

**Mother-to-child transmission (MTCT)** means transmission of HIV to a child from an HIV-infected woman during pregnancy, delivery or through breastfeeding. The term “vertical transmission” is commonly used interchangeably with MTCT.

**Replacement feeding** means the process of feeding a child, who is not receiving any breast milk, with a diet that provides all the nutrients the child needs. (*During the first six months this should be with a suitable breast-milk substitute-commercial formula or home-prepared formula-with micronutrient supplements*).

**Wet-nursing** means the breastfeeding of an infant by someone other than the infant’s mother. The term “surrogate nursing” is sometimes used.

## DECLARATION

I, Susan Akoth Nyerere, here declare that this thesis is my original work that has not been presented for any degree in any other University.

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## **DEDICATION**

This work is dedicated to my parents for preparing me for this phase in education by providing basic education on which to continue building my career. I would also like to dedicate it to my husband, John Nyerere and sons, Maurice Oduor and Hosea Odhiambo, for their patience and support during this particularly difficult period.

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## ACRONYMS

AIDS:	Acquired Immune deficiency Syndrome
ANC:	Anti-natal Care
ARV:	Anti Retroviral
BF:	Breastfeeding
CHW:	Community Health Worker
EBF:	Exclusive Breast feeding
FGD:	Focus Group Discussion
GOK:	Government of Kenya
HHH:	Household head
HIV:	Human Immuno-deficiency Virus
IFP:	Infant Feeding Practices
IMR:	Infant Mortality Rate
KAP:	Knowledge, Attitudes and Practices
KDHS:	Kenya Demographic and Health Survey
MOH:	Ministry of Health
MTCT:	Mother-to-Child Transmission
NASCOP:	National AIDS/STI Control Programme
PEM:	Protein-energy Malnutrition
SPSS:	Statistical Package for Social Sciences
STI:	Sexually Transmitted Infections
STD:	Sexually Transmitted Diseases
TB:	Tuberculosis
TBA:	Traditional Birth Attendant
UNAIDS:	Joint United Nations Programme on HIV /AIDS
UNICEF:	United Nations Children`s Fund
VCCT:	Voluntary Confidential Counselling and Testing
WHO:	World Health Organisation

## OPERATIONAL DEFINITIONS

**AZT (also known as Zidovudine (ZDV))** is an antiretroviral drug, which inhibits HIV replication. It is used in the prevention of mother-to-child transmission.

**CD4 cells** are the main target cells for HIV. CD4 lymphocytes are a type of white blood cells that are key in both humoral and cell-mediated immune responses. The number decreases during HIV infection.

**Cessation of breastfeeding** means stopping breastfeeding

**Colostrum** is the thick yellow milk secreted by the breasts during the first few days after delivery that gradually evolves into mature milk at 3-14 days postpartum.

**Commercial infant formula** means a breast-milk substitute formulated industrially in accordance with applicable Codex Alimentarius standards to satisfy the nutritional requirements of infants up to four to six months of age.

**Complementary food** means any food, whether manufactured or locally prepared, used as a complement to breast milk or to infant formula, when either becomes insufficient to satisfy the nutritional requirements of an infant.

**Cup feeding** means feeding an infant from an open cup, whatever is in the cup.

**Exclusive breastfeeding** means giving an infant no other food or drink, not even water, apart from breast milk (including expressed breast milk), with the exception of drops or syrups consisting of vitamins, mineral supplements or medicines.

**Forced Feeding** means feeding a child forcefully by blocking the nose so that food can go in as the child tries to gasp for air.

**HIV counselling and testing** means HIV testing, which is voluntary, with fully informed consent, and confidential with pre- and post-test counselling. This means the same as the terms voluntary counselling and testing (VCT) and voluntary and confidential counselling and testing (VCCT).

**HIV-positive and HIV-infected** mean women and men who have taken an HIV test whose results have been confirmed as positive/infected.

**Home-prepared formula** means infant formula prepared at home from animal milk or other foods suitably prepared to meet the nutritional needs of infants.

**Immunoglobulins** mean any of the five distinct antibodies present in the serum and external secretions of the body (IgA, IgD, IgE, IgG and IgM).

**Infant** means a child from birth to 12 months of age.

**Mixed feeding** means partial breastfeeding and giving some other milk or drink.

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## ABSTRACT

Mother to child transmission (MTCT) accounts for 90% of HIV infections in children, with one third occurring through breastfeeding. Breast milk transmission is markedly higher in breastfeeding populations as is the case in Kenya, where breastfeeding is still the most feasible, accessible and effective intervention for child survival. As part of efforts to reduce transmission through breast milk, there has been a shift in policy regarding breastfeeding. Mothers aware of this are likely to seek alternative ways of infant feeding in cases where babies are born to HIV-infected mothers. It was therefore, the aim of this study to assess the knowledge of mothers/caregivers about HIV/AIDS and Mother-to-child transmission (MTCT) of HIV and the alternative infant feeding practices that could be adopted by HIV-positive mothers or orphans as replacement to breastfeeding.

A cross-sectional survey was conducted during the months of September-October 2000 in Siaya District. The specific objectives were:

1. To determine the level of awareness about HIV/AIDS and its transmission through breast milk.
2. To determine infant feeding practices in the community.
3. To determine attitude towards specific recommended infant feeding practices.

Two divisions, Karemo and Boro, in Siaya district were covered during the study. A total of 188 mothers or caregivers of children below six months participated in the study and responded to the main questionnaire. Consecutive sampling method was used for the main questionnaire with all households with an infant below 6 months included in

the study due to their low numbers. Focus group discussions, key-informant and in-depth interviews were also used to enrich quantitative data collected using the main study instrument.

Results show that there is a high level of awareness about HIV/AIDS, MTCT and particularly transmission through breast milk. Unfortunately, about 15% of mothers did not know that a mother could transmit HIV to her baby. Most respondents also did not see delivery time as a possible cause of transmission. There were also a few misconceptions where respondents, especially those with little education, had incorrect information on transmission methods.

There were some positive feeding practices with almost all (98.9%) the infants still on breast milk. A few mothers initiated breastfeeding within the first hour (21.7%) while a handful (2.6%) were exclusively breastfeeding their babies. On the other hand, negative practices such as mixed feeding and poor choice of alternative feeds were also noted. There is widespread mixed feeding, from as early as the second week of life in some cases, a factor that increases chances of HIV transmission through breastfeeding.

Cow's milk was the most popular as a breast milk alternative and is readily available in the community although there is need to increase its availability at the household level and also improve on its preparation to make it nutritionally adequate and safe. Surrogate nursing and the use of other breast milk alternatives were not acceptable to most respondents for fear of cross infection due to unknown status of both baby and wet nurse.



From these findings we can conclude that the level of awareness about HIV/AIDS and MTCT is very high, but details are required for better understanding, and to enable mothers make informed and appropriate choices if there is need. Mixed feeding is the main practice as opposed to the recommended exclusive breastfeeding in the first six months of life. There is need for widespread counselling about HIV/AIDS and MTCT as well as on infant feeding practices. Therefore, it is recommended that:

1. Mothers and their partners should be targeted with relevant information on HIV/AIDS, MTCT and infant feeding.
2. Voluntary counselling and testing services should be provided at the community level for mothers and their partners to enable them know their status in order to make informed choices.
3. Training and refresher courses are necessary for traditional birth attendants (TBAs) and community health workers (CHWs) by health workers to create awareness among the TBAs and CHWs and using them to disseminate information.
4. Counselling be provided on infant feeding, highlighting advantages of exclusive breastfeeding as well as the risks associated with mixed feeding, breastfeeding and replacement feeding in the context of HIV/AIDS.
5. Men be sensitised about their role in HIV and infant feeding practices and decision making. This will help reduce the fear of stigmatisation.
6. Education on the proper use, suitability and preparation of alternative feeds that have potential such as cow's milk, goat milk and soya should be given. Production and distribution of milk should be improved to increase availability at the household level.

# CHAPTER 1

## INTRODUCTION

### 1.1 Background to the problem.

Acquired Immune Deficiency Syndrome (AIDS) is a disease caused by a virus, Human Immuno-deficiency Virus (HIV), which is a transmissible infectious agent. HIV infection has become pandemic with high incidence in the developing world. In Kenya, the number of HIV/AIDS cases has been rising steadily and at an alarming rate, since the first indigenous case of AIDS was reported in 1984. At the end of 1998, approximately 1.9 million adults aged between 15 and 49 including over 100,000 children in Kenya were living with HIV (NAS COP/MOH, 1999).

There are three recognized modes of HIV transmission: sexual contact, direct inoculation and transmission from mother to child. Mother-to-child transmission (MTCT) occurs in approximately 12-25% of children born of HIV positive mothers. This proportion is significantly increased to 25-45% if the baby is routinely breastfed and given other supplementary foods. The peak age of infection in women is 15-35 years, which coincides with the period of highest fertility. Consequently, there is a parallel epidemic of HIV among children in whom 90% of the infections are acquired from their mothers (Nduati, 1998).

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The transmission of HIV through breast milk is a major tragedy for Sub Saharan Africa where breastfeeding is the most feasible, accessible and effective intervention for child survival. HIV associated mortality has significantly reduced the gains made in the reduction of child mortality through improved immunization and effective treatment of common childhood conditions such as diarrhoea, acute respiratory infections and malnutrition.

Prevention of mother-to-child transmission of HIV by providing quality antenatal care and delivery services as well as using anti-retroviral therapy and replacement feeding are now a public health priority. In providing preventive services, the needs of infected and affected children should be taken into consideration. Impact is severe on child feeding as the mother may be too sick to breast feed, provide adequate care or prepare nutritious food. In Kenya, 25-45% of babies born to infected mothers will themselves be infected and the rest will be orphaned with a risk of becoming malnourished when their parents die from AIDS.

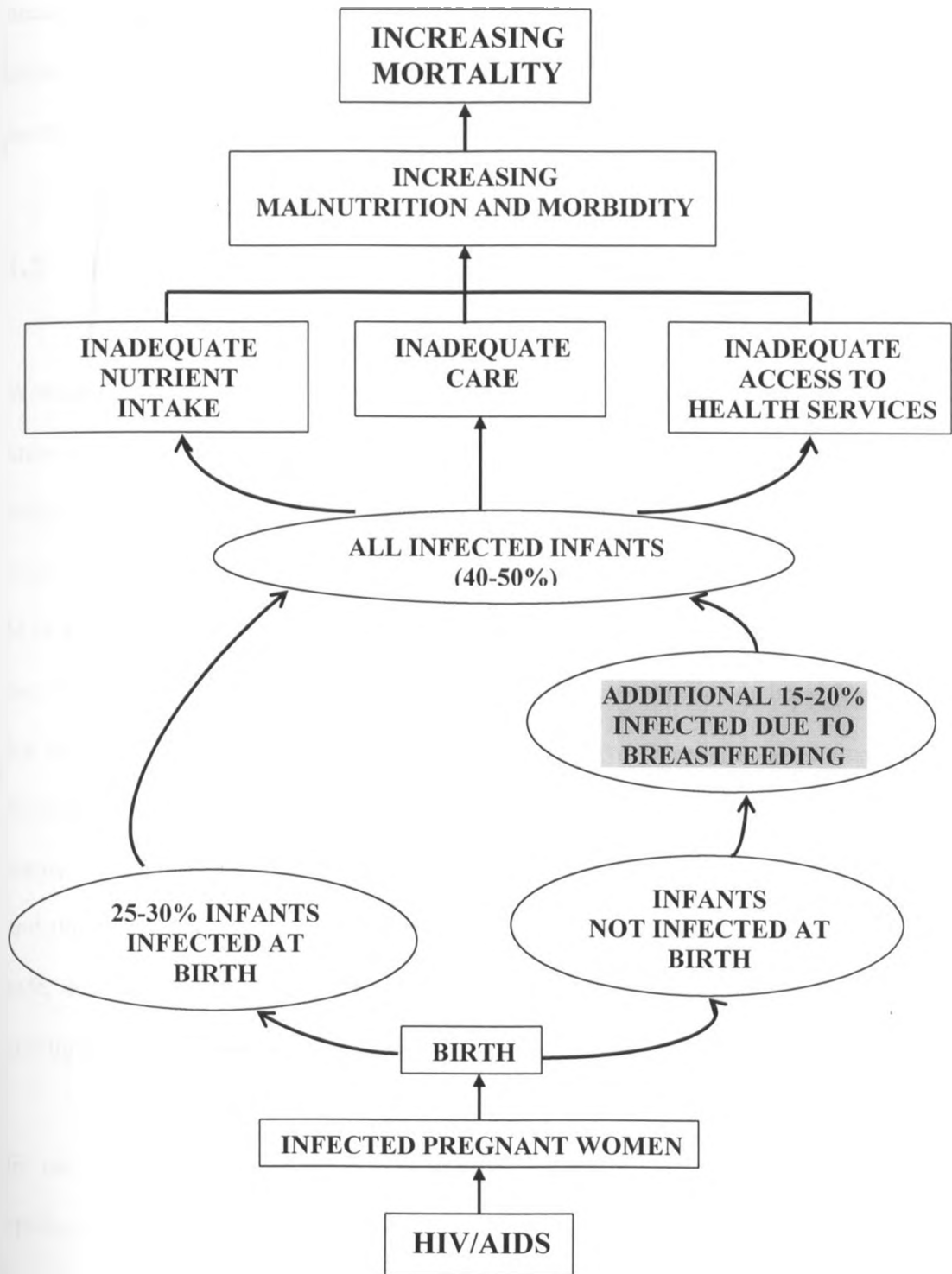
## **1.2 Problem Statement**

Mothers who are HIV positive and are aware of MTCT of HIV to their children are faced with the dilemma of whether to breastfeed or not. For those who may choose not to breastfeed, their dilemma deepens when making a choice on feeding options to adopt, given their risk to child survival versus the foregone benefits of breastfeeding.

Where poverty and low status of women prevent regular access to adequate food, health services and sanitation, it is difficult to ensure proper care and feeding of

young children. The transmission of the HIV through breast milk is raising considerable concern in countries with high HIV prevalence as it increases the number of AIDS and malnutrition cases among young children (figure 1.1).

Figure 1.1: The Research Problem



As part of efforts to reduce this transmission, there has been a policy shift regarding breastfeeding. Alternative ways of infant feeding are to be rigorously pursued through education, counselling and research in cases where babies born to HIV-infected mothers are identified (GOK/UNICEF, 1998).

### **1.3 Justification**

Women who are the primary health care providers for their families need adequate knowledge and information to protect them from acquiring HIV and for those already infected from transmitting it to their babies during the postpartum period. Therefore, there is need to find out the extent to which mothers and care givers are aware of MTCT. This will determine the kind of awareness that needs to be created to address the 15-20% infection of infants born uninfected. With the new policy on breastfeeding for HIV-positive women, different strategies for intervention, such as alternative feeding practices, must be identified taking into consideration their socio-economic status. Most mothers in rural Kenya cannot afford adequate amounts of infant formula and thus the study will help in the identification of appropriate alternatives that are safe, available and affordable. The findings will be useful in taking care of orphans and those babies whose mothers have opted not to breastfeed.

In the past two decades of the HIV/AIDS epidemic, emphasis has been on epidemiology and very little on prevention as well as care of infected and affected persons. Looking at infant feeding practices with the aim of improving them will ensure that care given in the future can help improve the infants' nutritional status and

reduce infant mortality rates. Currently, there is inadequate information on the knowledge that people, especially mothers have, regarding mother-to-child transmission of HIV through breast milk, and its influence on choices for infant feeding practices. There is no documented study that relates knowledge and attitude of MTCT with infant feeding practices thus the need for documentation.

## **1.4 Study Objectives**

### **1.4.1 Main objective**

To assess the knowledge and attitude of mothers and caregivers regarding mother-to-child transmission (MTCT) of HIV and infant feeding practices.

### **1.4.2 Specific Objectives**

1. To determine the knowledge about HIV/AIDS and its Mother-to-Child transmission (MTCT) through breast milk.
2. To determine infant feeding practices in the community.
3. To determine attitude towards specific infant feeding practices.

## **1.5 Expected Benefits**

- a) Nutritional advice based on knowledge of what is available, acceptable and what is being practised in the community.
- b) Formulation of measures to implement the government policy on advising mothers who are HIV infected about infant feeding.



- c) Involvement of community members to improve the nutrient density of replacement feeds already in use.

## 1.6 Limitations of the Study

- Mothers and caregivers participating in the study were of unknown HIV status.
- This study was conducted at a time when the short rains were on making it difficult accessing certain areas of the division due to poor roads. In addition, most respondents were preparing and planting their *shambas* making availability an issue and hence the large area covered.
- Salter weighing scales had to be used to take weights of newborn infants.

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## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Global Overview of HIV/AIDS

There are different strains of the Human Immuno-deficiency Virus (HIV), which causes AIDS but the greatest difference is between HIV-1 and HIV-2. Type one (HIV-1) is the most widely distributed strain, which accounts for the bulk of HIV infections and is the one found in Kenya and most parts of the world. HIV-2 is primarily found in Western Africa, does not transmit as readily as HIV-1 and cases of MTCT of HIV are very rare but it still leads to eventual death (NASCO, MoH 2001). Therefore, HIV in this document will be referring to HIV-1.

