WOMEN'S PERCEPTIONS OF INFANT FEEDING OPTIONS FOR HIV-POSITIVE MOTHERS IN LIKII SLUM OF CENTRAL DIVISION, LAIKIPIA DISTRICT

BY

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DECLARATION

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

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This thesis has been submitted with my approval as the university supervisor

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DEDICATION

I dedicate this work to my father, Peter Kuira Muriuki and my mother, Leah Gathoni Kuira, who have always believed in me and ensured nothing stood in my way as I pursued my dreams.

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ABSTRACT

This study examined women's perceptions of infant feeding options for HIV-positive mothers in Likii slum of central division, Laikipia district. It was designed to examine how cultural norms and beliefs as well as health knowledge influence women's perceptions of infant feeding options for HIV-positive mothers. The study also investigated the relationship between a woman's socio-economic status and her perceptions towards infant feeding options for sero-positive mothers.

The study was guided by the socialization theory since people's perceptions are to a larger extent moulded through the socialization process as individuals experience different agents of socialization in their lifetime. Data was collected using structured interviews, focus group discussions and key informant interviews. Quantitative data was analysed using the Statistical Package for Social Sciences (SPSS) and presented in tables of frequencies and percentages. On the other hand, qualitative data was organized, summarized and presented in verbatim quotes and selected comments.

The study findings suggest that the women in the area have a high knowledge of HIV transmission through breastfeeding and that it could be prevented. However, the level of knowledge of the infant feeding options for HIV-positive mothers is low. This in turn affects their perceptions of the options negatively. Cultural norms and beliefs, which also negatively affect the women's perceptions of the options, include breastfeeding for long durations and mixed feeding. In addition, wet-nursing or heat-treating breast milk is not culturally acceptable. The women's socio-economic status also had an influence on these infant-feeding options.

The study thus recommends the creation of awareness on all the options to reduce the HIV/AIDS stigma, and for mothers to have a variety of choices when they find themselves HIV-positive. Efforts should be directed not only at women, but also at those who influence women's decisions about infant feeding. If replacement feeding is to be advised, the supply of breast milk substitutes should be given priority since feeding advice will depend on their availability. Efficient distribution is essential if free or subsidized breast milk substitutes are to be offered, to ensure they reach eligible mothers. Resources should

be spent on promoting exclusive breastfeeding for the population as a whole, so that it will be easier for HIV-infected women who choose the option to practise it without stigmatising themselves as being HIV-positive.

ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Clinic
ARV	Anti-retroviral
AZT	Zidovudine
FGD	Focus group discussion
HAART	Highly active anti-retroviral therapy
HIV	Human Immunodeficiency Virus
MTCT	Mother-to-Child Transmission of HIV
NASCOP	National AIDS Control Council
NGO	Non-Governmental Organization
NVP	Nevirapine
PMTCT	Prevention of Mother-to-Child Transmission of HIV
STDs	Sexually transmitted diseases
UNICEF	United Nations Children's Emergency Fund
WHO	World Health Organization

CHAPTER ONE

BACKGROUND TO THE STUDY

1.1 INTRODUCTION

Breastfeeding, a traditional practice related to childcare, is a major health-promoting factor for infants and children in developing countries. This is because breast-milk offers immunological, nutritional, hygienic and financial benefits to both the mother and the infant. It provides the balanced nutritional requirements to meet the needs of the infants, and the antibodies present in the breast milk play a vital role in the prevention of infections like diarrhoea, pneumonia, and malnutrition. Breast-milk also avoids the costs and risks involved in replacement feeding using a bottle or a cup. These risks include under-nutrition if replacement feed is too dilute or inappropriate, and infection if the implements and water are not clean and safe (Jackson, 2002).

Researchers discovered the human immunodeficiency virus (HIV) in breast-milk and the likelihood of its transmission to the infant who breastfeeds from an infected mother in 1985. Health providers have therefore been faced with the dilemma of what alternative infant feeding option is appropriate for sero-positive mothers in developing countries, without compromising their health. The global burden of HIV lies in sub-Saharan Africa, a region where the major causes of infant deaths are malnutrition and infectious diseases (Anabwani and Nazario, 2005), which can be prevented through breastfeeding.

Mother-to-child transmission (MTCT) of HIV is the primary cause of paediatric HIV infections worldwide. Passing the HIV from the mother to the baby is called vertical or perinatal transmission. Transmission may occur in utero (antepartum), during labour and delivery (intrapartum) and after birth (postpartum), in the latter case occurring mostly through breastfeeding. During pregnancy 5 to 8% of babies become infected while during labour and delivery, 10 to 20% of exposed infants acquire HIV if no preventive measures are put into place. When a mother breastfeeds for 18 to 24 months, 10 to 15% of infants are infected (NASCOP, 2002).

The factors that appear to influence transmission include the severity and stage of HIV infection in the mother. If the mother becomes HIV infected during pregnancy or lactation period, she develops very high levels of the virus and so has a risk of about 29% of transmitting the virus to the foetus or to the baby. Other factors identified include infant oral thrush or lesions and presence of breast diseases, for example, mastitis (Tindyebwa et al., 2004). A positive HIV antibody test of an infant reflects the HIV status of the mother. This is because maternal antibody is present in the infant. However, it is not an indicator that HIV itself has been passed to the infant.

Whereas breastfeeding prevents an estimated 6 million infant deaths each year throughout the world, it also results in 200,000 to 300,000 infant HIV infections. During the first 6 months of life, breastfeeding is critical. Lack of breastfeeding during this period is associated with a two to ten-fold higher risk of infant deaths in developing countries. It is also believed that most of the breastfeeding associated with HIV transmission occurs during the same period (Humphrey and Iliff, 2001). In a resource poor setting, breastfeeding may lower infant morbidity and mortality. Besides, for babies who are already HIV-infected at birth, breastfeeding is likely to prolong life. Mothers are faced with a dilemma of competing risks: the risk of MTCT through breastfeeding and the risk of infant morbidity/mortality from other cases, if breastfeeding is withheld.

HIV/AIDS has introduced new dimensions to health care delivery worldwide. While breastfeeding is the primary guarantee of child survival in resource poor settings, breastfeeding by sero-positive mothers increases the incidence of HIV infection among infants. The infants who are exclusively breast-fed may have a lower risk of becoming infected than those who also consume other liquids or solids in the first 6 months of life. With mixed feeding, the baby's mouth and gut can easily become inflamed particularly by proteins present in the supplementary food. This allows easier transmission of HIV in the breast-milk to the baby (Coutsoudis et al., 1999).

The World Health Organization recommends exclusive breastfeeding for the first 6 months of life for women who are known not to be infected with HIV and for those whose infection status is unknown. Replacement feeding is only recommended when it is acceptable, feasible, affordable, sustainable and safe. The WHO also recommends

that HIV-infected women should have access to information, follow-up and clinical care, and support including family planning services and nutritional support (WHO, 2001a).

Another infant feeding option recommended is heat-treating expressed breast-milk and feeding the infant using a cup. An HIV-negative friend or relative may also act as a wet-nurse and breastfeed the baby as long as she remains sero-negative throughout the breastfeeding period (Tindyebwa et al., 2004). Though effective, these recommendations have challenged traditional practices and health policies related to breastfeeding, especially in low- resource settings. It is therefore on this basis, that this study was designed to find out women's perceptions towards these options and the various factors contributing to their perceptions in Likii slum of central division, Laikipia district.

1.2 STATEMENT OF THE PROBLEM

The promotion of infant feeding options for HIV-positive mothers may be an important public health approach to the reduction of mother-to-child transmission (MTCT) of HIV through breast milk. The infant feeding options recommended for the HIV-positive mothers are neither completely effective nor completely acceptable since the preference of breastfeeding varies across and within populations, as well as across socio-economic and cultural groups. This creates problems for health care providers and programme managers in terms of popularising the options to make them acceptable.

One factor that could influence their acceptance is the perceptions of the users. The basic ethical principal of informed choice requires that women are provided with adequate information about infant feeding options. Health knowledge is one factor that affects women's perceptions of the options. Women's perceptions can also be influenced by cultural and socio-economic factors. This is because the context within which information is made available is critical since the constraints might be so great that women cannot make an informed choice. The advice to give to HIV-positive mothers on infant feeding in resource constrained settings remains a vexing public health issue. The basic question that the study wanted to address was, what are the women's perceptions of the options given to sero-positive mothers in Likii slum of

central division, Laikipia district. The study sought to investigate the extent to which women's perceptions of infant feeding options for HIV-positive mothers would influence their acceptability in a resource-constrained setting.

1.3 OBJECTIVES

1.3.1 Overall objective

To investigate the women's perceptions of infant feeding options for HIV-positive mothers in Likii slum, Laikipia district.

1.3.2 Specific objectives

1. To document and assess the cultural norms and beliefs which are likely to influence infant feeding options for HIV-positive mothers.
2. To examine how health knowledge influences infant feeding options for HIV-positive mothers.
3. To investigate the extent to which a woman's socio-economic status influences infant feeding options for HIV-positive mothers.

1.4 RATIONALE OF THE STUDY

The AIDS pandemic has threatened breastfeeding because the virus can be transmitted through breast milk. Child-feeding practices rarely conform to the global recommendations by UNICEF and WHO of exclusive breast-feeding for 6 months, continued partial breast-feeding and timely transition to high quality non-breast milk foods for two and above years (Sellen, 2001). Recommendations for HIV-positive mothers are no exception especially in resource-constrained settings.

In a resource constrained setting, especially a slum area, when replacement feeding is advised, it may be accompanied with breastfeeding due to the high cost of infant formula, which may not be affordable to most mothers. In addition, scant attention has been paid to the social stigma of not breast-feeding which would immediately identify a woman as sero-positive. Women are also strongly influenced by the opinions of their spouses and partners as well as those of family and friends. The results from the study will hopefully assist programme managers in deciding the most effective infant feeding option that is likely to be adopted with minimum negative implications. A successful approach to alternative feeding would be very effective since although

intrapartum MTCT can be reduced through anti-retroviral drugs, such a gain is eroded by ongoing postpartum MTCT through breastfeeding. Hopefully, the results from this study will be of great use to the medical profession and the community in general.

The ranges of perceptions and influences to infant feeding options are helpful to health care providers as they offer counselling to mothers on infant feeding practice. The results will hopefully help them implement more powerful and innovative educational and motivational strategies to help mothers who are HIV-positive.

1.5 SCOPE AND LIMITATIONS OF THE STUDY

This study aimed at investigating women's perceptions towards infant feeding options for HIV-positive mothers in Likii slum of central division, Laikipia district. Economic, social and cultural variables were the major units of survey. Specific units of survey included level of literacy, maternal occupation, level of income per month and health knowledge. It also included cultural norms and beliefs.

Given the limitations of time and funding, the study did not focus on mother's earlier breastfeeding experiences, which could influence perceptions towards infant feeding options. The HIV/AIDS stigma may have affected the quality of data since the women were somewhat reluctant to talk on issues related to the disease. The results might also have been different if the study included an NGO dealing specifically with PMTCT in the area.

CHAPTER TWO

LITERATURE REVIEW

2.0 *Introduction*

This chapter is divided into two parts, namely, literature review and theoretical framework. In literature review, an overview of infant feeding practices is presented. The review also addresses the factors affecting infant feeding practices, HIV and breastfeeding and the challenges to the infant feeding options. On the other hand, the theoretical framework highlights the theoretical orientation that guided the study.

2.1 Infant feeding practices: An overview

The care and the feeding of infants are of central concern in every human group. It is a distinctive feature of human adaptation. Every society must ensure the well being of its members, particularly those vulnerable yet essential for the group's long-range survival such as infants, children and pregnant women. In all human societies, the newborn is fed on milk from the mother's breast, a practice referred to as breastfeeding. There are widespread differences in the techniques of infant feeding, whether breast, bottle or artificial feeds are used, and in the techniques and age of weaning (McElroy and Townsend, 2004; Helman, 2001).

Worldwide, the high rates of morbidity and mortality among mothers and children result from 3 interrelated problems: malnutrition, infections and closely spaced pregnancies. These problems are associated with unfavourable social and environmental factors and are closely related to breastfeeding practices (WHO, 1982). Breast-milk is the ideal food for newborns because it provides the balanced nutritional requirements to meet the needs of infants and also prevents infections, if it is practised for the first two years of life and beyond. It allows the mother to pass on immunities, for example, diarrhoea preventing immunoglobulin (IgA), which does not pass through the placental barrier in sufficient amounts during pregnancy, thus preventing diarrhoea (Anandaiah and Choe, 2000). Breastfeeding is also cost-effective and a safe form of feeding, because breast milk is always available provided the mother is well nourished. Other than fostering mother-child bond, breastfeeding also benefits the mother in the reduction of breast and ovarian cancer as well as the stimulation of high

prolactin hormone levels, which inhibit ovulation and therefore support birth control (Nicoll et al., 2000; Haggerty, 1999).

Normally, breastfeeding is by far the best way to feed an infant especially in the developing world. It is the simplest and most efficient way to deliver good nutrition to the infant. Malnutrition in children, which can be prevented through breastfeeding, not only adversely affects quality of life, but also socio-economic development. In developing countries, 25% of pregnant women suffer from protein energy malnutrition. This causes low birth weight infants, high infant mortality and morbidity. Severe malnutrition during the first 6 months of life, impairs intellectual development due to limited foetal brain development and the effects cannot be reversed (Gabr, 1987).

Large disparities in breastfeeding practices do exist among regions and population groups. They include delayed initiation of breastfeeding, use of prelacteals, discarding of colostrum, early introduction of water, herbal teas and nutritive liquids and the delayed use of semisolids and solid foods (Sellen, 2001). In a study done in south-west Uganda, for example, mothers give their infants a soup made of boiled mushrooms before starting to breastfeed, a process which starts 2 days after birth (Pool et al., 2001).

