ASSESSMENT OF FACTORS INFLUENCING THE NUTRITIONAL STATUS OF UNDER FIVES LIVING WITH HIV/AIDS: A CASE OF LEA TOTO PROGRAMME, NAIROBI –KENYA

BY:

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Declaration

This thesis is my original work and has not been presented for a degree in any other university or any other award.

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Dedication

To my son Allan Muendo and daughter Amanda Muendo.

Acknowledgement

First and foremost, I would wish to thank God for His providence and protection. Special appreciation goes to my supervisors, Professor Olive Mugenda and the late Professor Joseph Mungai for their diligence and guidance. My sincere gratitude goes to my parents, Mr. and Mrs. Matuli, my sisters and brothers for their valuable support throughout the entire study period.

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Abstract

Factors that influence the nutritional status of under fives living with HIV/AIDS were assessed through a descriptive survey. These factors included feeding practices, health and socio-economic characteristics. The study was carried out at the Lea Toto Programme situated at Kangemi, Nairobi. Purposive sampling was used to select the under fives. Stratified random sampling was done according to age and gender then random sampling done to obtain a proportionate number from each stratum and a sample of ninety children out of a total of two hundred obtained. Data was obtained by use of a semi-structured interview schedule and taking of anthropometric measurements. Data analysis was done by use of the statistical package of social sciences (SPSS) and Epi Info. ANOVA, Pearson's Product Moment Correlation, Chi-square and t-test were used in analysis. Result revealed that sixty of the children were stunted, fourty five were underweight and eighteen were wasted. Foods consumed frequently by the children were carbohydrates in nature. No exclusive breastfeeding was practiced. Fifty six of the children were breastfed for more than two years. 89 babies were weaned on porridge. A (χ^2) test revealed that there was no significant relationship between stunting and underweight and the number of meals taken by the children but a relationship existed between wasting and number of meals .An independent t-test showed a significant difference between underweight and wasting and whether children were breastfed or not . Fourty one of the children had succumbed to diarrhea within one week. Other opportunistic infections include anorexia, Tuberculosis and pneumonia. A (χ^2) test revealed a relationship between duration of living with HIV/AIDS and nutritional status. There was no relationship between frequency of occurrence of nausea and vomitting and nutritional status. Sixty two of the guardians had attained primary education and five college education .Income was little and irregular An ANOVA test showed no significant difference in stunting, wasting and underweight and income .A post-hoc test showed a significant difference between stunting and income. Dietary intake of children living with HIV/AIDS was inadequate due to low purchasing power of the guardians as a result of little income. These children ailed from opportunistic infections, which weakened their immune system. It is recommended that the government, donor agencies, nutritionists, and health institutions should work hand in hand to enhance the nutritional status of children living with HIV/AIDS.

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List of Abbreviations

AIDS	-	Acquired Immuno-Deficiency Syndrome
AIDSCAP	-	AIDS Control and Prevention Project
ARVs	-	Anti-retrovirals
FAO	-	Food and Agricultural Organization
GOK	-	Government of Kenya
HIV	-	Human Immunodeficiency Virus
KDHS	-	Kenya Demographic and Health Survey
MTCT	-	Mother to Child Transmission
NAP	-	Network of African People Living with HIV/AIDS
NASCOP	-	National Aids Control Programme
PMTCT	-	Prevention of Mother to Child Transmission
SARA	-	Support for Analysis and Research in Africa
STD	-	Sexually Transmitted Disease
TASO	-	The AIDS Support Organization
UNESCO	-	United Nations Educational Scientific and Cultural Organization
UNAIDS	-	United Nations Programme on HIV/AIDS
UNICEF	-	United Nations Children's Education Fund
UNSFN	-	United Nations System's Forum on Nutrition.
WHO	-	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The AIDS pandemic is the world's most deadly undeclared war. The economic and emotional burden for adults caring for infected children and AIDS orphans, is devastating (UNICEF$_a$, 1999). These children endure overwhelmingly large losses, living as they do in societies already weakened by underdevelopment, poverty and the AIDS epidemic itself (UNICEF$_a$, 1999). Neither words nor statistics can adequately capture the human tragedy of children grieving from dead parents, stigmatized by society through association with AIDS, plunged into economic crisis, insecurity and struggling without services or support systems (UNICEF, 1999).

AIDS constitutes a global emergency. It is a growing threat to stability, enhancing inequalities between and within countries, undermining previous gains in development and harming children. Recent estimates show that HIV infection, which causes AIDS, is far more common in the world than previously thought (UNICEF, 1998). Today, an estimated 36 million people worldwide live with HIV/AIDS (UNSFN, 2001). These figures include 1.1million children under the age of 15 years (UNICEF, 1998). In Sub-Saharan Africa, an estimated 25.3 million people were living with HIV by the year 2000 (UNSFN, 2001). In Kenya, the AIDS epidemic has continued to expand since it was first reported in 1984.

According to the Kenya Demographic and Health Survey it is estimated that 1.2-1.5 million people in Kenya are infected with HIV. The estimated rates of mother to child

transmission range between 30% and 40 %. Kenya has an estimated burden of close to a million orphans as a result of HIV/AIDS (KDHS, 2003).

In the recent years, the nutritional status and management of people living with HIV/AIDS has gained interest among researchers and people caring for those suffering from AIDS. Nutritional management is extremely important during HIV infection. HIV lives in all the body tissues, including the intestines (NAP, 2000). It increases susceptibility to diarrhoea and other infectious diseases that reduce appetite. People with AIDS often suffer from nutrient malabsorption (NAP, 2000). This weakens the immune system, making the body more susceptible to opportunistic infections, thus accelerating the progress of AIDS. For these reasons, it is very important for those infected with HIV and AIDS to eat adequately and to protect their nutritional status. Children under five require a high intake of nutrients in order to support rapid growth. Adequate nutrition is also essential in order to alleviate nutritional deficiencies. In children, nutritional status often serves as a proxy indicator of the overall well being of communities in developing countries because they reflect the burden of infectious diseases of the community as well as access to food and caring practices (Piwoz and Preble, 2000). Programmes have been set up to help communities take care of children living with HIV/AIDS. One of these programmes is the Lea Toto Programme which is part of The Children of God Relief Institute (Nyumbani), an organization that cares for children living with HIV/AIDS. The programme is taking care of 200 HIV positive children currently. The children are under the care of guardians and only receive food rations once a month from the programme.

1.2 Statement of the Problem

In the past three decades, there has been considerable progress in promoting health strategies such as growth monitoring, oral rehydration therapy, breastfeeding and immunization against common childhood infections resulting in reduced child

mortality. However, HIV is a major public health problem which has led to an increase in child mortality. Once a child is infected with HIV, survival depends on how long the body's immune system is able to fight the virus. Poor nutrition and infection may accelerate progression to AIDS. Additionally, distance from health facilities, unavailability of diagnostic equipment and retroviral drugs, high cost of drugs, and poor attitudes towards AIDS patients may accelerate death. Seropositive parents of children living with HIV/AIDS cannot adequately provide food for the family members because they are too weak to work. Even very old guardians living in abject poverty cannot fend for these children. The Lea Toto Programme, a community based organization provides food rations to children living with HIV/AIDS. These food supplies by the Lea Toto Programme are shared among all family members and may not benefit the target, who are the children living with HIV/AIDS. A study carried out The AIDS Support Organization indicates that progression to AIDS in people who can afford four meals in a day has a different trend from those who can afford one meal per day (TASO, 2001).

Nutrition, which is vital for the growth of under fives, is even more important for under fives living with HIV/AIDS as it may improve their immune system and enhance their quality of life. Studies done on HIV/AIDS in Kenya have focused on modes of infection and prevention of HIV/AIDS. Not much information is available on the complementary role of nutritional care to the general well-being of children living with HIV/AIDS.

The above observations suggest that good nutrition and prompt treatment of infections in HIV infected individuals may delay the onset of AIDS. This is particularly relevant to Kenya where expensive treatment of AIDS is unaffordable. Promoting proper nutrition is essential in order to improve fitness and quality of life for children living

with AIDS, given that these children form an especially vulnerable group. It is this view that prompted a study of this magnitude.

1.3 Conceptual Framework

The UNICEF's conceptual framework on the causes of malnutrition developed as part of the UNICEF's nutrition strategy was adopted for this study. The framework shows that causes of malnutrition are multisectoral, embracing food, health, and caring practices. They are also classified as immediate, underlying and basic, whereby factors at one level influence factors at other levels (UNICEF, 1998).

The interplay between the two most significant immediate causes of malnutrition, inadequate dietary intake and illness tends to create a vicious circle. A malnourished child, whose resistance to illness is compromised, falls ill, and malnourishment worsens as seen in the case of children living with AIDS. Malnutrition lowers the body's ability to resist infection by undermining the functions of the main immune response mechanisms. HIV/AIDS may cause loss of appetite, malabsorption and metabolic and behavioural changes. These in turn increase the body's requirement for nutrients.

Inadequate access to food in a household may impact upon nutritional status of AIDS positive children. The lack of access to food and adequate health services for children living with HIV/AIDS may weaken their immune system resulting in malnutrition. This will aggravate the occurrence of opportunistic infections further. Inadequate and/or inappropriate knowledge and discriminatory attitudes may influence the AIDS positive child's access to proper nutrition. This is because of the stigma attached to the disease. This may lead to child neglect and their nutritional needs may not be met. This study investigated the factors influencing the nutritional status of children living with HIV/AIDS. It is argued that the nutritional status of HIV/AIDS positive children

directly relates to the ability of the guardians and the health givers to support them. The socio-economic, health and feeding practices which are the underlying factors, determine what the guardians and caretakers will provide as food to the child. These factors are in turn shaped by the basic causes, which exist as political and economic structures. The model below illustrates the interrelationship between the various factors and their subsequent effect on the nutritional status of children living with HIV/AIDS. The main manifestation of poor nutrition is malnutrition, which may result in death. Inadequate dietary intake and exposure to diseases for example HIV/AIDS and its related opportunistic infections may lead to malnutrition and subsequent death. These factors are further determined by insufficient household food security, inadequate childcare and insufficient health services and unhealthy environment.