An estimated 83% of all the world's AIDS deaths, since the start of the epidemic, have occurred in Africa. By the end of 1998 there were at least 34 million people living in sub-Saharan Africa infected with HIV, out of which 11.5 million had already died since the first case was reported in the early eighties. In 1998 alone, about 2 million Africans died from HIV/AIDS (UNAIDS, 1999). There are three modes of HIV transmission; sexual contact, direct inoculation and transmission from mother to child. Many children receive the infection from mothers during pregnancy, at the time of birth or through breastfeeding.

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## **2.2 HIV/AIDS in Kenya**

HIV/AIDS is a major health and development problem in Kenya. At the end of 1998, approximately 1.9 million adults aged between 15-49 and over 100,000 children were living with HIV. On average, for every eight Kenyans aged between 15-49 one is infected. The rate is even higher in the urban population where one in every six is infected. Seven hundred thousand (700,000) people have developed AIDS since the first case was reported in 1981(NASCOP 1999). Since there is no cure, the disease threatens the social and economic well being of the country.

Prevalence in Nyanza province is generally high in most of the Districts, with Nyando and Kisumu leading at 26% followed by Bondo, Siaya, Homabay, Kuria, Migori, Rachuonyo and Suba at 24%. Kisii Central, North Kisii and Gucha trail at 11% prevalence. The rural-to-urban ratio ranges between 0.7 and 0.8, which is fairly high (NASCOP, 2000).

## **2.3 Overview of Mother-to-Child Transmission of HIV**

It is estimated that, world wide three million children under the age of 15 years have been infected with HIV. Mother-to-child transmission of the virus is responsible for more than 90% of HIV infection among children. It is believed that of those infected through MTCT, about two-thirds are infected during pregnancy and around the time of delivery and one-third are infected through breast milk. The other 10% may also

become infected with HIV from contact with infected blood or blood products or HIV contaminated medical equipment (UNAIDS, 2000).

Mother-to-child transmission (MTCT) rates vary considerably, with the risk of an infant acquiring HIV from an infected mother in the industrialised world ranging from 16-25% compared with 25-40% in developing countries. These differences may be accounted for by breastfeeding rates, with the additional risk of infection when an infant is breastfed at 15%. On average there's 20% risk of transmission during late pregnancy and during child birth and an additional 15% risk that an infant will get infected through breast milk (UNICEF, 1998)

### **2.3.1 Prevention of MTCT of HIV**

Infection can be prevented through protection, counselling of infected people (couples), use of antiretroviral therapy, and female-targeted prevention programs during labour and delivery. Below are a few examples of preventive measures that can be put in place to reduce mother-to-child transmission of HIV.

#### **1. Provide Quality Antenatal Care:**

- *Screening for Sexually Transmitted Infections (STIs)*

This involves controlling the spread of sexually transmitted diseases (STDs) such as syphilis and gonorrhoea to reduce the number of new HIV infections. Early diagnosis and appropriate treatment of STDs in the population reduces the

transmission of HIV/AIDS. Maternal STD infection during pregnancy may increase the risk of HIV transmission to the unborn child.

- *Voluntary Confidential Counselling and Testing (VCCT)*

This is HIV testing, which is voluntary with fully informed consent and confidential with pre- and post-test counselling. To reduce mother-to-child transmission of HIV, young women need to know whether or not they are infected. Providing HIV counselling and testing for women and their partners during pregnancy offers an opportunity to prevent HIV infection in HIV-negative women and to offer antiretroviral drugs and other advice for HIV-infected women to reduce MTCT.

- *Use of Antiretroviral Drugs*

Antiretroviral treatment drastically reduces the level of HIV in the blood, thus reducing the rate of transmission from mother to child in the womb, during labour and at birth. They can be taken during labour or during the last weeks of pregnancy. The duration of treatment determines how low the viral load in breast milk will be and could therefore also reduce the risk of transmission through breastfeeding.

- *Nutrition Support*

Nutrition plays an important role in the management of persons with HIV. A good nutritional status is important as it boosts the mother's immune system and lessens progression of HIV. Vitamin A deficiency impairs mother's immune system and

could therefore lead to an increase in the viral load. Correcting nutritional deficiencies promotes the health of all mothers and babies and may reduce mother-to-child transmission of HIV. Where necessary, supplements like vitamin A and other micronutrients should be given to boost the mother's immune status.

- *Counselling on Feeding Options*

Breastfeeding is the preferred infant feeding choice for women who are uninfected with HIV/AIDS and those whose status is unknown. Counselling messages to HIV-infected pregnant women should include the advantages and risks of the various infant feeding options, keeping the mother's social and economic situation in mind. The health worker should then support the mother's infant feeding method of choice.

## 2. Safe Delivery Practices

The mother should be advised to have a hospital delivery to minimise the time her infant is in contact with maternal blood and secretions during labour and delivery. Practices that reduce trauma and shorten exposure to the virus during labour and delivery, such as avoiding prolonged rupture of membranes, avoiding routine episiotomy and having elective Caesarean section delivery, can reduce HIV transmission.



### 3. Post-natal intervention

Mothers should practise safe ways of childcare to include personal hygiene, use of safe and affordable replacement feeds or exclusive breastfeeding where alternatives are not available.

#### **2.4. Human Rights and HIV/AIDS.**

A human rights approach to HIV/AIDS policies and programmes considers individuals capable of making rational decisions and also includes empowerment and facilitation. Every citizen has a right to have access to correct consistent information and education. Therefore, countries should ensure that messages reach those for whom they are intended at community, intermediate and central level (WHO/UNICEF, 1991).

Women are particularly vulnerable as a result of lack of education and employment opportunities, inadequate access to health care and sexual violence and abuse (Hausermann J, 1996). All HIV-infected mothers should have the chance to make an informed choice in the feeding of their infants. Therefore, infant feeding recommendations for HIV infected mothers should consist of options, which must be clear, specific and concise.

Without a cure for AIDS, the prevention of MTCT remains the most powerful factor in ensuring child survival in an environment where the epidemic is widespread (GOK/UNICEF, 1998).

## **2.5 HIV Infection in Women and Children**

Nearly half of all people living with HIV/AIDS are women and girls. Women in Africa, especially young ones are disproportionately affected by HIV/AIDS. It is suggested that about 55% of all new infections in Africa occur among women and as at the end of 1999, the number of infected women had surpassed that of men by more than 2 million. Recent studies show that women aged between 15-19 years are 5-6 times more likely to be HIV-infected than men in the same age group (UNAIDS, 2000). In Kenya the prevalence has been on the rise among pregnant women monitored at the sentinel sites in some parts of the country (table 2.1).

**Table 2.1: Percentage of pregnant women testing HIV- positive by sentinel sites.**

	1994	1996	1997	1998	2000
<b>Urban Sites</b>					
Busia	17	22	28	29	21.9
Kakamega	5	9	10	16	12
Kisii	2	2	16	16	15.7
Kisumu	19	20	27	29	29.8
Meru	3	2	15	23	38.1
Mombasa	10	16	12	17	14.3
Nairobi	6	16	16	16	16.8
Nakuru	10	22	27	26	10.5
Nyeri	3	3	9	17	14.0
Thika	2	27	13	34	21.4
<b>Peri-urban and Rural Sites</b>					
Chulaimbo	49	22	27	37.2	31.0
Karurumo	2	10	27	11.5	-
Mbale	12	11	16	-	30.0
Tiwi	12	24	-	33.3	23.5

Source: NASCOP, 2000.

This has resulted in a parallel epidemic among children who are not being spared the direct and indirect effects of AIDS. High birth rates and high rates of HIV infection in African women contribute to large numbers of infants infected with HIV and rapidly increasing infant and child mortality (Connolly *et al.* 1998 cited in Piwoz, 2000). Studies suggest that in the absence of interventions to prevent MTCT, between 25-45% of HIV infected breastfeeding women pass on the virus to their babies.

## **2.6 HIV/AIDS and Breastfeeding**

The role that breastfeeding plays in mother-to-child transmission of HIV illustrates an 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. Breastfeeding also provides psychological and child spacing benefits to infants and mothers, and reduces infant and child morbidity and mortality by protecting children from diarrhoeal diseases, pneumonia and other infections. Unfortunately between 10-20% of HIV infected mothers will pass the virus to their babies through extended breastfeeding (Piwoz Ellen, 2000).

Therefore, although breastfeeding is normally the best way to feed an infant, if a mother is infected with HIV, it may be preferable, to replace breast milk to reduce the risk of HIV transmission to the baby. The risk of replacement feeding should be less than the potential risk of HIV transmission through infected breast milk, so that infant illness and death from other causes do not increase. Replacement feeds should provide all the infant's nutritional requirements as completely as possible.

Breastfeeding is a significant and preventable mode of HIV transmission to infants and there is an urgent need to educate, counsel and support women and families so that they can make decisions about how to feed their children. Faced with this problem, the objective of health services should be to prevent HIV transmission through breastfeeding while continuing to support, protect and promote breastfeeding as the best choice of infant feeding for women who are HIV-negative and women who do not know their status (UNAIDS, 1998).

## **2.7 Impact of HIV/AIDS on Child Health and Survival**

Antenatal care given to mothers during pregnancy and at the time of delivery is very important for the survival and well being of the child as well as the mother. Gains made in child survival through improved immunisation and effective treatment of common childhood conditions such as diarrhoea, acute respiratory infections and malnutrition have suffered due to the AIDS epidemic. With a prevalence of 30% among pregnant women coming for antenatal care; out of one million births currently recorded in Kenya, 300,000 children are at risk of becoming infected. Only 25% of HIV infected children survive beyond their 5<sup>th</sup> birthday and increasingly, they contribute to the number of children with chronic illnesses (Boerma cited in NASCOP, 1999). AIDS has orphaned nearly 13 million children, and of these, 10 million are living in Africa (UNICEF, 2000). It is estimated that child mortality will increase by 30% and in some areas as much as 75% (Chin J., 1990).

Children die of HIV/AIDS and from lack of care because their mothers are overwhelmed with ill health and/or with the burden of caring for other ill members of the families (NASCOP, 1999). When a mother becomes debilitated by AIDS, her children are more likely to miss immunisation against childhood diseases, eat fewer and less nutritious meals and be taken out of school, especially if they are girls, to assume domestic responsibilities.

## **2.8 Impact of Maternal Morbidity and/or Mortality on the Family**

Death of mothers affects household food, social and economic security. This is because many households depend heavily on the role mothers play in agricultural production or income generation for food purchases. A woman's health and nutritional status affect her ability to care for her children resulting in morbidity/mortality of their children (Nurture, 1996).

## **2.9 HIV/AIDS and Education**

While the educated have access to the knowledge needed to protect themselves from the virus, the life saving information is not finding its way to those with little or no education. According to a study in 35 countries, the uneducated, whether men or women were:

- Five times more likely to know nothing about the disease than were those with post-primary schooling.
- Four times more likely to believe that there is no way to avoid AIDS.
- Three times more likely not be aware that the virus can be transmitted from mother to child, and
- Three-to-four times more likely not to know that HIV-positive persons might look quite healthy (UNICEF, 2000).

## **2.10 Malnutrition and Infant Feeding**

Malnutrition is a global problem whose causes lie in the social, economic, political and physical environment in which people live. Children must consume sufficient nutrients, energy and high quality protein in their diet to facilitate acceptable growth. Those subjected to under nutrition are shorter and weigh less than their well nourished peers (Pipes P.L, 1977). Malnutrition can be a result of sub-optimal breastfeeding practices and poor quality complementary foods. The nutritional status of young children cannot be separated from the nutritional and health status of women. Factors influencing the choice of feeding of infants are nutrient requirement, suitability, health of mother and baby, and infection. Preventing disability requires promoting and supporting breastfeeding and good nutrition.

## **2.11 Infant Feeding Patterns**

Infant feeding has a direct impact on the nutritional status and health of the child. The need for nutrients and energy is dependent on the infants' requirement for maintenance, physical growth and energy expenditure. Foods offered to infants reflect the culturally accepted practice, while infants' acceptance of food is influenced by neuromotor maturation and their interaction with their parents (Pipes PL, 1977). The survival and optimal development of the young child is also dependent on the interplay of socio-economic circumstances in which the child lives and the illnesses he/she develops (Curtis JG, 1981).

Decisions about infant feeding in settings of high HIV prevalence require a careful balancing of risks, with the risk and fear of transmitting HIV through breastfeeding on one side, and the risk and fear of mortality, morbidity and stigmatisation that can result from not breastfeeding on the other (Piwoz EG and Preble EA, 2000).

A qualitative research study was undertaken in Ndola-Urban District, Zambia to learn from communities and health providers about infant feeding practices; knowledge of MTCT; attitudes toward HIV-testing and the safety of the United Nations recommended replacement feeding options. The study was carried out in order to make recommendations for the introduction of an MTCT program, including recommendations about infant feeding options for HIV positive women. The research revealed that infant feeding options were very limited in the area because of economic and social concerns. Replacement feeding is costly and women who do not breastfeed were stigmatised as promiscuous and/or having HIV. There was, however, awareness of MTCT, including transmission through breastfeeding (Piwoz EG., Chintu M., Ntombela N. *et al.* 1999).

### **2.11.1 Breastfeeding**

Breastfeeding influences a child's growth and development and provides sufficient nutrition for the infant in the first six months of life. Breast milk protects infants by providing immunoglobulins, particularly IgA, which is found in large amounts in colostrum. Breast milk also has a variety of anti-inflammatory factors that protect against infections. Exclusive breastfeeding (EBF) for the first six months of an



infant's life enhances its nutrition and health status. Early supplementation, especially under unhygienic conditions can result in infections.

The best available estimates indicate that non-breastfed infants in the general population have a two-fold increased risk of dying compared to breastfed infants (Nduati, 1998). Therefore, breastfeeding will continue to be the optimal choice of infant feeding among sero-negative women and those who do not know their HIV status. On the other hand, although the most sensible and realistic choice for an HIV-infected woman is to give replacement feeding, this option is difficult to implement given that HIV is rampant in settings where resources such as clean water and alternatives to breast milk are scarce.

A study in Durban, South Africa, observed that infants of HIV-positive mothers who were exclusively breastfed for at least 3 months had a significantly lower HIV transmission risk by 3 months (14.6%) than did those who also received other fluids or food in early infancy (mixed-feeding) (Coutsoudis *et al.* 1997). The MTCT rate for exclusively breastfed and never breastfed infants was similar through the first 6 months (20%).

***Breastfeeding versus formula feeding:***

Another study conducted in Nairobi, Kenya, randomised 425 pregnant women to one of two groups, one using infant formula from birth (no breastfeeding), and the other breastfeeding (Nduati *et al.* 2000b). The risk of HIV-Transmission, calculated at 24 months, among breastfed infants was 36.7% compared to 20.5% for the formula fed

group ( $p < 0.002$ ). However, mortality was not significantly different among the formula fed (20.0%) and breastfed infants (24.4%) at 24 months. HIV-free survival was significantly greater in the formula fed group (70% versus 58%). According to the review by Piwoz and Preble, the researchers pointed out that the risk of postnatal transmission was not linear, thus, 63% of postnatal infections occurred by six weeks, 75% by 6 months and about 87% by 12 months of age (Piwoz EG and Preble EA, 2000).

This suggests that in the long term, child survival rates are higher in formula fed infants while HIV infection rates in the same group is low compared to breastfed babies born to HIV infected women. Therefore, the identification of appropriate alternatives to breast feeding will go a long way in preventing MTCT in the most effective, safe, affordable and acceptable way in communities where prevalence of HIV is high.

### **2.11.2 Supplemented Breastfeeding**

In traditional societies, the first supplement offered to young infants was often gruel prepared from the local staple and water. Initially the gruels are specially prepared for the infant who is then gradually introduced to the adult diet according to physiological maturity. In many cultures supplements are introduced at an early age, typically within the first 3 months of life (King J and Ashworth A, 1991).

Early supplementation, sometimes in the first few weeks of life, is common in several African societies, Malasia and the Carribean. This is due to

- Cultural perception of the nourishing or “super food” properties of the local staple with breast milk alone thought to be inadequate.
- The woman’s agricultural and other work commitment that leaves the infant with a caretaker for several hours in a day.

Traditionally, among the Luo of Western Kenya, supplementation began as early as 2-3 weeks when the mother’s milk was deemed insufficient and generally between 1-3 months when breast milk and gruel played almost equal parts in the diet. After 6 months, gruel formed the major component of the diet, usually made from sorghum and millet flour with a little sour milk added when possible (Odhalo, 1961 cited by King and Ashworth, 1991).

Early supplementation is now known to increase chances of MTCT because mixed feeding irritates the gastro-intestinal tract, exposing the infants to infection from mothers’ breast milk that may be loaded with the virus. Therefore, total replacement with appropriate options, once identified is preferable where exclusive breastfeeding is not possible.

### **2.11.3 Replacement Feeding**

In situations where hygiene is good, mothers are well informed and the family can afford an appropriate breast milk substitute, the risk of infant death from an HIV related infection acquired through breast milk is much greater than the risk of

infection from not being breastfed. However, in many situations, the use of breast milk substitutes is extremely hazardous and carries a higher risk than breastfeeding, especially in the developing world (Tomkins A, 2000).

Mother-to-child transmission should be prevented in the most effective, safe, affordable and acceptable way in communities where the prevalence of HIV infection in pregnant women is as high as 30%. Mother-to-child transmission of HIV can be prevented through safe feeding. The South African study suggests that if a HIV-positive woman chooses breastfeeding, she should be supported to exclusively breastfeed for at least 3 months (WHO, 2000).