In most cases, supplementary foods should be introduced at 4-6 months and progressively increased and varied until the child can eat the regular family diet at age 18-30 months. In Kenya, 54% of children under 6 months are fed on plain water, water-based liquids/juices, milk other than breast-milk and food made from grains, fruits and vegetables. The explanation mothers give for early weaning is that the baby is thought to be hungry because of the inadequate supply of breast-milk, making the child cry often (CBS et al., 2003). Mixed feeding is culturally encouraged and prevails in many cultures (Kakute et al., 2005; Oguta, 2001).

In many cultures, especially in developing countries where breastfeeding is a cultural norm, mothers breastfeed for long durations. Breast milk is the best source of nourishment for babies. A majority of women report breastfeeding for between 18 to

24 months, while others go beyond 2 years (Dop 2002; Pool et al., 2001; Oguta, 2001).

Both the milk production and output are dependent upon the suckling frequency, intensity and duration. Factors that are known to decrease the suckling frequency include supplementation of the baby's diet, scheduled feedings and use of feeding bottles and pacifiers. The mother must be well nourished to provide an optimum product. A well-nourished mother produces more breast-milk with less suckling (Huffman, 1984 as quoted in Okwayo, 1992).

Wet-nursing is viewed as a form of emergency and short-term care designed to help a mother through difficult times or to save an infant whose mother has died. Oguta (2001), in his study in south-western Kenya, found that elderly women in the community who have reached menopause readily accept wet-nursing as ideal for an orphaned baby. Breast-milk is interpreted as a conduit for ancestral essence or power, thus raising concern if an infant breastfeeds from a woman of another lineage or from another ethnic group (Winikoff et al., 1988).

Human milk is universally unique. It is the only common food produced in humans for humans. It is charged with symbolism. In some societies, it is a symbol of maternal love, while in others, it is seen as bringing to fruition the construction of the identity commenced during pregnancy and also fulfilling a social role, by sealing the child's place in the lineage (Desclaux, 2004).

The establishment of an indissoluble 'milk-tie' between infants of different parents who suck at the same breast has important social, political and economic consequences. According to MacClancy (2003), in late eighteenth century, two Moroccan tribes performed a ritual that involved the exchange of milk from lactating mothers. This stipulated not only peaceful relations and mutual aid, but also strict prohibitions on marriage between the two tribes. The milk-tie is a means of establishing a lasting connection between two groups of people. It is a tie that in many ways is meant to be a significant, and as lasting, as those based on blood. Like human blood, human milk is an essential life enabling substance.

The milk-tie is, however, not a universal phenomenon since in some cultures, women do not breastfeed children belonging to other women. Among the traditional Agikuyu, if a child touched or sucked from the breast of a woman other than its mother, a ram had to be slaughtered for purification (Leakey, 1977). In addition, among the traditional Baganda of East Africa, mothers refused to allow surplus expressed milk to be fed to other babies (Jelliffe, 1962, as quoted by MacClancy 2003). The practice of milk-kinship is also on the decline due to the increasingly widespread distribution of formula milk and the general shift from extended families to nuclear families, both brought about by modernization.

2.1.1 Factors affecting infant feeding practices

In any community, there are always cultural, social, personal and economic factors that influence whether and for how long women breast-feed their infants, how they explain failure to breast-feed to themselves and others, and how and when they wean their infants. Among the traditional Gikuyu community, when a child was delivered, the mother had to chew sugarcane brought by the husband from the field and put as much juice as possible in the mouth of the newborn. This symbolised blessings. Then, a few days after birth, the mother masticated a banana, which she introduced to the infant's mouth using her mouth or using her finger. A Gikuyu woman would not engage in sexual relations when suckling a child, which lasted for 2 to 3 years. Postpartum sexual abstinence, combined with full breastfeeding resulted in an expected interval of around three years between births and protected mothers from closely spaced pregnancies (Leakey, 1977).

Among the Luo, weaning of an infant is abrupt and involves the application of bitter herbs on the mother's breasts. The infants are weaned immediately the mother discovers she is pregnant, on the available family food at a particular meal within the day (Ndegwa, 1999). Other methods used by mothers to stop breastfeeding include giving a child cow's milk, sending him/her to relatives or application of hot pepper on the mother's breasts. In addition, a mother may decide to sleep alone or while dressed up (Coutsoudis, 2005; Larvijsen and Jansen, 1983).

Breastfeeding is a natural process that is dependent on learning and is therefore influenced by social and cultural factors. It is the epitome of a bio-cultural

phenomenon in which the processes of biology and culture are inextricably linked. Maternal attitudes towards breastfeeding practices are culturally conditioned and indeed influence infant feeding decisions. Breastfeeding comes to a halt in some societies once a mother becomes pregnant. Among the Luo, mothers perceive pregnancy as a dangerous state, which pollutes breast milk causing diarrhoea to the suckling child. According to them, the relationship between the unborn and the nursing infant is that of jealousy since the breast milk on conception belongs to the unborn and not the nursing infant (Nyikuri, 2001; Ndegwa, 1999).

The human body is more than just a physical object. Body image refers to all the ways an individual conceptualises and experiences his or her body. The culture in which we grow up teaches us how to perceive some parts of the body as public and others as private (Helman, 2001). Breastfeeding is accomplished by a gendered body. This means that women's decisions on how they use their bodies to nurture their children, are framed by attitudes towards their bodies and their breasts that may have nothing to do with breastfeeding. These attitudes are formed long before decisions about child feeding arise. Breastfeeding heightens awareness of body and body boundaries, but meanings assigned to bodies and boundaries are neither universally shared nor unchanging (Wright et al., 1993). In a society which values female slimness and firm breasts as the ideal body image, the belief that breastfeeding makes breasts sag may result in mothers avoiding to breastfeed their infants.

Breastfeeding in public makes many people uneasy. Breast milk is considered susceptible to spirits, the evil eye or black magic. Most mothers will therefore avoid breastfeeding in public or cover their children when they do so to protect them from evil spirits (Esterik, 2002). Mothers may feel uncomfortable even when the 'public' they are breastfeeding in front of, is that of family members in their own home. The key point is not the place, but the presence of other people with the mother, whether strangers or people she knows. The main reason could possibly be because in some cultures, especially in developed countries, it is taboo to reveal one's breasts to people (Pugliese, 2000).

Other women become embarrassed to breastfeed in front of other people due to the dual role of the breasts: sexuality and feeding. Cultural norms regarding sexuality

complicate exposing breasts for feeding in public (Hoddinott and Pill, 1999). Ndegwa (1999), in his study among the Luo, found that formally employed mothers are likely to breastfeed for shorter duration than the informally employed ones. This could be due to them not carrying their children to their place of work and also because it is not socially and culturally acceptable to breastfeed in public and private institutions.

Individual or personal factors are frequently correlated with sociodemographic variables and they directly influence the initiation and duration of breastfeeding. These factors include age of the mother, gender of the infant, breastfeeding experience, mother's level of education and physical and emotional state. An older mother who has breastfed more than once is more likely to breastfeed and does it for longer durations. Breastfeeding duration seems to increase with subsequent births among mothers. Embodied knowledge gained through exposure to breastfeeding is more influential than theoretical knowledge (Ndegwa, 1999). For the most highly educated group, breastfeeding durations are likely to be lower while a higher family economic status is associated with an earlier bottle-feeding. In patrilineal societies, sons are mostly preferred and, therefore, breastfed for longer durations than girls. A study in Nyanza Province found that older women tended to breastfeed boys for longer durations than girls, while young mothers introduced food supplements earlier for boys. A last born, regardless of gender, was breastfed longer (Nyikuri, 2001). Another study found that the women in the area who belonged to protestant religious groups breastfed for shorter durations as compared to Catholics (Okwayo, 1992).

A supportive environment contributes to the mothers' maintenance of breastfeeding. The family, friends and relatives need to be supportive to enhance a mother's confidence to breastfeed. The role of women in society also affects the breastfeeding practice, particularly if working outside home is valued or not and the extent to which men support breastfeeding. Women must find ways to integrate infant care and feeding into their daily activities. This is both a scheduling and a resource problem and is deeply affected by gender ideologies. Supportive work environments enable mothers to combine work and breastfeeding. Flexible employment practices, including parental leave and breaks from work, are likely to affect breastfeeding practices (Hector et al., 2005; Esterik, 2002).

Cultural background has important influences on many aspects of people's lives including their beliefs, diet, etc., all of which have important implications for health and healthcare. Infant feeding is of central concern for each society and is governed by rules regarding for how long breastfeeding is to last, and when and what weaning food is to be given. A complex mix of material and ideological factors seem to constrain child-feeding patterns. Although infant feeding has other influences like individual factors (age, parity, etc.), educational factors, socio-economic and environmental factors, breastfeeding is deeply ingrained in traditional culture. HIV/AIDS has put a threat on infant feeding practices and mothers are faced with situations under which decisions must be made according to the biomedical professionals. Any choice is governed by the desire to maximize the benefits and minimize the risks. The dilemma exists on whether to adopt the health provider's recommendations and then face stigmatisation in the society or follow the cultural rules at the expense of the infant's general health.

However, breastfeeding traditions, norms and beliefs are not impervious to change. It is clear that systems of beliefs surrounding breastfeeding vary between cultures, undergo rapid change over time and are contested among different individuals in a community at any given point in time (Helman, 2001).

2.1.2 HIV and breastfeeding

Mother-to-child transmission (MTCT) of HIV-1 is a leading challenge to public health in developing countries. In Kenya, the prevalence of HIV infection among pregnant women is estimated to be 8%. This is the prevalence in women who went to hospitals and health centres for antenatal clinic (ANC). Fifty to sixty thousand infants are infected with HIV annually due to MTCT. Currently, 120,000 children are living with HIV in Kenya (MOH, 2005). An important issue in developing countries is prevention of postnatal HIV transmission through breastfeeding. About 10 to 15% of the newborns to HIV-infected mothers are infected if they are breastfed for between 18 and 24 months (NASCOP, 2002). This shows that the longer the breastfeeding period, the more the risk of HIV transmission through breastfeeding.

The risk of transmission depends on whether the mother breastfeeds exclusively, on the duration of breastfeeding, on the mother's breast health and on her nutritional and

immune status. Mother-to-child transmission of HIV through breastfeeding is also influenced by the stage of the HIV condition in the mother and is more likely during the acute HIV infection, if there are symptoms of AIDS and vitamin A deficiency in the mother and child. Women who are newly infected during pregnancy or lactation have a higher risk of about 29% of transmitting HIV to their infants due to the increased viral load (Tindyebwa et al., 2004).

Breastfeeding problems, for example, mastitis, breast abscess or cracked, bleeding nipples, increase the risk of transmitting HIV through breast milk. The mother is advised to feed the infant only with the other healthy breast and seek treatment for the condition (Jackson, 2002). Mastitis is associated with significantly higher concentrations of immunological and inflammatory mediators, which increase viral load in breast-milk (Semba, 2000).

2.1.2.1 Infant feeding options for HIV-positive mothers

Milk in some form is necessary for an infant from birth to about 6 months. If an infant is not breastfed, he/she requires about 150 millilitres of milk per kilogramme of body weight per day (Tindyebwa et al., 2004). To prevent mother to child transmission of HIV through breastfeeding, options recommended include replacement feeding from birth, exclusive breastfeeding with early cessation, wet nursing and heat-treating breast milk (WHO, 2001a).

2.1.2.1.1 Replacement feeding

Replacement feeding means the process of feeding an infant who is not receiving breast milk with a diet that provides all the nutrients the child needs. During the first 6 months the infant should be fed with a suitable breast milk substitute, either commercial formula or home prepared formula with micronutrient supplements. Home-prepared formula can be made with fresh animal milk. Safe use of animal milk involves modification of the protein and salt content in the milk, to make it suitable for the infant. Micronutrient supplements are recommended because animal milk may provide insufficient iron and zinc and may contain less vitamin A, C and folic acid (UNICEF/UNAIDS/WHO, 1998). Modified animal milk includes milk from cows, goats, sheep or camels.

Commercial infant formula is closest in nutrient composition to breast milk, though it may lack some substances such as long chain essential fatty acids present in breast milk. It is usually adequately fortified with micronutrients. The formula is available as a powder to be reconstituted with water. After 6 months, the infant should be fed in addition to the formula, complementary foods made from appropriately prepared and nutrient-enriched family foods, given 3 times a day (UNICEF/UNAIDS/WHO, 1998).

The advantage of this option is that there is no risk of passing HIV to the baby, though there is a high risk of diarrhoea and other infections if the mother lacks the resources to buy and prepare the breast milk substitutes safely. According to WHO (2001a), replacement feeding is only recommended when it is acceptable, feasible, affordable, sustainable and safe.

2.1.2.1.2 Exclusive breastfeeding for the first 6 months then abrupt weaning

Exclusive breastfeeding means that an infant receives *only* breast milk from the mother or a wet-nurse, or expressed breast milk, and no other liquids or solids except drops or syrups consisting of vitamins, mineral supplements or medicines (WHO, 2001a). The advantage of this option is that it gives the infant the best immunity from other infections. Several properties in human milk may provide specific protection to the baby of an infected mother. Breast-milk contains growth factors such as epidermal growth factor and transforming growth factor which may enhance the maturation of the gut epithelial barrier, thus maintaining the integrity and hindering passage of virus (Udall et al., 1981). It is also the best source of nutrients and safe water for the infant. In addition, it reduces the risk of pregnancy and prevents the possible stigma of not breastfeeding in a society where breastfeeding is a cultural norm.

Though there is a risk of passing HIV to the baby, this can be lowered if the mother does not have breast problems, for example, cracked nipples or mastitis, or is not clinically ill with AIDS. The mother also needs to seek medical attention in case of infant oral sores or thrush. Exclusive breastfeeding has been shown to have a lower risk of MTCT than mixed feeding. Mixed feeding causes inflammation to the baby's gut and mouth, which may facilitate entry of the virus to the baby's bloodstream (Coutsoudis et al., 1999). Breast engorgement is more likely to occur with mixed feeding causing sub-clinical mastitis, a condition that increases the viral load in breast

milk (Tindyebwa et al., 2004). Of course, exclusive breastfeeding may carry a greater risk of HIV transmission in mothers with advanced cases of the disease.