Conceptual Model

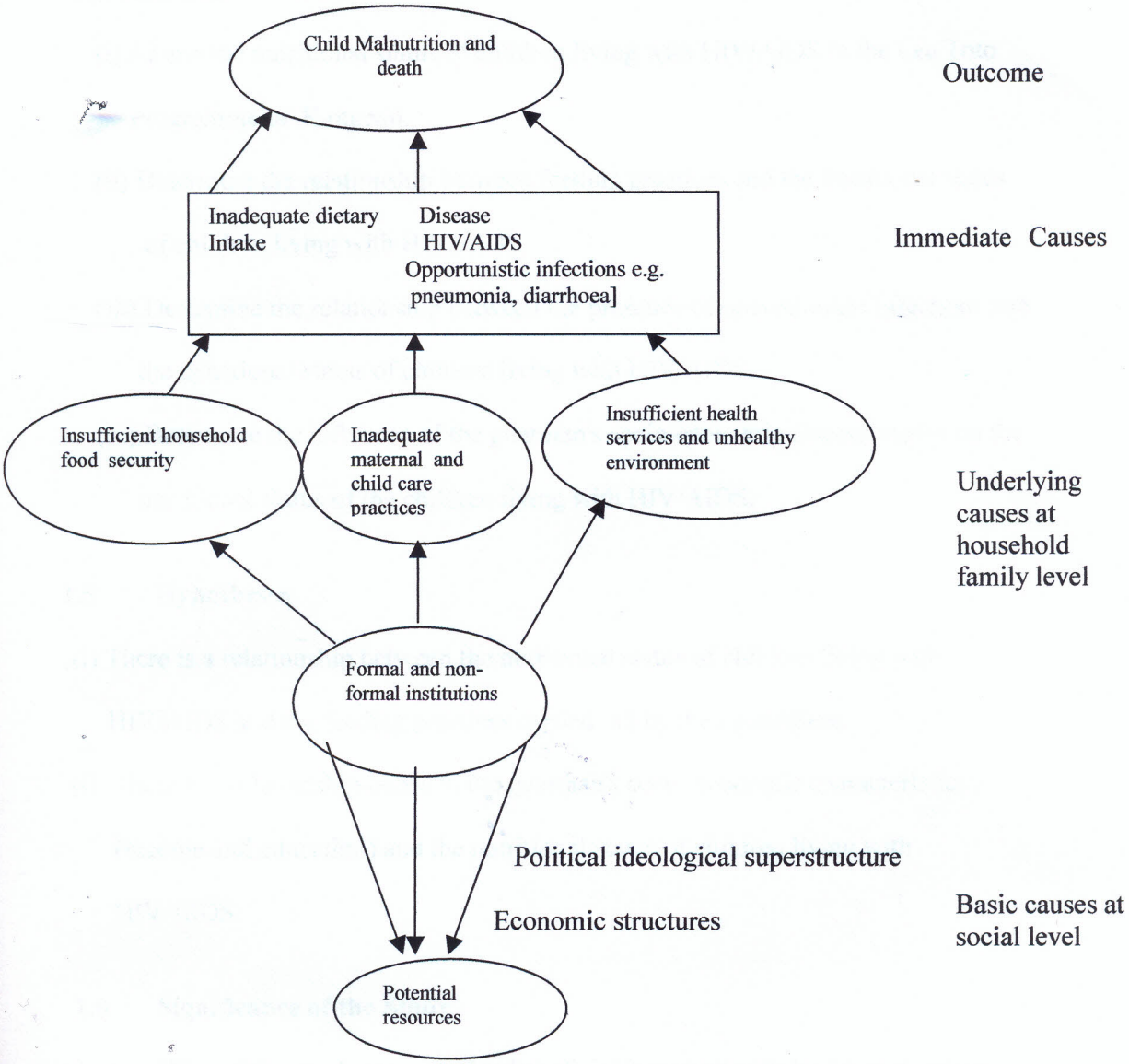


Figure 1. Adapted from Kenya National Guidelines on Nutrition and HIV/AIDS, 2006, pg 101

1.4 Objectives of the Study

The objectives of this study were to:

(i) Assess the nutritional status of children living with HIV/AIDS in the Lea Toto Programme in Kangemi.

(ii) Determine the relationship between feeding practices and the nutritional status of children living with HIV/AIDS.

(iii) Determine the relationship between the presence of opportunistic infections and the nutritional status of children living with HIV/AIDS.

(iv) Determine the influence of the guardian's socio-economic characteristics on the nutritional status of the children living with HIV/AIDS.

1.5 Hypotheses

(i) There is a relationship between the nutritional status of children living with HIV/AIDS and the feeding practices carried out by their guardians.

(ii) There is a relationship between the guardian's socio-economic characteristics (income and education) and the nutritional status of children living with HIV/AIDS.

1.6 Significance of the Study

The findings of this study may provide beneficial information to health and welfare agencies concerned with taking care of children living with HIV/AIDS. This information may be utilized in ensuring that these children are well taken care of to enhance their nutritional status.

Study findings may be useful to community workers. These may enhance their knowledge on the appropriate care of children living with HIV/AIDS to improve their quality of life. Members of the extended family in the community may put into

practice findings of this study and try to provide a nutritionally adequate diet to these children. The findings of the study will contribute to the existing body of knowledge aimed at improving the lives of people living with HIV/AIDS.

1.7 Limitations of the Study

Data was collected from children living with HIV/AIDS registered in the Lea Toto Programme. Generalization of the results to children living with HIV/AIDS and not registered in programmes should be done with caution.

1.8 Conceptual Definition of Terms

Acquired Immuno- Deficiency Syndrome - Refers to a group of diseases, which are associated with HIV infection which render the body highly susceptible to life threatening opportunistic infections.

Asymptomatic -A person infect with a disease but without clinical signs and symptoms.

Human Immuno- Deficiency Virus (HIV) -Member of the retrovirus family found in body fluids.

Opportunistic Infections - Infections from micro-organisms that normally do not cause disease in general population but can infect people once their immune systems are compromised by AIDS.

Symptomatic -Infection with signs and symptoms.

1.9 Operational Definition of Variables

An operational definition is a description of the way researchers will observe and measure a variable (Vogt, 1993).

Nutritional Status -Taking of anthropometric measurements and comparing them to standard reference data from the National Centre for Health Statistics operationalized this.

Feeding practices -This was measured by establishing the food availability in households in which the children live, frequency of feeding, quality and quantity of food served.

Breastfeeding Practices -This was measured by establishing whether the children were breastfed or not and for what duration of time. The method of breastfeeding was also established, that is, whether mixed or exclusive breastfeeding.

Health background -Identifying frequency of occurrence of opportunistic infections, duration and treatment of illnesses and the presence of water and sanitation facilities operationalized this.

Education -This was measured by establishing the level of education of the children's guardians.

Economic characteristics -This was operationalized by establishing what economic activities the children's guardians were involved in.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, literature was reviewed under the following sub-topics: Origin of AIDS, Epidemiology of HIV/AIDS in children, Clinical manifestation in children, Mode of transmission of AIDS, Mother to child transmission, Prevention of mother to child transmission, Nutrition and HIV /AIDS ,Breastfeeding and HIV/AIDS, Weaning and HIV/AIDS, ARVs and nutrition

2.2 Origin of AIDS

Acquired Immunodeficiency Syndrome has killed more than 25 million people since it was first recognized in 1981 in the US making it one of the most destructive epidemics in recorded history. Despite recent improved access to anti retroviral treatment and care in many regions of the world, the AIDS epidemic claimed 3.1 million lives in 2005;more than half a million lives (570,000) were children. (UNAIDS /WHO, 2005).

Although HIV was initially identified as a disease concentrated mainly among homosexual men, the most common mode of transmission at the global level is heterosexual. (Belsey, 2005).

2.3 Epidemiology of HIV/AIDS in Children

There are 1 million births in Kenya annually. 10% of these are born to HIV infected mothers. Without prevention of mother to child transmission 30% of these become infected. About 20,000 –30,000 neonates acquire HIV annually. Children form 10% of the whole HIV infected population in Kenya (MOH,2005).

2.4 Clinical Manifestations of HIV/AIDS in Children

Stage	Presentation
I Asymptomatic	This stage is asymptomatic and is characterized by: - persistent generalized lymphadenopathy -Hepatosplenomegaly
II Mild	**This stage is characterized by:** -Recurrent or chronic upper respiratory tract infections (otitis media, sinusitis; 2 or more episodes in any 6 months period) -Popular pruritic eruptions; Herpers zoster; seborrheic dermatitis -Recurrent oral ulceration's (2 or more episodes in 6 months); Angular cheilitis -Parotid enlargement -Extensive human papilloma virus infection or Molluscum infection (more than 5% body area or disfiguring) -Fungal nail infections
III Moderate	-Unexplained moderate malnutrition not responding to therapy -Unexplained persistent diarrhea; unexplained persistent fever -Oral candidiasis (outside neonatal period);OHL -Pulmonary tuberclosis -Severe recurrent bacterial pneumonia -Lymhoid interstitial pneumonitis (LIP) -Unexplained blood disorder for> 1 month (anemia, neutropenia thrombocytopenia)

IV Severe	**Conditions where a presumptive diagnosis can be made using clinical signs or simple investigations:** -Unexplained severe wasting not responding to therapy -Pneumocystis pneumonia (PCP) -Recurrent severe presumed bacterial infections Chronic orolabial (> 1 month duration) -Extrapulmonary tuberculosis -Kaposi's sarcoma -Esophageal Candidiasis -HIV encephalopathy
VI Severe	**Conditions where confirmatory tests necessary** -Cryptococcal meningitis -Candida of trachea,bronchi or lungs -Cryptosporidiosis ,isosporiasis -Disseminated non-tuberculosis mycobacteria infection -CMV infection

Source: (MOH, 2006) Comprehensive HIV/AIDS Care pg. 28

2.5 Mode of Transmission of AIDS

HIV is found in blood and sexual fluids. Majority of the world's HIV cases have resulted from infections through heterosexual transmission, which together with homosexual transmission accounts for about three quarters of HIV infections worldwide (UNICEF, 1998). The virus can be transmitted through blood. When infected blood is transfused, the virus is passed to the person. Blood products, which

are infected, may spread the virus too. Use of contaminated needles and unsterilized knives or blades used in scarification and circumcision could also transmit the virus. Some anti-viral drugs like AZT, that are being tested may reduce the risk of passing HIV to babies. A HIV positive mother always passes antibodies (but not always HIV itself) to her unborn baby. This means that a new baby will always test positive for HIV because the mother's antibodies show up in the baby's blood, but many babies later have a negative test (Higgins 1998). This means that they are not actually infected with HIV itself. It is possible to know this for sure when a baby is 18 months old because at that time the mother's antibodies will disappear from its blood (Higgins 1998). Organ donations from infected people may transmit the virus too (Blandie, 1989).

2.6 Mother to Child Transmission of HIV/AIDS

Infants can acquire HIV through mother to child transmission, blood transfusion or infected blood products and or use of contaminated instruments. MTCT accounts for 90% of HIV infection in children. Overall rates of transmission are 15-40%. Transmission of HIV/AIDS from an infected mother to her infant can occur during pregnancy or delivery or through breast milk. The risk of transmission through breast milk is about 15% for infants who are breastfed upto six months and about 20% for children breastfed to their second year. Women who are infected with HIV/AIDS or re-infected with a different strain of HIV during the breastfeeding phase have a much higher risk (29%)of transmitting the virus to the child through breast milk (GOK, 2006).

Transmission is influenced by the maternal viral load. Acquisition of HIV infection during pregnancies and breastfeeding is associated with very high viral load. Maternal CD_4 count and disease stage also has an effect .The mode of delivery affects MTCT.

Elective cesarean section halves the risk of transmission. Prematurity in infants affects MTCT (MOH, 2005).

2.7 Prevention of Mother to Child Transmission

There should be primary prevention of HIV in women and prevention of unwanted pregnancies in women with HIV /AIDS. Mothers are advised to have an elective cesarean section. There should be optimum antenatal care during pregnancy. During delivery, optimize birthing practices and avoid prolonged rapture. The birth canal should be cleansed with anti viral and anti microbal agents .Use of ARVs reduces MTCT by lowering maternal viral load (MOH, 2005).

Nutritional status may influence a person's risk of infection. This has been much investigated for MTCT where several randomized placebo controlled trials have studied the effects of vitamin supplementation. Results from the studies indicate that providing nutritionally compromised mothers with multi-vitamin supplements reduces child mortality and HIV transmission through breastfeeding. (Fawzi, Msamanga and Hunter, 2002).