Foods that are locally available in the home can be made suitable for replacement feeding and their use strongly emphasised in health, education and agricultural extension programmes. Mothers need guidance to improve these traditional foods through combinations with other foods available to them locally if already giving foods deficient in essential nutrients and in unhygienic circumstances. The government should help to ensure the availability of foods that can be used for replacement feeds among the low income groups who are hardest hit by the AIDS epidemic.

# CHAPTER 3

## METHODOLOGY

### 3.1 Study Area and Design:

#### 3.1.1 Study Area

Siaya is one of the nine districts in Nyanza Province. It is bordered by Busia district to the North, Vihiga and Kakamega to the North-East, Kisumu to the South-east, Homa-Bay across the Winam Gulf to the South and Lake Victoria to the West. In 1999 it had a total of 10 divisions, 49 locations and 173 sub-locations (GOK, 2001). Rainfall in the district is bimodal and the relief and altitude influence its distribution and amount. The long rains occur between March and June with peak periods being between April and May while the short rains occur between August and November. The general population in Siaya is predominantly Luo by tribe and depends on mixed farming as the main source of livelihood.

The study was carried out in two divisions, Karemo and Boro, both of which make up the former Boro Division in Siaya District. One location was randomly sampled in each Division, followed by random selection of three sub-locations included in the study. Locations included in the study were Township and Central Alego in Karemo and Boro divisions respectively. Three sub-locations, Ojwando 'A' and Kochieng 'A' from Central Alego location and Mulaha from Township location were covered to

collect the information required. The study area, Siaya District, was purposively chosen due to its stated high incidence of STI/HIV infections. The population is also believed to be at a higher risk of infection because of cultural and socio-economic factors.

HIV/AIDS has been a major cause of deaths in the district since 1990. It has devastating effects on the district as a whole and more so at the household level especially where the most productive member of the family succumbs to the disease. Incidence is further exacerbated by the fact that accessibility to health facilities is particularly poor in some divisions and most facilities are under-equipped, hence unable to provide quality service when required (GoK, 1994).

### **3.1.2 Study Design**

The study was cross-sectional, using both quantitative and qualitative methods to collect information from the community. Study instruments were designed to assess the knowledge of mothers and caregivers about mother-to-child transmission of HIV and infant feeding practices. The study instruments used were a structured questionnaire, in-depth and key-informant interview guides and a focus group discussion guide.

## **3.2 Study Population**

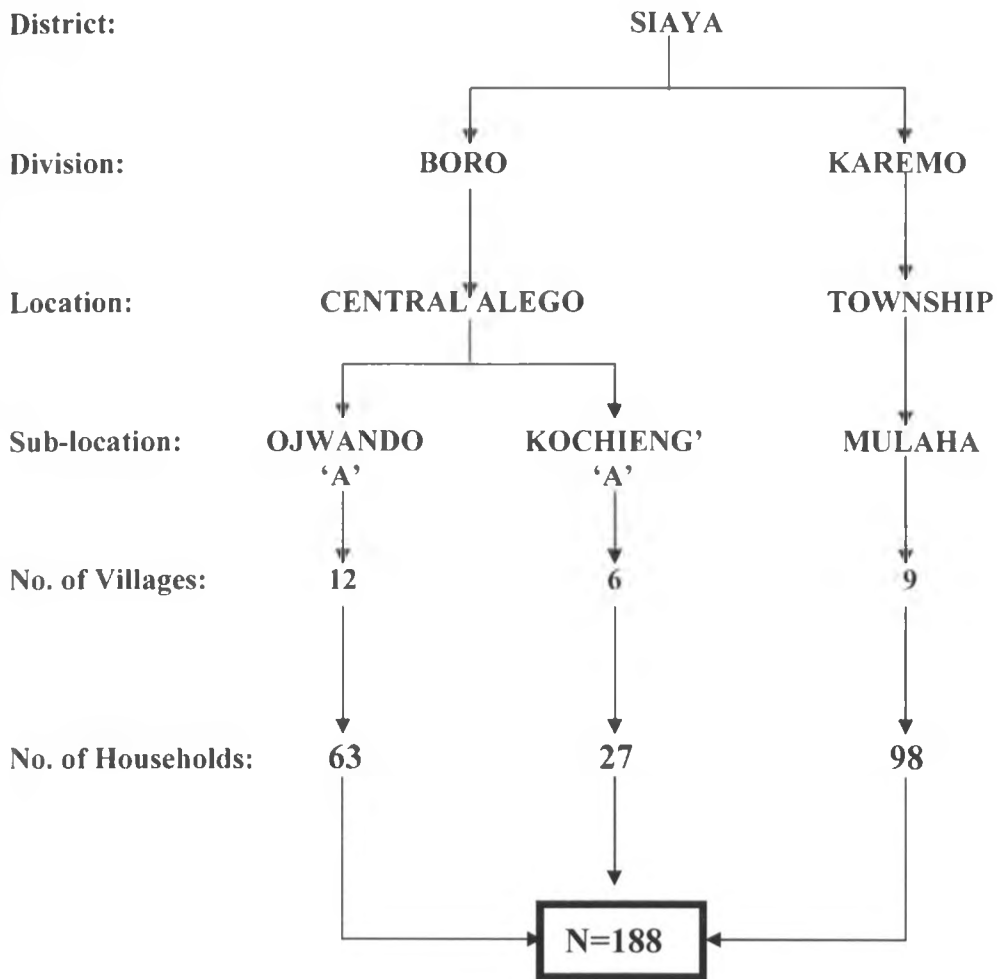
This consisted of mothers/caregivers of children less than six months old whose HIV status was not known. They were respondents to the main questionnaire and in-depth interviews. Women of childbearing age, and men participated in the Focus Group Discussions while elderly women, community health workers (CHWs) and traditional birth attendants (TBAs) were the respondents for the Key Informant Interviews.

## **3.3 Sampling Procedure and Sample Size Determination**

### **3.3.1 Sampling Procedure**

Multi-stage cluster sampling that is both purposive and random was used. Siaya District and Boro and Karemo Divisions were purposively selected. One location was randomly sampled from each division and a total of three sub-locations were covered consisting of 27 villages. Consecutive sampling method was used at the household level due to the low numbers of children under 6 months old in the study area. Every household with a child below 6 months old was included in the study. Sampling for qualitative methods was purposive to meet the criteria stated earlier for the study population. There were 2 categories of focus group discussions in terms of composition with one being made up of men and another of women. Three groups of 8-10 people were used for men and another three for the women. Four key informant interviews were also carried out.

**Figure 2.1: Sampling Procedure**





### 3.3.2 Sample Size Determination

For the purpose of sample size determination, the following statistical formula was used to get the minimum possible number, as recommended by Fisher et al., (1991)

$$n = \frac{z^2 (pq)}{d^2}$$

where:

n = the desired sample size (when the population is greater than 10,000).

z = the standard normal deviate, usually set at 1.96, which corresponds to the 95% confidence interval.

p = the proportion in the target population who have knowledge about MTCT is not known, therefore it will be assumed that 50% do (0.5).

q = 1.0 – p.

d = degree of accuracy desired to be set at 0.08.

Therefore the sample size was:

$$n = \frac{(1.96)^2 (0.5)^2}{(0.08)^2}$$

=150 + 20% attrition rate (30)

$$\text{Total } n = 150 + 30 = 180$$

The sampling frame for the questionnaire comprised households in the 27 villages with children below 6 months of age. Due to the low number of children below 6 months, all households that had a child falling within this age bracket automatically

qualified for the study, resulting in a total of 188. This number was higher than the calculated sample size of 180 but was retained to take care of any refusals to participate in the study if they were to arise. This age was targeted to assess breastfeeding practices, especially exclusive breastfeeding.

### **3.4 Reconnaissance Visit**

A visit was made to the district headquarters prior to the actual data collection, where the researcher met and introduced the study intentions to leaders at the District Commissioner's office and the District hospital. Study instruments were also tested in two villages adjacent to the study area during this visit.

### **3.5 Data Collection**

Data was collected in September and October 2000 during which the main questionnaire was administered to one hundred and eighty eight (N=188) households where mothers or caregivers were respondents. Both quantitative and qualitative methods of data collection were used for gathering data on the current knowledge, attitudes and practices of mothers and caregivers. Qualitative methods such as Focus group discussions (FGDs), key informant and in-depth interviews were used to enrich quantitative data collected using the structured questionnaire. Information on attitude towards specific recommended alternative infant feeding practices such as surrogate nursing, breast milk banks, expressed breast milk and infant formula was collected through the FGDs and in-depth interviews. The principal investigator moderated the

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focus group discussions with one assistant taking notes and responses given probed to provide more detailed information. The discussions were also recorded on audiocassette, which was later transcribed to fill any gaps in the notes.

### **3.6 Study Instruments**

A pre-tested structured questionnaire was the main instrument for data collection. Qualitative methods, namely, Focus Group Discussions, key-informant interviews and in-depth interviews that made use of appropriate guides were also used to collect more information. Information on type of data collected by each instrument is given in the section 3.5 above and the following sub-sections.

#### **3.6.1 Structured Questionnaire: (appendix 1)**

This was used to collect quantitative data on the knowledge about HIV/AIDS, transmission of HIV/AIDS through breast milk and infant feeding practices from mothers and caregivers of children below 6 months. It included information in the following areas:

- Demographic and socio-economic characteristics of the study households.
- Awareness of vertical transmission of HIV through breast milk.
- Child feeding patterns in the community.
- Other childcare attributes
- Attitude of mothers towards using alternatives to breastfeeding.
- Data on the age and weight of the infants.

### **3.6.2 In-depth Interview Guide: (appendix 2)**

An in-depth interview was used for greater depth of meaning by seeking detailed open-ended responses to questions. Details not brought out initially were sought through follow-up questions (probes). It was used to collect more information from a 10% sub-sample of mothers to whom the structured questionnaire had been administered. The guide enabled the investigator to probe further depending on responses obtained and therefore achieve better understanding of the attitudes and practices.

### **3.6.3 Focus Group Discussion (FGD) Guide: (appendix 3)**

The focus group discussions consisted of 8-10 people, who talked freely and spontaneously about topics related to this study, which were put to them and guided by the moderator/facilitator. A research assistant noted down key issues raised in the session and other factors that may influence interpretation of information, such as non-verbal messages that could indicate how the group felt about the topics under discussion. These have provided greater depth of understanding as to why some things are done that may not have been captured through the questionnaire or in-depth interview.

Six discussions were held in three villages as had been planned, three with women of childbearing age and another three with men of middle age (25-45 years). Unlike the women who participated in the in-depth interviews who were mothers/caretakers of

children below 6 months, those used here had children of varied ages above 6 months. The men who participated in the discussions had families of their own or headed households with children. Participants were recruited at random and briefly interviewed to determine if they qualify for the groups. Invitations to participate were extended a few days in advance to those who qualified.

#### **3.6.4 Key Informant Interview Guide: (appendix 4)**

Key informant interviews were used to recover information about ways of living that have either ceased to exist, have been sharply modified or were unavailable from the other groups interviewed. The guide also made use of open-ended questions and probes. This was used to obtain information on traditional infant feeding practices from elderly women in the community and on health care practices at the community level from community health workers (CHWs) and traditional birth attendants (TBAs).

### **3.7 Recruitment and Training of Enumerators**

Three field assistants all from the area, speaking the local language and having completed at least secondary level of education were recruited and rigorously trained for two days on the proper interpretation and administration of the main questionnaire as well as taking anthropometrical measurements. There was no translated version of the main questionnaire. Following the training the field assistants understood all questions very well and as such were able to translate them during the interviews.

### **3.8 Data Validity and Quality Control**

Pre-tested questionnaires were used to collect data and field assistants were closely supervised during the pre-testing and early stages of the actual survey by the principal investigator. Each completed questionnaire was checked before leaving the households and at the end of each day to ascertain that all questions were answered correctly and consistently. Notes taken during focus group discussions, key informant and in-depth interviews were filled in at the end of the day and, together with cassettes on the discussions were stored safely until the time of analysis.

Age and weight measurements were determined for all the infants and 10% revisits made by the principal investigator. To take care of the rapid weight changes in very young babies, these revisits were carried out within 3 days of the first measurement. Salter scales used to measure infant weights were sent for standardisation at the Siaya District Weights and Measures department. Thereafter, the scales were set to zero together with weighing pants before taking each child's measurement. Each child was weighed with no clothing at all and two sets of measurements were taken.

### **3.9 Data Management**

The computer package, EPI INFO was used for data entry and analysis. Further statistical analysis was carried out using the SPSS programme. Quantitative data was analysed to determine the mothers'/caregivers' knowledge and attitude about MTCT of HIV and infant feeding practices. The data has been presented in tables where

appropriate. Tapes have been transcribed and analysed together with notes taken during focus group discussions and key informant interviews. Weight for age indicators have been calculated using the EPI INFO 6.02 computer package. The international reference population as defined by the U.S. National Centre for Health Statistics (NCHS) was used as the reference population for this study.

The statistical methods used in the analysis include:

- Descriptive statistics.
- Chi-square with cross tabulations to assess the level of significance between proportions
- T-test to compare infant feeding practices and knowledge about MTCT, knowledge of MTCT and level of education, economic status and infant feeding practices and infant feeding practices and level of education.



## CHAPTER 4

### STUDY FINDINGS

#### 4.1 Characteristics of Participants

##### 4.1.1 Respondents

Respondents to the main questionnaire were mainly female, 183 (97.3%) and 178 (94.7%) were mothers of the study infants. Others were fathers (5), grandmothers (3) and sisters (2) suggesting that mothers are by far the main caregivers to young infants (Table 4.1). The mean age of respondents was 25 years, ranging between 12 and 50 years with about three-quarters (75%) being below 30 years of age.

**Table 4.1: Distribution of Respondents by Sex and Relation to Child:**

<b>Sex of Respondents</b>	<b>N=188</b>	<b>Percent</b>
Female	183	97.3%
Male	5	2.7%
<b>Relation to Child</b>		
Mother	178	94.7%
Father	5	2.7%
Grandmother	3	1.6%
Sister	2	1.1%

#### 4.1.2 Infants

A total of 189 infants participated in this study out of which 98 came from Township location and 91 from Central Alego location where one household had a set of twins, thus the extra infant. There were ninety six (50.8%) male and ninety three females (49.2%). Their age ranged from one day to six months with a mean of 3.05 months. Table 4.2 below shows the distribution of the infants by location, sex and age. There were slightly more infants aged between one and three months (50.8%) than those in the four to six-month age bracket (49.2%).

**Table 4.2: Distributions of study infants by division, sex and age (months)**

<b>Characteristic</b>	<b>N=189</b>	<b>Percent</b>
<b>Division</b>		
Karemo	98	51.9%
Boro	91	48.1%
<b>Sex</b>		
Male	96	50.8%
Female	93	49.2%
<b>Age in months</b>		
1	37	19.6%
2	37	19.6%
3	22	11.6%
4	24	12.7%
5	31	16.4%
6	38	20.1%

### 4.1.3 Mothers and Household Heads

The youngest mother was 13 years old while the oldest was 48 years with a mean age of 24.5 years. Table 4.3 shows that 65 (34.8%) of all the mothers were twenty years or less, while 174 (93%) were between 15 and 35 years, an age bracket said to be the peak period of HIV infection among women. Men headed 157 (83.5%) of the households included in the study with only (31) 16.5% female headed. There were a total of 187 living mothers, with one having died soon after giving birth.

**Table 4.3: Distribution of Mothers by Age and Marital Status**

Characteristic	N=187*	%
<b>Age in years</b>		
<15	1	<b>0.5</b>
16-20	64	<b>34.2</b>
21-25	53	28.3
26-30	37	19.8
31-35	20	10.7
36-40	9	4.8
41-50	3	1.6
<b>Marital Status</b>		
Monogamy	115	61.5
Polygamy	27	14.4
Single	38	<b>20.3</b>
Separated/divorced	1	0.5
Widowed/remarried	6	3.2

*\*One mother had twins and another had died.*

One hundred and fifteen (61.5%) mothers were in monogamous marriages, 27 in polygamy and 7 either separated from their husbands or widowed. One of the widows had however remarried through inheritance. The remaining 38 (20.3%) were single mothers who had never been married with 26 of them being 20 years of age or less. About three-quarters (141) of participating mothers had given birth to between one and four children, while the rest had given birth to five or more.

The study showed that in this community, decision on how to use available household income is mainly made by household heads; 85 fathers (45.2%), 33 mothers (17.6%), 26 grandmothers (13.8%), 12 grandfathers (6.4%) whereas in 32 (17%), both mother and father made this decision in the study households. This trend may result in mothers not being able to provide appropriate alternative feeds even when they have the knowledge.

Mothers' education ranged from lack of any formal education to post secondary but with 63.6% not having completed primary education suggesting a very high, school dropout rate (see table 4.4). About half of the mothers (92) were engaged in farming, 51 were housewives or dependants, 40 in business/casual work, and 4 in employment. The dependants (27) were young teenage mothers who were single, owned no property and totally depended on parents or guardians for their livelihood, while the 24 housewives were not involved in any farming or income generating activities and lived in rented houses. They depended on their husbands who were either in business, employment or were casual workers.