Early cessation of breastfeeding also reduces the risk of HIV transmission by reducing the length of time during which an infant is exposed to HIV through breast milk. However, the optimum time for early cessation is not known. In addition, up to date, there is no evidence and much experience as to how early cessation can be achieved with minimum adverse effects to the infant. Besides, early cessation may increase malnutrition among infants.

It is advisable for an HIV-positive woman to stop breastfeeding as soon as she is able to prepare and give her infant adequate and hygienic replacement feeding, probably at 6 months, when exclusive breastfeeding can no longer meet an infant's nutritional needs and its anti-effective protective effect is rapidly decreasing. In addition, HIV-positive mothers should stop breastfeeding over a shorter period than usual. It is advisable that the period of transition from exclusive breastfeeding to alternative feeding should last only about 2 weeks or less. This is because the baby is at a higher risk of HIV infection during the transition period (UNICEF/UNAIDS/WHO, 1998).

2.1.2.1.3 Heat-treating breast milk

Heat treatment of expressed breast milk from an HIV-positive mother kills the virus in the breast milk. Heat-treated breast milk is nutritionally superior to other milk, but heat-treatment destroys some of the nutrients. It is a new concept to a majority of mothers, who tend to be less optimistic about it (De Paoli et al., 2004; Oguta, 2001). The HIV-positive mother is advised to routinely express breast milk into a clean container for heat treatment. The Holder pasteurisation method is very effective in destroying the virus in breast milk with minimal destruction of immunoglobulins and other protective factors in the milk. The milk is allowed to heat to 62.5 degrees Centigrade for 30 minutes. This method can be effective in a hospital setting.

At home, the breast milk can be boiled and then cooled immediately by putting it in a refrigerator or standing the container in cold water. The milk should be put in a sterilized container to minimize contamination. A study by Olorff and colleagues (1993), as quoted in Tindyebwa et al. (2004), reported that HIV is inactivated when

breast milk is left to stand at room temperature for half an hour. The inhibitory effects of breast milk were attributed to a milk-lipase-activated factor that released fatty acids, which were thought to dissolve or disrupt the viral envelope. Infant feeding counselling should be provided when women choose this option and issues of hygiene and stigma should be addressed.

2.1.2.1.4 Wet-nursing

Wet-nursing is an option where an HIV-negative friend or relative may act as a wet nurse and breastfeed the baby on behalf of the mother who is HIV-positive, to minimize the likelihood of HIV transmission. This should only be on condition that she remains HIV-negative throughout the breastfeeding period. There is a risk of HIV transmission if the wet nurse becomes infected during the breastfeeding period. A study by Sidley (2005) found that wet nursing could cause HIV transmission among babies.

Wet-nursing ensures the child continues to benefit from breast milk. The wet nurse is supposed to exclusively breastfeed the infant and for as long as needed. However, there is a potential risk of HIV transmission from the infant to the wet nurse especially if she has breast disease, for example, cracked nipples (UNICEF/UNAIDS/WHO, 1998). The wet nurse must agree to and understand the implications of HIV testing and counselling. This is because she has to be tested for HIV. This option is only practical where such a practice is culturally acceptable.

2.1.2.2 Timing of postnatal transmission through breastfeeding

HIV can be transmitted through breast milk at any point during lactation and thus the rate of infection in breastfed infants increases with duration of breastfeeding. The persistence of maternal antibodies and the presence of a 'window period', during which infection is undetectable by current technology, makes it difficult to determine whether an infant has been infected during delivery (intrapartum) or through breastfeeding (immediately after birth). But the longer the duration of breastfeeding, the greater the risk of transmission (Miotti, 1999)

Due to limitations in HIV test technology, it is not possible to determine the precise timing or mode of transmission to the newborn baby. This is probably due to HIV

viral load below the level of detection by the current available tests. Antibody tests such as the enzyme linked immunosorbent assay (ELISA) are not able to detect HIV infection in babies younger than 15 to 18 months. Polymerase chain reaction (PCR), viral culture and P24 antigen tests, although able to detect the virus itself, are not able to establish infection definitely before 2 to 3 months of age. The main way of roughly estimating the transmission rate through breastfeeding is thus by comparing overall vertical transmission rates between formula-fed and ever-breastfed infants. This has led to widely differing estimates, ranging from 0 to 46% (Hanna, 2002).

The transmission rate of HIV through breastfeeding in the first 6 months, the period which breastfeeding offers the child the highest benefit, has been reported to carry 5% risk. This 5% risk can be reduced further if exclusive breastfeeding is practised (Coovadia and Coutsoudis, 2001). In a prospective cohort study in Durban, South Africa, infants who were already HIV-1 infected at birth and were exclusively breastfed had a lower probability of infection than those who never breastfed. Breast-milk contains non-specific immune factors that have antiviral and anti-HIV-1 effects in vitro which could have neutralised the HIV acquired during delivery. There was no much difference in transmission rates between infants who had been exclusively formula-fed during the first 3 months and those who had been exclusively breastfed although mixed feeding recorded a higher rate of transmission (Coutsoudis et al., 1999).

Breastfeeding may possibly hasten the death of the mother. A study in Nairobi showed 3 times the mortality in HIV-positive mothers who breastfed than those who did not. The authors suggest that the high-energy demands of breastfeeding in HIV-infected mothers may accelerate the progression of HIV-related death (Nduati et al., 2001). This is in contrast with what Coutsoudis and colleagues found in a study conducted in Durban, South Africa. According to the latter study, there was no additional risk of morbidity or mortality in mothers who breastfed compared with those who did not (Coutsoudis et al., 2001). However, caution needs to be taken when interpreting these results since neither of these studies provided detailed information on the mode, duration and quantity of breastfeeding and associated mortality risks. In addition, the women in Durban were generally healthier than those in Nairobi (WHO, 2001b).

2.1.3 Anti-retroviral drugs

Preventive treatment exists to prevent MTCT. Anti-retroviral (ARV) drugs help to keep the HIV from progressing and may reduce the likelihood of transmission. ARV prophylaxis for prevention of MTCT is only given to women with confirmed HIV-infection (Preble and Piwoz, 2001). A simple, cheaper Nevirapine (NVP) regimen is as effective as the more complex and expensive Zidovudine (AZT) regimen in reducing MTCT of HIV-1 during peripartum period (Guay and Musoke, 2001).

In resource-constrained settings, the most widely used regimens are a single dose of NVP and / or short course AZT. A single dose of NVP 200 milligram is given to the mother at the onset of labour and the baby is given 2mg/kg single dose within 72 hours of life. Short course AZT is given starting at 32 to 34 weeks gestation. 300 milligram is taken every 12 hours during pregnancy and every 3 hours in labour. The infant is given 4mg/kg per day every 12 hours for one week. The aim is to provide at least 4 weeks of AZT to the mother and one week to the infant. A combination of more than one drug is more efficacious, for example, when AZT is combined with the single-dose maternal and infant NVP. Highly active anti-retroviral therapy (HAART) in pregnancy is the most effective regimen for reducing MTCT. This is a triple combination anti-retroviral therapy (Tindyebwa et al., 2004).

Several trials are currently evaluating the efficacy of postpartum ARVs to reduce HIV transmission through breastfeeding. This could be a promising alternative, should their effectiveness and feasibility be proven (Maclean and Stringer, 2005).

2.1.4 Challenges of infant feeding options

2.1.4.1 HIV/AIDS stigma and discrimination

HIV-related stigma refers to all unfavourable attitudes, beliefs and policies directed towards people perceived to have HIV / AIDS as well as towards their significant others and loved ones, close associates, social groups and communities (Deborah et al., 2003). HIV infection carries a high level of stigmatisation since people infected are often blamed for their condition and seen as immoral. Although HIV / AIDS is treatable, it is a progressive incurable disease. The symptoms of HIV–related illness

may be considered repulsive, ugly and disruptive to social interaction. Stigma is a powerful tool of social control. It can be used to marginalize, exclude and exercise power over individuals who show certain characteristics. HIV/AIDS affects self-esteem, mental health, access to care, violence and HIV incidence (Fredriksson and Kanabus, 2003).

Discrimination related to HIV is an act of showing partiality, to make a difference in treatment of a person on the basis of his/her HIV/AIDS status. From the time HIV/AIDS was identified, social responses of fear, denial, stigma and discrimination have accompanied the pandemic. Discrimination has spread rapidly, fuelling anxiety and prejudice against the groups most affected, as well as those living with HIV/AIDS. People living with HIV as well as people merely believed to be HIV-positive have been fired from their jobs, evicted from their homes and denied services. Discrimination has been reported in the areas of employment, health care, insurance and education (Fredriksson and Kanabus, 2003).

The impact of HIV/AIDS on women is particularly acute. In many developing countries, women are often economically, culturally and socially disadvantaged and lack equal access to treatment, financial support and education. In some societies, women are mistakenly perceived as the main transmitters of sexually transmitted diseases (STDs). Such a belief provides a basis for further stigma of women within the context of HIV/AIDS. HIV-positive women are treated very differently from men in many developing countries. Men are likely to be 'excused' for their behaviour that resulted in their infections, whereas women are not (Fredriksson and Kanabus, 2003). This may be the reason why for women who find themselves sero-positive, communicating information about their sero-status is significantly less compared to HIV-negative women. Fear of violence (physical beatings) and break-up of relationships among women who are found to be HIV-infected is not uncommon (FHI, 2004).

Where PMTCT interventions are available, not all women receive the full benefit. HIV testing is critical because women who do not know they are HIV positive cannot benefit from interventions. Some pregnant women refuse to be tested because they fear learning that they have a life threatening condition; because they distrust HIV

tests; or because they do not expect their results to remain confidential, and fear stigma and discrimination following a positive result. Pregnant women might choose not to protect themselves or their unborn children, especially if living in close-knit families and communities, rather than risk rejection if they are known or perceived to have HIV/AIDS. Some women who test positive do not return to clinics for follow up visits, or fail to take drugs they have been given. A study at the Coast Provincial Hospital in Kenya indicated that less than one third of the infected ANC clients took Nevirapine during labour (Temmerman et al., 2003). This can happen because they might have had negative experiences interacting with clinic staff or because they have been poorly informed about HIV transmission and how it can be prevented. Furthermore, for women who access VCT services and are found to be HIV-infected, communicating information about their sero-status to their sexual partners is difficult (FHI, 2004).

To completely eliminate MTCT through breastfeeding, the WHO recommends replacement feeding if it is feasible, acceptable, affordable, sustainable and safe. This has negative implications. In a society where breastfeeding is a cultural norm, there is fear of stigma and loss of confidentiality of women who opt not to breastfeed from birth. This is because a woman's decision not to breast-feed might draw attention to her HIV status, putting her at risk of discrimination or even violence and abandonment by her family and community (Jackson, 2002).

In developing countries, replacement feeding is rarely an option. This is due to risk of illness or death of the infant due to improper use of breast milk substitutes, for example, if mixed with unhygienic water or it is over-diluted. The advice to breastfeed avoids undermining the practice of breastfeeding in the wider population. The period of rapid transition to weaning foods with some continued breastfeeding to settle the baby is a dangerous period for HIV transmission. Young HIV-positive mothers are not necessarily independent. They live within the family where the mother or mother- in-law still has control over them. Relatives may castigate a woman who suddenly stops breastfeeding thereby increasing pressures on her to continue with some breastfeeding (Jackson, 2002).

2.1.4.2 Mother-to-child transmission of HIV (MTCT) knowledge

A majority of the people have a very good general knowledge about the means by which HIV is transmitted. This includes sexual intercourse, blood transfusion, contaminated syringes/needles, and a pregnant woman to her unborn baby. However, knowledge of various ways through which MTCT can occur still varies with time and place. In a research among women in south- western Kenya, maternal knowledge on MTCT was as low as 8.9% (Oguta, 2001).

Another research among Nigerian women attending ANCs showed that a majority of pregnant women had very good knowledge of the modes of HIV transmission. However, knowledge of specific aspects of MTCT such as probability of transmission of HIV during pregnancy, labour and delivery, and breastfeeding was generally low. Close to half of the women (41.7%) were not aware of the association between breast-milk and HIV transmission and only 30.4% knew that HIV from an infected mother could be transmitted during delivery. Those aware of the existence of ARV drugs were only 24.5%. In a society where there are strong beliefs and practices with regard to breastfeeding, irrespective of one's knowledge of MTCT, many women would opt to breastfeed their babies even when found to be sero-positive (Ekanem and Gbadegesen, 2004).

Social pressures remain a problem even if mothers are given the correct information. The mothers are continually under pressure from neighbours, relatives and friends and other people in the community to whom they have not disclosed their HIV status to continue breastfeeding though not exclusively breastfeed (Smart, 2005).

2.1.4.3 Socio-economic constraints

To avoid MTCT through breastfeeding, the mother is advised not to breastfeed at all but give other foods that provide all the necessary nutrients to the infant (replacement feeding). For those who choose replacement feeding, the options include commercial formula or using cow, goat, sheep or camel milk to which sterile water and sugar are added in the right amounts. However, a baby fed on infant formula does not receive the special vitamins, nutrients and protective agents found in breast milk. A baby who is not breastfed will need about 150 ml of milk per kg of body weight per day. Since

commercial infant formula is expensive, home-prepared formula (modified animal milk) must be prepared hygienically and made in accurate modification. The cost of infant formula is beyond the reach of poor families, even if the product is widely available (Tindyebwa et al., 2004).

Exclusive breastfeeding may not be easy for mothers to achieve because of cultural, practical and health reasons. Mothers may find it practically difficult to combine exclusive breastfeeding and their formal work or other occupations. A mother who is already unwell and undernourished, may have a low milk supply and exclusive breastfeeding therefore becomes physiologically stressful. Traditionally, and even now, small amounts of weaning foods were given within the first few weeks or months (Bassett, 2000). Although in Kenya 97% of infants are breastfed at some point in time, the rate of exclusive breastfeeding is quite low with women giving mixed feeds. Only 13% of infants under 6 months are exclusively breastfed (CBS et al., 2003).