2.8 Nutrition and HIV/AIDS

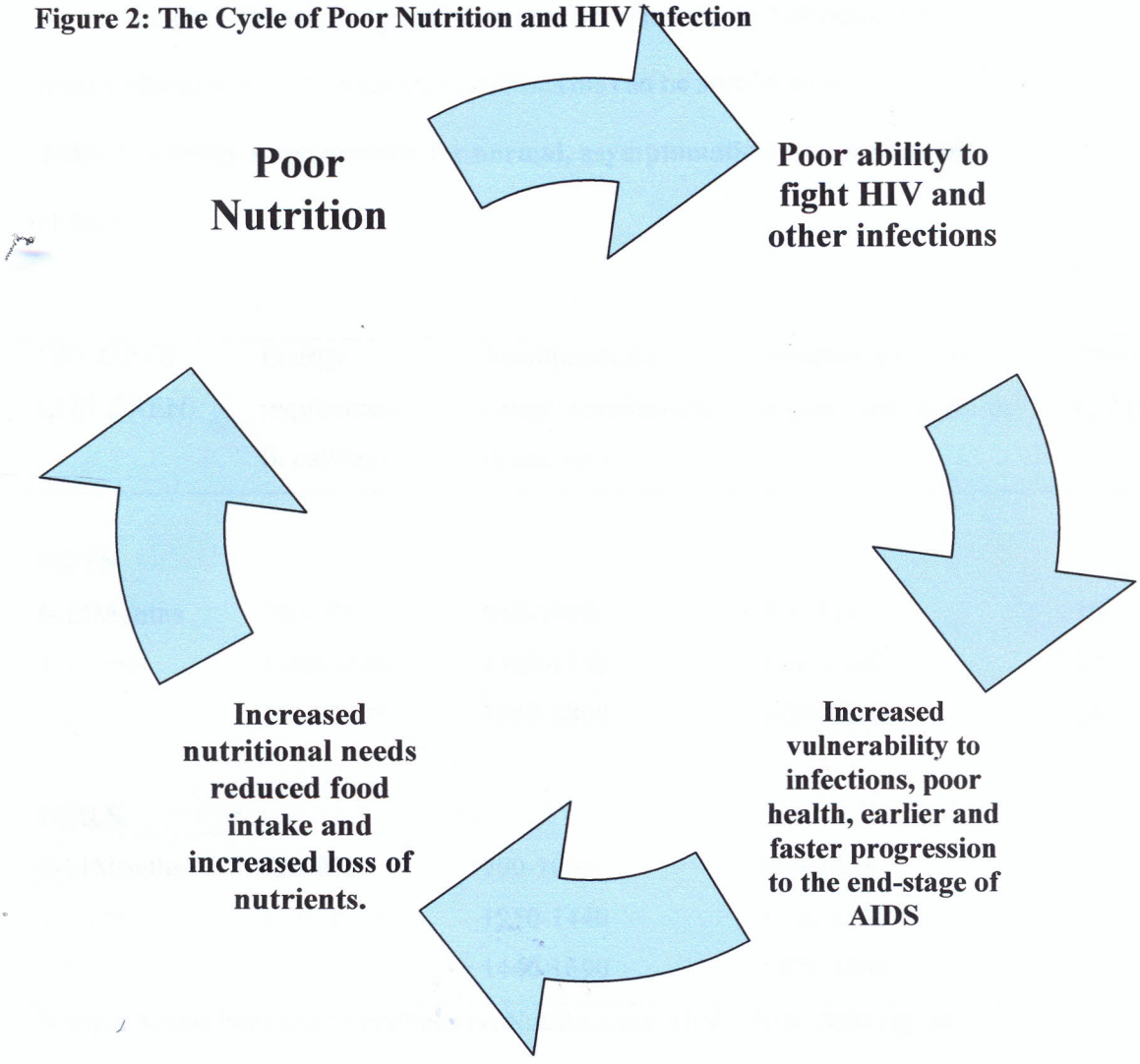
Adequate nutrition is important because it may retard the progression of HIV to AIDS (Piwoz and Preble 2000). Even at the early stages of HIV when no symptoms are apparent, HIV increases the body's nutritional needs (WHO/FAO 2002). The risk of malnutrition increases significantly during the course of infection and weight loss has shown to be an independent predictor of mortality (Tang, Spiegelman and Forrester, 2002).A study from Thailand showed that a daily micronutrient tablet reduced mortality in HIV positive adults (Jiamton, Pepin and Suttent, 2003). Adequate nutrition is important because it improves quality of life. Meeting immediate food and

nutrition needs is essential if HIV /AIDS affected households are to live with dignity and security (WHO/FAO, 2002). Nutrition care and support can entail nutritional counselling, awareness generation, provision of food aid, meal planning, or other interventions. Home based care offers strong opportunities for nutrition counselling. Community involvement is critical for the successful provision of these service (WHO, 2004).

2.8.1 The Relationship between Nutrition and HIV/AIDS

Nutritional management is important during HIV infection. Malnutrition is one of the serious complications of AIDS. Children with full-blown AIDS often suffer from extreme nutritional wasting. HIV increases susceptibility to infection and loss of appetite. Poor appetite and nutrient malabsorption cause the body to become depleted of its nutritional reserves and it weakens, weakening the body's immune system, making it more susceptible to opportunistic infections thus accelerating the progress of AIDS. Malnutrition and HIV/AIDS are synergetic and together create a vicious cycle that additively weakens the immune system (MOH 2006). This is illustrated in figure 2:

Figure 2: The Cycle of Poor Nutrition and HIV Infection



Adapted from the Kenya national guidelines on Nutrition and HIV/AIDS, 2006 pg. 8

2.8.2 Nutritional Requirements of People Living With HIV/AIDS

For people with HIV/AIDS, it is important to keep as healthy as possible. Developing healthy eating habits is extremely important. HIV positive children with no symptoms of HIV or other opportunistic infections need 10 percent more energy than non-infected children in order to maintain normal weight, activity and growth. Children with signs of other infections or AIDS need 20-30 percent more energy to maintain

normal weight HIV positive children loosing weight need 50-100 percent more energy (Burgess,A and Glasauer, P, 2004). This can be seen in table 1:

Table 1: Energy requirements for normal, asymptomatic and symptomatic children

GROUP OF CHILDREN	Energy requirement (k cal/day)	Asymptomatic energy requirement (k cal/day)	Symptomatic energy requirement (k cal/day)	Protein (g/day)
BOYS				
6-11Months	760-970	840-1070	910-1160	10
1-3 years	1200-1410	1320-1550	1440-1690	25
2-5 years	1410-1690	1550-1860	1690-2030	26
GIRLS				
6-11Months	720-910	790-1000	860-1090	10
1-3 years	1140-1310	1250-1440	1370-1570	25
2-5 years	1310-1540	1440-1690	1570-1860	26

Source: Kenya National Guidelines on Nutrition and HIV/AIDS, 2006 pg. 49

With HIV/AIDS, the body has extra need for protein. Proteins play an important role in the body's defence system. Meat is a good source of protein especially chicken and fish, which are easier to digest. Dairy products are a good source of protein too (Burgess, A and Glasauer,P,2004).

As the body's immune system weakens, the need for vitamins and minerals increases. Children living with HIV/AIDS should eat plenty of fruits and vegetables. Vegetables should not be overcooked. The skins of grains and legumes contain important vitamins. Whole grains should be taken. Brown bread and unrefined maize meal are preferred.

HIV positive children aged 6months to 5 years can receive high doses of vitamin A (Burgess, A and Glasauer, P, 2004).

Vitamin A is essential, as it is believed to reduce the progression of HIV disease. It is important to drink a lot of water. Boiled water is safe as it reduces the risk of contracting diseases caused by disease-causing germs in unboiled water (Bylsma, 1996).

Nutritional advice is important for HIV positive patients at all stages of the disease following the diagnosis to obtain optimum health once the symptoms of AIDS are experienced to help maintain body weight, fight infection and treat gastrointestinal symptoms such as anorexia, nausea, vomiting and diarrhoea. Good nutrition not only improves quality of life, prevents weight loss but also prevents further weakening of the immune system and appears to extend the life expectancy of the patient.

2.8.3 Factors influencing the nutritional status of under fives living with HIV/AIDS

A review of a study carried out in Kenya indicates that HIV/AIDS affects the socio-economic status of the household. Employed household members are forced to take time off to be nursed or to nurse the sick members (AIDSCAP, 1996). Family income is threatened and savings are reduced to pay for medical expenses (AIDSCAP, 1996). When family income is reduced, the caregivers of children living with AIDS may not be able to meet the nutritional needs of children. This may result in malnutrition, which weakens the immune system making the body susceptible to infection, which supports progression of AIDS.

A study carried out in Kenya revealed that children, living with AIDS are vulnerable to both malnutrition and under-nutrition due to scarcity of food (Saoke and Mutemi, 1994). This may be because; these children are staying in households, which

experience extreme poverty. They may not even be able to get adequate food on a daily basis.

Another study carried out in Kenya revealed that children lacked medical attention. Access to health care was minimal or non-existent (AIDSCAP, 1996). Health care is essential for HIV/AIDS positive children because the virus weakens their immune systems. This renders them highly susceptible to opportunistic infections such as diarrhoea and tuberculosis which when not treated further weaken the immune system and affects digestion and absorption causing malnutrition.

Children living with HIV/AIDS are vulnerable and are stigmatized in society due to their illness. They may suffer from emotional deprivation. Emotional stress may cause anorexia which is loss of appetite. This may lead to malnutrition related to AIDS.

2.8.4 Effects of Opportunistic Infections on Nutrition

People living with HIV/AIDS are affected by opportunistic infections due to their immune system being weakened by the HIV virus. Anorexia in AIDS arises from causes similar to those in cancer. Depression over the diagnosis can destroy the appetite even before symptoms of the disease appear. The individuals who test positive for AIDS must deal with the psychological impact of the diagnosis, the terminal nature of the infection, medical, personal and financial problems that lie ahead. Understanding of food intake becomes trivial to the person overwhelmed with problems (Byslma, 1996).

Diarrhoea, which is passing three or more loose or watery stools in a day, is common in HIV/AIDS patients. Diarrhoea may come and go and can be hard to cure. The most common cause of diarrhoea in persons with AIDS are infections in the intestines from

unclean food or water, infections because of HIV/AIDS or the side-effects of some medicines. Diarrhoea can cause malnutrition if the food passes through the body so quickly that the body cannot use it. Diarrhoea may also cause dehydration, if the body loses more liquid than is taken. Plenty of liquid should be taken.

Nausea and vomiting may prevent a person from eating or drinking. She/he may become weak, malnourished and dehydrated. This may be caused by infections, medicine, problems with the stomach and the HIV/AIDS infection itself (Bylsma, 1996).

Respiratory infections can also limit food intake in people with AIDS. These cause fever and pain, which worsen anorexia. Tuberculosis which is a serious infection caused by a germ that usually affects the lungs may affect a person with AIDS. A person with AIDS gets tuberculosis easily because their body is too weak to fight it. Coughs, which are a common sign of lung problems such as tuberculosis and pneumonia, may also occur (NAP, 2000).

Oral infection, which manifests itself as a thick white coating on the mouth, tongue and sometimes esophagus, occurs during HIV/AIDS. The coating covers the taste receptors and alters taste sensations. Thrush also causes pain and reduces the flow of saliva. Problems with the mouth or with other parts of the body that food passes through can keep a person from eating normally. The person becomes weak, malnourished and has a harder time fighting infections (Higgins, 1998).

2.9 The Role of Breastfeeding in HIV/AIDS

Many studies have been carried out to improve our understanding of the HIV/breastfeeding relationship, the risk factors for HIV transmission through breastfeeding and to identify ways of making breastfeeding safer in HIV infected mothers. One of these studies is by WHO which recommends exclusive breast feeding

for HIV infected women for the first six months of life unless replacement feeding is acceptable, feasible, affordable, sustainable and safe for them and their infants. A number of factors have now been identified which appear to increase the risk of HIV transmission through breastfeeding. These include maternal viral load, virus type and other viral characteristics, maternal immune status, breastfeeding duration, type of breastfeeding practised (either exclusive or mixed) and the presence of abscesses, mastitis, cracked nipples and oral lesions in infants (UNICEF, 1998).