**Table 4.4: Distribution of Mothers/HHH by Education and Occupation**

Characteristic	Mother		Household Head	
	N=187	%	N=188	%
<b>Education level</b>				
No formal Education	11	5.9	27	14.4
Primary Incomplete	108	57.8	56	29.8
Primary Complete	46	24.6	54	28.7
Secondary Incomplete	13	7.0	19	10.1
Secondary complete	6	3.2	25	13.3
Beyond Secondary	3	1.6	7	3.7
<b>Occupation</b>				
Employment	4	2.1	47	25.0
Business/casual work	40	21.4	69	36.7
Farming	92	49.2	71	37.8
Housewife	24	12.8	1	0.5
Dependant	27	14.4	-	-

Most household heads were engaged in farming (37.8%) and business/casual work (36.7%), while 47 (25.0%) were in employment. One hundred and five (55.9%) household heads had completed primary education or higher.

#### 4.1.4 Sources of Livelihood

There was some significant difference in proportions of different income sources in the two divisions with more gainful employment in Karemo division ( $p < 0.05$ ). However, the main source of income for the two divisions is farming (35.1%). Although 92 (48.9%) of all households owned livestock in the form of cattle, sheep or

goats, only 42 (22.3%) were milking them at the time of study. The quantity of milk that these families were able to draw from the animals also varied greatly with 10 of the 42 households getting less than 1 litre, 20 households between 1-2 litres and only 12 obtaining more than 2 litres per day.

**Table 4.5: Household main sources of income (%)**

Source of income	Division		All N=188
	Karemo (n=98)	Boro (n=90)	
Employment	25 (25.5%)	19 (21.1%)	44 (23.4%)
Farming	24 (24.5%)	<b>42 (46.7%)</b>	<b>66 (35.1%)</b>
Business	<b>39 (39.8%)</b>	26 (28.9%)	65 (34.6%)
Casual labour	8 (8.2%)	2 (2.2%)	10 (5.3%)
Remittances	2 (2.0%)	1 (1.1%)	3 (1.6%)

#### 4.1.5 Type of Fuel and Housing

The main source of fuel was found to be firewood in 139 (73.9%) of the study households. Mothers gathered the firewood in 131 of these households. Time taken to gather firewood ranged from a few minutes to over 3 hours with 57 households spending over 2 hours. About half (95) of the households lived in grass-thatched houses, 84 corrugated iron sheet roofs, 8 asbestos roofs and 1 tiled roof. There were also two types of floors with 125 (66.5%) made from mud/soil and the other 63 (33.5%) cemented.

#### 4.1.6 Water and Hygiene

There was no difference in the proportions of households as far as access to the main water source was concerned. Twenty-six percent (26%) had access to borehole water as their main source, spring (22%), river (21%) and dam (18%). Very few households, 8% and 4% used tap and lake water respectively. However, proportions using these sources differed significantly ( $p < 0.05$ ) between the two divisions, with Karemo using more of river (26.5%) and dam (24.5%) whereas Boro relied more on boreholes (34.4%) and spring (28.9%). Forty-four percent (44%) of the households took less than 15 minutes to fetch water from the main water source and more than three-quarters (80%) took 30 minutes or less.

Responding to questions on hand washing habits, 147 (78.2%) and 146 (77.7%) said they washed their hands after visiting the toilet and before handling food respectively. Another 39 (20.7%) and 32 (17%) washed their hands only sometimes in these conditions, leaving 2 who did not wash their hands after visiting the toilet and 10 not washing their hands before handling food. Although there was no question to find out whether drinking water was boiled, 101 (53.7%) respondents reported giving children boiled water when stating prelacteals or other foods that had been introduced by the time of the study.

## 4.2. Knowledge of HIV/AIDS and MTCT

All respondents (100%) knew about the disease, AIDS with 167 (88.8%) saying they knew how it is transmitted. One hundred and fifty six (83%) of all the respondents had heard of or seen an infected person who was ill or had died of AIDS. This level of awareness was confirmed during the focus group discussions (FGDs), key informant and in-depth interviews.

### 4.2.1 Sources of Information on HIV.

Information regarding HIV/AIDS and MTCT was reported to have been obtained from various sources as shown in table 4.6 below:

**Table 4.6: Sources of information**

Channel	N	% (N=188)
Radio/TV	168	89.4
Friends	156	83.0
Health Facility	125	66.5
Posters/books	87	46.3
Barazas/Seminars	24	12.8
Others	23	12.2

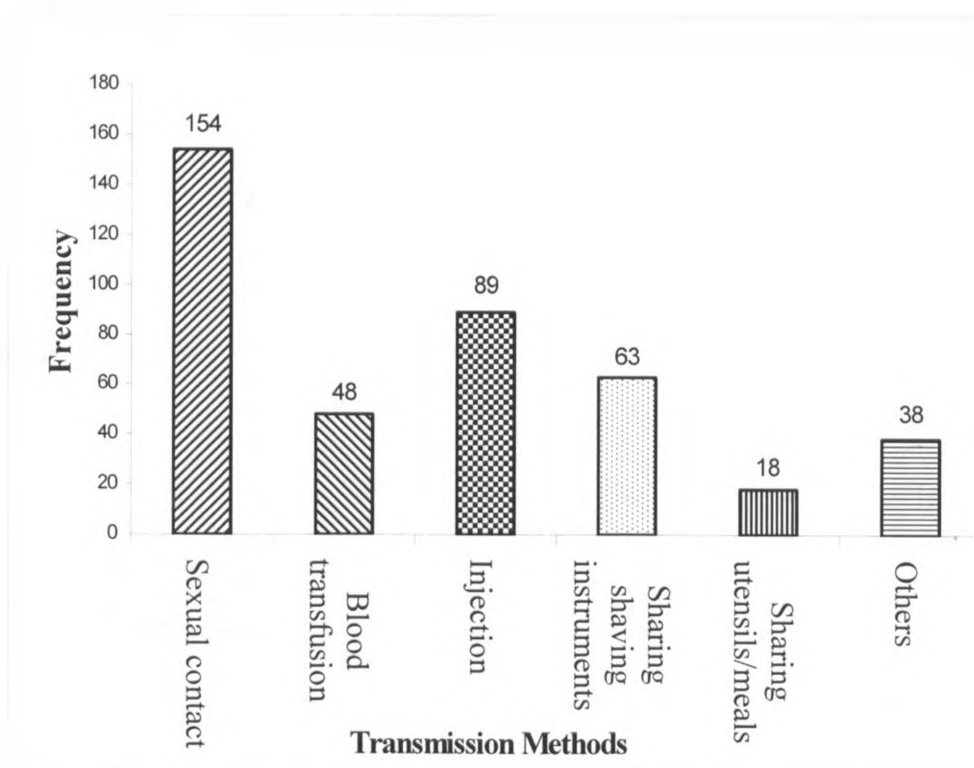
Other sources of information included billboards, school, church, cinema and songs. The radio/TV rated very high as a source of information with 55 of the 168 having got messages about HIV/AIDS from this source even though they did not own one. A total of 117 households owned radios in working condition whereas only 5



respondents reported getting information from television but it was not clear if they owned them or watched elsewhere.

Ninety-two out of 98 (93.9%) in Karemo and 75 out of 90 (83.3%) in Boro Division knew at least one correct method of transmission while 21 said they had no idea how transmission occurs. Among those who claimed not to know how HIV/AIDS is transmitted, three-quarters (16) were from Boro division and 18 of them were mothers of the study infants.

**Figure 4.1: Modes of Transmission of HIV/AIDS**



Note: *Multiple responses taken*  
Several methods of transmission were mentioned with sexual contact ranking highest from 154 (81.9%) of all the respondents (figure 4.1) and accounting for 92.2% of

those who knew how HIV/AIDS is transmitted. This was followed by injection (89), sharing shaving instruments (63) and blood transfusion (48). Most methods mentioned under others were those due to misconception and were individual beliefs, for example, shaking hands (3), through the air (3), coughs (3), mosquito bites (9) and contaminated food and water (2). Transmission through meal/utensil sharing (18) was also based on personal belief.

Most participants in the focus group discussions knew AIDS as a disease whose ultimate end is death given that there still is no cure, but a few still thought of it as a curse. There is a lot of fear about the disease in the community, especially for the young and sexually active generation that is out to have fun. One group, however, tried to differentiate between AIDS and the curse (“Chira”) saying that:

“*Chira* cannot be detected in the laboratory while AIDS can be detected”.

“*Chira* can be treated with traditional herbs while AIDS cannot”

In another group, a participant felt that there were similarities in their symptoms and that some people have actually been cured of AIDS.

Although barely mentioned among other transmission methods, when respondents were asked whether it was possible for a child to contract HIV from the mother, 158(84%) said **yes**, 9(4.8%) said **no**, while the remaining 21(11.2%) did not know. Those who thought MTCT was possible mentioned varied ways through which this could happen; one hundred and twenty eight (81%) mentioned breastfeeding, 101(63.9%) during pregnancy, 29 (18.4%) during delivery and 9 (5.7%) other ways. This question allowed more than one response for each respondent. There was no

difference in proportions that gave yes and no responses in the two divisions, but there were twice as many who did not know in Boro than in Karemo.

Out of the 179 mothers who responded to the main questionnaire, 152 (84.9%) knew that transmission from mother to child was possible, while the remaining either did not think it possible (9) or did not know (18). There was a positive relationship, although not significant, between a mother's education level and knowledge of possibility of MTCT. The two categories of mothers, who either did not think MTCT was possible or did not know, had not gone beyond primary school.

Most participants in the focus group discussions and in-depth interviews were aware of mother-to-child transmission, particularly of infection through breast milk and during pregnancy. However, very few respondents in the FGDs thought that transmission could occur during delivery just as with only 18.4% from respondents (N=188) to the main study instrument. A few participants mentioned shaking hands, contaminated water, breath and mosquito bites as possible ways of transmission. However, apart from those saying they did not know, no respondent had complete incorrect knowledge about HIV/AIDS, with majority having most facts correct.

According to participants, the solution to the HIV/AIDS problem depends on the discovery of a drug to treat the disease. Other ways of preventing transmission in the absence of a drug include abstinence, use of condoms, being faithful to one partner, not breastfeeding if a mother knows that she is infected, no instrument sharing among individuals, testing to ascertain HIV status for couples who intend to get married and

banning of wife inheritance or those with this intention undergoing screening. Participants also felt that infected people should go public and inform people about the reality and that the government should be open about those who are infected or have died, that is, doctors should tell relatives the truth about the cause of death.

#### **4.2.2 Perception of infected people.**

There is some degree of stigmatisation, as people tend to think that the infected had been promiscuous. Infected people are not neglected but are taken care of by immediate family members. However, the main problem is that it is not openly discussed, and many say they are suffering from other ailments when they ail from the disease.

Discussants knew that the disease is common in the district but could not agree on what category of people was most affected in the community. Some thought it was common among the youth while others mentioned women of childbearing age, men and the rich. Participants in FGDs claimed that those from urban centres, especially well off men, lure young girls with money and end up infecting them. These girls in turn infect others with whom they interact in the village. Others also thought that the disease is widespread because most people did not take counselling and education sessions seriously. There is also rampant use of drugs among the youth thus influencing their actions and parents failed to discuss the disease openly with their children due to the generation gap.

### 4.3 Infant Feeding Practices

#### 4.3.1 Breastfeeding Initiation

There was a wide variation among respondents regarding the timing of the baby's first breastfeed. Of 189 babies included in the study, 120 (63.5%) were put to the breast within 6 hours after delivery, out of whom 41 were breastfed within the first hour. Another 32 (16.9%) were put to the breast between 6 and 12 hours, while the rest were breastfed after 12 hours. Five respondents had no idea when the babies received their first breastfeed while one had never breastfed because the mother died soon after giving birth (table 4.7).

**Table 4.7: Distribution of Infants by time of initiating breastfeeding**

<i>Timing of first breast feed</i> (N=189)		<b>Pre-lacteal given</b>
<1hour	41 (21.7%)	9
1-6hours	79 (41.8%)	27
6-12hours	32 (16.9%)	15
>12hours	31 (16.4%)	29
Don't know	5 (2.6%)	2
Never	1 (0.5%)	1

Eighty-three infants (44%) received a pre-lacteal feed, 104 (55%) did not while 2 (1%) of the respondents did not know whether or not the baby was given anything prior to initiating breastfeeding. The pre-lacteal feeds given were herbal mixture, water, mother's boiled breast milk, orange juice and cow's milk. Out of the 83 who

gave pre-lacteal feeds, 77 (92.8%) reported giving water followed by herbal mixture (9), cow's milk (2) and orange juice (1).

The likelihood of giving a pre-lacteal feed tends to be inversely related to the initiation of breastfeeding, with mostly those introduced to the breast within the first hour not receiving anything while a higher proportion of those put to the breast after 12 hours received something. However, it is interesting to note that even infants who had been breastfed within 1 and those breastfed between 1 and 6 hours received some pre-lacteal, 9 of 41 (22%) and 27 of 79 (34.2%) respectively as shown in table 8 above.

Respondents gave a number of reasons for giving these pre-lacteal feeds. One reason was that the breast does not produce milk immediately and thus the need to stop the baby from crying by giving him/her something while waiting for the milk to be produced. Where water was given first the main reason was given as cleansing the stomach before giving breast milk but where herbal mixture was given, the reason was to protect the infant against illness including an immunisable disease like tetanus, which was singled out.

### **4.3.2 Frequency and Duration of Breast Feeding:**

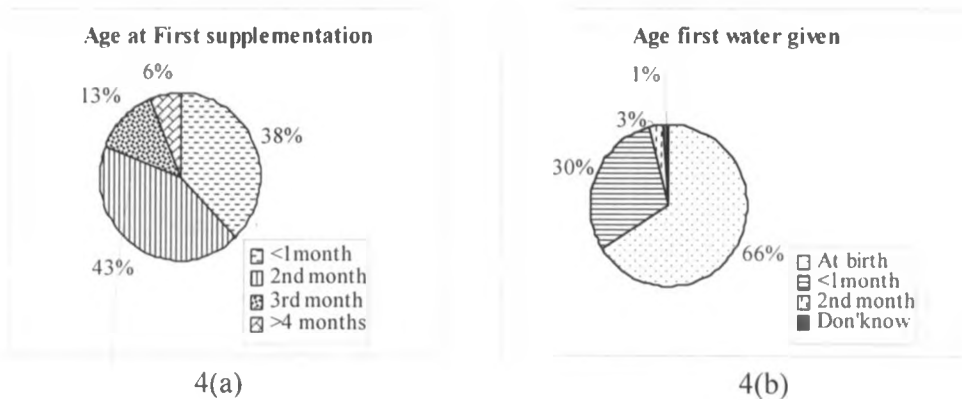
Of the 189 babies, 187 were still breastfeeding, with only two having stopped, one because the mother had been sick and another whose mother had died. Of those still breastfeeding, 128(68.4%) were being breastfed on demand or more than 6 times in 24 hours and 41 (21.9%) being breastfed 5 to 6 times. Therefore, 169 (90.4%) were receiving at least five breastfeeds per day at the time of the study.

Information from the FGDs, in-depth and key-informant interviews indicated that cessation of breastfeeding also varied among individuals, with most mothers aware that they should breastfeed for up to two years, but majority stopping due to early conception. It is believed in the community that once a mother conceives the breast milk goes bad, that is, it browns, curdles and contains pus and can cause diarrhoea. The other common reason was the fact that other household chores took up most of the mother's time with the child remaining with another person for long periods.

### **4.3.3 Complementary Feeding**

Other foods had been given to 162 (85.7%) babies with the timing varying among respondents. By their second month, 131 (69.3%) babies had been given some other feed in addition to breast milk, whereas by the same time 187 (98.9%) of babies had been given water (figure 4.2 a and b).

**Figure 4.2 (a) and (b): Age of introducing other Foods/Water**



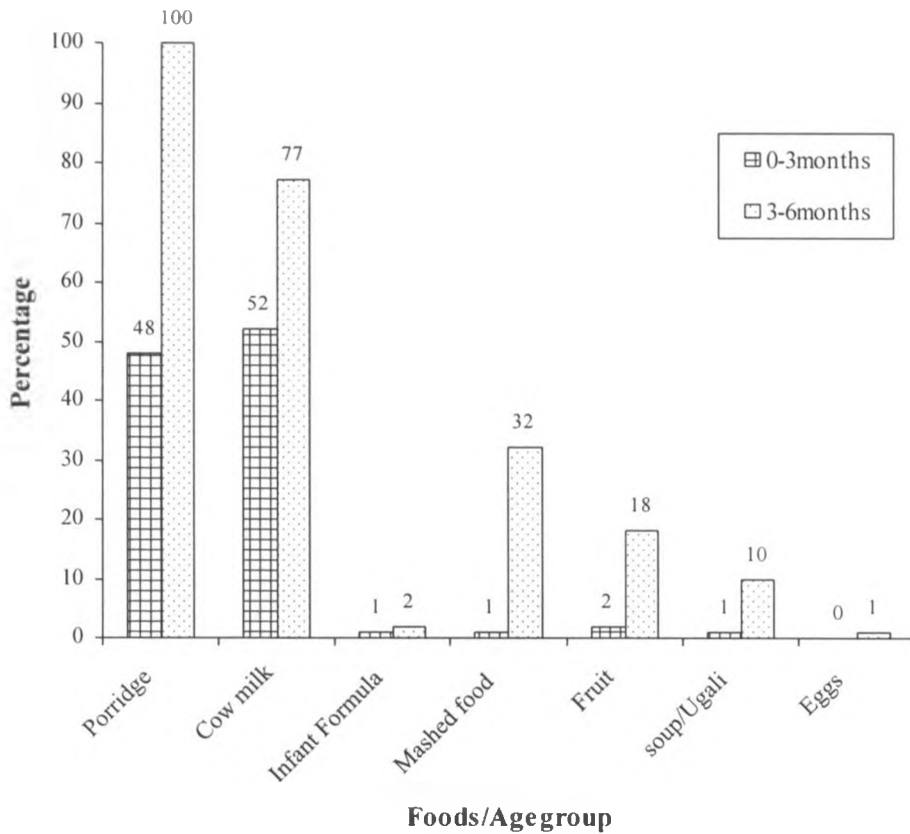
Complementary feeds, sometimes introduced as early as the second week was attributed to inadequate breast milk, although there were individual differences such as the babies' "readiness" to eat other foods, the mothers inadequate diet or tight schedule with other household chores. Foods that were being given at the time of the survey varied widely. Porridge was the most popular having been given to 139 (85.8%), 122 (75%) had been given cow's milk, 31 (19%) mashed potatoes/bananas, 19 (11.7%) fruit, 3 (1.9%) infant formula and 1 (0.6%) eggs. Methods used to give complementary foods included cup and spoon (101), cup (68), forced feeding (48), cup-with-spout/bottle (22) and hand (7).

