUESTIONS</th>
<th>ANSWERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Did you ever breastfeed this child?</td>
<td>Yes .......................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>No.......................</td>
</tr>
<tr>
<td>2.</td>
<td>How long after birth did you first put the child to the breast?</td>
<td>Immediately/within First hour after delivery ..................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>After the first hour .......................................</td>
</tr>
<tr>
<td>3.</td>
<td>During the first three days after delivery, did you give the child</td>
<td>Yes .......................</td>
</tr>
<tr>
<td></td>
<td>anything else to eat or drink before feeding him/her breast milk?</td>
<td>No.......................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Don't know.......................</td>
</tr>
<tr>
<td>4.</td>
<td>What did you give him/her?</td>
<td>Milk other than breast milk ..................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Plain water ..................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Glucose water ..................</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sugar – salt- water solution ..................</td>
</tr>
<tr>
<td>Question</td>
<td>Options</td>
<td></td>
</tr>
<tr>
<td>------------------------------------------------------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Anything else that you fed him/her?</td>
<td>Fruit juice.........................&lt;br&gt;Infant formula ..................&lt;br&gt;Diluted porridge..................&lt;br&gt;Other ....................</td>
<td></td>
</tr>
<tr>
<td>5. Are you currently breastfeeding the child?</td>
<td>Yes ............................&lt;br&gt;No ..............................</td>
<td></td>
</tr>
<tr>
<td>6. For how long did you breastfeed the child?</td>
<td>Months [ ] [ ]</td>
<td></td>
</tr>
<tr>
<td>7. At what age did you introduce feeds other than breast milk to your child?</td>
<td>Not yet weaned..........&lt;br&gt;0-3 months..........&lt;br&gt;4-6 months..........&lt;br&gt;7-9 months..........&lt;br&gt;More than 9 months..........&lt;br&gt;</td>
<td></td>
</tr>
<tr>
<td>8. What foods did you introduce?</td>
<td>Porridge..........&lt;br&gt;Mashed foods..........&lt;br&gt;Cows milk..........&lt;br&gt;Tea.....&lt;br&gt;Others..........&lt;br&gt;(Specify)</td>
<td></td>
</tr>
<tr>
<td>9. Did the child drink any of the following during the day or at night?</td>
<td>A ..............................&lt;br&gt;B ..............................&lt;br&gt;C ..............................&lt;br&gt;D ..............................&lt;br&gt;E ..............................&lt;br&gt;F ..............................</td>
<td></td>
</tr>
<tr>
<td>A  Breast milk?</td>
<td>A ..............................</td>
<td></td>
</tr>
<tr>
<td>B  Plain water?</td>
<td>B ..............................</td>
<td></td>
</tr>
<tr>
<td>C  Commercially produced infant formula?</td>
<td>C ..............................</td>
<td></td>
</tr>
<tr>
<td>D  Any other milk such as tinned, powdered or fresh animal milk</td>
<td>D ..............................</td>
<td></td>
</tr>
<tr>
<td>E  Fruit juice?</td>
<td>E ..............................</td>
<td></td>
</tr>
<tr>
<td>F  Any other liquids such as tea, coffee, sodas or soup broth?</td>
<td>F ..............................</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Types of foods consumed by the child yesterday during the day and at night.</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>G</td>
<td>Any food made from grains (e.g. millet, sorghum, maize, rice, wheat, porridge, or other local grains)?</td>
<td>G. .................</td>
</tr>
<tr>
<td>H</td>
<td>Pumpkin, red or yellow yams, carrots or red sweet potatoes?</td>
<td>H. .................</td>
</tr>
<tr>
<td>I</td>
<td>Any other food made from roots or tubers (e.g. white potatoes, white yams, cassava or other local roots/tubers)?</td>
<td>I. .................</td>
</tr>
<tr>
<td>J</td>
<td>Any green leafy vegetables?</td>
<td>J. .................</td>
</tr>
<tr>
<td>K</td>
<td>Mango, papaya (or other local Vitamin A rich fruits)?</td>
<td>K. .................</td>
</tr>
<tr>
<td>L</td>
<td>Any other fruits and vegetables (e.g. bananas, avocados, tomatoes)?</td>
<td>L. .................</td>
</tr>
<tr>
<td>M</td>
<td>Meat, poultry, fish, or eggs?</td>
<td>M. .................</td>
</tr>
<tr>
<td>N</td>
<td>Any foods made from legumes (e.g. lentils, beans, soybeans, pulse or peanuts)?</td>
<td>N. .................</td>
</tr>
<tr>
<td>O</td>
<td>Any food made with oil, fat or butter?</td>
<td>O. .................</td>
</tr>
<tr>
<td>10.</td>
<td>How many times did the child eat yesterday during the day and at night?</td>
<td>NUMBER OF TIMES .................</td>
</tr>
<tr>
<td></td>
<td>DON'T KNOW .................</td>
<td></td>
</tr>
</tbody>
</table>