The role that breastfeeding plays in mother-to-child transmission of HIV illustrates one important link between HIV and nutrition. Breastfeeding is a tradition in Africa and breast milk is the main source of nutrition for infants during their first years of life. In addition, breastfeeding provides psychological benefits to infants and mothers. It reduces child morbidity and mortality by protecting children from diarrhoea, pneumonia and other infections. Unfortunately, between 10 – 20 % of HIV infected mothers will pass the virus to their babies through extended breastfeeding, (Piwoz and Preble, 2000). In general, infants who are not breastfed in developing countries have higher rates of childhood illnesses, malnutrition and often irregular supply of breast milk substitutes (Piwoz and Preble, 2000).

As the risk of HIV transmission through breastfeeding becomes more widely understood, HIV infected African women face the difficult burden of having to decide whether to break with tradition and choose not to breastfeed or breastfeed and run the risk of infecting their infants with HIV/AIDS. The decision not to breastfeed comes with its own social risk of including the stigma or suspicion of being infected with HIV, a risk that sometimes carries grave social, emotional and physical consequences. In an attempt to minimize risk to her infant yet hide her own status from neighbours,

friends and family, an HIV infected mother may combine breastfeeding with artificial feeding, the worst of all possibilities as it exposes the infant to both sets of risks.

Exclusive breastfeeding refers to breastfeeding without supplementary foods such as water, other liquids or semi-solid foods. In general, exclusive feeding is recommended for the first 6 months of life. It reduces the risk of infant mortality from diarrhoea and abrupt weaning. Exclusive breastfeeding may be one option for reducing mother-to-child transmission through breastfeeding while minimizing the consequences of replacement feeding in Africa (Piwos and Preble, 2000). Heat treating of breast milk may reduce viral viability hence reduce HIV transmission (MOH, 2005).

2.10 Weaning strategies for HIV infected infants

After six months, breast milk and other forms of milk alone are not adequate to meet a baby's nutritional requirements. For breast fed infants the transition from breast milk to replacement milk should only be done if replacement feeding is acceptable, feasible, affordable, sustainable and safe. Complementary foods should be introduced after six month of age with continued breast feeding or replacement feeding until a nutritionally adequate diet can be sustained without breast milk (GOK, 2006).

Commercial infant formula can be introduced to the under fives. These are regulated to meet nutritional specifications for infant feeding for the first months of life. They are often modified with micronutrients, including iron. Home modified can be done by increasing the fluid content with boiled water, increasing the energy content with sugar and improving protein digestibility by boiling the milk after preparation (WHO, 2003). Wet nursing, a traditional method involves another family member nursing the baby in the case of severe illness or death of a mother. It should be considered if the

prospective wet-nurse has been offered HIV testing and counseling and is found to be negative (WHO, 2003).

Complementary foods should be made from nutrients enriched family foods. Children between six to twelve months should be fed at least three times a day. While those twelve to twenty four months fed at least fives times a day. Those aged twenty four month and above should be fed with three family meals and at least two snacks a day. Milk should continue as an important component of the diet (GOK, 2006).

2.11 ARVs and Nutrition

Highly active antiretroviral therapy should improve overall nutritional status with an increase in total body weight and intracellular water (MOH, 2006). Drugs may alter nutrient absorption, metabolism, distribution and excretion thus affecting nutritional status of the patients. Drugs may result in loss of appetite, change in taste, diarrhea and alter food absorption. All people living with HIV/AIDS qualify for ARVs, but those with a BMI of less than 16kg/m^2 should be nutritionally stabilized with therapeutic food for no less than seven days before starting ARVs.

Nutrition related side effects of ARVs

ARVs may cause high blood cholesterol. PLWHA need to reduce dietary fat intake and increase vegetable and fruit intake. ARVs may result in peripheral neuropathy which is a condition of feeling numb in the toes and feet. This is caused by medication used to treat opportunistic infections e.g. tuberculosis. Supplementation with B group vitamins may improve the condition. Kidney stones, may be caused by ARVs such as Indinavir. This can be prevented by drinking plenty of water (an extra six glasses). Some ARVs such as protease inhibitors damage the liver.

There is therefore a critical need to strengthen the capacity to take care of children living with HIV/AIDS materially, economically and socially. Efforts to protect these

children are beginning to take progress (UNICEF $_b$, 1999). Several of these efforts have taken place in Botswana, Malawi, Zambia and Zimbabwe; four of the worst affected countries in the world in terms of HIV/AIDS prevalence (UNICEF $_b$, 1999). Malawi and Uganda have introduced home-based care for children living with HIV/AIDS focusing on community-based care initiatives (UNICEF $_b$, 1999). Far more needs to be done to meet the crisis and ensure that the rights of HIV/AIDS positive children to education, proper nutrition and health are the essential parts of these efforts.

2.12 Summary

Literature reviewed revealed that AIDS is a global public health problem since no cure or vaccine exists and infections result in death. Much has been done to develop and articulate policies relevant to prevention and control of AIDS. The scourge has resulted in changes in family systems. Children living with AIDS require special nutritional care in order to meet their nutritional needs, prevent progression of the disease and improve their immunity to opportunistic infections.

Children living with HIV/AIDS have become a very vulnerable group in the society and as such, their basic needs are not met. It is in this view that this research was carried out in order to find out factors that influence the nutritional status of children living with HIV/AIDS and come up with recommendations that will ensure that these children are well taken care of in society and that their nutritional needs are met.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Research Design

A descriptive survey was employed in this study. A survey is an attempt to collect data from members of a population in order to determine the current status of the population with respect to one or more variables (Mugenda and Mugenda, 1999). A survey was done because it facilitates the assessment of variables in their natural setting and is effective in measuring the relationship between and among various variables (Sproull, 1988). The survey method was also chosen because it allowed for extensive data collection on a large population within a short period of time.

3.2 Study Area

Kangemi is an informal settlement located in the Western part of Nairobi comprising 9 villages namely, Thiboro, Gichagi, Marenga, Central, Kangoora, Waruki, Sodom, Machagucha and Mountain View Estate. These villages consist of a population belonging to people of the very low income group with an exception of Mountain View Estate. The residents of these areas belong to various ethnic groups found in Kenya. The major economic activities they engage in include hawking, selling fruits and vegetables and selling of illicit brew. Most men are employed as watchmen in the surrounding areas. They therefore earn very little money that can barely buy enough food for family members.

3.3 Lea Toto Programme

The Lea Toto community based programme is part of The Children of God Relief Institute (Nyumbani), an organization that cares for the children living with HIV/AIDS. It was set up in 1998 with a vision of caring for children living with HIV/AIDS. Its vision is to enable the Kangemi community to identify and establish

sustainable community strategies to cope with the needs of the community, in connection with the increasing number of individuals who are HIV positive.

Currently, the programme is taking care of a population of 200 HIV positive children. The Lea Toto Programme identifies and admits clients who are willing to take up the responsibility of caring for children living with HIV/AIDS who have already been tested for HIV at the Nyumbani laboratory. The Programme gives food rations to guardians of these children once a month. Counseling services are also offered at the programme. The social workers at the programme make home visits to the families with children living with HIV/AIDS and also hold meetings with them at the programme's centre once a month.

3.4 Target and Accessible Population

The target population refers to the population that the researcher will generalize the results to. In this study, the target population consisted of all children living with HIV/AIDS in urban slum areas. The accessible population on the other hand refers to a more narrowly defined and manageable population. The accessible population consisted of children living with HIV/AIDS registered at the Lea Toto Programme in Kangemi. The sampling frame was made up of a total of 200 under fives living with HIV/AIDS in the Lea Toto Programme. The sampling frame was obtained from identified and registered children living with HIV/AIDS at the Lea Toto Programme in Kangemi.

The under fives were included in the study because they make up a vulnerable group in the society. Those with HIV/AIDS are even more vulnerable because they are not protected and are therefore weak. This is because AIDS destroys the ability of the immune system to mount a defence against any infection. Those children living in

children's homes were excluded from the sample because care offered to them was monitored and therefore similar for all cases.

3.5 Sample Size and Sampling Procedure

3.5.1 Purposive sampling

Purposive sampling was used in this study because children living with HIV/AIDS aged below five years and registered with the Lea Toto Programme at Kangemi made up a large number of the total population. They consisted of a total of 180 out of 200 children registered in the programme.

3.5.2 Stratified Random Sampling

To ensure that all ages and both gender were included in the sample, the selected 180 children were stratified according to age and gender. Proportionate sampling was then done in each stratum to ensure that all the strata were represented.

3.5.3 Simple Random Sampling

From each stratum, simple random sampling was used to obtain a sample of ninety children living with HIV/AIDS from the total population of 200 registered in the Programme. 90 children represented 45% of the total population of children living with AIDS registered in the Programme. According to (Ary, Jacob and Razavieh, 1972), 10-20% of the total population in descriptive survey research is acceptable for a sample. The guardians of the selected 1-5 year olds were interviewed.

3.6 Data Collection Instruments

3.6.1 Interview Schedules

The data required was obtained by use of a semi-structured interview schedule., as appears in appendix A. The interview schedule was used to collect both quantitative and qualitative data from the guardians. The interview schedule allowed for elaboration and helped in establishing rapport in order to get frank responses on

issues. It was important for probing so as to get in-depth information. The interview schedule was developed to address specific objectives of the study.

3.6.2 Anthropometric Measurements

These were taken to ascertain nutritional status. Height and weight measurements were used, to derive the following indices; weight for age, height for age, and weight for height. The nutritional status of the children living with AIDS was measured by calculating the extent to which these three indices deviated from measurements for a standard population of well-fed children. The United States National Centre for Health Statistics (NCHS) reference data was used. The use of this reference population is based on the findings that well-nourished young children of all population groups follow similar growth patterns. For Height for age children falling below the cut-off point of minus two standard deviations (-2SD) from the median of the reference population were classified as stunted and chronically undernourished. Children below minus three standard deviations (-3SD) were considered severely stunted. Weight for height measures current nutritional status or wasting. Children whose Z score were below minus 2 standard deviations (-2SD) from the median of the reference population were classified as wasted or acutely undernourished and below minus three standard deviations (-3SD) were severely wasted. Weight for age below two standard deviations (-2SD) from the median was underweight. This reference data was collected from United States children between birth and 18 years.

3.7 Pre -Testing the Instruments

Pre-testing of the instrument was done in order to test its validity. Validity is done to ascertain the accuracy of measurements, with regard to a specific purpose. This was also done to test for reliability, which is the consistency of measurements, each time they are made. This enabled the researcher to correct deficiencies in the instruments. This exercise was carried out to remove vague questions from the instruments, and to

ensure that no valid indicators were left out. Data for testing was collected from 5 guardians of children living with AIDS who were not part of the final sample, but in a similar situation with the study sample. Data was collected from guardians of children living with HIV/AIDS at Kayole who live in a similar situation as the guardians at Kangemi.

3.8 Data Collection Procedures

The researcher interviewed the guardians of children living with HIV/AIDS who were selected after sampling. The interviews were carried out in Kiswahili. The interviews were conducted at the Lea Toto Programme centre as the guardians of the children made visits to the Centre. The researcher together with one trained research assistant took anthropometric measurements of the children. The research assistant was trained on the correct procedures to be followed when taking weight and height measurements. The researcher explained to the respondents the purpose of the research and assured them of the confidentiality of their responses.

Height measurements were taken using a stadiometer and length board. The subjects were required to stand straight with the head positioned such that the Frankfurt plane was horizontal, feet together, knees and heels straight, buttocks and shoulder blades in contact with the vertical surface of the stadiometer. The movable headboard was then gently lowered until it touched the crown of the head. The height measurements were taken with the examiner's eyes level with the headboard. Height was recorded to the nearest millimeter.