All 93 infants between 3-6 months were already on complementary feeds while 71 (74%) of those below 3 months had been given other foods by their second month. Of the remaining 25 (26%) of the latter age group, 20 (20.8%) were on breast milk plus water and only 5 (5.2%) were exclusively breastfeeding (2.6% of all study children). All 93 infants (100%) between 3-4 months were taking porridge, 72 (77%) cow's milk and 30 (32%) mashed food compared to only 46 (48%) porridge, 50 (52%)



cow's milk and 1 (1%) mashed food for the younger age-group. Other feeds were consumed in negligible amounts especially for those below three months (figure 4.3).

**Figure 4.3: Distribution of Complementary Foods currently in use by Age**



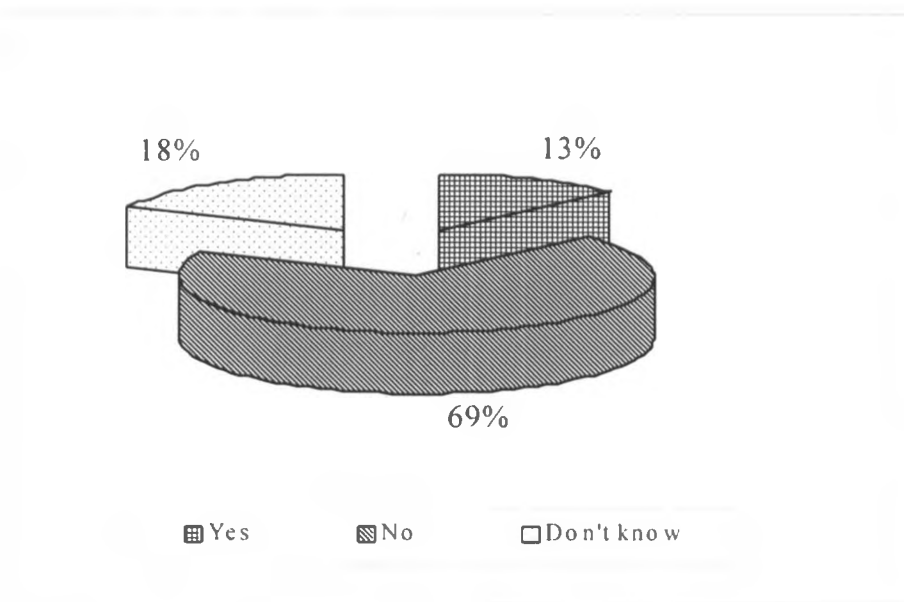
Porridge was made from finger millet, sorghum, maize/rice or cassava flours, and sometimes it was enriched with milk, sugar, groundnut paste/flour, beans and dry fish flour (“omena”). For the very young the water and flour mixture was strained using a fine sieve to make it light, gradually making it thicker as the child became older. All these were said to be readily available in the community and were obtained through own production (56%), purchasing (88%) and remittances from relatives (1.9%). However, a higher proportion of respondents in Karemo division obtained the foods

through purchasing while in Boro, there was more from own produce, though most relied on both. Results show that decisions on what to feed the baby are mainly made by mothers, 152 (80.9%) in this study population.

#### 4.3.4 HIV and Infant feeding Practices

When asked whether an HIV positive mother should breastfeed or not, 24 (12.8%) said yes, 130 (69.1%) said no and 34 (18.1%) did not know (figure 4.4).

**Figure 4.4: Breast feeding or non-breast feeding by HIV+ mother**



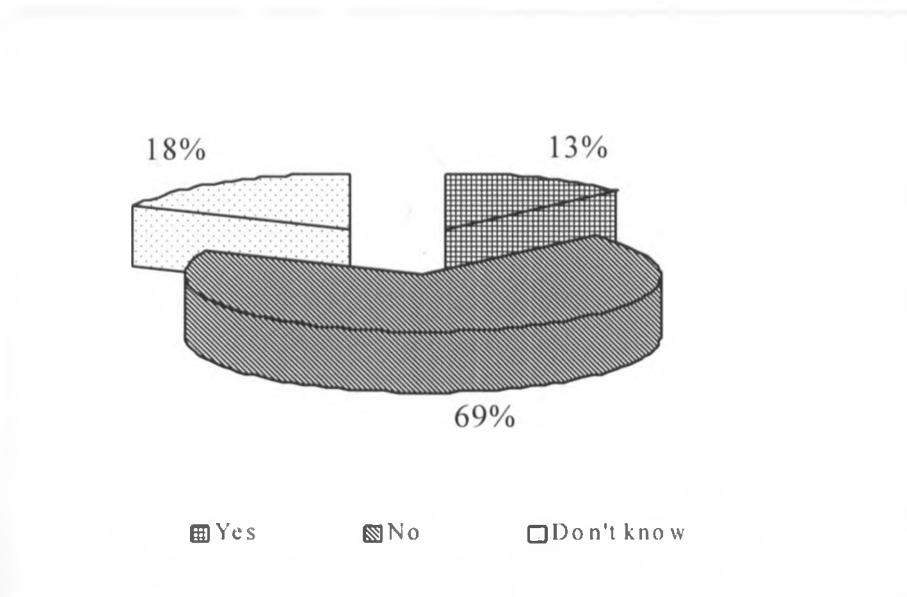
Discussants in Focus Group Discussions (FGDs) also strongly felt that mothers who knew they were infected should not breastfeed their babies in order to protect the child from becoming infected through breast milk. On the other hand, those who

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**Figure 4.4: Breast feeding or non-breast feeding by HIV+ mother**



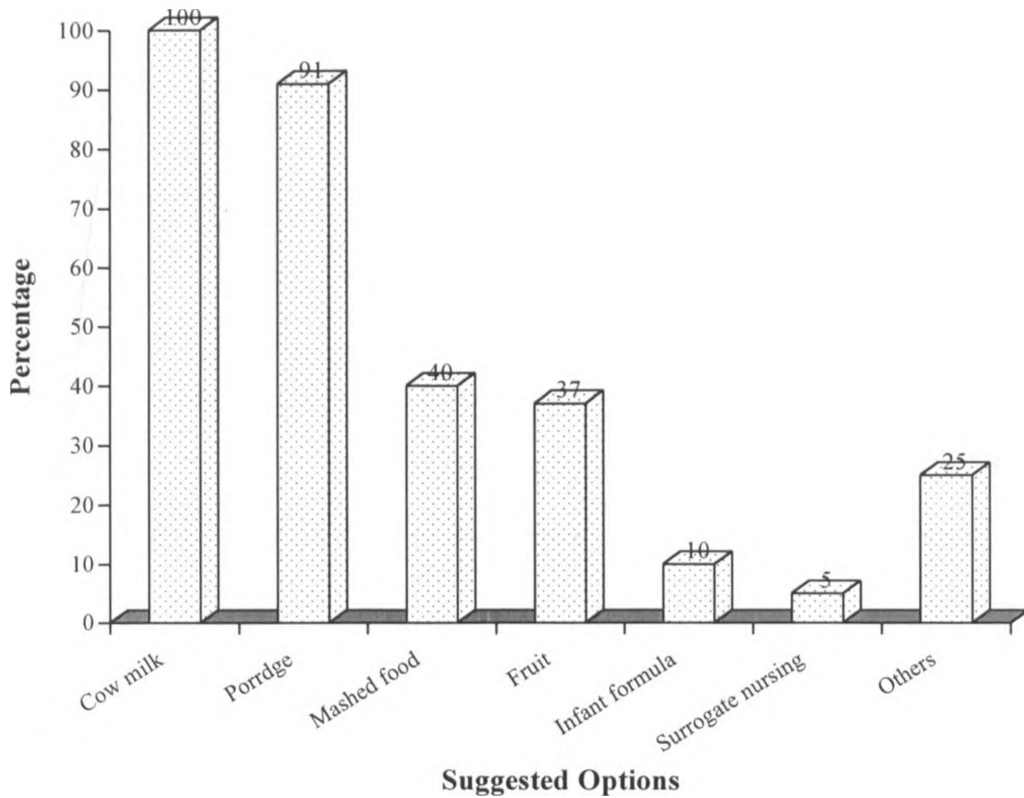
Discussants in Focus Group Discussions (FGDs) also strongly felt that mothers who knew they were infected should not breastfeed their babies in order to protect the child from becoming infected through breast milk. On the other hand, those who

suggested that a positive mother should just breastfeed argued that there was no point denying the child breast milk as they felt such a child was already infected during pregnancy.

#### **4.3.5 Breast Milk alternatives**

The respondents who felt that an infected mother should not breastfeed suggested a variety of alternative feeds that are readily available in the community. All the 130 respondents (100%) gave cow's milk as an option for a child who could not be breastfed for whatever reason (figure 4.5), but all did not seem to know that it is necessary to dilute the milk. Only one traditional birth attendant (TBA) knew that cow's milk required diluting for a newborn baby, but talked of mixing 1-part milk to 2-parts water instead of 2-parts milk to 1-part water.

**Figure 4.5: Suggested Alternatives to Breast Milk**



Other options mentioned included enriched porridge (118), boiled water (101), mashed potatoes/bananas/beans (52), fruits (48), infant formula (13), surrogate nursing (7), and others (33). Others included *ugali* (9 respondents), eggs (7), groundnuts and omena (4 each), ceralac (2) soya, goat milk, boiled breast milk, liver, vegetables, rice and boiled fish (1 each). Although water was mentioned, it was to be given alongside other foods and most respondents said they would boil both water and milk before giving it to babies. Most people suggested that mashed potato and bananas be pureed and made light enough to be fed from a cup. Fruits such as ripe bananas, avocado pears, pawpaw and oranges could be given, normally in form of juices or puree.

In addition to cow's milk, which was mentioned by all 130 respondents as a suitable breast milk alternative, others like infant formula, surrogate nursing, soya and goat milk, although mentioned by very few respondents would also be suitable alternatives for non-breastfeeding infants under 6 months if correctly prepared. Cow's milk is readily available in the community but it is not affordable for those who do not produce their own.

The rest are unsuitable as breast milk alternatives but would be suitable for use after 6 months as complementary feeds to supplement the breast milk substitute chosen. Porridge could mainly be made from millet, maize, cassava and sorghum as the main ingredients and enriched using other locally available ingredients such as groundnut/simsim paste, milk, sugar, beans, soya and dry fish meal.

Infant feeding options such as wet nursing, breast milk banks and heat-treated breast milk were thought to be inappropriate due to possibility of infection or difficulty in expressing and boiling breast milk. Although wet nursing had been used in the community, the present generation does not welcome the idea, and the idea of breast milk banks was also thought to be unhygienic. Those interviewed knew of no one in the community who was practising wet nursing with one only recalling a case she had seen 5 years earlier. Infant formula was said to be good for infants but most mothers felt that it was costly and thus unaffordable for most. This may be the reason why very few respondents mentioned it as a possible alternative where a child cannot be breastfed.

#### **4.3.6 Attitude towards non-breastfeeding mothers:**

Participants in the Focus Group Discussions indicated that it is rare to find women who do not breastfeed their babies without a good reason, saying it only happens if a mother is very sick, has died or maybe among school girls who have to go back to school. However, they were in agreement that an HIV-infected mother should not breastfeed her baby.

### **4.4 Other Childcare Practices**

#### **4.4.1 Delivery**

Most of the babies (148) were delivered at home even without the assistance of traditional birth attendants (TBAs) with only 41 born in hospital. About three-quarters of the hospital births were observed in Karemo division, where people are nearer the district hospital and have more reliable sources of income. Lack of funds was given as the reason for not going to hospital as well as distances to be covered mainly on foot. The practice of giving birth at home may increase chances of HIV transmission from mother to child especially since they do not know their HIV-status.

The TBAs who were interviewed knew that transmission and infection were possible during delivery yet most times they assisted mothers even without protection. Otherwise, they used improvised protective gear like polythene bags and “clean” old rags. None of those interviewed had undergone any form of training for the job they

were doing, most having attended only a day's seminar organised by the Anglican Church diocese. The others had just learnt the trade from their grandmothers or other elderly women in the community.

#### **4.4.2 Morbidity Patterns.**

Of the 189 babies, 132 (70%) had been unwell during the two weeks prior to the survey. The main illnesses reported were fever/malaria (72), cough/cold (36), diarrhoea (24), stomach disorders (15) and skin rash (11). Of those who had been unwell, 116 (87.9%) were treated while the rest had not sought treatment. Treatment was either at a health facility or at home, the latter involving purchase of drugs or use of herbs. Treatment at the health facility and purchase of drugs required spending money, the lack of which was the reason given by some respondents for not seeking treatment for their children. From the results it is evident that the decision on when and where to seek treatment for the baby is mainly made by mothers (85%).

#### **4.4.3 Immunisation**

Many babies in the study had not received full immunisation for their age. Only 38 (20%) of the total number had been fully immunised for their age, while 151(80%) had not received all for which they were eligible. Out of the 151 another 31 were born at home and had not yet visited a health facility, some as late as their second month after birth, while about 100 had not received BCG, which was reportedly not available in the health facilities despite receiving all other vaccinations for which they



were eligible. Apart from the 31 who had not visited a health facility and an additional 20 who did not avail cards for various reasons, the rest had their immunisation cards that were used to obtain this information.

#### 4.4.4 Role of Men and other family members

It turned out that mothers received very little assistance with childcare from other members of the family, particularly men/fathers of the children. Most mothers left babies asleep or with children (42.3%), some as young as 6 years, when they had to leave briefly. However, on a day they needed to go somewhere far majority either kept an older child from school or went with the baby. Other caregivers during mother's absence included grandmothers (14.8%), aunt/uncle (10.1%), fathers (3.2%) and others (6.9%), which include stepmother, neighbour and house-help.

The distribution of these caregivers by age showed that 9.1% were less than 6 years, 23.8% between 6 and 9 years, 29.4% between 10 and 15 with the remaining 37.8% above 15 years (table 4.8). This shows that about one-third of caregivers during mother's absence are below 10 years of age who cannot provide appropriate care.

**Table 4.8: Distribution of substitute caregivers by age**

Age	< 6 years	6-9 years	10-15 years	> 15 years
<b>n=143 (Percentage)</b>	13 (9.1)	34 (23.8)	42 (29.4)	54 (37.8)

In the olden days grandmothers took care of babies when mothers were away but this is not the case today, as most of the grandmothers are still young and sometimes also busy caring for their own babies. Men in the community still do not see how they can remain with a very young baby and participation of fathers in care giving was limited to providing money or livelihood in some cases. The men in their contributions during the Focus Group Discussions confirmed this.

#### **4.5 Care of Orphans**

In the community grandmothers, very young teenage girls or co-wives took care of orphans in the olden days and surrogate nursing was in use at the time for such children. Today, orphaned children are still cared for by grandmothers or other members of the extended family who may volunteer, but other alternative methods of feeding are used. These caregivers use the feeds mentioned earlier in the report depending on what is available to individual families most of which are not suitable, but it is rare to find one woman wet-nursing another woman's baby.

The other alternative is to take such a child to an institution where orphans are taken care of. Currently the only one is in Rangala (Mission), which is far and expensive, but most men felt that it was an easier option to take a child there if the mother died. They found it easier because they believe they cannot be able to take care of the infants and are prepared to work hard and get money to pay for their upkeep rather than take care of the children themselves.

#### 4.6 Nutritional Status of Study Infants

In evaluating the nutritional status of the infants, weight for age was used. Children found to be below minus two standard deviations (-2SD) from the median of the reference population (NCHS data) were classified as being underweight with those below minus 3 standard deviations (-3SD) being severe. Those between -2 and -1 SD were classified as being at risk of becoming underweight.

Of the 189 infants 12 (6.4%) were underweight (below -2SD); 2(1.1%) of them severely and 35 (18.5%) at risk, figures that are much higher than the national ones for infants below 6 months which stand at 2.3% below -2SD and 0.4% below -3SD (KDHS, 1998). Seven (58%) of the children below minus (-) two standard deviations had been unwell two weeks prior to the survey whereas all the infants who were below -2SD as well as two-thirds of those at risk (-2 to -1 SD) came from male-headed households.

Across the sexes, twice as many female infants as males (8.6 to 4.1%) were underweight but a higher percentage of the males seemed to be at risk of becoming underweight as is seen in Table 4.9 overleaf. The proportion of the underweight was also higher among infants between 3-6 months compared to those below 3 months. The distribution had a mean of minus (-) 0.37 and a median of minus 0.30 SD. At 95% confidence interval the distribution mean for underweight prevalence should be anywhere between -0.52 and -0.22 SD if it was to be repeated in the same population.