11. Can you list all the types of food your child ate during the last 24 hours?
<table>
<thead>
<tr>
<th>Time</th>
<th>Food Eaten</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Some of the foods eaten by the family but not given to the child because of culture include:
- Poultry
- Fish
- Eggs
- Beef
- Mangoes
- Other (Specify)

13. Who feeds the child when you are away from home?
- Mother (Respondent)
- Husband/Partner
- Older Children
- Other Relatives (Specify)
- Neighbors/Friends
- Maid
- Nursery School
- Other (Specify)

14. Do you think your child has a feeding problem?
- Yes
- No

15. How would you describe his/her appetite?
- Good
- Fair
- Poor
- Other (Specify)
### QUESTIONNAIRE

<table>
<thead>
<tr>
<th>Question</th>
<th>Options</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. What do you do when the child refuses to eat?</td>
<td>Leave him/her alone, Encourage him/her to eat, Change food, Force, Other (Specify)</td>
</tr>
<tr>
<td>17. Has the child experienced any of the following in the past two weeks?</td>
<td>Diarrhoea, Cough, Difficult breathing, Fever, Convulsions, Other (Specify)</td>
</tr>
<tr>
<td>18. When the child was sick he/she was offered drinks in amounts:</td>
<td>Less than usual, Same amount, More than usual, Other (Specify)</td>
</tr>
<tr>
<td>19. When the child was sick he/she was offered food in amounts:</td>
<td>Less than usual, Same amount, More than usual, Other (Specify)</td>
</tr>
<tr>
<td>20. During illness the child is prohibited from eating foods like:</td>
<td>Eggs, Mangoes, Beans, Vegetables, Other (Specify)</td>
</tr>
</tbody>
</table>

### 1C. CHILD ANTHROPOMETRY

<table>
<thead>
<tr>
<th>Child Age (Months)</th>
<th>Child Weight (Kgs)</th>
<th>Child Height (Cms)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1ST</td>
<td>1ST</td>
<td></td>
</tr>
<tr>
<td>2ND</td>
<td>2ND</td>
<td></td>
</tr>
<tr>
<td>AVERAGE</td>
<td>AVERAGE</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX 2

SPOT OBSERVATION CHECK LIST

Preventive health services use

1. Continued child growth monitoring
2. Immunization schedule followed for the specific age.

Sources of drinking water

1. Vendor/well
2. Piped outside
3. Piped inside

Toilet facilities

1. None (open space)
2. Public latrine
3. Private latrine
4. Flush toilet

Waste disposal

1. Heaped garbage within the compound
2. Bury/burn waste within the compound
3. Public damping bin
4. Household collection

Location of child feeding surface

1. Earth surface
2. Mat/cloth
3. Small chair
4. Mothers lap

Mother's activity while feeding child
1. Household maintenance
2. Eating
3. Encouraging child to eat
4. Economic activity

How child is served food
1. Shares plate with older children
2. Eats from individual plate
3. Shares the same plate with mother.
APPENDIX 3

FOCUS GROUP DISCUSSION QUESTIONS

1. Helping children to eat
   a) When do babies and children need help when eating? At what ages?
   b) Who helps them? Who should help them?
   c) How often should they eat?
   d) How is food served within the family? Who shares the plates?
   e) Who eats with children? Should they eat alone?

2. Eating arrangements
   a) When and where should the children eat?
   b) What feelings do you have about meal versus snacks?

3. Poor appetite
   a) What does it mean when a child refuses to eat food?
   b) Do mothers recognize poor appetite? How do they recognize it?
   c) How do they describe it? With what do they associate poor appetite?
   d) Do they view it as a problem?
   e) Do they view it as a characteristic of children?

4. Control of eating
   a) What do mothers do when their children refuse to eat food when they are sick/not sick?
   b) What do they do when the child eats/drinks only a little?
   c) Should the children ask for food? At what ages?
APPENDIX 4a

Location of Kajiado District in Kenya

Note: As of 1992, the following districts have been split (sub-divided) as indicated below:

1. Kakamega (Kakamega and Vihiga)
2. South Nyanza (Homa Bay and Migori)
3. Kisi (Kisii and Nyamira)
4. Kericho (Kericho and Bomet)
5. Machakos (Machakos and Mokweni)
6. Meru (Meru and Tharaka-Nithi)

Source: CBS, 1989
APPENDIX 4b

Map of the Study Area