Weight measurements were taken using a bathroom scale. The scale was placed on a hard flat surface, and checked for zero balance, before each measurement. The subject was asked to stand at the centre of the platform. Body weight was recorded to the nearest 0.1 kilogramme.

3.9 Data Analysis

The interviews yielded both qualitative and quantitative data. Quantitative data was analyzed by use of descriptive statistics. Descriptive data analysis was done by use of the Statistical Package of Social Sciences (SPSS). The package enables one to easily enter data and formulate required statistics for data analysis. Nutritional data was analysed using a computer package on anthropometric measurements (Epi Info 2000). T-tests were carried out to establish the statistical significance of the results. ANOVA is a statistical test used to show how the categorical variables co-vary. In addition, it is used to assess statistical significance of findings. ANOVA was done to test for statistical significance of the differences among mean scores of variables. Pearson's Product Correlation Coefficient is a statistical test which shows the degree of relationship between two variables. This test was used to show the strength of the relationship between the dependent variable, which is nutritional status and independent variables namely, age, gender, feeding practices, health and socio-economic factors. Chi-square tests were carried out to establish whether relationships existed between nutritional status and feeding and health factors.

Qualitative data was extracted from interview schedules and then coded. Coding of raw data was done by assigning values to make it possible for the computer to operate on the data thus coded. Categories were established and from these, themes formed. Generalizations were made from these themes in order to support quantitative data obtained.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

The study aimed at assessing the factors that influence the nutritional status of under fives living with HIV/AIDS at the Lea Toto Programme in the Kangemi area of Nairobi Province. The factors assessed include feeding practices, health and socio-economic characteristics.

4.2 Demographic Characteristics

4.2.1 Children's Age

Twenty three children (25.6%) were aged between 4 - 5 years, Twenty two (24.4%) 5 years, Twenty one (23.3%) 3 – 4 years, eleven (12.2%) 1 - 2 years, Seven (7.8%) 2 – 3 years and Six (6.7%) below one year.

Table 2: Frequency Distribution Showing the Children's Age

Age	N	Percent (%)
Below one year	6	6.7
1 to 2 years	11	12.2
2 to 3 years	7	7.8
3 to 4 years	21	23.3
4 to 5 years	23	25.6
5 years	22	24.4
Total	**90**	**100.0**

4.2.2 Nature of the Guardians

The study covered 90 respondents selected from the Lea Toto Programme in Kangemi. Out of these, forty four (48.9%) were guardians of male children while forty six (51.1%) were guardians of female children living with HIV/AIDS.

The guardians of the children consisted of fifty three (58.9%) single HIV positive mothers, fourteen (15.5%) were relatives of the children such as uncles and aunties, eight (8.9%) were grandmothers, seven (7.8%) were mothers and fathers who were

HIV/AIDS positive, six (6.7%) were not related to the children and two (2.2%) were single fathers with HIV/AIDS.

4.3 Nutritional status of under fives living with HIV/AIDS

The indicators that were used to assess the nutritional status of children were height for age, weight for height and weight for age.

Table 3: Nutritional status indices

Index	Boys	Girls	Total	Percent (%)
Stunting	28	32	60	67.8
Underweight	26	19	45	50.0
Wasting	9	9	18	19.9

Results indicate that sixty (67.8%) of the children were stunted, and therefore shorter than the expected height for age. Twenty eight of the children were boys while thirty two were girls. Stunting indicates a deficit in skeletal development that may be indicative of a chronic nutritional problem.

Forty five (50%) of the children were underweight, twenty six boys and nineteen girls. Eighteen (19.9%) of the children were wasted, nine boys and nine girls.

HIV/AIDS affects assets, institutions and outcome such as nutritional status. But nutrition is more than an outcome for those affected by HIV/AIDS; it is also a means of addressing it (WHO, 2004). Other key contributors to good nutrition are adequate health, childcare, access to clean water and sanitation.

4.3.1 Nutritional status of the children based on age

Results indicate that the highest number, twenty eight (31.1%) of the children who were stunted were aged between 48-60 months. The same category had the highest cases of wasting, that is nine (10%) and the same age bracket had the largest number of underweight children. These were twenty (22.2%). The results are shown in table 4

Table 4: Nutritional status of children based on age.

Age (Months)	Stunted	Percent (%)	Wasted	Percent (%)	underweight	Percent (%)
0-12	8	8.9	3	3.3	4	4.4
13-23	6	6.7	1	1.1	3	3.3
24-35	6	6.7	1	1.1	5	5.6
36-47	13	14.4	4	4.4	13	14.5
48-60	28	31.1	9	10.0	20	22.2
Total	**61**	**67.8**	**18**	**19.9**	**45**	**50.0**

4.3.2 Nutritional status and age of children

Table 5: Correlation between nutritional status indices and age of children.

Index	Age (r – value)
H/A	0.049
W/A	0.008
W/H	0.041

N=90

Correlation significant at the 0.05 level

To determine whether there was a relationship between the various nutritional indices and the children's age, the Pearson's Product Moment Correlation Coefficient was used. This statistical test was used because data collected for age was continuous. There was a positive relationship between weight for age (underweight) and age with an r-value of 0.008. There was a positive relationship between height for age (stunting) and age because the r-value was 0.049. A positive relationship existed between weight for height (wasting) and age with an r-value of 0.041. The 0.05 significance level was used. These positive relationships indicated that the nutritional status of children deteriorated with age. This could be explained by the fact that the older children had lived longer with HIV/AIDS and their bodies could have been

weakened more, making them prone to malnutrition. Malnutrition hastens onset of AIDS among HIV positive children (WHO, 2004).

4.4 The relationship between feeding practices and the nutritional status of under fives living with HIV/AIDS

Among children, malnutrition is especially prone to strike those who lack nutritionally adequate diets, are not protected from frequent illness and do not receive adequate care. Illness is frequently a consequence of malnutrition and malnutrition is also commonly a result of illness (Unicef, 1998). HIV/AIDS, a major cause of child deaths also takes a major toll in child growth and development. Special care should therefore be taken to ensure that children living with HIV/AIDS are properly fed.

4.4.1 Number of Meals Taken

The number of meals taken in a day by the children living with HIV/AIDS are shown in table 6:

Table 6: Number of Meals Taken in a Day

No of meals taken	N	Percent (%)
One	-	-
Two	-	-
Three	38	42.3
Four	2	2.2
Five	1	1.1
Number subject to food availability	49	54.4
Total	**90**	**100.0**

From table 6, none of the children took one or two meals in a day, two (2.2%) took four meals in a day. One (1.1%) took five meals in a day and forty nine (54.4%) who make up the highest percentage took meals subject to availability of food. This means that sometimes, these children would go without food when there was no money to purchase it. This was found common with the children whose guardians had irregular income. This also explains the reason why only two (2.2%) of the guardians managed

income. This also explains the reason why only two (2.2%) of the guardians managed to prepare special foods for the children living with HIV/AIDS. The Special foods consisted of proteins of high biological value such as beef stew and eggs served with carbohydrate foods such as Ugali and rice. A vegetable was included in the meal and a fruit given. These provide vitamins and mineral salts to the body. The other eighty eight (97.8%) could not have special meals for these children because they lacked the money to buy food. The two (2.2%) guardians who had diet modifications for these children were able to serve small frequent meals. The other dietary modifications that should have been made for these children would have been serving a lot of liquid foods and giving plenty of fruits after meals.

4.4.2 Source of Food

The means through which a household acquires food to meet the dietary needs of its members determines the household food security status of the particular household.

Table 7: Source of food

Source of food	N	Percent (%)
Farm production	4	4.4
Gifts	3	3.3
Market purchase	87	96.7
Borrowing	30	33.3
Lea Toto	90	100.0

**Multiple responses allowed*

From table 7, eighty seven (96.7%) of the guardians purchased their food from the market. This was subject to availability of money. Cheaper foods were preferred. This factor also limited their choice of food in terms of variety. Ninety of the guardians were registered at the Lea Toto Programme and they received a food package consisting of two kilos of beans, 1 kilo of green grams, 1 kilo of cooking fat and 2 kilos of millet flour which were distributed on a monthly basis. These foods did not

benefit the child living with HIV/AIDS alone because they were shared among all the guardians' household and most of them consisted of many members. Families used the food within one week and had to depend on the guardian's ability to get food for the remaining three weeks in a month. Thirty of the guardians had to borrow food sometimes when they had no other means of acquiring it. Three (3.3%) of the guardians were refugees and depended on gifts from other refugees. Four (4.4%) of the guardians got food from their farms as they practised small-scale farming.

4.4.3 Frequency of Consumption of Selected Foods

A food frequency table was used and respondents were asked to state how frequently children living with HIV/AIDS took some selected foods, which included ugali, rice, Irish potatoes, beans, kales, cabbage, oranges, ripe bananas, beef, chicken, fish, eggs, milk and porridge. The above selected foods represent the major sources of nutrients required by the body for proper functioning. These foods are also available locally, at Kangemi.

Table 8: Food frequency table

Food item	Several times a day	Once a day	Once a week	Once a month	occasionally
Ugali	56	33	-	-	1
Rice	63	25	1	1	-
Irish potatoes	67	18	2	3	-
Beans	2	6	2	5	5
Kales	45	40	2	2	1
Cabbages	38	46	1	2	3
Oranges	-	1	2	48	39
Ripe bananas	-	10	23	23	34
Beef	-	2	10	40	38
Chicken	-	-	-	1	89
Eggs	-	1	1	45	43
Fish	-	1	1	47	41
Milk	1	88	1	-	-
Porridge	44	46	-	-	-

* Multiple responses allowed.

The study findings indicate that foods consumed several times a day included; ugali, Irish potatoes, rice, kales and cabbage. This was because these foods were more readily available and cheaper as compared to the others. However, the consumption of oranges, ripe bananas, beef, chicken, eggs, fish and milk was occasional as the respondents said that these foods were very expensive and they could not afford them on frequent basis. These results suggest that children living with HIV/AIDS consumed a lot of carbohydrate foods, that is, Ugali, rice and Irish potatoes. Foods containing protein were rarely taken whereas they required them in large amounts. These included beef, chicken, fish, eggs and milk. Literature has shown that the potential for micronutrient deficiencies to act as co-factors in HIV progression is most obvious in poor populations with inadequate dietary intake and high infectious disease burden (Chandaria, 1989). In reality, vitamins and minerals availed to the children were mainly from cabbage and kales. This could have been available in small

amounts as most of them are in bound form and are easily destroyed during food preparation and cooking. Liquids were also rarely given to these children even though they require them in large amounts, to replace lost fluids. A study in Zimbabwe showed that households caring for children living with HIV/AIDS had switched from more expensive to cheaper commodities, and many households especially in the urban area studied, reported decreased food consumption and switched to cheaper foods (Mutangudura, 2000). This concurs with the study findings which indicate that there was no diversity in choice of foods to be consumed.

4.4.4 Methods of Food Preparation

The most frequently used method of cooking food was boiling. Eighty nine (98.9%) of the respondents reported that they normally boiled their food. This was a good method of cooking the food as it softens it making it easily digestible. Frying and stewing were rarely used due to lack of facilities and materials. Steaming was not used because of lack of knowledge on how to go about it. Steaming could have been a good method to use when cooking food for children living with HIV/AIDS as the food could have been tender, easy to digest and more nutritious.