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The proportion of infants below -2SD appears to increase with the level of the mother's education, but this may be due to the small numbers of mothers in the latter categories. However, the proportions of those at risk (-2 to -1 SD) were relatively high among the first three levels of education; no formal, primary incomplete and primary complete. There was no difference in the prevalence of severe and moderate underweight in relation to the timing of introducing complementary feeds but 83% of those who appeared to be at risk were given other foods in their first or second month.

**Table 4.9: Prevalence as percentage of Underweight by background characteristics**

Background Characteristic	% Underweight (N=189)		-2to-1SD (At Risk)
	Below -3 SD	Below -2 SD*	
<b>Sex</b>			
Male (n=96)	1.0%	4.1%	21.9%
Female (n=93)	1.1%	8.6%	15.1%
<b>Age (months)</b>			
0-3(n=96)	1.0%	4.1%	14.7%
4-6(n=93)	1.1%	8.6%	22.3%
<b>Division</b>			
Karemo (n=98)	1.0%	4.1%	20.4%
Boro (n=91)	1.1%	8.8%	16.5%
<b>Education Level</b>			
No Formal (n=11)	0	0	18.2%
P. Incomplete (n=107)	0	3.7%	23.1%
P. Complete (n=46)	2.2%	10.9%	13.0%
S. Incomplete (n=13)	0	15.4%	7.7%
S. Complete (n=6)	0	0	16.7%
Beyond Sec. (n=3)	0	0	0
<b>Main income source</b>			
Employment (n=44)	2.3%	4.6%	6.8%
Farming (n=66)	1.5%	9.1%	24.2%
Business (n=65)	0	4.6%	21.5%
Casual labour (n=10)	0	0	10.0%
Remittances (n=3)	0	33.3%	33.3%
<b>TOTAL</b>	1.1%	5.3%	18.5%

\*Includes infants who are below -3SD

*Figures are expressed in terms of percent of the number of standard deviation (SD) units from the median of the NCHS/CDC/WHO international reference population. Children are classified as underweight if their Z-scores are below minus two or minus three standard deviations (-2SD to -3SD) from the median of the reference population.*

**Table 4.9: Prevalence as percentage of Underweight by background characteristics**

Background Characteristic	% Underweight (N=189)		-2to-1SD (At Risk)
	Below -3 SD	Below -2 SD*	
<b>Sex</b>			
Male (n=96)	1.0%	4.1%	21.9%
Female (n=93)	1.1%	8.6%	15.1%
<b>Age (months)</b>			
0-3(n=96)	1.0%	4.1%	14.7%
4-6(n=93)	1.1%	8.6%	22.3%
<b>Division</b>			
Karemo (n=98)	1.0%	4.1%	20.4%
Boro (n=91)	1.1%	8.8%	16.5%
<b>Education Level</b>			
No Formal (n=11)	0	0	18.2%
P. Incomplete (n=107)	0	3.7%	23.1%
P. Complete (n=46)	2.2%	10.9%	13.0%
S. Incomplete (n=13)	0	15.4%	7.7%
S. Complete (n=6)	0	0	16.7%
Beyond Sec. (n=3)	0	0	0
<b>Main income source</b>			
Employment (n=44)	2.3%	4.6%	6.8%
Farming (n=66)	1.5%	9.1%	24.2%
Business (n=65)	0	4.6%	21.5%
Casual labour (n=10)	0	0	10.0%
Remittances (n=3)	0	33.3%	33.3%
<b>TOTAL</b>	1.1%	5.3%	18.5%

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## CHAPTER 5

### DISCUSSION

#### 5.1 Characteristics of Participants

Over 90% of mothers were in the 15-35 years age bracket, which is very vulnerable to infection by HIV making them and their children highly at risk as it coincides with the period of highest fertility (Nduati, 1998). This is further complicated by the fact that about one third (65) of these mothers were 20 years of age or less and 38 (20.3%) were single mothers suggesting both early marriages and pre-marital sex. This trend jeopardises efforts aimed at primary prevention of the spread of HIV/AIDS and is complicated further by the fact that these mothers' HIV status was unknown. The high school dropout rate among mothers leads to inability to find gainful employment leaving more than 75% as farmers, housewives or dependants. The mothers who had never been to school or dropped out early had little knowledge about HIV in general suggesting that very little education could hinder the utilisation of information available, further exposing them to infection.

Although more than 80% of the households were male-headed, men did not seem to take a very active role in childcare, especially feeding, something they actually admitted during their focus group discussions. This had a direct effect on decision making even on the general health seeking behaviour. Decisions on what to feed the baby and when to take them to hospital lies with mothers, whereas the decision on

how to use the available income rests with household-heads. This is reflected in the underweight levels of the study children where all (100%) who were severely underweight and more than 80% of the moderately underweight were in households where decision making on how to use available income and that on infant feeding were made by different people.

Findings of this study suggest that young infants are generally cared for by their mothers or other female members of the family. Most mothers are young and actively involved in childcare. They are also sexually active (even when still young or single), had minimal education and more than three-quarters are farmers, housewives or dependants. These factors as well as their unknown HIV-status makes it difficult for them to actively make decisions on child care and feeding practices while at the same time putting them and their babies at greater risk of contracting HIV infection. There is need, therefore, to increase the role of men in HIV and infant feeding decision making and practices.

## **5.2 Knowledge of HIV/AIDS and MTCT**

Generally, there is a high level of awareness about HIV/AIDS (100%); one hundred and sixty seven (88.8%) respondents knew how it is transmitted while 84% were aware that a child could contract the disease from the mother. Respondents indicated various means through which transmission takes place. One hundred and twenty eight (81%) of those who knew that MTCT of HIV is possible mentioned breastfeeding, (63.9%) during pregnancy, (18.4%) at delivery and other ways (5.7%) through which

transmission could occur. These proportions are very similar to the national figures of 99% and Nyanza province (95%) for awareness of HIV/AIDS and 85% countrywide for MTCT (KDHS, 1998). Unfortunately those who thought MTCT was not possible or did not know whether or not it was possible were mothers (15.1%). This set of mothers had not gone beyond primary level of schooling a result supported by findings from another study that showed that the uneducated, whether men or women were 3 times more likely not to be aware that the virus can be transmitted from mother to child (UNICEF, 2000). People are less likely to be informed about AIDS if they lack formal education.

A formative research on HIV and infant feeding carried out in Zambia in 1998 and 1999 had results that also showed a high level of awareness about HIV and its transmission methods including mother-to-child (NFNC, 1999). In the Zambia study, health providers and HIV-positive respondents had more information about MTCT than mothers of children less than two years old. Like in the present study, most mothers and fathers in the Zambian study knew that HIV was transmitted during pregnancy and through breastfeeding rarely mentioning during delivery.

Another survey in Homabay and Nyeri districts in Kenya among health workers and the communities regarding mother-to-child transmission also showed high awareness of MTCT among health workers who seemed to be more knowledgeable about transmission during delivery (Menya, Nduati and Kwamboka, 1999). However, unlike in the present study, there was little awareness in the communities at the time and in particular they did not seem to know that HIV could be transmitted through breast

milk. The main difference in these studies is that the two previous ones had focussed more on the health workers with minimal information from the community, which was the focus for the current study.

It is worrying to note that delivery does not rate highly as a possible way of infecting babies in the communities given that most deliveries occur at the homes without expert assistance or counselling thus putting these babies at even greater risk. This was confirmed by responses from TBAs, who despite knowing that transmission can occur during delivery, most times assisted mothers even without protection or they used improvised protective gear like polythene bags and “clean” old rags. None of those interviewed had undergone any formal training for the job they were doing, most having attended a day’s seminar organized by a church organization. Others had learnt the skill from their grandmothers or other elderly women in the community through observation. A few misconceptions on transmission methods mentioned included body contact, breath/cough, contaminated food and water, sharing the toilet and sharing utensils and meals. This incorrect information may contribute to infected people being stigmatised and needs to be dealt with by providing the correct information through health education in the community.

The radio (89.4%), friends (83%) and the health facility (66.5%) rated highly as main sources of information for most people in the community. These three sources of information appear to be easily accessed and may be appropriate for disseminating information on HIV/AIDS, particularly MTCT with emphasis on breast milk transmission and ways of prevention. This would create awareness in the community,

which would hopefully create demand for testing and thus people getting to know their status and thereafter act appropriately based on individual circumstances. At the national level, radio is the most common single source of information on HIV/AIDS at 73% and 87% for women and men respectively and 67% for Nyanza province (KDHS, 1998).

Findings of this study, therefore, suggest a very high level of awareness of HIV/AIDS and its transmission from mother to child in this community. However, there are gaps in knowledge about how much more mothers know about transmission through breastfeeding, especially regarding its timing and ways of prevention. Also of concern is the fact that many do not regard delivery as a means through which mother-to-child transmission can occur and other misconceptions about transmission of HIV/AIDS in general.

### **5.3 Infant Feeding Practices**

#### **5.3.1 Breastfeeding:**

Breast milk is the best food for infants for the first four, and usually six months of life, because it is economical, convenient for mothers, provides sound nutrition, protects infants against infections other than HIV, and also promotes maternal health and child survival.

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There were some positive breastfeeding practices such as early initiation by a few (21.7%) mothers and breastfeeding on demand reported in the study group with almost all infants still breastfeeding. However, breastfeeding is not exclusive in this community as most mothers gave pre-lacteal feeds and complementary feeds are given very early due to the belief that the breast milk is inadequate. At the time of the survey, 20 infants (10.6%) were taking breast milk plus water with only 5 (2.6%) exclusively breastfeeding, all being less than three months old. Of the 5 mothers who were exclusively breastfeeding, 4 knew that MTCT is possible and were also aware of breast milk transmission although reasons for exclusively breastfeeding were not explored.

These rates are quite low and there is, therefore, need to educate the community on the importance of breast milk for infants and particular emphasis put on practices that are appropriate such as initiation within the first hour followed by exclusive breastfeeding for the first six months. Promotion of early initiation will reduce chances of giving prelacteal feeds while ensuring that infants benefit from colostrum's protective properties. This will include breastfeeding counselling and support to create confidence in mothers to produce and maintain a good supply throughout this period.

### **5.3.2 Complementary Feeding**

There are a wide variety of complementary feeds in use in the study community, which are readily available. Other foods are given within the first month while water is given even at birth, a practice that is associated with the risk of gastrointestinal and

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other infections (Preble and Piwoz, 1998). Twenty three (96%) of the children who had suffered from diarrhoea had already been given complementary foods suggesting increased danger with mixed feeding at an early age. Infections of the gastrointestinal tract increases the risk of HIV transmission through breast milk such as would occur in these conditions of mixed feeding.

Research has shown that early supplementation reduces breast milk output since the production and release of milk depends on the frequency and intensity of suckling (Latham, 1997; KDHS, 1998). Therefore, early introduction of other foods deprives infants of the superior nutritive qualities of breast milk leading to malnutrition. Among the study infants all, except 25 (13.2%) had received complementary feeds by the third month with the most popular foods being porridge and cow's milk. Porridge was made from cereal flours, sometimes enriched with milk, sugar, groundnut paste/flour, beans/soya and dry fish flour ("omena"). Respondents did not however, seem to be aware of the need to dilute or sweeten cow's milk, while porridge was over-diluted for the very young infants, made thicker as the baby became older and unsweetened in most cases. Vegetables and fruits did not feature much as complementary feeds thus exposing children to micronutrient deficiencies.

Although these foods were said to be readily available in the community, most required purchasing, making them unaffordable for those who did not produce their own. The said foods are not suitable for this age group but would be appropriate at a later period to supplement breast milk or its suitable alternative. Cup and spoon (55%) was the most popular method of feeding, followed by cup feeding (37%) and forced

feeding (26%). The use of bottles or cup with spout was very low, returning only 12% of the study infants. The use of cups need promotion as they are easy to use and keep clean and as such would be most appropriate where an alternative or expressed breast milk had to be given to an infant.

## **5.4 Knowledge of MTCT and Infant Feeding**

### **5.4.1 MTCT and Breastfeeding**

Despite the advantages of breast milk, breastfeeding is one of the ways through which mother-to-child transmission of HIV takes place and overall MTCT is higher in populations with high proportions of mothers who breastfeed (Bertolli J., 1998). Risk factors associated with increased MTCT through breast milk include recent infection, duration of breastfeeding, mixed feeding and vitamin A deficiency in the mother. Others include oral lesions in infants, cracked nipples and breast abscess. The most effective method of preventing transmission of HIV through breastfeeding is breast milk avoidance, but this requires that there are alternative feeds that can be used to replace breast milk, for mothers who choose not to breastfeed. These need to be acceptable, feasible, affordable, sustainable and safe; otherwise, exclusive breastfeeding for a short duration and early cessation is recommended (UNAIDS, 1998).

Many respondents strongly felt that infected mothers should not breastfeed their babies except for a few respondents who thought there was no need denying the baby

breast milk yet he/she is already supposedly infected during pregnancy. Almost all respondents said they would not breastfeed if they were HIV-positive to avoid infecting their babies. This choice may not be practical in a setting where breastfeeding is the norm and suitable alternative feeds are not available to all households in adequate amounts. Even for those with access to suitable alternative feeds such as cow's milk, little knowledge on appropriate method of preparation and unsafe water sources make their use impractical.

Therefore, based on these findings, a more practical solution in this setting would be to promote exclusive breastfeeding followed by early weaning in order to maximise nutritional benefits while minimising HIV transmission and other infectious diseases. To be able to do this it is important to target interventions to HIV-infected mothers, which can only be possible if status is known and thus the need to create awareness about the need to know one's status. Counselling on infant feeding in relation to HIV/AIDS needs to be carried out to create awareness and possibly demand for voluntary confidential counselling and testing. This should include advantages and disadvantages of all the available infant feeding options to include their nutritive value, safety, affordability, feasibility and acceptability.

In a clinical trial in Nairobi on the effect of breastfeeding and formula feeding on transmission of HIV-1, compliance with assigned mode of feeding was 96% in the breastfeeding group, but only 70% in the formula group (Nduati et al., 2000). In another study in Durban, South Africa, out of 549 HIV-infected women, 393 mothers who opted to breastfeed received counselling on the importance of exclusive

breastfeeding and their choices supported (Coutsoudis et al., 1999). At 3 months, only 103 children had been exclusively breastfed while the rest had received mixed feeding and results showed higher proportions of the infected children among those who were mixed feeding. This suggests that compliance to exclusively breastfeed depends on the different settings.

Although it is known that exclusive breastfeeding for at least 3 months reduces chances of transmission through breast milk, it is clear that people in the community, do not exclusively breastfeed and many may find it difficult to do so, as other feeds have always been used alongside breast milk. However, since breastfeeding is almost universally practiced in this community, counselling targeted at expectant mothers would be needed to promote, support and encourage exclusive breastfeeding while emphasizing its positive attributes.

The idea of not breastfeeding was appealing to many mothers who chose it as the best option for preventing HIV transmission through breast milk, but given the environmental, cultural and socio-economic factors in this community it may not be a feasible nor sustainable choice. The misconception of 100% infection during pregnancy by a few mothers needs to be addressed so that they can freely make choices based on correct information. A lot of counselling and education on the most suitable alternative feeds and the best preparation methods can be given while emphasizing the need to exclusively give replacement feed while providing support to mothers who make this choice.

### 5.4.2 Replacement Feeding

In order to eliminate the risk of HIV transmission through breastfeeding completely, an infected mother needs to feed the infant with suitable replacements for breast milk that are nutritionally adequate, safe, affordable and culturally and socially acceptable. Safety and hygiene is very important, as it helps minimise the risks of these feeds. From birth to 6 months of age, milk in some form is essential for infants. This should be prepared with careful attention to hygiene, which requires clean water and fuel to boil the water, milk and utensils. The closest in composition to breast milk are commercial infant formula, cow's milk, goat milk or vegetable products such as soya bean. It is with this in mind that the study set to find out what the community traditionally gave children who could not breastfeed and what respondents thought mothers should give in place of breast milk if they were infected.

The same foods used as complementary feeds in the community were mentioned by most respondents as being suitable alternative feeds for children who cannot be breastfed for whatever reasons. Cow's milk was mentioned by all who felt that an infected mother should not breastfeed while 91%, 40% and 37% mentioned porridge, mashed food and fruits, respectively. However, fruit was to be used alongside milk or porridge. Like in this study, the "Baseline (KAP) survey in Homabay and Nyeri" also found cow's milk to be the most favoured breastfeeding alternative together with porridge (Menya et al., 1999). In the *Zambian study*, infant formula and cow's milk were the main replacement feeds found to be in use (NFNC et al., 1999).

Cow's milk was the most preferred alternative, even among those who did not produce their own nor had resources to buy enough, because it is readily available in the community even if not to individual mothers. Knowledge on the appropriate home preparation of cow's milk to make it suitable for infants below six months was lacking and as such needs to be addressed. In addition, the community needs support to produce their own milk even if from small livestock and information on the need to spare the little milk available to them for infants as a priority over other uses where mother's milk must be replaced.

Infant formula was also thought to be a suitable alternative feed yet unaffordable for most people, but only 10% of respondents mentioned it as an alternative feed. Therefore, on the basis of affordability, it is not suitable as a replacement for breast milk as most households do not have reliable sources of income. Other suitable alternatives that need to be promoted and their use encouraged are goat milk and soya, which were mentioned by one respondent each. Soya is produced in the region and may only require educating the community on its suitability and demonstrations on preparation of the milk from the bean.