In many situations, heat-treating breast milk may be unrealistic because of the time and the facilities involved, difficulties in expressing milk and a potential lack of support or understanding from family members unaware of the HIV infection. Furthermore, some cultures may have taboos against this practice (Jackson, 2002). On the other hand, to have a friend or a relative act as a wet nurse may not be culturally acceptable without revealing the HIV status. In addition, wet nursing has also been associated with HIV infection among babies. For example, a study in South Africa showed that HIV-positive children were 17 times more likely than HIV-negative children to have been breastfed by a woman other than their mother (Sidley, 2005).

The relative risks of morbidity and mortality associated with replacement feeding vary with the environment and individual circumstances. Not breastfeeding exposes children to malnutrition, diarrhoea and pneumonia especially in the first year of life. In resource-limited settings, replacement feeding is always mixed with breastfeeding, increasing MTCT through breast milk. Commercial infant formula may not be affordable for slum dwellers since they must have in addition to money for buying the formula, safe water, access to fuel or electricity, sterilised utensils, skills and time to prepare it correctly in estimated volumes. Widespread poverty and poor hygienic

conditions prevalent in slum dwellings, puts women in a tight spot in deciding whether to replacement feed or not. If used incorrectly – mixed with unsafe water, for example, or over diluted – a breast milk substitute can cause infections, malnutrition and even death (VanDerslice et al., 1994).

Prevention of postnatal transmission of HIV while maintaining adequate infant nutrition is a major challenge. In a resource constrained setting, replacement feeding is rarely an option, given the higher rates of mortality from diarrhoea and respiratory diseases (Peterson and Kuhn, 2002). The risk of illness or death of the infant due to improper use of breast milk substitutes, for example, if mixed with unhygienic water or if over-diluted, might be greater than the risk of MTCT through breastfeeding.

Some of the constraints associated with infant formula feeding, for example, lack of adequate information on the correct and proper method of mixing and feeding, and access to infant growth monitoring and good health care provision, are often structurally determined and overcoming them is often beyond the means of the mother.

2.2 Theoretical framework

2.2.1 Socialization theory

According to Brim (1966), socialization is the process by which individuals acquire the knowledge, skills and dispositions that enable them to participate as effective members of the society. The individual learns of the values, attitudes, norms and other attributes of his culture and in time becomes a social being. When he/she has acquired all the social skills, he is regarded as more independent, responsive and socialized within his own socio-economic class and the larger cultural group. Socialization starts during childhood and continues all across the lifespan as long as people learn from social experience (Elkin and Handel, 1972).

The assumption behind this theory is that social behaviour is in some sense governed by societal and cultural rules. An individual learns the types of interactions that are defined as legitimate and illegitimate within his/her group and the positive and

negative sanctions that can be brought to bear as a consequence of the actions that are taken (Tallman et al., 1983). Every society has its rules, and most people conform to the rules most of the time. The motivation that has been built during the socialization process is what leads most people to conform to those rules. To act otherwise and to violate rules produces guilt in the individual (Rosman and Rubel, 1989).

The theory also holds that through socialization, social identities are formed and individuals learn an array of expected behaviours associated with a particular social position. An individual learns how people with given identities act and feel as well as think. Establishing an identity requires demonstrating the behavioural skills, values, attitudes and feelings associated with that identity. An identity locates a person in a social system (Tallman et al., 1983). The social aspects of identity refer to the broad social categories that are used to distinguish people and to establish behavioural expectations. They include gender, religion, occupation, status, and so forth.

Socialization may be direct or indirect. Direct socialization involves using conscious efforts to convey the values, manners and beliefs that are thought to be associated with a particular position, for example, a physician being trained in a medical school. More often, socialization takes place indirectly as individuals learn through interactions with each other. Cultural tradition is acquired by each individual at his own initiative (Kroeber, 1948). Children learn often without any formal instruction.

Socialization is made possible by the various agencies of socialization. Agencies of socialization are structured groups or contexts within which significant processes of socialization occur. All agencies of socialization have direct divergent expectations towards those being socialized but more often or not they have convergent expectations (Elkin and Handel, 1972). Socialization can thus be divided into primary and secondary socialization. Primary socialization occurs in infancy and childhood and is the most intense period of cultural learning. During this phase, the family is the main agent of socialization. Secondary socialization takes place later in childhood and continues into maturity. The main agents during this phase include schools, peer groups, organizations, mass media and work place, all of which provide educational experiences. Each agency has a different level of influence on people's behaviours and attitudes.

All agencies of socialization may vary in how attentive they are to socially desired outcomes, how they go about trying to bring about these outcomes and how effective their chosen procedures are. Despite the variations, any society endeavours to bring about certain desired and recognizable results in the socialization of its individuals (Elkin and Handel, 1972).

Thus, through socialization individuals learn how to process information, generate ideas and evaluate the consequences of actions. Though socialization is a life long process, each individual develops a sense of self-identity and the capacity for independent thought and action (Tallman et al., 1983).

2.2.2 Relevance of the theory

Breastfeeding practices and other forms of infant feeding are deeply ingrained in the traditional culture. Infant feeding is socially controlled and varies historically and across socio-economic and cultural groups. It is a tradition that has been carried from one generation to the next. It is through socialization that girls learn, from a tender age, what is expected of women in society, including caring for the infants. This knowledge is deposited in each woman in the form of schemes of perception, thought and action.

Perceptions of infant feeding options for HIV- positive mothers will greatly be influenced by the cultural norms and habits acquired through socialization that are held by each woman. An option that does not tally with the cultural expectations is likely to be perceived negatively because of the sanctions that are likely to be identified with it. A woman may brand an option as illegitimate in her culture depending on existing cultural norms. Most African cultures regard breastfeeding as a cultural norm, and is accompanied with diverse beliefs. Therefore, the option of giving breast milk substitutes from birth (replacement feeding) is likely to be perceived negatively.

It is through socialization that people learn their relative social positions in the society and the accompanying lifestyles. Each social class exhibits distinctive modes of

thought and behaviour. Each social class will also have different opportunities for obtaining desired goods and services especially for the options recommended for the HIV-positive mothers. Individuals from high class are likely to financially afford the infant feeding options recommended. In addition, they might also be exposed to a wider range of agents of socialization offering knowledge of HIV transmission through breastfeeding and its prevention. Thus, women from different social classes will have different perceptions of the options.

Any agency of socialization will always have an influence on people's behaviours and attitudes. Formal education, acquired through schools and other institutions, may increase willingness to accept new products and use of new procedures more effectively. Knowledge gained either formally or informally moulds an individual's way of thinking and outlook. Thus, education is likely to bring about favourable perceptions towards infant feeding options. Health information gained through organizations, mass media and schools, in this case, information on HIV transmission through breastfeeding will, to a certain extent, influence women's perceptions. Women with less knowledge or no knowledge at all are likely to have negative perceptions towards new procedures on infant feeding. All these factors are conceptualized as shown in Fig. 2.1.

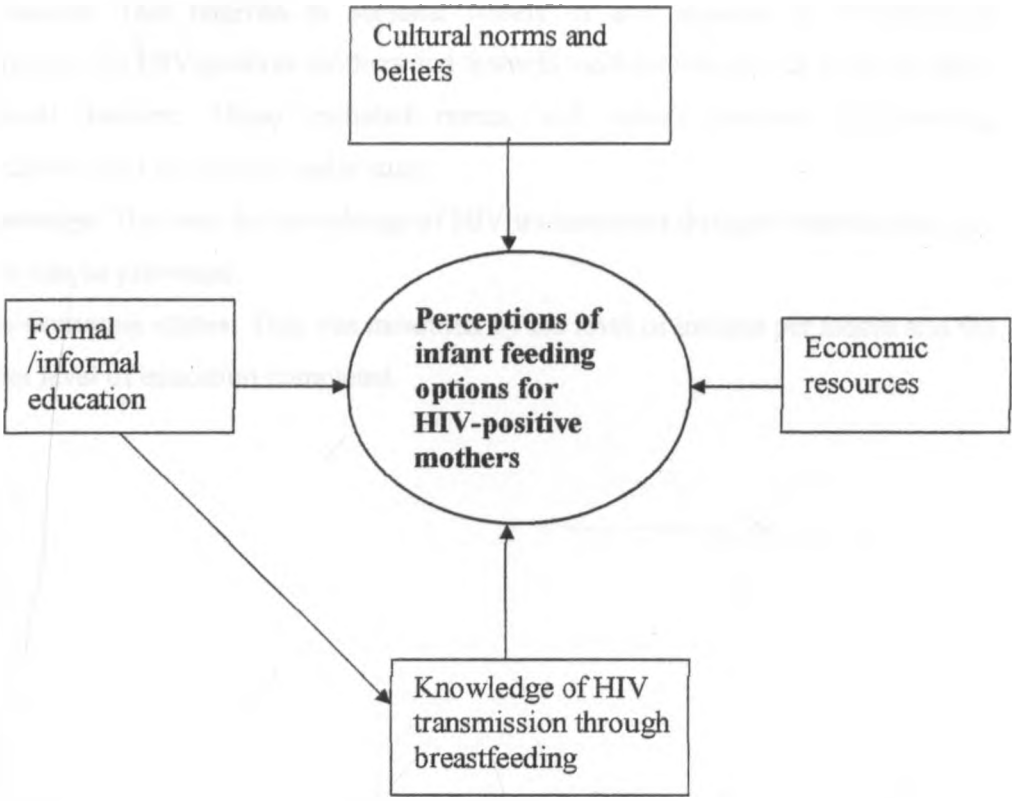


Fig 2: 1: Conceptualization of the factors influencing women's perceptions of infant feeding options for HIV – positive mothers.

2.3 Hypotheses

1. Cultural norms and beliefs are likely to negatively influence infant feeding options for HIV-positive mothers.
2. Limited knowledge of HIV transmission through breastfeeding is likely to negatively affect infant feeding options for HIV-positive mothers.
3. Low socio-economic status of women is likely to negatively affect infant feeding options for HIV-positive mothers.

2.4 Operationalization of the variables

Dependent variable

Infant feeding options: This referred to infant feeding options for HIV-positive mothers which included replacement feeding from birth, exclusive breastfeeding for 3-6 months then abrupt weaning, wet-nursing and heat-treating breast milk

Independent variables

Perception: This referred to personal beliefs of and attitudes to breastfeeding alternatives for HIV-positive mothers and towards mothers who decide to adopt them.

Cultural factors: These included norms and beliefs towards breastfeeding alternatives held by women under study.

Knowledge: This was the knowledge of HIV transmission through breastfeeding and how it can be prevented.

Socio-economic status: This was measured by the level of income per month and the highest level of education completed.

CHAPTER THREE

METHODOLOGY

3.0 *Introduction*

This chapter describes the research site, study design, the population and unit of analysis. The chapter also describes the sample design and sampling procedure. In addition, the chapter explains the methods of data collection and data analysis and problems encountered in the field.

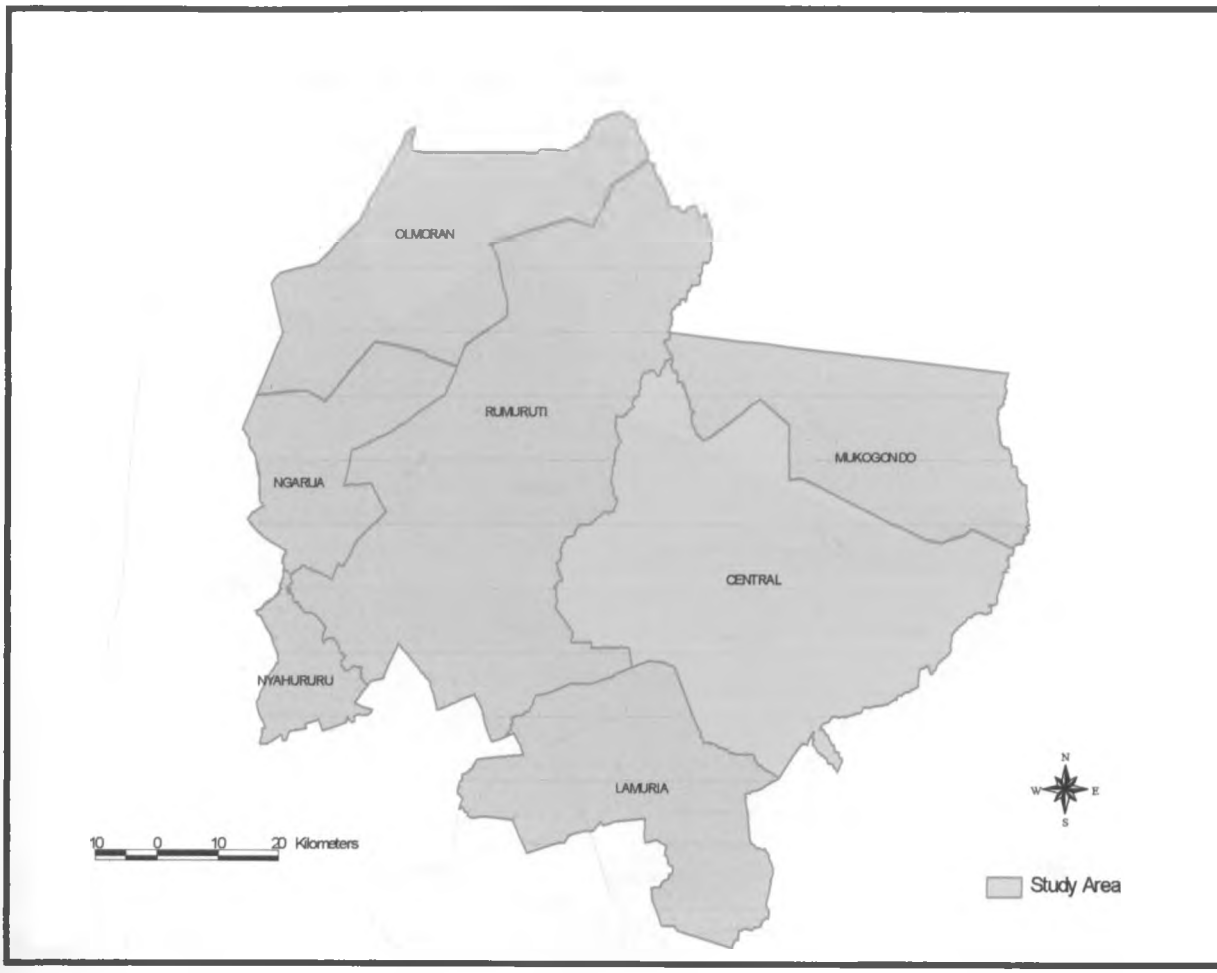
3.1 Research site

This study was carried out in Likii slum, which is located within the Central division of Laikipia district. Laikipia district is in the Rift Valley Province of Kenya and it is an arid and semi-arid land (ASAL) district. It borders Samburu district to the north, Isiolo to the northeast, Meru Central to the south, Nyandarua and Nakuru districts to the south west and Koibatek and Baringo districts to the west. The district covers an area of 9,693 square kilometres, and is sub-divided into 7 administrative divisions. These are Central, Lamuria, Mukogodo, Rumuruti, Nyahururu, Olmoran, and Ng'arua (Map 3.1).