4.4.5 Satisfaction of Food Consumption among Households

Respondents were asked to state how satisfied they were with certain statements regarding food consumption. Responses included satisfied, neutral, and dissatisfied. These applied to all the family members, including the HIV/AIDS positive children. There was a general dissatisfaction amongst the respondents with the distribution of food among family members. This was due to the cultural practices, which advocated for serving of men first in the families. Dissatisfaction was also seen in the variety of foods served, the general appearance, quality and quantity of food. This was mainly due to lack of money to purchase a variety of good quality food.

4.4.6 Breastfeeding Practices

Breastfeeding by HIV positive women is a major means of HIV transmission. (WHO, 2003). Exclusive Breastfeeding however is still recommended for children below six months in areas where the risk of malnutrition and disease is paramount. No exclusive breastfeeding was practiced among the study population. Mixed breastfeeding was carried out whereby the children were breastfed as well as accustomed to new foods. This endangered their lives as they were made susceptible to contracting AIDS through breast milk as well as getting sick because of bad practices during alternative feeding. This included preparing food under unhygienic conditions.

Fifty six (62.2%) of the children living with HIV/AIDS were breastfed. Of the fifty six who were breastfed, thirteen (23.2%) were breastfed for less than 1 year, thirty six (64.2%) for between one and two years, and seven (12.6%) for between 2 and 3 years.

Table 9: Duration of Breastfeeding

Duration of breastfeeding	N	Percent (%)
Less than 1 year	13	23.2
Between 1 – 2 years	36	64.2
Between 2 -3 years	7	12.6
Total	**56**	**100.0**

Most of the mothers, fifty (55.6%) breastfed their children for more than two years because they were not aware of their HIV status and had no information on the danger of breastfeeding when one was HIV positive. Two (2.2%) mothers breastfed for more than two years because they had no alternative foods to wean the children with and believed that breast milk was the best for their children.

Those who breastfed their children for less than one year gave the following reasons: they were expecting another child, they wanted to wean their babies early and the mother became sickly and had to stop breastfeeding. Some of the children, thirty four (37.8%) were not breastfed because of fear of transmission of HIV/AIDS to the child,

mothers inability to breastfeed due to weak status and death of the mother soon after delivery. Therefore, some of the mothers could have transmitted the HIV virus to their children during delivery or through breast milk. This could have weakened the babies' immune systems at this early age and made them prone to infection and malnutrition.

4.4.7 Weaning Practices

Delayed or poor supplementation inhibits the normal growth in infants particularly supplements and weaning foods of poor nutritive values. Appropriate feeding can significantly reduce the adverse effects of infections on nutritional status. Focus should be on the child's important remediable feeding problems, rather than provide general nutritional advice(Unicef,2000).

Table 10: The Frequency Distribution Showing Types of Food Introduced to Babies Living with HIV/AIDS

Weaning Foods	N	Percent %
Porridge	80	88.9
Potatoes	67	74.4
Peas	53	58.9
Carrots	27	30.0
Spinach	35	38.9
Milk	40	44.4
Pawpaw	43	47.8
Bananas	27	30.0

**Multiple responses allowed*

Data in table10 shows that most of the babies, eighty (88.9%) were first introduced to porridge, potatoes and peas. Few, twenty seven (30%) of them were given carrots and bananas. The only protein food that was introduced to them was milk and this was given when money was available to buy it. The other protein foods were considered too expensive and were therefore not introduced to the babies.

4.4.8 Relationship between number of meals taken by the children and their nutritional status.

To establish the relationship between the number of meals taken and the nutritional status of the children, the three indices of nutritional status were correlated to the number of meals taken by the children using the chi-square (χ^2) test.

Table 11 Number of meals taken and nutritional status

Index	χ^2	Df	p. value
H/A	1.057	1	0.304
W/A	0.54	1	0.461
W/H	3.54	1	0.04

N= 90

Results indicate that there was no significant relationship between stunting and underweight and the number of meals taken at a p value of 0.05. This was probably because there was no great variance in the number of meals taken in a day. However, there was a significant relationship between wasting and the number of meals taken. The number of meals taken therefore had an effect on the wasting levels of the children. There was therefore a relationship between feeding practices and the nutritional status of children.

4.4.9 Nutritional status and breastfeeding

The t-test for independent samples was used to determine whether there was a difference between the nutritional status of children who were breastfed and those who were not. Table 12 represents the t-test results:

Table 12: Comparison of Nutritional Status among Children who were Breastfed and those who were not Breastfed

Index	t-value	Sig. Value P
H/A	0.431	0.667
W/A	2.295	*0.024
W/H	2.212	*0.030

N = 90

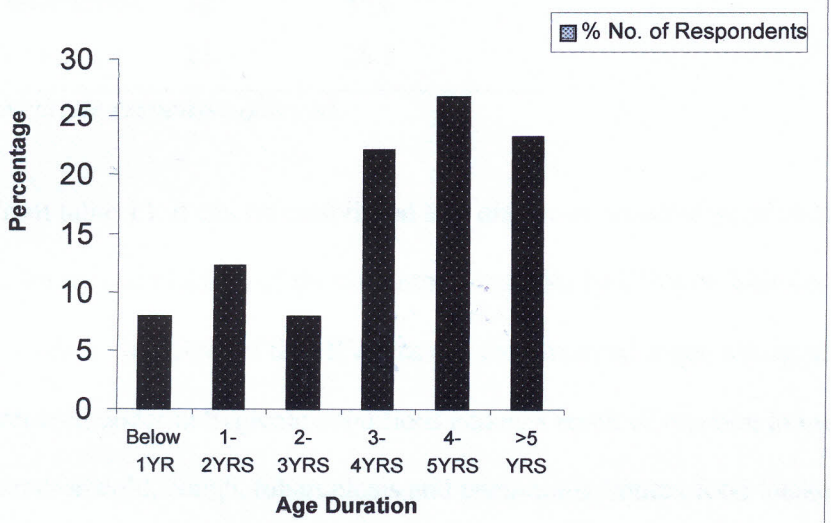
The results reveal that there was a significant difference in wasting (P=0.030) and underweight (0.024) between those children who were breastfed and those not. There was no difference in stunting, (P= 0.667) and breastfeeding, at p = 0.05 level. Breastfeeding was therefore not beneficiary to the children leaving with HIV/AIDS because it increased levels of wasting and underweight though it did not have an effect on stunting. There was therefore a relationship between breastfeeding and nutritional status of the children living with HIV /AIDS because the replacement feeding carried out was not done in a clean environment

4.5 The relationship between health and nutritional status of under fives living with HIV/AIDS

4.5.1 Duration of living with HIV/AIDS

The role of nutrition in prolonging the life of a person suffering from HIV/AIDS is important. With proper nutrition, people live with the virus for many years. Data in figure 3 indicates that seven (7.8%) had lived with HIV/AIDS for one year, 11 (12.2%) for between 1 to 2years, seven (7.8%) 2 to 3 years, twenty (22.2%) 3 to 4 years, twenty four (26.7%) 4 to 5 years and twenty one (23.3%) for five years.

Figure 3: Frequency Distribution Showing the Length of Time the Children have Lived with HIV/AIDS



4.5.2 Occurrence of Opportunistic Infections as a Result of HIV/AIDS

Eighty nine (98.9%) of the children had been ill within seven days before the interviews were carried out, while only one (1.1%) had not fallen ill within that period of time.

Table 13: Frequency Distribution Showing the Occurrence of Opportunistic Infections

Illness	N	Percent (%)
Cold	21	23.3
Diarrhoea	41	45.6
Cough	35	38.9
Rashes	14	15.6
Fever	10	11.1
Anorexia	21	23.3
Vomiting	9	10.0
Tuberculosis	32	35.6
Pneumonia	24	26.7

**Multiple responses allowed.*

From table 13, it can be established that diarrhoea occurred in most of the cases, that is, fourty one (45.6%) of the children living with HIV/AIDS. This could have been as a result of the effect of the HIV virus on the intestinal walls, taking of food and water prepared under unhygienic conditions and as a result of reaction to medication. The common cold, cough, tuberculosis and pneumonia limited food intake in these children. These caused fever and pain, which worsened anorexia. Anorexia made the children lack appetite. Nausea and vomiting prevented the children from eating and drinking leading to dehydration and malnourishment. Children with HIV have more rapidly progressive disease than adults and infections. Early HIV immuno suppression results in more frequent, more severe and recurrent forms of infection such as pneumonia, tuberculosis and measles.(WHO,2004).

4.5.3 Incidences of opportunistic infections seven days before study period

Table 14: Frequency of Occurrence of Opportunistic Infections

Frequency of Disease Occurrence	N	Presently (%)	N	Once (%)	N	Often (%)
Diarrhoea	28	31.1	4	4.4	53	58.9
Nausea and vomiting	21	23.3	5	5.6	61	68.9
Cough	10	11.1	3	3.3	75	83.3
Tuberculosis	6	6.7	9	10.0	72	80.0
Mouth thrush	3	3.3	7	7.8	75	83.3
Anorexia	2	2.2	6	6.7	77	85.5

**Multiple responses allowed*

Data in table 14 indicates that most of the opportunistic infections occurred often in children living with HIV/AIDS. Results show that diarrhoeal cases were the most frequent occurring opportunistic infections, that is fifty three (58.9%), nausea and vomiting, sixty one (68.9%), cough seventy five (83.3%), tuberculosis seventy two (80%), mouth thrush seventy five (83.35%) and anorexia seventy seven (85.5%). These opportunistic infections weakened the immune system of the children, rendering them susceptible to malnutrition and further infection.

4.5.4 Relationship between duration of living with HIV/AIDS and the nutritional status of the under fives

A chi-square test revealed that there was no relationship between the duration of living with HIV/AIDS and the nutritional status of the children at a p value of 0.05.The result are presented in table 15:

Table 15: Nutritional status and duration of living with HIV/AIDS

Index	(χ^2)	df	P. value
H/A	0.22	1	0.35
W/H	0.010	1	0.92
W/A	1.16	1	0.28

4.5.5 Frequency of occurrence of disease and nutritional status

Adequate diet intake is essential in helping people living with HIV/AIDS fight the opportunistic infections that arise due to the condition. To determine whether there was a relationship between the frequency of nausea and vomiting occurring and the nutritional status of the children, the chi-square (χ^2) test was used and the following results were obtained:

Table 16: nutritional status and frequency of occurrence of infections

Index	χ^2	df	P value
H/A	0.20	1	0.65
W/H	1.54	1	0.46
W/A	1.90	1	0.16

These results revealed that there existed no relationship between the frequency of occurrence of nausea and vomiting and the nutritional status of the children at a p value of 0.05. This could be attributed to the fact that most of the children often experienced nausea and vomiting and therefore there was no great variance.

4.6 The relationship between socio-economic characteristics and the nutritional status of under fives living with HIV/AIDS

Households affected by HIV/AIDS often move from relative affluence into poverty. Studies in Burundi, Haiti and Zambia showed, changes including loss of income and loss of paid employment in affected households (UN,2004).

4.6.1 Educational Level of the Guardians

Table 17: Percentage Distribution of Respondents' Educational Level

Level of Education	N	Percent (%)
No formal Education	8	8.8
Primary	62	68.9
Secondary	15	16.7
College	5	5.6
Total	**90**	**100.0**

The findings of the study show that most of the respondents, sixty two (68.9%) had attained primary school education, fifteen (16.7%) had attained secondary education, eight (8.8%) had no formal education, while only five (5.6%) had college education. The above results indicate why only few respondents had jobs. This is because one's level of education determines the type of job he/she is able to get and hence the amount of money they earn, thus determining their purchasing power. The educational level variable was important because a study has found out that people who acquire education are generally more aware of the need to utilize available resources for the improvement of the nutritional status of their families and themselves (UNESCO, 1983).