Although mentioned by 91% of respondents as a possible alternative to breast milk, in practice more mothers were using porridge as a complementary food rather than milk and the porridge was over-diluted for the new-borns and unsweetened in most cases. Unfortunately, porridge, especially the dilute form in which it was given is not nutritionally adequate and also unsuitable as an alternative feed for infants below 6 months whose gut is not yet fully developed to handle complex feeds. However ways

of making porridge suitable for these children, especially towards the end of this period, can be explored for households that may have problems accessing adequate amounts of other milks, since it is readily available in the community. Respondents also mentioned mashed foods, eggs, groundnuts, “omena”, liver, vegetables, rice and boiled fish. Although unsuitable as breast milk alternatives, ways of incorporating them in complementary feeds, even if just to enrich should be explored since they are available in the community. They can be used for infants after six months alongside some form of milk.

Although surrogate nursing was mentioned by 5% of respondents as a possible alternative feeding method, others did not see it as being practical due to the fear of cross infection between wet nurse and infant. Similarly, as in this study, although traditionally used, wet nursing is no longer very common according to most informants in the other Kenyan and Zambian studies mentioned earlier, the reason being fear of HIV. However, in the present study it was also stated that there are myths that may make surrogate nursing impractical in the community. One is that if a surrogate mother quarrelled with the biological mother of the infant, the child would die, or that she has to abstain from sex for the period she is breastfeeding until the child is one year old, irrespective of her marital status.

Like surrogate nursing, other alternative feeding methods where human milk was to be used such as breast milk banks and boiling expressed milk were not acceptable to most respondents. The reasons were that there was a likelihood of infants contracting the disease from an infected donor’s milk and the tedious job of expressing and

boiling human milk, which may end up being contaminated. In any case, the respondents said, “mothers are not cows to be milked.”

*Non-breastfeeding:* It was reported that it is uncommon to find women who do not breastfeed without a good reason and it only happens when a mother is too sick to breastfeed or among school girls who must leave babies behind to go back to school. Non-breastfeeding is therefore associated with illness of a mother, although not necessarily HIV/AIDS. However with the awareness of the possibility of breastfeeding avoidance as a way of preventing MTCT of HIV such mothers may be labelled as being infected with the virus.

Traditionally, the care of orphans lies with members of the family, most often the baby’s grandmother or other family member who may volunteer to assist. This has changed for the worse in recent times because the extended family is no longer as closely knit. The result is that at times an orphaned infant is left with a grandmother who is unable to provide adequate care and such a child may not receive suitable replacement feeds. The presence of only one orphanage in the district, run by a religious organisation, provides very few alternatives. Moreover, this facility is expensive and unaffordable for most families

From this discussion it is evident that foods that are already in use in the community as complementary feeds can be used as replacement feeds. Although cow’s milk is the most preferred alternative, in practice more people were using porridge, the reason being that for those who did not produce their own milk because they do not own cows, it may not be readily available or affordable. Porridge and milk have potential,



as alternatives but require a lot of improvement in their preparation to make them nutritionally adequate and safe. Other foods mentioned may also be improved for use at a later stage thus the need for supplementation with micronutrients and proper preparation methods of these feeds to make them appropriate and adequate for age. Replacement feeds are mainly given from a cup, using cup and spoon or forced feeding.

The use of alternative feeds where breast milk is involved are not popular due to the fear of infection as the practice may increase chances of HIV transmission among mothers especially since they do not know their status. In addition wet-nursing is no longer popular due to myths and a disintegrated extended family. Suitable options are thus sometimes unavailable to children who cannot breastfeed especially the orphans. Non-breastfeeding mothers are likely to face stigmatisation in a community where breastfeeding is the norm.

## **5.5 Health seeking Behaviour**

Most mothers do not seek medical care in health facilities for themselves nor for their babies as indicated by the high proportion of home child deliveries (78%) endangering the mothers' lives, and more than half of children who had been unwell two weeks preceding the survey had not been taken to hospital. Reasons given for this behaviour are lack of funds or long distances to be covered. Instead children are treated at home using over-the-counter drugs or herbal mixtures with neither proper nor timely diagnosis with the added danger of further exposing the infants to

infections. This may have contributed to the high number of the study children (70%) who had been unwell during the two weeks preceding the survey, which may be suggestive of a weakened immune system.

More than three-quarters of infants had not been fully immunised for their age, majority not having received BCG due to its shortage in hospitals. This is unfortunate given that tuberculosis is quite rampant now with the AIDS pandemic together with the fact that these mothers were of unknown status. Counselling on the importance of seeking medical care as soon as possible for all must be carried out in this study community with emphasis on mothers to include ante-natal care and for children under five.

## CHAPTER 6

### CONCLUSION AND RECOMMENDATIONS

#### 6.1 Conclusions

From the study findings and discussion it can be concluded that there is a high level of awareness about HIV/AIDS and MTCT in general but inadequate detail all round. There were both positive and negative infant feeding practices observed that are likely to affect the choice of alternative feeds. However, the information gathered could be used to create awareness that will lead to appropriate actions being taken in the right direction.

On the knowledge about HIV/AIDS and MTCT through breast milk, study findings show a very high level of awareness of both in this community but the respondents generally lack adequate detailed information that is necessary to make useful decisions. Therefore, despite knowing that transmission is possible through breast milk, it is not clear as to how much more mothers know about transmission through breast feeding, especially regarding its timing and ways of preventing it. Misconceptions about transmission of HIV/AIDS in general and in particular regarding MTCT during delivery and the HIV status of children at birth need to be addressed. The HIV status of the general study population is unknown and can make targeting HIV and infant feeding interventions difficult and may result in cases where HIV-negative or untested mothers do not breast feed. Therefore, there is need for

more detailed information while mothers and their partners, need to know their status in order to make appropriate decisions.

In relation to infant feeding practices, these have not changed over time with both positive and negative practices evident in this study. The positive practices include the fact that almost all the infants were still on breast milk and though few, some mothers initiated breastfeeding within the first hour while a handful were exclusively breastfeeding their babies. On the other hand, negative practices such as mixed feeding and poor choice of alternative feeds were also noted. Thus, there is need to create awareness about infant feeding practices while strengthening the positive aspects and discouraging negative practices by providing adequate information. Although wet nursing is no longer popular for fear of cross infection between the baby and surrogate mother, because of myths and a weakened extended family in which it was practised traditionally, this can be promoted by providing adequate information on the right way to practice it while taking necessary precautions.

Cow's milk was mentioned by many respondents, is commonly used in this community, and thus has a high potential as an alternative to breast milk for children who cannot breastfeed for whatever reasons. However, there is inadequate knowledge on its preparation to make it appropriate as a replacement for breast milk. Therefore, there is need to improve its preparation to make it nutritionally adequate and safe for age as well as making it readily available and affordable within the community. Other suitable alternatives that can be explored and their use promoted are goat milk and soya milk.

This study also sought to determine the attitude towards specific infant feeding practices. Alternative feeding with human milk was not acceptable to most respondents due to the likelihood of cross infection. Mothers who do not breastfeed are likely to face stigmatisation as the practice becomes associated with HIV/AIDS, while commercial infant formula was thought to be suitable but is unaffordable for the majority.

## **6.2 Recommendations**

Based on the above findings and conclusions the following recommendations on knowledge of HIV/AIDS and infant feeding practices should be given serious consideration to increase awareness and enable the community make appropriate decisions regarding breast milk alternatives where there is need.

### **Knowledge:**

- Target the community with more information on HIV/AIDS, MTCT and infant feeding practices. Radio, health facility and “barazas” can be used as channels for disseminating information.
- Provide voluntary counselling and testing for mothers and their partners to enable targeting interventions.
- Provide training and refresher courses for TBAs and CHWs on the current situation to minimise MTCT with particular attention to transmission during delivery, the role of breastfeeding and possible alternative feeding practices.

### **Infant Feeding Practices:**

- Sensitising men about their role in HIV and infant feeding practices and decision-making. Involving them will help reduce stigmatisation of women who chose not to breastfeed.
- Counselling on infant feeding, highlighting advantages of exclusive breastfeeding as well as the risks associated with mixed feeding, breastfeeding and replacement feeding in the context of HIV/AIDS.

### **Alternative Feeds:**

- ***Cow's Milk:*** There is need to:
  1. Improving milk production and distribution through the introduction of heifer projects that are already in place in other parts of the district and other parts of Nyanza Province through women groups.
  2. Encourage mothers to start income generating activities with support from NGOs and CBOs working in this community to improve their purchasing power and ability to buy the milk from other producers.
  3. Educate mothers and caregivers on how to make it suitable as a breast milk substitute that is nutritionally adequate while ensuring hygiene and safety.
- ***Other Milks:***
  1. Sensitise the community on the suitability of goat milk as a breast milk alternative, promote its use and introduce milk goats in the area.

2. Sensitise the community and give them demonstrations on how to use soya beans, which do very well in the area, to prepare soya milk locally for use as an alternative feed.

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## REFERENCES

- ACC/SCN. (1997). *The Third Report on the World Nutrition situation: ACC/SCN*. Geneva.
- ACC/SCN. (1998). *Challenges for the 21st century: A gender perspective on Nutrition through the life cycle*. ACC/SCN, Geneva
- ACC/SCN. (2000). *The Fourth Report on the World Nutrition situation: Nutrition throughout the life cycle*. ACC/SCN, Geneva
- AIDS action/CHD (1999). *Child Health Dialogue: The international newsletter on child health and disease prevention*. Health link Worldwide.
- Balint, A.G. (1998). *Situation Analysis of HIV/AIDS epidemic in Sub-Saharan Africa*. East Africa medical Journal. 75:684, 1998.
- Bijlsma M. (2000). *Nutritional care and support for people living with HIV: Review of the literature, initiatives, and educational materials in Sub-Saharan Africa*: FAO, May.
- Boerma JT. et al. (1998). *Mortality Impact of AIDS Epidemic: evidence from community based studies in less developed countries*. AIDS; 12:513-514, 1998.
- Chin J. (1990). *Current and future dimensions of the HIV/AIDS pandemic in women and children*. Lancet; 336:221-24, 1990.
- Coutsoudis A. et al. (1999). *Influence of infant feeding patterns on early Mother-to-child transmission of HIV-1 in Durban, South Africa: a prospective cohort study*. Lancet; 354:471-6, 1999.

**Csete J., (1997).** *Malnutrition and Disability.* In: Child Health Dialogue. Issue 7/CBR  
New issue 25 2nd quarter 1997.

**Curtis, J.G (1981).** *The first year of life.* Churchill Livingstone Press. London.

**FAO (1997).** *Agriculture, Food and Nutrition for Africa:* A resource book for  
teachers of agriculture. FAO, Nutrition Division, Rome.

**FAO/WHO (1992).** *International Conference on Nutrition: Major issues for  
Nutrition Strategies.* Theme paper No. 3. FAO, Italy.

**Fisher et al (1991).** *Handbook for family planning operations research design.* 2nd  
Edition. The population Council, New York.

**GOK/Central Bureau of Statistics (1994).** *Siaya District Development Plan 1994-  
1996.* Ministry of Planning and National Development.

**GOK/Central Bureau of Statistics (1997).** *Siaya District Development Plan 1997-  
2001.* Ministry of Planning and National Development.

**GOK/Central Bureau of Statistics (2000).** *National Economic Survey.* Office of the  
Vice-President and Ministry of planning and Development.

**GOK/Central Bureau of Statistics (2001).** *1999 Population and Housing Census,  
Volume 1.* Ministry of Finance and Planning

**GOK/UNICEF, (1992).** *Kenya's Programme of Action for Children in the 1990s.*  
Reata Printers Limited, Nairobi.

**GOK /UNICEF (1992).** *Children and Women in Kenya: A Situation Analysis.* Regal  
Press, Nairobi.

- GOK /UNICEF (1998).** *Situation Analysis of Children and Women in Kenya, Section 4: the well being of children.* Central Bureau of statistics, Nairobi.
- Hansermann J. (1996).** *Defining human right in relation to HIV/AIDS.* In: AIDS/STD Health Promotion Exchange 1996 No. 1.
- Jelliffe, DB. (1969).** *Child Nutrition in Developing Countries: A handbook for Fieldworkers.* U.S. Government Printing Office, Washington, D.C.
- Kasule, J. et al. (1997).** *Zimbabwean Teenagers' Knowledge of AIDS and Other Sexually Transmitted Diseases.* In: East Africa Medical Journal 74:76-81, 1997.
- Kenya. Ministry of Health. 2001.** *AIDS in Kenya: Background, Projections, Impact, Interventions and Policy,* 6th ed. Nairobi: National AIDS and STD Control.
- King, Jean & Ashworth, Ann (1991)** *Contemporary Feeding Practices in Infancy and Early Childhood in Developing Countries.* In: Infant Child Nutrition Worldwide: Issues and perspectives. CRC Press.
- Manchester, J (1997)** *Prenatal HIV transmission and children affected by HIV/AIDS: concepts and issues.* In: AIDS /STD Health promotion exchange 1997 No. 4 UNAIDS.
- Menya, Nduati & Kwamboka (1999)** *Baseline KAP survey of health workers and communities regarding MTCT in Homa Bay and Nyeri.*
- NASCOP/GOK (1999)** *AIDS in Kenya: Background, projections, impact and interventions.*

**National Council for Population and Development, (1993).** *Kenya Demographic and Health Survey*. NCPD, CBS and Macro International Inc., Maryland, USA.

**National Council for Population and Development, (1998).** *Kenya Demographic and Health Survey*. NCPD, CBS and Macro International Inc., Maryland, USA.

**Ndinya-Achola (1998).** *Biology and natural history of HIV/AIDS*. Module 2, unit 1.

**Nduati R. (1998).** *Breastfeeding: A complex intervention in the 21st century*. East Africa Medical Journal Vol. 75:441, 1998.

**Nduati R, et al. (2000b).** *Effect of breastfeeding and formula feeding on transmission of HIV-1*. A randomised clinical trial. JAMA 282 (9): 1167-1174, 2000.

**Pipes, PL (1977).** *Nutrition in Infancy and Childhood*. The C.V. Mosby Company, Saint Louis.

**Piwoz EG, Chintu M, Ntombela N et al (1999).** *HIV and Infant Feeding: A summary of findings and recommendations from the formative research study in Ndola, Zambia*. NFNC/Ndola DHMT/LINKAGES/SARA

**Piwoz, EG and Preble EA. (2000).** *HIV/AIDS and Nutrition: A review of the Literature and Recommendations for Nutritional Care and Support in Sub-Saharan Africa*. Washington, DC: Academy for Educational Development.

**Pradilla, Alberto (1999)** "*The Geographic Distribution of Malnutrition*". In: *Infant and Child Nutrition Worldwide: Issues and Perspectives*. CRC Press.

**Preble EA. and Piwoz EG. (1998).** *HIV and infant feeding: A chronology of research and policy advances and their implications for programs.* Washington, DC: Academy for Educational Development.

**Robinson D. (1995).** *Dealing with very sick children at a health centre.* In: Child Health Dialogue: The international newsletter on child health and disease prevention. Issue 1 4th quarter 1995

**Thuita, F.M. and Mirie, W. (1999).** *Nutrition in the management of Acquired Immunodeficiency Syndrome.* In: East Africa Medical Journal 76:507-509, 1999.

**Tomkins, A. (2000).** *Nutrition and Immunity.* In: Child Health Dialogue: The international newsletter on child health and disease prevention. Issue 19, 2<sup>nd</sup> quarter 2000

**UNAIDS (1999).** *Report on the global HIV/AIDS epidemic.* Geneva: UNAIDS

**UNAIDS (2000).** *Report on the global HIV/AIDS epidemic.* Geneva: UNAIDS

**UNAIDS/WHO/UNICEF (1997).** *HIV and Infant Feeding. A review of HIV transmission through breastfeeding.* WHO/UNAIDS.

**UNAIDS/WHO/UNICEF (1998).** *HIV and Infant Feeding.* A policy statement developed collaboratively by UNAIDS, and UNICEF.

**UNEP (1999).** *Domestic Environment and Health of Children and Women,* ed. Gopalan, H.N.B. and Saksena Sumeet. Replika Press, New Delhi.

**UNICEF (1998).** *The state of the World's Children.* Oxford University press, New York: United Nations Children's Fund.

**UNICEF (2000)** *The state of the World's Children*. Oxford University press, New York: United Nations Children's Fund.

**UNICEF/UNAIDS/WHO (1998a)**. *HIV and Infant Feeding: A guide for decision makers*. WHO/UNAIDS/UNICEF

**UNICEF/UNAIDS/WHO (1998)**. *HIV and Infant Feeding: A guide for health-care managers and supervisors*. WHO/UNAIDS

**UNICEF/UNAIDS/WHO (1998c)**. *HIV and Infant Feeding: A review of the literature*. WHO/UNAIDS/UNICEF

**WHO, (1981)** *Contemporary Patterns of breastfeeding: Report on WHO collaborative study on breastfeeding*. Geneva, Switzerland.

**WHO, (1991)** *Infant feeding: the physiological basis*. ED, Arke James. WHO Geneva

**WHO, (1995)** *Physical Status: The Use and Interpretation of Anthropometry*. Report of a WHO Expert Committee, Geneva.