As already stated, Likii slum, which is part of Nanyuki Municipality, is located within Central division and borders Nanyuki town (Map 3.2). Like other slums, it is inhabited by poor people within the area and suffers from poor provision of sanitary and water services.

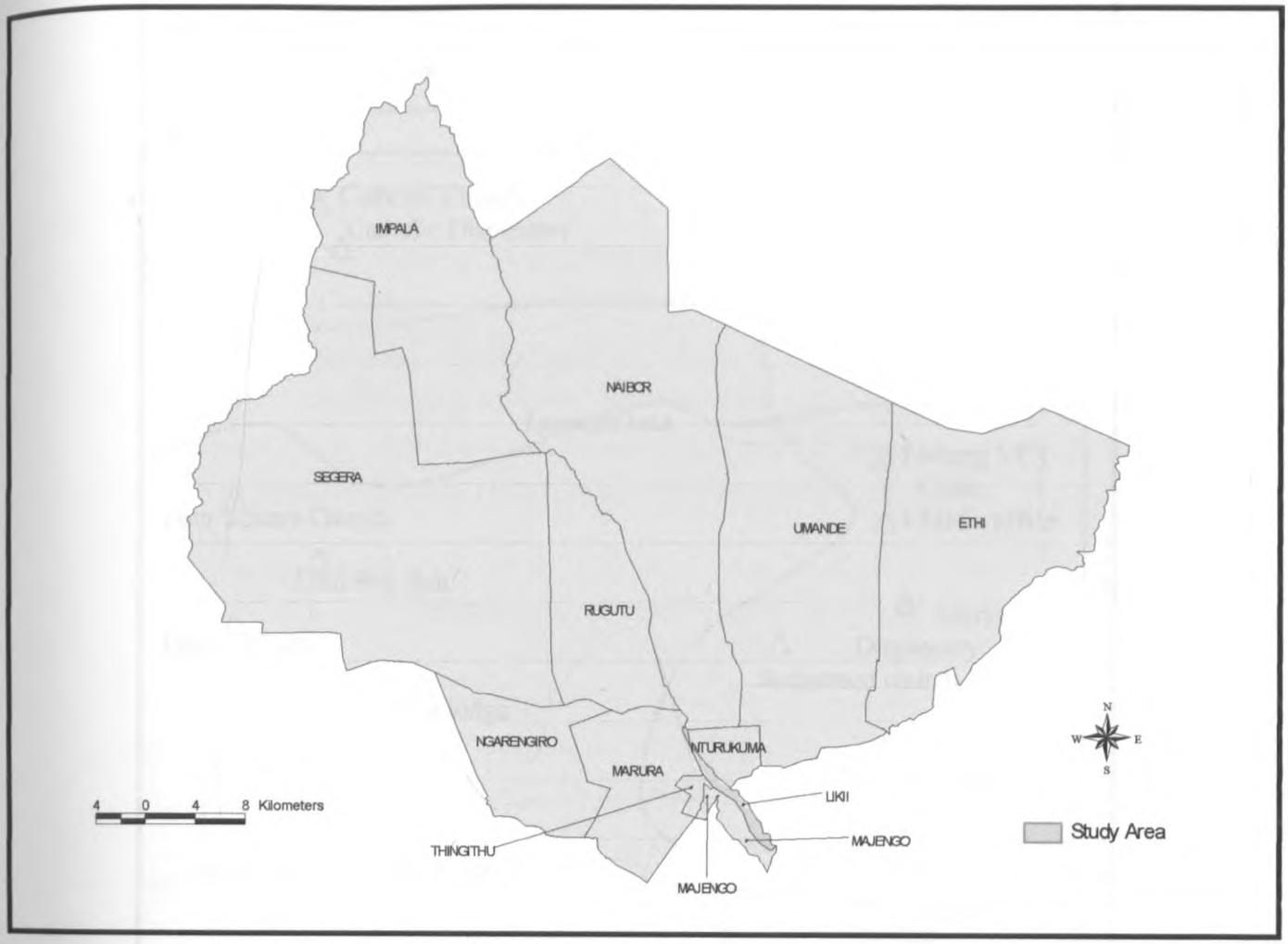
3.1.1 The population

According to the 1999 population census, Laikipia district had a population of 322,187 persons. The major towns in the district are Nanyuki, Nyahururu and Rumuruti. Nanyuki town is leading in population because of its potential and commercial activities going on in the area. In 2002, it was estimated that by 2006, the population of Nanyuki town would be 52,891 persons. This rapid population growth rate poses a major challenge and pressure in provision of services, mainly water, housing, sanitation, health and education services, thereby affecting the social and economic development of the district negatively (GOK, 2002). Horticultural crops grown in Central division through irrigation systems and the vibrant economy and tourism activities in Nanyuki town contribute to income earnings within the division.



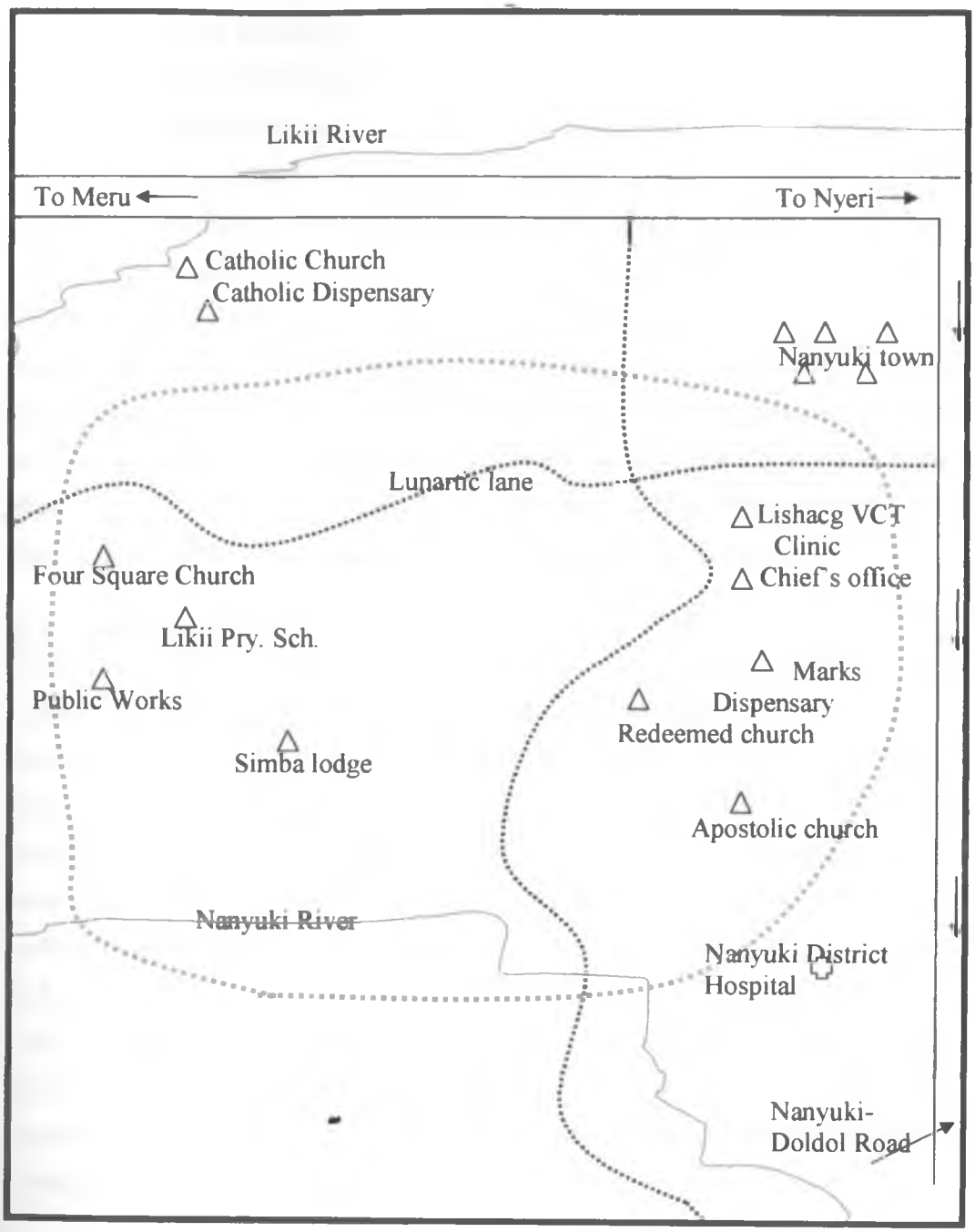
Map 3.1: Laikipia District showing divisional boundaries

Source: Central Bureau of Statistics, Sep 2006



Map 3.2: Central Division showing sub-location boundaries

Source: Central Bureau of Statistics, Sep 2006



Map 3.3: Sketch Map of Likii slum

3.1.2 The health situation

In the district, HIV/AIDS patients occupy 20% of all hospital beds. The prevalence of HIV/AIDS in the district is 10%, while 20% of all the in-patients at Nanyuki District Hospital are HIV-positive suffering from opportunistic infections. Though there is no known accurate figure of the severity of HIV/AIDS in Laikipia district, it is estimated that 30,000 people are infected with the virus. The 18-35-age bracket is the most affected, indicating that the reproductive and economically productive segment in the society is the hardest hit. The effect of the scourge is more pronounced within the urban centres especially in the slums. HIV/AIDS is of particular concern in the district, given the fact that it stretches the already inadequate health facilities beyond their limits (GOK, 2002). The mortality rate of the under five infants is 60 per 1000 of live births while the doctor/patient ratio is 1: 50,000 (CBS et al., 2003)

3.2 Research design

This study was cross sectional. A cross sectional study is one that studies a cross section of the population at a single point in time (Baker, 1999). The study investigated the women's perceptions of infant feeding options for HIV-positive mothers in a slum area of Nanyuki town in Laikipia district. The nature of the data sought was both qualitative and quantitative. Therefore, both quantitative and qualitative methods of data collection were used. Structured interviews were used to collect quantitative data, while focus group discussions and key informant interviews collected qualitative data. The Statistical Package for Social Sciences (SPSS) was used to analyse the quantitative data, which was later presented in tables of frequencies and percentages. Qualitative data was analysed using non-computerized methods. The data was organized, summarized and presented in verbatim quotes and selected comments.

3.3 Sample size and sampling procedure

3.3.1 Sample size

All mothers in Likii slum who had children below 2 years at the time of the survey formed the population for the study. A study population is a collection of all units from which a sample is drawn (Pelto and Pelto, 1978). The unit of analysis was individual mothers. Sampling refers to planned ways of selecting subjects. It takes less time to study a sample than a whole population and the data from such a sample

may have greater internal validity (Baker, 1999). One hundred mothers were sampled and involved in the study. Likii slum was selected because it is a resource-constrained setting and the researcher was familiar with the place.

3.3.2 Sampling Procedure

Likii sub-location was selected using purposive sampling which is a non-probabilistic sampling technique in which the subjects are selected to meet the study's needs (Baker 1999). Most of the poor people in Central division live in Likii slum, in crowded and poor hygienic conditions.

The 100 respondents, who were interviewed using a standardized questionnaire, were selected with the assistance of the local administration. The researcher requested the assistant chief of Likii sub-location for a list of households in the sub-location. A survey was then conducted to come up with a list of all the households with children below 2 years. In total there were 318 households with children below 2 years. Using this list as a sampling frame, 100 households were selected using simple random sampling, a probabilistic type of sampling where every element has an equal chance of winding up in the sample.

3.4 Methods of data collection

3.4.1 Primary methods

3.4.1.1 Structured interviews

In an interview, the interviewer records responses from respondents. The advantage of this method is that there is direct interaction between the respondent and the interviewer (Bernard, 1994). Informants were asked to respond to identical sets of questions using a standardized questionnaire (Appendix 1). Each questionnaire consisted of 27 items, including both open-ended and closed-ended questions to allow respondents to provide further details on some of the issues. The questionnaire consisted of basic socio-economic information and questions related to perceptions of breastfeeding and infant feeding options for HIV-positive mothers.

3.4.1.2 Focus group discussions

Focus group discussions are held with groups that are systematically selected according to defined criteria, for example, gender, age, occupation, etc., to discuss a specific topic of interest. Although focus group discussions do not generate quantitative data, they are intended to reach a consensus, make decisions among alternatives or agree on a specific plan or course of action (Bernard, 1994). An interview guide composed of a minimum set of questions was used (Appendix 2). Focus group discussions allowed verification of information obtained from interview –administered questionnaires.