4.6.2 Occupation

Out of the 90 respondents, a third (30%) were employed while two thirds (70%) were unemployed. Those who were employed engaged in jobs like construction of houses, cleaning of houses, washing of clothes, plaiting hair, selling fish, vegetable business, selling of illicit brew and small-scale farming. The above categories of jobs are not permanent, thus resulting in temporary income. This meant that sometimes the guardians lacked money to purchase food. In addition, those guardians who were HIV positive would sometimes be too weak to perform these manual duties, as they require a lot of energy. This was common when they were faced with opportunistic infections, which weakened their bodies. Those who had formal employment, for

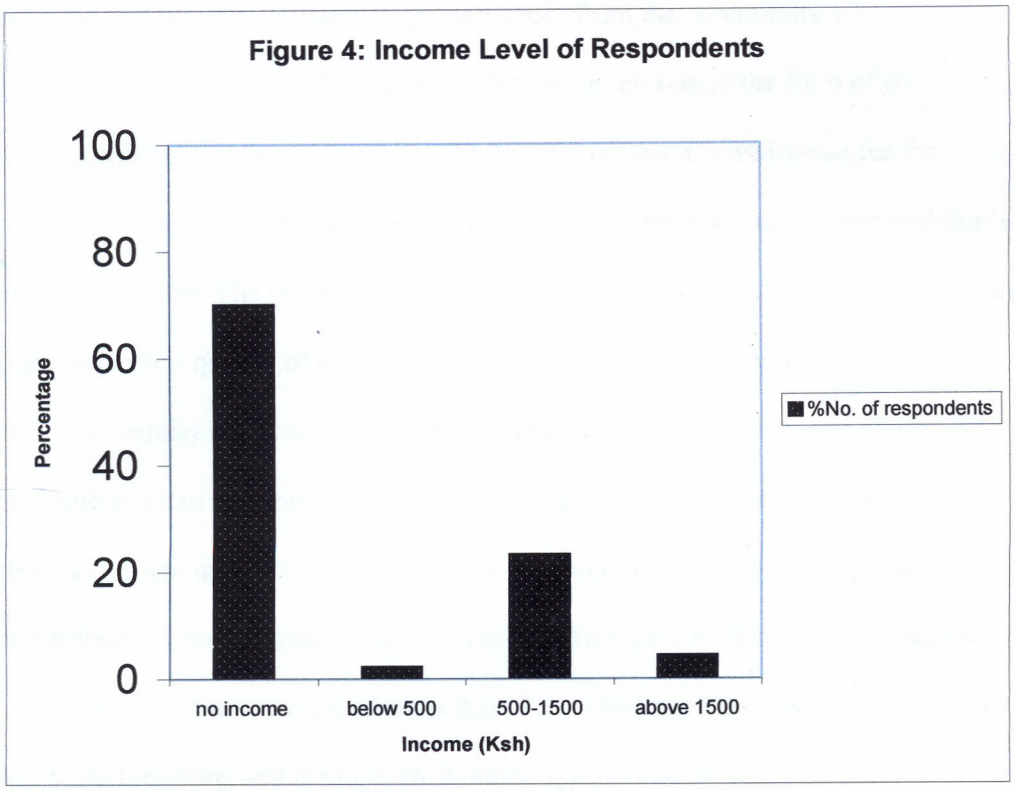
instance, working with the city council went for months without pay. This impacted on their ability to buy food.

Table 18: Guardians' Occupation

Type of activity	N	Percent (%)
Small scale business	14	15.6
Farming	2	2.2
Formal employment	11	12.2
No job	63	70.0
Total	**90**	**100.0**

4.6.3 Income

This variable was sought to find out the total monthly income of the guardians who had any form of employment at the time the study was carried out. Income influences food selection and consumption because people cannot eat what they cannot acquire (Atebe, 1996). Income therefore determines the quality and quantity of food availed to family members. The following bar graph represents income levels of the respondents:



From the above bar graph, results indicate that sixty three (70%) of the guardians had no income, two (2.2%) earned below Ksh 500, twenty one (23.4%) earned between Ksh 500- 1500 and four (4.4%) earned above Ksh 1500. From the above figures, it may be evident that this money may not have been adequate in meeting the guardians' needs, especially food requirements as it was little and irregular.

4.6.4 Community Support

A study carried out in Zambia indicated that people living with HIV/AIDS only braved a stigma by their association with AIDS and are often discriminated against as they work to spare future generations from the ravages of this disease (UNICEF, 2000). Out of the 90 respondents, only one (1.1%) had disclosed the HIV positive status of the child they were living with. Eighty nine (98.9%) had not disclosed their children's status. This is because they feared stigmatization by members of the public. In some incidences, some of the guardians opted to move out of their areas of residence once they discovered that the community was aware of their child's status.

Only one (1.1%) of the guardians got assistance from the community with reference to the HIV positive child. The type of assistance given was in the form of food for the infected child. The other eighty nine (98.9%) did not get any assistance for the infected children from the community because they were not aware of the children's HIV/AIDS status. The community, therefore, did not play a role in the children's lives to improve their quality of life in terms of provisions of clothing, food, and medical care. Community members did not lend a hand in feeding, bathing, and administering medicine to these children. This may have had major repercussions to the children, especially when majority of the guardians who were HIV positive themselves succumbed to opportunistic infections and could not care for the children adequately as they required the same attention as that of the children. Thus, the children did not feed well, therefore weakening their immune system and bodies.

4.6.5 Relationship between nutritional status and the guardians level of education

Table 19: Differences between Nutritional Status Indices and Guardians' Level of Education

Index	t-Value	Sig. Value (P)
H/A	-1.975	*0.05
W/A	-0.927	0.342
W/H	2.147	*0.036

N = 90

An independent t-test performed revealed that there was a significant difference between stunting ($p \leq 0.05$) and level of education and wasting ($p=0.036$) and level of education. However, there was no difference between underweight (0.342) and the level of education. The levels of education compared were no formal education, primary, secondary and college. There is therefore a relationship between stunting and wasting and the level of education of the guardians.

4.6.6 Nutritional status and income levels of guardians

Un ANOVA test was carried out to determine whether there were significant differences among the mean scores of the various income levels of guardians and the specific nutritional status indices. A general ANOVA was carried out and results obtained are shown in table 20:

Table 20: Comparison of Differences between Nutritional Status Indices and Income Levels of the Guardians

Index	F	Sig. Value – P
H/A	1.346	0.265
W/A	1.154	0.332
W/H	0.323	0.809

N = 90

According to the data in table 20, there was no significant difference in stunting (0.265) and income, underweight (0.332) and income, wasting (0.809) and income. However, on carrying out a post-hoc test, there was found to be a significant difference between height for age and income with a p value of 0.048 at 0.05 significance level.

CHAPTER FIVE

SUMMARY CONCLUSIONS AND RECCOMMENDATION

The purpose of this study was to assess the factors that influences the nutritional status of under fives living with HIV/AIDS .To achieve this the nutritional status of the children was assessed. The factors examined included feeding practices, health and social economic characteristics.

5.1 Summary of the findings

5.1.1 Nutritional status of the under fives

The study findings indicated that sixty (67.8 %) of the children were stunted forty-five (50%) were underweight and eighteen (19.9%) of them were wasted. Study findings revealed that a higher number of stunted (31.1 %) underweight (20%) and wasted (10.0%) children were aged between 48-60 months The Pearson's Correlation Coefficient carried out revealed that there was a positive relationship between stunting, underweight and wasting and age.

5.1.2 The relationship between feeding practices and the nutritional status of under fives living with HIV/AIDS.

Research findings revealed that forty-nine (54.4%) of the children took meals subject to their availability. Eighty seven (96.7%) of the guardians purchased food from the market. While the Lea Toto provided food, it was not sufficient because it was shared among all family members in a household. Foods consumed frequently by the children were carbohydrates in nature because they were deemed cheaper. Proteins were taken occasionally because they were considered expensive. No exclusive breastfeeding was practiced. Fifty six (62.2%) of the children were breastfed. Fifty (55.6%) were breastfed for more than two years. Most of the babies (88.9%) were weaned on porridge .The only protein introduced to them was milk, when money was available.

A chi-square test revealed that there was no significant relationship between stunting and underweight and the number of meals taken by the children but a relationship existed between wasting and the number of meals taken. An independent t-test showed that there was a significant difference between underweight and wasting and whether the children were breastfed or not.

5.1.3 The relationship between health and the nutritional status of the under fives living with HIV/AIDS

Forty one (45.6%) of the children had succumbed to diarrhea, resulting in dehydration and malabsorption of food .The other opportunistic infections the children succumbed to include anorexia, tuberculosis and pneumonia.

A chi-square test revealed that there was no relationship between the duration the children had lived with HIV/AIDS and nutritional status. There was no significant relationship between frequency of occurrence of nausea and vomitting and nutritional status.

5.1.4The relationship between Socio -economic characteristics and the nutritional status of the under fives living with HIV/AIDS

Sixty two (68.9%) of the guardians had received primary school education while only five (5.6%) had college education. The guardians received little and irregular income. Support given by the Lea Toto programme was shared among household members, disadvantaging the child living HIV/AIDS .An ANOVA test revealed that there were no significant differences in stunting, wasting and underweight and income, but a post-hoc test showed a significant difference between stunting and income.

5.2 Conclusion

The following conclusions were made from the study findings:

i) The daily intake of meals by the children living with HIV/AIDS was subject to availability of food which was influenced by the guardians' purchasing power and not the nutritional content of the food. Meal taken were not balanced and mostly consisted of carbohydrate foods. Food rations given by the Lea Toto Programme were shared among members of the households. Mixed breastfeeding was practiced and weaning done with carbohydrates. There was a significant relationship between wasting and the number of meals taken. There was a significant difference in wasting between those children who were breastfed and those not breastfed.

ii) The children living with HIV/AIDS frequently ailed from opportunistic infectious subjecting them to dehydration, malabsorption and anorexia. There was no significant relationship between nutritional status and frequency of occurrence of nausea and vomiting. There was no significant relationship between the duration of living with HIV/AIDS and nutritional status.

iii) The educational levels of most of the guardians of the children living with HIV/AIDS were low, subjecting them to secure low income jobs. This had an effect on their purchasing power. There was significant difference between stunting and wasting the guardians' level of education though there was none between underweight and level of education. An ANOVA test showed that there was a significant difference between stunting and income.

5.3 Recommendations

According to the findings of the study, the following are recommended:

i) Nutritionist from government institutions such as hospitals should visit programmes attached to children living with HIV/AIDS such as Lea Toto Programme and advice guardians on constituents of balanced affordable weaning foods. Mothers who have HIV/AIDS should practice exclusive breastfeeding other than mixed breastfeeding for six months. This is because mixed breastfeeding subjects babies to dangers of contracting HIV/AIDS as well as risk factors associated with poor weaning practices.

ii) The government in conjunction with donor agencies should avail drugs at subsidized prices to try and curb mother to child transmission of HIV/AIDS and treat opportunistic infections. These can be given to the guardians of children enrolled in programmes as they receive food rations. This will strengthen the children's immune systems.

iii) Members of the community should be encouraged to come up with self-help groups, which will help them to set up income generating activities. This can be done by provision of capital by the Lea Toto Programme to the guardians to ensure that they have consistent income. This will improve their purchasing power and hence nutritional status of the children living with HIV/AIDS.

iv) The Lea Toto Programme should have a programme set in place to monitor and evaluate the progress of children living with HIV/AIDS. Focus should be on interventions geared towards the benefit of these children. Follow up should be done to ensure that children living with HIV/AIDS benefit from the food rations given.