**WHO, (1998)** *Contemporary feeding of young children in developing countries: A review of current scientific knowledge*. WHO, Nutrition Division, Geneva, Switzerland.

**WHO/BASICS/UNICEF (1999)**. *Nutrition Essentials: A guide for health managers*. WHO, Geneva, Switzerland.

**WHO/UNAIDS/UNICEF (1998)** *Technical Consultation on HIV and Infant Feeding: Implementation of Guidelines*. Report of a meeting, Geneva, 20-22 April 1998.

**WHO/UNICEF (1991)** *Joint WHO/UNICEF meeting on infant and young child feeding*. Geneva, Switzerland.



## APPENDICES

### Appendix 1: Survey Questionnaire.

#### Demographic Characteristics:

Division \_\_\_\_\_ Location \_\_\_\_\_ Sub-location \_\_\_\_\_ Village \_\_\_\_\_  
 Household No. \_\_\_\_\_ Date of Interview \_\_ / \_\_ / 2000  
 Interviewer's Name \_\_\_\_\_  
 Respondent's name \_\_\_\_\_ Age (yrs) \_\_\_\_ Sex \_\_\_\_ Relation to HHH \_\_\_\_  
 Relation to child \_\_\_\_\_  
 Name of HHH \_\_\_\_\_ Sex \_\_\_\_

**Codes:** Sex:                      Relation to household head:      Relation to child:  
           1=male                      1= wife                                      1=mother  
           2=female                    2= self                                     2=father  
   Other, specify \_\_\_\_\_                Other, specify \_\_\_\_\_

**Instructions:** Where choices are given, **CIRCLE** or **FILL IN** provided spaces as necessary, unless otherwise instructed.

#### Characteristics of mother/household head (HHH)

Name	Occupation	Education	Age (years)	Marital status	Brings money
<b>Mother</b>					
<b>HHH*</b>					

\*If not mother

Codes: 1=employed      0=none                                      1=monogamous      1=yes  
           2=business        1=primary incomplete                2=polygamous        2=no  
           3=farmer            2=primary complete                    3=single  
           4=housewifery    3=secondary incomplete               4=separated/divorced  
           5=casual labour    4=secondary complete                 5=widowed  
           Other, specify      5=beyond secondary

#### Socio-economic characteristics

3a. What are your sources of income/livelihood? (**Circle all mentioned sources**).  
           1=employed            2=mixed farming      3=crop farming        4=business  
           5=casual labour      6=remittances from relatives      Other, specify \_\_\_\_\_

b. Of the above which is the main source? \_\_\_\_\_

## APPENDICES

### Appendix 1: Survey Questionnaire.

#### Demographic Characteristics:

Division \_\_\_\_\_ Location \_\_\_\_\_ Sub-location \_\_\_\_\_ Village \_\_\_\_\_  
 Household No. \_\_\_\_\_ Date of Interview \_\_\_ / \_\_\_ / 2000  
 Interviewer's Name \_\_\_\_\_  
 Respondent's name \_\_\_\_\_ Age (yrs) \_\_\_\_\_ Sex \_\_\_ Relation to HHH \_\_\_\_\_  
 Relation to child \_\_\_\_\_  
 Name of HHH \_\_\_\_\_ Sex \_\_\_\_\_

**Codes:** Sex:                      Relation to household head:              Relation to child:  
           1=male                      1= wife                                      1=mother  
           2=female                    2= self                                      2=father  
   Other, specify \_\_\_\_\_              Other, specify \_\_\_\_\_

**Instructions:** Where choices are given, **CIRCLE** or **FILL IN** provided spaces as necessary, unless otherwise instructed.

#### Characteristics of mother/household head (HHH)

Name	Occupation	Education	Age (years)	Marital status	Brings money
<b>Mother</b>					
<b>HHH*</b>					

\*If not mother

Codes: 1=employed              0=none                                      1=monogamous    1=yes  
           2=business                  1=primary incomplete                  2=polygamous    2=no  
           3=farmer                    2=primary complete                    3=single  
           4=housewifery            3=secondary incomplete               4=separated/divorced  
           5=casual labour            4=secondary complete                 5=widowed  
           Other, specify            5=beyond secondary

#### Socio-economic characteristics

3a. What are your sources of income/livelihood? (*Circle all mentioned sources*).  
           1=employed                  2=mixed farming    3=crop farming    4=business  
           5=casual labour            6=remittances from relatives    Other, specify \_\_\_\_\_

b. Of the above which is the main source? \_\_\_\_\_

4. Who makes decisions about the following? (*Use the codes underneath*)
- How to use the available income \_\_\_\_
  - What to feed the baby on \_\_\_\_
  - When to take child to health facility when sick \_\_\_\_  
1=father 2=mother Other, specify \_\_\_\_\_
5. What is the main source of fuel used in this household?  
1=wood 2=charcoal 3=gas 4=paraffin Other, specify \_\_\_\_\_
6. If wood or charcoal, how is it obtained?  
1=gathered/burnt 2=bought Other, specify \_\_\_\_\_
7. Who gathers the wood fuel?  
1=mother 2=father 3=child Other, specify \_\_\_\_\_
8. How much time does it take?  
1=less than ½ hour 2=half to 1hr 3=2 to 3 hours 4=more than 3hours
9. Observe/ask if they have a radio in working condition.  
1=yes 2=no
10. Record type of roofing for the main house  
1=thatched 2=corrugated iron sheets Other, specify \_\_\_\_\_
11. Record type of floor for the main house  
1=mud/soil 2=cemented 3=wooden
12. Does the family own cows or goats? 1=yes 2=no  
(*If no go to question 15*)
13. Are they milked? 1=yes 2=no
14. How much milk is obtained?  
1=less than 1 litre 2=1-2 litres 3=more than 2 litres

### Water and Sanitation

15. What are the sources of water for this household? (*Circle those given*).
- |         |             |                      |            |
|---------|-------------|----------------------|------------|
| 1=river | 2=tap/piped | 3=spring             | 4=borehole |
| 5=lake  | 6=rainwater | Other, specify _____ |            |
16. From those mentioned, which is the main source? (*Write code*) \_\_\_\_\_
17. How long does it take to and from the main water source?  
1=less than 15 minutes 2=15 to 30 minutes 3=31 to 60 minutes  
4=more than 60 minutes

### Maternal and childcare practices

26. Where was study child delivered?  
1=home      2=health facility      Other, specify \_\_\_\_\_
27. Is the mother available to take care of the child during the day/night?  
1=yes      2=no
28. If no, how long is she away?  
1=1 to 2 hours    2=3 to 6 hours    3=6-12 hours    Other, specify \_\_\_\_\_
29. Who takes care of the child when mother is away?  
1=father      2=grandmother      3=sister/brother      4=stepmother  
5=neighbour    6=Househelp      7=mother goes with child  
Other, specify \_\_\_\_\_
30. Does the mother always feed the child herself?      1=yes      2=no
31. If other person feeds the child, what is the reason?  
1=mother away  
2=mother is sick  
3=child refuses to feed when with the mother  
Other, specify \_\_\_\_\_

### Child's Section

- 32a. Characteristics of child  
Name \_\_\_\_\_ Date of Birth \_\_\_\_ / \_\_\_\_ / 2000  
Age in months \_\_\_\_\_ Birth order \_\_\_\_\_ Sex \_\_\_\_ Weight \_\_\_\_\_  
1=male      1<sup>st</sup> reading \_\_\_\_\_  
2=female      2<sup>nd</sup> reading \_\_\_\_\_
- b. How many of the other children are alive? (*Write number*) \_\_\_\_\_

### Infant feeding:

33. How soon after delivery was the infant put to the breast?  
1=within 1 hour      2=1 to 6 hours      3=6 to 12 hours  
4=after 12 hours      5=I don't know
- 34a. Was anything given before breast milk?      1=yes      2=no
- b. What was given?  
1=herbal mixture      2=water      Other, specify \_\_\_\_\_

35. Is the child breast-feeding? 1=yes 2=no  
(If yes, go to question 37)
- 36a. If no, at what age did the child stop breast-feeding?  
1=less than 3 months 2=3 to 6 months 3=never breast
- b. Why was breast-feeding stopped?  
1=mother away 2=mother died 3=mother sick 4=pregnancy
37. If yes, how many times does the child breast-feed in 24 hours?  
1=less than 2 times 2=2-4 times 3=5-6 times 4=more than 6 times
- 38a. Has the child been introduced to other foods/drinks other than breast-milk?  
1=yes 2=no
- b. At what age was this done?  
1=less than 1 month 2=second month 3=third month  
4=fourth month 5=fifth month
39. At what age was water given to the child?  
1=at birth 2=less than 1 month 3=second month 4=third month  
5=after 3 months Other, specify \_\_\_\_\_
- 40a. What food/drinks are you currently giving this child?  
1=water 2=herbal drinks 3=porridge 4=cow's milk  
5=infant formula 6=mashed potatoes Other, specify \_\_\_\_\_
- b. If porridge is given what is it made of?  
1=finger millet 2=sorghum 3=maize 4=cassava 5=milk  
6=sugar 7=fat 8=groundnut paste  
Other, specify \_\_\_\_\_
41. How do you obtain this food?  
1=own production 2=purchasing 3=given  
Other, specify \_\_\_\_\_
42. How do you prepare this child's food?  
1=straining 2=mashing 3=chopping 4=stirring  
Other, specify \_\_\_\_\_
43. How is the child fed?  
1=bottle feeding 2=cup feeding 3=cup and spoon  
4=hand 5=forced feeding Other, specify \_\_\_\_\_

## Morbidity

44. Does this child suffer from any of the following conditions?  
1=tuberculosis      2=skin disease      3=oral thrush  
4=swollen lymph glands      5=severe weight loss  
Other, specify \_\_\_\_\_
45. Has the child been unwell during the last 14 days?  
1=yes      2=no  
(If no, go to question 49)
46. If yes, what illness?  
1=fever/malaria      2=cough/cold      3=pneumonia  
4=Diarrhoea      Other, specify \_\_\_\_\_
- 47a. If the child was unwell did she/he get treated?      1=yes      2=no
- b. Were there any charges      1=yes      2=no
48. If yes, where?  
1=health facility      2=at home      3=traditional healer  
Other, specify \_\_\_\_\_
- 49a. What is the nearest health facility?  
1=dispensary      2=health centre      3=district hospital  
4=private clinic/hospital
- b. What means do you use to get there?  
1=on foot      2=bicycle      3=matatu/bus
50. How long does it take you to get there?  
1=less than 30 minutes      2=30 minutes to 1 hour      3=1 to 2 hours  
4=2 to 4 hours      5=more than 4 hours
51. Is this child fully immunised?      1=yes      2=no      3=Don't know
52. If yes and card is available check for completeness for age.  
1=complete      2=incomplete

### 53. Food frequency checklist

Below is a list of foods, please indicate how often you give this child the following foods *(Please tick in the appropriate box)*.

Food	Once daily	Twice daily	Three or more times daily	Twice a week	More than twice a week	Once in two weeks	Occasionally	Never
Breast milk								
Cow's milk								
Infant formula								
Plain water								
Sweetened water								
Salted water								
Fruit juice (fresh)								
Porridge (wimbi)								
Porridge (sorghum)								
Porridge (maize)								
Soup								
Ugali								
Mashed potatoes								
Fruits								
Other, specify _____								

## Appendix 2: In-Depth Interview Guide

### General Introduction

Investigator-introduce self and explain why you are visiting.

Respondent- introduce yourself and tell me your age and about your family

TOPIC	DISCUSSION	PROBES
Purpose	To gather information on HIV/AIDS awareness and infant feeding practices	
Methodology	In-depth Interview: -please feel free to share as much information as possible on the topics we are about to discuss	
General Topics: HIV/AIDS Awareness	What comes to mind when you hear of HIV/AIDS?  How does one contract HIV?  How does community perceive infected people? Is it common?	-MTCT? -breast milk? -source of info.  -who? -solution?
Maternal Care	While expecting this child did you receive care from a health facility? Were health talks given?	STDs/HIV, MTCT, Infant feeding-bf, hygiene
Infant Feeding Practices	How have you been feeding your baby from birth?  What influenced your choice of infant feeding?  What is your opinion of women who do not breastfeed their new-borns?  What options are available for a child who is not able to breastfeed for any reason.  How are the options obtained? Own produce, given, bought?	-bf initiation? -pre-lacteals? -exclusive? -supplementation? -bf cessation  -culture -advice? Who gives?  -options -preparation -who's responsible?  -accessibility -affordability -problems?



	<p>What part is played by other members of the family to assist you with child care?</p> <p>What is your opinion on infant feeding options?</p> <p>Do you modify the feeding pattern when this child is unwell?</p> <p>Does your child or you suffer from any chronic illness?</p> <p>Is there anything you would like to add to what we have discussed or a question you would like to ask? (record all). If you have no more questions thank you very much for your time and participation in the interview.</p>	<p><i>-When, how often?</i></p> <p><i>-commercial formula?</i>  <i>-Wet-nursing?</i>  <i>-breast milk banks?</i>  <i>-heat-treated breast milk</i></p> <p><i>how?</i>  <i>Why?</i></p> <p><i>TB, skin disease etc.</i></p>
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### Appendix 3: Focus Group Discussion Guide

TOPIC	DISCUSSION	PROBES
General Introduction	<p>Research team – investigator, recorder etc</p> <p>Community – please introduce yourselves and tell us your age, occupation and religion</p>	
Purpose	To gather information on HIV/AIDS awareness and infant feeding practices	
Methodology	<p>Focus group discussion:</p> <ul style="list-style-type: none"> <li>-please feel free to share as much information as possible on the topics you are about to discuss</li> <li>-it is not an exam and thus there are no right or wrong answers</li> </ul> <p>Do you have any questions that you would like to ask before we begin; if not please ask at the end of the session</p>	
General Topics: HIV/AIDS Awareness	<p>What comes to mind when you hear of HIV/AIDS?</p> <p>How does one contract HIV?</p> <p>How does community perceive infected people? Is it common?</p>	<p>-MTCT?</p> <p>-breast milk?</p> <p>-source of info.</p> <p>-who?</p> <p>-solution?</p>
Infant Feeding Practices	<p>Generally how are babies fed from birth?</p> <p>What factors influence choice of IFP?</p> <p>What is the opinion of the community on women who do not breastfeed their newborns?</p> <p>If a child was/is not able to breastfeed for any reason, what did/does the community do for him/her?</p>	<p>-bf initiation?</p> <p>-pre-lacteals?</p> <p>-exclusive?</p> <p>-supplementation?</p> <p>-bf cessation</p> <p>-culture</p> <p>-advice? Who gives?</p> <p>-preparation</p> <p>-who's responsible?</p>

	<p>What options were/are available for such a child?</p> <p>How are the options obtained? Own produce, given, bought?</p> <p>Does the community consider any foods unsuitable for infants?</p> <p>What part is played by other members of the family to assist the mother?</p> <p>What is the general opinion on infant feeding options?</p> <p>What kind of social or physical structure does the community have to take care of orphans?</p> <p>If you have any questions or comments You can make them now (record all). If there are no more questions thank you very much for your time and contributions in the discussion.</p>	<p><i>-accessibility</i> <i>-affordability</i> <i>-problems?</i></p> <p><i>-When, how often, what?</i></p> <p><i>-commercial formula?</i> <i>-Wet-nursing?</i> <i>-breast milk banks?</i> <i>-heat-treated breast milk</i></p>
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## Appendix 4: Key-Informant Interview Guide

<p>General Introduction</p> <p>Investigator-introduce self and explain why you are visiting.</p> <p>Respondent- introduce yourself and tell me your age and religion</p>
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TOPIC	DISCUSSION	PROBES
Purpose	To gather information on infant feeding practices	
Methodology	<p>Key-informant Interview:</p> <p>-please feel free to share as much information as possible on infant feeding practices</p> <p>Do you have any questions that you would like to ask before we begin; if not please ask at the end of the session</p>	
<p>General Topic:</p> <p>Infant Feeding Practices</p>	<p>Generally how were/are babies fed from birth?</p> <p>What factors influence choice of IFP?</p> <p>What is your opinion of women who do not breastfeed their new-borns?</p> <p>If a child was/is not able to breastfeed for any reason, what did/does the community do for him/her?</p> <p>What options were available for such a child?</p> <p>How were/are the options obtained? Own produce, given, bought?</p> <p>Does the community consider any foods unsuitable for infants?</p>	<p>-<i>bf initiation?</i></p> <p>-<i>pre-lacteals?</i></p> <p>-<i>exclusive?</i></p> <p>-<i>supplementation?</i></p> <p><i>when &amp; why?</i></p> <p>-<i>bf cessation</i></p> <p>-<i>culture</i></p> <p>-<i>advice? Who gives?</i></p> <p>-<i>wet-nurse</i></p> <p>-<i>preparation</i></p> <p>-<i>who's responsible?</i></p> <p>-<i>accessibility</i></p> <p>-<i>affordability</i></p> <p>-<i>problems?</i></p>

	<p>What part is played by other members of the family to assist the mother with childcare?</p> <p>What is your opinion on infant feeding options?</p> <p>What kind of social or physical structure did/does the community have to take care of orphans?</p> <p>If you have any questions or comments You can make them now (record all). Thank you very much for your time and contribution.</p>	<p><i>-When, how often, what?</i></p> <p><i>-commercial formula?</i></p> <p><i>-Wet-nursing?</i></p> <p><i>-breast milk banks?</i></p> <p><i>-heat-treated breast milk</i></p>
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