Three focus group discussions were held, each consisting of 6 mothers. The selection of the respondents for the focus group discussions was done through a simple random method among the 100 respondents who had earlier been exposed to structured interviews.

3.4.1.3 Key informant interviews

Key informant interviews consist of interviewing a number of strategically selected, knowledgeable individuals representing different perspectives and categories, which may provide the needed information on a given issue or subject. The advantage of this method is that it can be carried out quickly and provides in-depth information because it comes directly from knowledgeable informants. However, key informant interviews do not generate quantitative data and since samples are small, they are susceptible to biases in information (Bernard, 1994). An interview schedule (Appendix 3) consisting of questions that needed to be covered in a particular order was used. The interviews collected data on the practice of infant feeding and perceptions of infant feeding options for HIV-positive mothers.

The key informants were judgementally sampled. They included two elderly women from the area, one health provider from Nanyuki district hospital and one programme manager of World Vision, a local NGO dealing with HIV/AIDS. Nanyuki district hospital was selected due to its proximity to the study area and because it offers PMTCT services to both the antenatal clinic clients and postnatal clients. A health

provider from a private hospital in the area was reluctant to be involved in the study and therefore, could not be interviewed. The only NGO in the area dealing with HIV/AIDS is World Vision, which is based in Nanyuki town. It is involved in creation of awareness, peer education, behaviour change, female genital cutting (FGC) and early marriages in Daiga location of central division. World Vision also deals with PMTCT but, unfortunately, the project is not based in Nanyuki. The rest of the organizations in the area are community-based initiatives dealing with HIV/AIDS and the youth.

3.4.2 Secondary methods

Documentary materials such as journals, books and articles were used particularly at the formulation stage of the research. Relevant literature on breastfeeding and HIV was reviewed to provide background information for the study.

3.5 Methods of data analysis

Since data collected was both quantitative and qualitative, different methods of data analysis were used. Data from focus group discussions and key informant interviews was organized, summarized, and presented in verbatim quotes and selected comments. Data from questionnaires was analyzed quantitatively using the Statistical Package for Social Sciences (SPSS) computer programme and results presented in tables of frequencies and percentages.

3.6 Problems encountered and solutions thereof

During the study, several problems arose. Some respondents thought they were being spied on and were at first reluctant to be interviewed. To solve this problem, the researcher introduced herself stating clearly the purpose of the research. Informed consent was also established before commencing the study. The subjects were given accurate and complete information on the purpose of the study.

The study was conducted during a draught period and most respondents were without food. Some were struggling to get a meal even for the day and they thought they would be offered payment in case they were involved in the study. The researcher

solved this problem by explaining to the respondents that she was a student and the study was for her degree. This meant that she could not offer them money and participation was purely voluntary.

3.8 Ethical considerations

The researcher sought authority to conduct the research in the area from the local administration. The researcher also complied with the principle of informed consent to ensure that the subjects knowingly agreed to participate in the research. Data collected was also kept confidential. This was through the use of pseudonyms and code numbers to conceal the identity of respondents for their safety, dignity, and privacy. In addition, a rapport was developed before the study commenced.

CHAPTER FOUR

SOCIO-ECONOMIC CHARACTERISTICS OF THE STUDY POPULATION

4.0 Introduction

This chapter presents the socio-economic data of the study population as well as the socioeconomic index (SEI) and infant feeding practices in the study area. The chapter also presents the HIV/AIDS prevalence among pregnant women in the area.

4.1 Socio-economic characteristics of the study population

A total of 100 women with ages ranging from 16 years to 42 years (mean 25.32) were involved in the study. A substantial number of the respondents (41%) were between 21 and 25 years (Fig. 4.1).

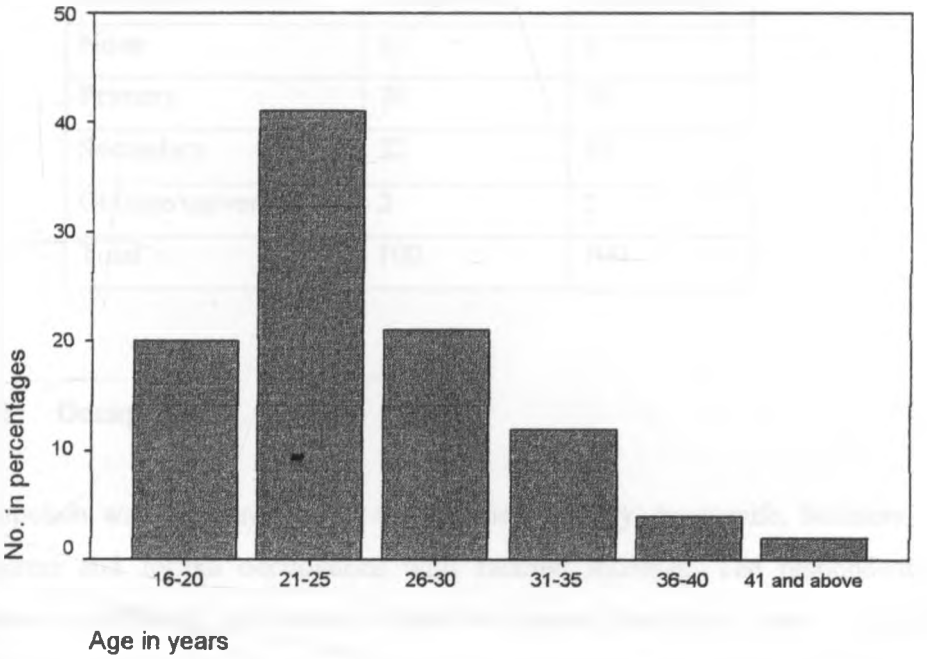


Fig. 4.1: Age distribution of the respondents

Christianity was the predominant religious affiliation of the majority of the respondents (98%) while Islam accounted for only 2%. Most of the respondents (76%) were married. The single women accounted for 19%, while those divorced or

separated were only 5%. The central division of Laikipia district is a cosmopolitan area. A majority of the residents are Agikuyu but other ethnic groups like Ameru, Akamba, Somali, Luo and others reside there.

4.1.1 Level of education

Formal education attainment was measured on 4 levels. These included no education at all, primary level, secondary level and college/university level. The results from the study show that all respondents had formal education. The findings in Table 4.1 indicate that a majority (76%) had only achieved primary education. Those who had completed secondary and college/university education accounted for 22% and 2%, respectively.

Table 4.1: Distribution of respondents' level of education

Educational level	Frequency	Percentage
None	0	0
Primary	76	76
Secondary	22	22
College/university	2	2
Total	100	100

4.1.2 Occupation

Occupation was measured using 4 categories, namely, housewife, business, casual labourers and formal occupations with salaried incomes. The respondents were involved in different occupations where they earned their daily bread. Among those studied, the casual labourers and housewives both accounted for 32%. If a respondent was a housewife, she had a husband or a relative to depend on. Those in businesses accounted for 29% while those in formal occupations with salaried incomes were 7%.

Respondents involved in businesses were, for example, selling vegetables, dairy products, second hand clothes or were in the business of selling *chang'aa* (illicit

liquor). Casual labourers were involved in house help or temporarily working on horticultural farms. The respondents with salaried incomes were either employed as teachers, shop assistants or secretaries. Those earning an income of less than Ksh 2000 accounted for 40% while those earning between Ksh 2001 and Ksh 4000 were 43%. Nine per cent of the respondents earned a salary of between Ksh 4001 and Ksh 6000 while only 8% earned more than Ksh 6000. Table 4.2 shows the respondents' income distribution per month.

Table 4.2: Respondents' monthly income distribution

Income per month	Frequency	Percentage
< Kshs 2000	40	40
Kshs 2001 - Kshs 4000	43	43
Kshs 4001 - Kshs 6000	9	9
> Kshs 6000	8	8
Total	100	100

4.1.3 Socio-economic index (SEI)

An index is a composite of indicators to measure a complex concept. It is composed of a set of indicators that have been added together. The cumulative score on the indicators serves as the index score (Baker, 1999). To come up with the socio-economic index, the researcher combined occupation, income per month and education attainment. Occupation is the primary factor in identifying the social status of individuals. Some occupations are higher in status than others and also have varying incomes. Education is also an important indicator of socio-economic status. A person with a higher level of education is more exposed to a variety of things than those with a lower level. He/she is then in an advantaged position with regard to options in life.

The education levels were ordered from the highest to the lowest and each given a score. Likewise, the income per month and occupation were ordered and each level given a score. The results are presented in Table 4.3 below:

Table 4.3: Socio-economic index (SEI)

Education level	Occupation	Income	Score (points)
None	Housewife	< Kshs 2000	1
Primary	Casual labourer	Kshs 2001 – Kshs 4000	2
Secondary	Business	Kshs 4001 – Kshs 6000	3
College/university	Formal (salaried incomes)	> Kshs 6000	4

The maximum score was 12 points. To get a cut off, minimum points scored were subtracted from the maximum points scored and the answer divided by the number of socio-economic categories. The cut off was 4 points. This is illustrated as shown below:

$$\text{Cut off} = \frac{\text{maximum points scored (12)} - \text{minimum points scored (1)}}{\text{Number of socio-economic categories (3)}}$$

$$\text{Cut off} = \frac{12 - 1}{3} = 3.66$$ This was then rounded off to 4 points

The low socio-economic class was between 1 and 4 points, middle class was between 5 and 8 points, while high class was between 9 and 12 points. Sixty-four women fell in the middle class while 33 were in the low class. Only 3 women were from high class. Therefore, a majority of the women interviewed were from the middle class. Table 4.4 shows the respondents' socio-economic status.

Table 4.4: Respondents' socio-economic status

Socio-economic class	Number of points	Number of women in the class	Percentage
Low class	1-4	33	33.0
Middle class	5-8	64	64.0
High class	9-12	3	3.0
Total		100	100

4.2 Infant feeding practices in the study area

The women involved in the study had children ranging from 1 week old to 24 months (mean 11 months). The modal age was 18 months. The women in the area breastfeed their children for long durations. At the time of the study, 79% of the respondents were breastfeeding their babies both during the day and night, while only 21% did not breastfeed their babies at all since they considered their children old enough not to be breastfed. It is considered a norm and a cultural practice to breastfeed one's baby. In one of the focus group discussions, Grace (not her real name)[1], had the following to say:

> *I breastfeed because it is a responsibility. That is what good mothers do. I mean, what else am I supposed to do? I am a mother. Otherwise, breastfeeding to me is boring.*

For the respondents who did not breastfeed, the modal age of their babies was 18 months while the mean was 17.7 months. Breastfeeding may be described according to timing and frequency. In terms of timing, breastfeeding may be described as on demand (by the child) or on schedule (determined by a schedule or work demands of the mother). Among the respondents who were breastfeeding their babies, 63% did it on demand while 25% did it 1-3 times a day. Only 11% breastfed their babies 4-6 times a day.

Weaning is usually a gradual process, since it takes time for a child to get accustomed to foods other than breast milk. Complementary foods, also called supplementary foods, are given in addition to breastfeeding. The respondents who were by then giving complementary foods were 90%. These foods are introduced at different ages but for half of the respondents (50%), they introduced at 3 months. This complements the information given by one key informant, an elderly mother aged about 52 years, who stated that things have changed unlike in the past when weaning foods were introduced immediately after birth. Currently, on average, mothers introduce weaning

[1] Twenty seven years old and has college education.

foods at 3 months. Table 4.5 shows various ages at which complementary foods were introduced.

Table 4.5: Various ages at which complementary foods were introduced

Age of the baby (months)	Frequency	Percentage
1.00	15	5.6
2.00	19	21.1
3.00	45	50.0
4.00	11	12.2
5.00	1	1.1
6.00	8	8.9
7.00	1	1.1
Total	90	100.0

Among those interviewed, only 8.9% introduced the complementary foods at 6 months. The main reason for the early introduction of complementary foods for a majority of the respondents (68.9%) was the perceived insufficient breast milk, which makes the baby cry more often. Other reasons for introduction of complementary foods are presented in Table 4.6 below.

Table 4.6: Other reasons for giving complementary foods

Reason	Frequency	Percentage
Onset of another pregnancy	5	5.6
Lack of time/working	16	17.8
Perceived insufficient milk	62	68.9
Advised by a doctor	2	2.2
Right age for weaning	4	4.4
The mother went back to school	1	1.1
Total	90	100

The foods that are first introduced are soft foods that are given in small quantities. The women in the area give a variety of foods, but a majority first start with porridge with milk or fruits. This is then followed by mashed pumpkins and potatoes or mashed potatoes and bananas. Other women give cow milk to which water is added in

equal quantities, as the first complementary food. Just like in the past, women who have already given birth, offer a variety of information concerning the breastfeeding practice. Helen (not her real name)[2], a mother of 5 children, had the following advice to other women:

> *When you decide to give your baby cow milk, you first boil the milk, let it cool, and remove the top layer. You let it boil again, cool it and again remove the top layer. The milk is then safe for the baby. Alternatively, you can add water to the milk in equal volumes, for example, one cup of water added to one cup of milk. One should not add sugar.*

Mixed feeding was a common practice among the respondents. Children are given a variety of foods in addition to breastfeeding. The foods included potatoes, bananas, *ugali*, tea, pumpkins, glucose, *Weetabix*, fruits and beans, among other foods.

Some women, especially those nursing their first child, take a while before getting comfortable breastfeeding in public. This could be probably due to the reason that in some cultures, especially in western societies, it is taboo to expose one's breasts to other people (Hoddinott and Pill, 1999). Another reason could be due to cultural beliefs held by mothers. When asked whether they would breastfeed in public, most of the women (79%) said they would comfortably do so. This is because they believed it was a normal thing. For those who would not agree to breastfeed in public, 80% said they found it embarrassing while 20% feared to be bewitched or the evil eye. Due to these reasons, they preferred covering their babies while breastfeeding in public, especially in social gatherings.