5.4 Suggestions for Further Research

From the findings of the study, it is recommended that:

i) A similar study be carried out in a rural setting to find out if the results concur.

ii) A study can be carried out to compare the nutritional status of under fives living with HIV/AIDS in institutions and those in the community.

REFERENCE

AIDSCAP, (1996). AIDS in Kenya : Socio-Economic Impact and Political Implications. Nairobi: UNAIDS.

Ary, D. Jacob, L. and Razavieh, A (1972). Introduction to Research in Education. NewYork: Reinhart and Winston Inculturation.

Atebe, J (1996). Assessment of Socio-cultural and Economic Determinants of Food Selection and Consumption among Nairobi Households. A case of Jerusalem, Buruburu Phase II and Akiba Estates.

Belsey, M (2005). AIDS and the family: policy options for a crisis in family capital. New York: UN.

Blandie, (1989). A Prospective Study of Infants Born to Women Seropositive for HIV type 1. Medical Journal 320, 1643 – 8.

Burgess. A and Glasauer. P, (2004). Family Nutrition Guide. Rome: FAO.

Bylsma, M. (1996). Living positively: Nutrition Guide for People Living with HIV/AIDS. Mature: Bril print.

Centre for Disease Control (2000): Epi Info, 2000 Software for Public Health. Washington D.C., USA, CDC . Computer Programme.

Fawzi, W. Msamanga, G and Hunter, D. (2002). Randomized trial of vitamin supplements in relation to transmission of HIV-1 through breastfeeding and early child mortality. AIDS 16:1935-1944.

Government of Kenya, (2006). Kenya National Guidelines on Nutrition and HIV/AIDS. UNICEF, USAID, FANTA

Higgins, T (1998). An Introduction to HIV Treatment for African People. The Terrace Higgins Trust.

Jiamton, S. Pepin, J. and Suttent, R. (2003). A randomized trial of the impact of multiple micronutrient supplementation on mortality among HIV-infected individuals living in Bangkok, AIDS 17:2461-2469.

Ministry of Health, (2005). Comprehensive HIV/AIDS Care.

Ministry of Health, (2003). Kenya Demographic and Health Survey: Nairobi.

Mutangadura, G (2000). Household welfare impacts of mortality of adult females in Zimbabwe: Implications for policy and program development. IAEN: Durban.

NAP. (2000). A Healthy Diet for Better Nutrition for People Living with HIV/AIDS. Nairobi: NAP.

Piwoz, E. and Preble, E. (2000). HIV/AIDS and Nutrition: A Review of the Literature and Recommendations for the Nutritional Care and Support in Sub-Saharan Africa. Washington: SARA.

Sproull, (1988). A Handbook of Research Methods: A Guide for Practitioners and Students in Social Sciences. London: The scarecrow Press.

Tang, A. Forrester, J. Spiegelman, D. (2002). Weight loss and survival in HIV Positive patients in the era of highly active anti retroviral therapy. Journal of Acquired Immune Deficiency Syndromes 31(2): 230-6.

TASO, (2001). The AIDS Support Organization: Nairobi.

UN, (2004). The impact of AIDS. New York: UN.

UNAIDS/WHO, (2005). AIDS epidemic update. Nairobi: WHO/UNAIDS.

UNESCO, (1993). Maternal and Young Child Nutrition. UNESCO.

UNICEF, (1998). Situational Analysis of Women and Children. Nairobi: UNICEF.

UNICEF a (1999). Children Orphaned by AIDS, New York: UNICEF.

UNICEF, b (1999). The Progress of Nations. New York: UNICEF.

UNICEF, (2000). Management of the child with a serious infection severe malnutrition. Hong Kong: WHO.

UNICEF, (2000). The State of the World's Children 1998, New York: Oxford University Press.
UNSFN, (1998). Nutrition and HIV/AIDS. Geneva: WHO.

UNSFN, (2001). Symposium on Nutrition and HIV/AIDS. Nairobi: UNSFN.

Vogt. P, (1993). Dictionary of Statistics and Methodology. London: Sage Publications.

WHO/FAO, (2002). Living well with HIV/AIDS. A manual on Nutritional care and support for people Living with HIV/AIDS. Rome: FAO.

WHO, (2003). HIV and infant feeding. A guide for health-care managers and supervisors. Geneva: WHO.

WHO, (2004). Nutrition for improved development outcomes. Geneva: WHO.

WHO, (2004). Serious childhood problems in countries with limited resources. Geneva: WHO.

WHO, (2005). Consultation on Nutrition and HIV/AIDS in Africa. Durban: WHO.

APPENDICES

APPENDIX I: INTERVIEW SCHEDULE FOR GUARDIANS OF CHILDREN LIVING WITH HIV/AIDS

RESPONDENT'S NUMBER: _____

The interviewer will carefully read out each of the following questions to the respondent and fill in the responses that best describe the respondent's response

SECTION I: Demographic Characteristics

1. Child's gender (Tick as appropriate)

   (a) Male [ ] (b) Female [ ]

2. How old is the child?

Years	Months

3. Nature of the child's guardian. (Tick as appropriate)

   1. Single mother (HIV positive) [ ]
   2. Single father (HIV positive) [ ]
   3. Grandmother (parents deceased) [ ]
   4. Guardian relative (cousin, uncle, aunt) [ ]
   5. Both parents (HIV positive) [ ]
   6. Guardian not related to child [ ]

4. How did you know about the Lea Toto Programme?

Socio-Economic Characteristics

5. What level of education have you attained? (Tick as appropriate)

   (a) No formal education [ ] (d) College [ ]

   (b) Primary [ ] (e) University [ ]

   (c) Secondary [ ]

6. *Do you engage in any economic activity? (Tick as appropriate)*

(a) Yes [ ] (b) No [ ]

7. If yes, what activities do you engage in? (Tick as appropriate)

(a) Manual work (specify) (b) Formal employment (specify)

(c) Self employment (specify) (d) Any other (specify)

8. If yes, what is your total monthly income? (Tick as appropriate)

(a) Below 500 Ksh [ ] (c) Ksh 1000-1500 [ ]

(b) Ksh 500-1000 [ ] (d) 500 and above [ ]

1. Did the child's parents own any property? (Tick as appropriate)

(a) Yes [ ] (b) No [ ]

10. If yes, under whose care is it? (Tick as appropriate)

(a) Relatives [ ] (b) Guardians [ ] (c) Any other specify [ ]

Community Support

11. Is the community aware of the child's HIV/AIDS status?

(a) Yes [ ] (b) No [ ]

12. Do you get any assistance from the community other than from the Lea Toto Programme?

(a) Yes [ ] (b) No [ ]

13. If yes, what sort of assistance are you given? (Tick as appropriate)

(a) Payment of fees

(b) Provision of clothing

(c) Provision of food

(d) Provision of medical care

(e) Others (specify)

14. Do members of the community offer to assist in taking care of the children. (Tick as appropriate)

(a) Yes [ ] (b) No [ ]

15. If yes, in what ways? Explain .....

Feeding Practices

16. How many meals does the child take in a day? (Tick as appropriate)

(a) One [ ] (b) Two [ ] (c) Three [ ] (d) Any other (specify)

17. Please indicate the source of food for the family.

(Tick as appropriate)

(a) Farm production [ ] (b) Market purchase [ ]

(c) Gifts [ ] (d) Borrowing [ ]

(e) Lea Toto Programme [ ]

18. How often do you take the following foods?

Food item	Several Times A Day	Once A Day	once a week	Once a month	Occasionally
Ugali					
Rice					
Irish potatoes					
Beans					
Kales (sukuma wiki)					
Cabbage					
Oranges					
Bananas (ripe)					
Beef					
Chicken					
Eggs					
Fish					
Milk					
Porridge					

19. Does the price of food determine the type of food you buy? (Tick as appropriate)

(a) Yes [ ] (b) No [ ]

20. If yes, how does the price of food determine what foods you buy, explain?

21. Which methods of food preparation do you use often?

22. Do you have any special foods prepared for the child who is living with HIV/AIDS?

(a) Yes [ ] (b) No [ ]

23. *If no, why don't you have any diet modifications for the child? Explain*

24. If yes, what modifications do you make to the normal family meals?

25. Do you understand the concept of a balanced diet? (Tick as appropriate)

(a) Yes [ ] (b) No [ ]

26. How satisfied are you with the following statements about food? (Tick as appropriate)

Level of satisfaction	**Satisfied**	**Neutral**	**Dissatisfied**
Distribution of food among members during meal times			
Variety of foods served			
General appearance, taste, texture of food			
Quality of food served			

27. Was the child breastfed? (Tick appropriate)

(a) Yes [ ] (b) No [ ]

28. If yes, for how long was she/he breastfed?

29. And for what reason? Explain

30. If yes, what other foods were introduced in addition to breastfeeding?

31. If no, why was the child not breastfed?

a) Fear of HIV transmission to child [ ]

b) Mother's inability to breastfeed due to weak status. [ ]

c) Any other (specify)

32. With your permission I would like to take the child's measurements.

Measurement	*First measurement*	*Second measurement*	*Mean*
Weight			
Height			

Health Background

33. For how long has the child been living with HIV/AIDS?

34. Has the child been unwell within the past 7 days (Tick as appropriate)

(a) Yes [ ] (b) No [ ]

35. If yes, what illness has he/she been suffering from?

36. What measures are taken to alleviate illness?

(a) Hospital/clinic [ ] (b) Self/shop medication [ ]

(c) Traditional/herbal treatment [ ] (d) No treatment [ ]

(e) Prayers [ ]

37. Do you have access to clean water? (Tick as appropriate)

(a) Yes [ ] (b) No [ ]

38. What is the source of water that you use for food preparation?

39. Which of the following sanitation facilities do you use? (Tick as appropriate)

(a) Pit latrine [ ] (b) No sanitation facilities [ ] (c) Others specify [ ]

40. How often does the child suffer from the following diseases?

Disease	Presently	Once	Often	Occasionally
Respiratory infection				
Diarrhoea				
Nausea and vomiting				
Cough				
Tuberculosis				
Mouth thrush				
Anorexia				

Knowledge and Attitudes on HIV/AIDS

41. What is AIDS?

42. What is your feeling about this plight? Explain

43. Express your opinions from the choices provided below (Tick as appropriate)

Information about AIDS	Disagree	Agree	I don't know
1. AIDS is spread through sexual fluid			
2. AIDS is spread through sharing of toilet facilities			
3. A person suffering from AIDS should eat nutritious food			
4. A person suffering from AIDS should avoid heavy smoking and alcohol			

44. Do you know the relationship between good nutrition and HIV/AIDS?

(a) Yes [ ] (b) No [ ]

45. If Yes, Explain

46. Do you get any assistance from the Lea Toto Programme?

(a) Yes [ ] (b) No [ ]

47. If yes, what assistance do you get from the programme? Explain

APPENDIX II: TIME SCHEDULE

Time	Activity
May-December 2000	Proposal Writing
February 2001	Departmental Defense of proposal
April 2001	Faculty defense of proposal
1st May- 15th May 2001	Pre-testing Instruments
15th May- 30th May 2001	Refining Instruments
August - December 2002	Data Collection
January – March 2003	Data Analysis
January – May 2004	Presentation of first Draft to Supervisors
August 2004	Submission of revised thesis
September 2004	Defense of Thesis

APPENDIX III: BUDGET

Item	Cost (Kshs.)
1. Stationary	5,000
2. Subsistence	30,000
3. Traveling	10,000
4. Proposal	
a) Typing	5,000
b) Photocopying	5,000
c) Binding	1,000
5. Thesis	
a) Typing	10,000
b) Photocopying	2,000
c) Binding	2,000
6 Miscellaneous	5,000
Grand Total	**75,000**