Sources of complementary foods can be diverse. One can either buy, grow them or the food can be donated or be given at a clinic. The results from the study indicate that a majority of the respondents (92%), got complementary foods through buying while only 2.2% got through donation. Only 5.6% grew the foods they gave as complementary foods. Thirty-eight point six per cent spent between Kshs. 500 and Kshs. 1000 to buy the complementary foods while 28.9% spent between Kshs. 1001 and Kshs. 1500 per month. Lastly, 19% spent less than Kshs. 500 while 13% spent over Kshs. 1500 per month.

[2] Thirty seven years old and has primary education.

Food preparation requires time and money. To prepare these complementary foods, most of the respondents (73.3%) used charcoal, while the remaining percentage either used firewood, paraffin or gas. For half of the respondents (50%), the source of energy cost between Kshs. 500 and Kshs. 1000 while 8.9% used between Kshs. 1000 and Kshs. 1500 per month. The respondents who used less than Kshs. 500 were 37.8% while 3.3% used over Kshs. 1500.

The results from the study show that the respondents discontinue breastfeeding at diverse ages, but about a half (48%) do so at 24 months. The reason given by a majority (64%), for a specific age to discontinue breastfeeding was that it is normal to stop at that age. Other reasons included job commitment or the baby was old enough to feed on common foods. For a child who is used to breastfeeding, stopping to do so can be a tug of war between the child and the mother. This is because the child does not let go of its mother's breasts easily. Therefore, mothers use various methods to discontinue breastfeeding. Slightly less than a half of the respondents (45%) take the child to a relative while 43% give cow's milk to the baby. Only 12% apply pepper on the breasts in an effort to stop breastfeeding.

For a majority of respondents (75%), an infant whose mother dies at birth or is ill and thus unable to breastfeed is usually given home prepared formula, while 21% thought that such an infant should be given commercial infant formula. Only 4% said that such an infant should be wet-nursed.

4.2.1 HIV/AIDS prevalence among pregnant women in the area

Data from the District AIDS and Sexually Transmitted Infections Coordinator (DASCO), Laikipia district, show that the HIV infection rates are high in the area. The rate of HIV among pregnant women attending ANC in the year 2005 was 7.4% (80 women) while at the maternity it was 11.3% (33 women). According to the coordinator, who is also a health provider in Nanyuki District Hospital, this percentage is high.

In 2005, the number of new women who visited the ANC was 3067 while the revisits were 3342. The uptake of PMTCT services is quite low (21%), despite the high

number of new women attending the ANC. However, data on the number of children infected with HIV was not available.

Among the mothers infected with HIV, those who chose replacement feeding as an infant feeding option were 4 mothers, while those who opted to exclusively breastfeed were 7 mothers. According to the health provider, since there is lack of a well systematized follow up mechanism, one would not know whether what the women did practically conformed to the recommendations specified.

CHAPTER FIVE

WOMEN'S PERCEPTIONS OF INFANT FEEDING OPTIONS FOR HIV-POSITIVE MOTHERS

5.0 Introduction

This chapter presents research findings. Included in this chapter are women's knowledge and perceptions of infant feeding options for HIV-positive mothers. The data from questionnaires was analysed using the Statistical Package for the Social Sciences (SPSS) and the results are presented in terms of means, frequencies, percentages and graphic presentations. On the other hand, data from key informants and focus group discussions is presented in verbatim quotes.

5.1 Mother to child transmission (MTCT) of HIV knowledge through breastfeeding

5.1.1 Determination of PMTCT knowledge through breastfeeding

The knowledge of the respondents about HIV transmission through breastfeeding was assessed using a scoring system. Each correct answer was awarded one point. Two questions were used for scoring. The first addressed whether an infant could get HIV through breastfeeding and whether it was preventable. In this question, the correct answer was awarded one mark. The second question asked the respondents to list a number of ways a mother who is infected with HIV could prevent her newborn from becoming infected. A response was considered valid if it provided the correct answer known. There were 9 ways, which a mother could adopt to prevent her baby from becoming infected with HIV. They included replacement feeding from birth, exclusive breastfeeding for the first few months (preferably 3-6 months) then abrupt weaning, and wet-nursing or heat-treating breast milk. In addition, the infected mother could seek treatment in case of breast disease or infant oral thrush or take ARVs. Furthermore, she could eat a healthy meal (balanced diet) and avoid unprotected sex during the breastfeeding period to avoid new strains of HIV (WHO, 2001a). Respondents were graded using the following cut-off points:

- No knowledge at all (0 points)
- Low PMTCT knowledge (1-2 points)
- Average PMTCT knowledge (3-5 points)
- High PMTCT knowledge (6-9 points)

Women in the study area are quite aware of the possibility of HIV transmission through breastfeeding. Most of the respondents (97%), knew that a child could get HIV from breastfeeding while only 1 respondent was not aware of the association between breast milk and HIV transmission. Just 2% of the respondents said the baby could not get HIV through breastfeeding. The percentage of respondents who knew that HIV transmission through breastfeeding could be prevented (90%), was substantially lower than those who knew that the baby could get the virus through breastfeeding.

The findings from the study show that the women in the area have low PMTCT knowledge (8%) in regard to infant feeding options for HIV-positive mothers. Using the scoring system, Table 5.1 shows how the women performed.

Table 5.1: Respondent's PMTCT knowledge

PMTCT knowledge	Number of women	Percentage
No knowledge at all (0 points)	10	10.0
Low PMTCT knowledge (1-2 points)	82	82.0
Average PMTCT knowledge (3-5 points)	8	8.0
High PMTCT knowledge (6-9 points)	0	0.0
Total	100	100

Most of the respondents (88%) seemed to know only the option of replacement feeding for HIV-positive mothers, while only 8% gave exclusive breastfeeding then abrupt weaning as an option for an HIV-positive mother. Those who gave wet-nursing and heat-treating breast milk as options for HIV-positive mothers were 3% and 5%, respectively. This is represented in Table 5.2 below.

Table 5.2: Infant-feeding options mentioned for HIV-positive mothers

Infant feeding options mentioned	Frequency	Percentage
Replacement feeding	88	88.0
Exclusive breastfeeding then abrupt weaning	8	8.0
Wet-nursing	3	3.0
Heat-treating breast milk	5	5.0

There are several steps that a mother who is infected with HIV could prevent her child from becoming infected. Some respondents were aware of some of these steps that a mother can take in case she is HIV-positive. Just 2% of the respondents said the mother should seek treatment in case the child has infant oral thrush while only 1 respondent (1%) said an HIV-positive mother should seek treatment in case of breast disease. A few of the respondents (6%) said that the mother who is infected should take ARVs to prevent her baby from being infected while 11% said the mother should take a balanced diet as a preventative measure. There were some respondents (2%) who thought that a mother who is infected with HIV should avoid sharing basins with her infant. These steps are presented in Table 5.3:

Table 5.3: Other steps mentioned by respondents for HIV-positive mothers

Other steps taken by an HIV-positive mother	Frequency	Percentage
Seek treatment in case of infant oral thrush	2	2.0
Seek treatment in case of breast disease	1	1.0
Take ARVs	6	6.0
Take a balanced diet	11	11.0
Not sharing basins	2	2.0

5.1.2 Health knowledge and women's perceptions of infant feeding options

The results showed that the women's knowledge of the association of HIV and breastfeeding (97%) was quite high. This means that they were aware that a child could get infected if he/she breastfed from an infected mother. This could be the reason why 92% of the respondents would accept to feed their babies from breast milk

substitutes from birth (replacement feeding) since they believed it was the safest option for a mother who is infected with HIV.

A very high percentage of women in the study (84%) would not accept to wet-nurse their babies. Among those who would not accept to wet-nurse, 64% said it would be impossible to know the HIV status of the wet nurse. Although some women would accept to wet nurse their babies, 31.3% would do so on condition that they knew the HIV status of the wet nurse. One's HIV status is always confidential. Despite what one would say about one's HIV status, people are always in suspicion about what they hear about one's status. When asked whether she would wet-nurse her child, Eunice (not her real name)[3], a mother of one-month old infant, had the following to say:

> *I cannot give any other woman to breastfeed my baby since I do not know her status and it is hard to tell whether one is positive or not. I cannot trust her even if she tells me she is negative.*

The women were also aware of the benefits of breast milk to the baby. For those who would agree to wet nurse, 37.5% believed that breast milk was the best food for the baby.

Among the respondents, 83% would not accept to feed their babies heat-treated breast milk. For some of the respondents, the HIV virus cannot be destroyed by anything. It is therefore due to this reason that over half of the respondents (56.6%), did not believe that HIV could be destroyed by heat. Wairimu (not her real name)[4], had the following to say about heat-treating breast milk:

> *The HIV germs are not like those of typhoid, that heating will destroy them. These germs (HIV) are very strong.*

It was the first time for some of the respondents to hear about heat-treating breast milk. Among the respondents who would not agree to heat-treat breast milk, 18% said they had never heard of the option while 12% believed it was a lot of work and it would be difficult to express enough breast milk. Some (4.8%) believed it was dirty

[3] Twenty three years old and has secondary education.
[4] Twenty six years old and has primary education.

work to heat-treat breast milk and therefore could not use the same utensils they cook in to heat-treat the milk. Others (8.4%) said the milk would evaporate in the process.

For the 17 respondents who would accept to feed their infants with heat-treated breast milk, they were confident that HIV could be destroyed by heat making the milk safe.

Most women knew HIV is usually in the breast milk. Therefore, only 21% of the respondents would accept to exclusively breastfeed their infants. More than half of those respondents (58%) would accept to do so on condition that they had enough information from a health provider about the option. Winfred (not her real name)[5] had the following to say:

> *If the doctor was to assure me that my baby will not get infected if I breastfeed, I would do it even if am infected.*

For the respondents who would not accept to exclusively breastfeed, 40% believed that a child would not thrive well on breast milk alone and required other foods. The other respondents (60%) feared the baby would get infected through taking breast milk even though it was exclusive breastfeeding. They believed that the breast milk from an HIV-positive mother has the virus and however the mother breastfeeds, the transmission cannot be prevented unless one totally avoids to breastfeed.

Regardless of one's HIV status, all women have the right to information about breastfeeding, infant weaning and on the options for HIV-positive mothers. A total of 74 respondents (74%) had received information and counselling on breastfeeding while 72% had received information and counselling on infant weaning. Slightly over half of the respondents (51%) had received information and counselling on infant feeding alternatives. The respondents got the information from various sources, Nanyuki District Hospital (67%) being the most common source of information for the respondents. Other sources included the radio, peers and friends, relatives, women's groups, and Huruma and Ng'arua health centres.

[5] Eighteen years old and has primary education.

According to a health provider from Nanyuki District Hospital, when giving information and counselling on infant feeding alternatives to an HIV-positive mother, the information given is about all the options. The mother is then allowed to choose the best option that fits her circumstance. When asked whether the mothers adhere to the recommended options, he had the following to say:

> *We do not have a well-systematized follow-up mechanism. When we give the information and counselling, we just hope that the mothers will adhere to the options they have chosen.*

Where mothers cannot afford to replacement feed due to poverty, they are advised on exclusive breastfeeding for the first few months (preferably 3 months) and then stop breastfeeding as soon as they are able to prepare and give their infants adequate and hygienic replacement feeding.

According to the health provider, the other options seem not to be practical in the area. Some mothers insist that they do not think the baby is safe if they exclusively breastfeed and usually go to seek help from the hospital for breast milk substitutes. In such cases, they are advised to seek help from NGOs in the area or community initiatives. Regarding the issue, the health provider had the following to say:

> *Our hands are tied. The hospital does not provide free infant formula. There is nothing much we can do for those who cannot afford to replacement feed apart from give information on other alternatives.*

5.2 Influence of socio-economic status on options for HIV-positive mothers

A majority of the women in the study area are from the middle class. All the respondents had at least some formal education. Although the rate of knowledge of HIV transmission through breastfeeding and its prevention is higher among the women who had primary education (about 90%), there were still some women (9.2%) who did not know that this could be prevented. This was also the case with those who had secondary education. Despite all of them being aware that a child could get HIV through breastfeeding, 9% did not know that it could be prevented. All the women who had college/university education were aware that a baby could get HIV through breastfeeding and that it could be prevented.

All the women who had college/university education knew about all the infant feeding options for HIV-positive mothers and some other ways such a mother could adopt to prevent her baby from being infected. These options were replacement feeding, exclusive breastfeeding for the first few months then abrupt weaning, heat treating breast milk and wet nursing. Other viable ways an HIV-positive mother could adopt included seeking treatment in case of breast disease or infant oral thrush or taking ARVs. In addition, eating a balanced diet was mentioned as a way an HIV-positive mother could prevent HIV transmission to her baby.

For the respondents who had achieved primary and secondary education, their knowledge on the infant feeding options for HIV-positive mothers varied with one's educational status. Among the respondents with primary education, 88% gave replacement feeding as an option, while among those who had attained secondary education, 86.4% gave it as an option. Women who had primary and secondary education who gave exclusive breastfeeding then abrupt weaning as an option were 7.9% and 9.1%, respectively. Respondents with secondary education who knew about wet-nursing were 4.5% in comparison with those who had only primary education (2.6%). This was the case with the option of heat-treating breast milk, since 13.6% of those who had secondary education knew about heat-treating breast milk, while only 2.6% of the women who had primary education knew about the option. Therefore, the results show that the higher the level of education, the higher the awareness of the infant feeding options for HIV-positive mothers (Table 5.4).

Table 5.4: Knowledge of infant feeding options by level of education

Infant feeding options for HIV-positive mothers	**Primary education**	**Secondary education**	**College/university education**
Replacement feeding	88%	86.4%	100%
Excusive breastfeeding then abrupt weaning	7.9%	9.1%	100%
Wet nursing	2.6%	4.5%	100%
Heat treating breast milk	2.6%	13.6%	100%

The respondents who had secondary education had more knowledge of other ways that a mother who is HIV-positive can adopt to prevent HIV transmission to her baby than those who had only primary education. They knew that such a mother could seek treatment in case of breast disease or infant oral thrush or take ARVs. Furthermore, eating balanced diet was mentioned as a way an HIV-positive mother could prevent HIV transmission to her baby. Some also believed that by the mother getting tested during pregnancy, it could prevent HIV infection to her baby. One woman also mentioned that an HIV-positive mother should not share basins with her baby to prevent the transmission. The respondents who had primary education only mentioned taking ARVs, eating a balanced diet, getting tested for HIV in case one is pregnant, and not sharing basins.

The perceptions of infant feeding options for HIV-positive mothers are affected by one's level of education. All the respondents who had either secondary or college/university education would accept to adopt replacement feeding from birth. A very high number of respondents who had primary education (89.5%) would accept to replacement feed. None of the women who had college/university education would accept to wet nurse their babies, while 9% of those who had secondary education would accept to do so. Among the respondents with primary education, 18% would agree to do wet nursing. Half of the respondents who had college/university education would agree to give their babies heat-treated breast milk, while 27% of the respondents with secondary education would do so. A few of the respondents who had primary education (13%) would accept to feed their babies heat-treated breast milk. The main reason was that they believed the virus is destroyed by heat.

The respondents would not accept to wet nurse their babies for a variety of reasons. Irrespective of one's educational status, lack of knowledge of the HIV-status of the wet nurse was one main reason which arose why the respondents would not accept to wet nurse their infants. Although the respondents who had college/university education had heard about the option, none would agree to wet nurse. Half of them said they would not be comfortable. Among those who had primary education, 18% had never heard about the option, while only 9% of those with secondary education had not heard about the option and thus would not agree to wet nurse their babies.

Half of the respondents with college/university education would not accept to give heat-treated breast milk because they would not find it comfortable to do so. The respondents with primary and secondary education who believed the virus could not be destroyed by heat were 50% and 40.9%, respectively. Other reasons that arose from all the groups for not accepting to give their infants heat treated breast milk was that the process of heat-treating was a lot of work, or dirty or the milk would evaporate in the process.

All the women with college/university education would not accept to exclusively breastfeed. The respondents who had primary and secondary education who would accept to exclusively breastfeed were 21% and 22.7%, respectively.

The respondents from different occupations had varied views towards the options for HIV-positive mothers. When asked whether they would accept to wet nurse their babies, 18% of the respondents who were housewives said they would while 24% of those occupied in various businesses said they would give it a try. Only 9% of the casual labourers would accept to do wet nursing while none from the formal employment with salaried incomes would accept to wet-nurse or exclusively breastfeed. A substantial number of housewives (46.8%) would accept to exclusively breastfeed, while casual labourers and business women who would accept to do so were 12.5% and 16.8%, respectively.

The casual labourers and housewives who would accept to feed their babies heat-treated breast milk both accounted for 15.6%. Those in businesses and in formal employment accounted for 17% and 28.6%, respectively. A majority of respondents from different occupations would accept to replacement feed since they all accounted for over 80%.

Irrespective of the amount of income a respondent earned, it did not affect the options of replacement feeding and exclusive breastfeeding then abrupt weaning. There were variations, however, on the option of heat-treating breast milk and wet-nursing. Among the respondents earning Kshs. 6000 and over, 25% would accept to heat-treat breast milk while those earning less than Kshs. 2000 accounted for only 17.5%. In addition. when asked whether they would accept to practise wet-nursing, 17.5% of

those earning less than Kshs. 2000 said they would. Those earning Ksh.6000 and above who would accept to wet nurse accounted for only 12.5%.

5.3 Influence of cultural norms and beliefs on infant feeding options for HIV-positive mothers

Breastfeeding is a cultural norm in the study area. Women are expected to breastfeed their babies when they give birth. Although a high percentage of women would accept to replacement feed, doing so is not easy due to the expectations in the society and the likelihood of revealing one's HIV status when they do so. This shows that HIV/AIDS stigma is still high in the area. In one of the FGDs, the following statement arose from Lorna (not her real name)[6]:

> *It is very difficult not to breastfeed although sometimes you have no choice if you are sick. You see other women breastfeeding and you cannot. The people will also know you are HIV-positive. This is something very difficult to do.*

For those who said they would not accept to replacement feed, (8%) believed that breast milk is always the best food for the infants.

The HIV/AIDS stigma affects infant feeding options for HIV-positive mothers negatively. HIV-infected women who deviate from the cultural norm of breastfeeding risk exposing their HIV status and becoming prey to the negative social implications. A mother who opts not to breast-feed was viewed differently. A majority of the respondents (69%) viewed such a woman as being HIV-positive. Some viewed her as abnormal (17%) while others (11%) thought such a woman wanted to kill her baby. Only a few (3%) thought the woman wanted the best for her child, since such an option would prevent her child from being infected with the virus.

Most of the women in the study (84%) would not accept to wet nurse their babies. Key interviews held with knowledgeable old women on the historical context of breastfeeding, revealed that the practice of wet-nursing, just like in the past, is not acceptable in the society. It raises concern if a child is to breastfeed from a woman of

[6] Thirty two years old and has secondary education.

another lineage or from another ethnic group. Breast milk is interpreted as a means through which ancestral power is passed from one generation to the next (Winikoff et al., 1988). Among those who would accept to wet nurse, 31.3% would do so if the wet-nurse is related to the mother.

The mother-child bond, which is usually enhanced during breastfeeding, is also affected during the practice of wet-nursing. For some mothers, this is a price too costly to pay. This belief affects the option of wet-nursing negatively. This is well reflected in what one respondent[7] said regarding the option:

> *My husband will not agree. How will my child know I am her real mother? It is really confusing. I have never seen anyone do it. What will other people* say?

Heat-treating breast milk sounded absurd for most mothers as some were hearing it for the first time. In all the focus group discussions, the women looked surprised to hear that there is such an option. One participant narrated how she heard of a child's death that had been caused by taking boiled breast milk. Wangui (not her real name)[8], when asked if she would heat-treat breast milk had the following to say:

> *God! Heat breast milk? How will it look like? I cannot do it.*

In addition, Mama Wanjohi, one of the key informants, aged about 80 years had the following to say about the option:

> *This is unheard of. It is not acceptable in the society to heat-treat breast milk. It is a taboo. The process will harm the mother's breasts making them fail to produce milk any longer. The milk will also evaporate in the process.*

Generally, women give other foods in addition to breast milk. This is a practice that also happened traditionally among the Agikuyu of Kiambu (Leakey, 1977). Although most women do so at diverse ages, a majority introduce complementary foods at 3 months. The option of exclusive breastfeeding for 6 months then abrupt weaning was thus viewed negatively by some of the respondents. Some of the respondents said that

[7] Sixteen years old and has primary education.
[8] Twenty five years old and has primary education.

such a practice was not practical because the baby could not get satisfied with breast milk alone. Loise (not her real name)[9] a mother of two-month old infant, when asked why she would not exclusively feed her baby had the following to say:

> *It is not possible to breastfeed alone. The baby will not live on breast milk alone, since she/he cannot get satisfied. Other foods have to be given.*

In conclusion, the PMTCT knowledge with respect to infant feeding options for HIV-positive mothers among the respondents is low. This has affected the infant feeding options for HIV-positive mothers negatively. Furthermore, breastfeeding is a norm in the study area and tends to have a negative influence on some of the options for HIV-positive mothers, for example, replacement feeding and heat-treating breast milk. The socio-economic status has also had some influence on the options. The higher the education status, the more aware one is about the infant feeding options for HIV-positive mothers. However, this does not transform into the probability of the options being accepted. In addition, not all the respondents were exposed to the information and counselling on infant feeding options for HIV-positive mothers. This affected the women's perceptions towards the options, because some were hearing about some of the options for the first time.

[9] Twenty nine years old and has primary education.

CHAPTER SIX

DISCUSSION AND CONCLUSION

6.0 Introduction

In this chapter, the research findings are interpreted and compared with some other studies done elsewhere and which have some relationship to the issue of infant feeding options for HIV-positive mothers. The discussion is based on the research objectives. Finally, conclusions and recommendations, and areas for further research are dealt with.

6.1 Discussion

Breastfeeding has always been seen as an extremely healthy and natural substance and as a way to provide irreplaceable benefits for both mothers and babies. To learn that breastfeeding could pose a danger when a mother is HIV-positive was profoundly disconcerting. Mother-to-child transmission (MTCT) of HIV is responsible for 90% of HIV infection in children. The remaining 10% are infected through contaminated blood or sexual abuse. MTCT occurs during the intrauterine and intrapartum periods, and during breastfeeding. In the absence of interventions, the absolute risk of transmission through each of these routes is about 7%, 13% and 15%, respectively (De Cock et al., 2000).

The findings from this study suggest that the women studied have negative perceptions of all infant feeding options for HIV-positive mothers. Although knowledge of MTCT through breastfeeding is high, knowledge on the various alternatives is low. Cultural norms and practices affect women's perceptions of the infant feeding alternatives.

The results show how entrenched the cultural norm of breastfeeding is in the study population. Although prolonged breastfeeding is common, complementary foods are typically introduced early, with a majority introducing the foods between 2 and 3 months. This shows that the recommendation that women of unknown status or those HIV-negative, to exclusively breastfeed for 4-6 months of age, is only practised by a

minority of women. Similarly, a study done in south-west Uganda also revealed that women introduce complementary foods gradually at 4-6 months (Pool et al., 2001). This has also been reported in other studies (Oguta 2001; Basset, 2000).

Just less than two-thirds of the respondents (61%) introduce complementary foods early due to the perceived insufficient breast milk. This was also observed in a study done in Cameroon where women hold a belief that breast milk is an incomplete food, which does not increase the infant's weight (Kakute et al., 2005). Greiner and colleagues, (1981) argue that 'an insufficient milk syndrome' is a more shared belief in many cultures. It is usually a common reason for discontinuing to breastfeed in most cultures. The real cause of insufficient milk is early introduction of complementary feeds and, therefore, less nipple stimulation, scheduled feedings and use of feeding bottles and pacifiers. If a mother does not increase her food intake and eat nutrient-rich foods, it can also lead to insufficient milk in her breasts. When women in close geographical proximity share the belief that insufficient milk is a common phenomenon, they may become more acutely watchful for signs of it. Therefore, even a non-hunger-related crying is interpreted as a sign of insufficient milk. Once the word 'insufficient' is directed at a mother, her confidence in her body's ability to nurture and nourish often plummets.

In Kenya, over half of the children below 6 months are given supplementary foods (CBS et al., 2003). Exclusive breastfeeding for about 6 months is central to infant health due to the irreplaceable benefits of breast milk. Breast milk provides complete nutrition and strengthens a baby's immune system. Thus, early supplementation denies the infant these benefits and it is likely to die of or suffer from diarrhoea or respiratory infections.

People have the capacity to tolerate an amazing degree of inconsistency between what they say they believe, what they do believe, and what they do. Among the women who were still breastfeeding their babies, 63% reported breastfeeding on demand. Oguta (2001) also reported that a majority of women breastfed on demand. Infants can regulate their intake volume and the amount of fat in their feedings (Thompson, 1996), a reason why it is advisable that they be breastfed on demand. What is not

understood is whether the women who report breastfeeding on demand practically do so.

Mixed feeding is very common in the study area and in other areas (Kakute et al., 2005; Oguta, 2001). In a rural area of Cameroon, women are culturally encouraged to give their infants mixed feeding because it is a traditional practice (Kakute et al., 2005). This shows that relatives and friends strongly influence women's choices on infant feeding. Though a mother might choose to exclusively breastfeed her infant, she is usually under the pressure of cultural practices. This is because with time she has learnt the values, attitudes and norms of her society through the process of socialization in order to participate effectively in that society.

Infant feeding is a practice that does not occur in a vacuum. It requires encouragement and advice, especially if a mother is nursing her first child. Relatives and friends, who have breastfed before and thus have gained knowledge through exposure to breastfeeding, provide information, advice and emotional support (Okwayo, 1992). This was observed in the study area, where women who had subsequent births provided information on infant feeding to other women.

Unfortunately, sometimes the information provided could be wrong and, therefore, might have adverse effects on the infants' health. For example, the researcher observed one incident where one woman advised other women not to add water to animal milk. In addition, the participants in focus group discussions disagreed on whether water should be added to milk or not and if so, what amount. They also were not sure whether sugar should be added or not. Poor knowledge on the modification of home-prepared formula has also been reported in other studies (Oguta, 2001; Paoli 2000, as quoted in Oguta, 2001).

Cow milk has more protein and a greater concentration of sodium, phosphorus and other salts than breast milk. Modification involves dilution with boiled water to reduce the concentration. Dilution reduces the energy concentration, so sugar must be added. One hundred millilitres of cow milk should be mixed with fifty millilitres of boiled water and 2 teaspoons of sugar. Other milks that are similar in composition to cow milk are goat milk and camel milk and need to be modified in the same way as

cow milk. Sheep milk has more fat and energy than cow milk. The protein content is also very high. Therefore, it requires more dilution. Fifty millilitres of sheep milk should be added fifty millilitres of boiled water and 1 teaspoon of sugar (UNICEF/UNAIDS/WHO, 1998).

Breastfeeding in public matters because hungry babies are not very patient and it is hard to be a parent without leaving home. Finding a truly private place to breastfeed can be difficult, if not impossible, once a mother has resumed activities outside her home. How a woman perceives and performs breastfeeding in public is important in infant feeding since breast milk does not stop to be best just because other people are present. Though a majority of the women (79%) comfortably breastfeed in public, among those who did not, were embarrassed to do so. Others were afraid that the evil eye could poison breast milk and thus could only breastfeed while covering their infants.

Ideas, beliefs and assumptions about various practices affect women's behaviour. Being uncomfortable breastfeeding in public is also reported in a study done in London. Breastfeeding with discretion and being aware of the sensitivities of others were approved, whereas more overt breastfeeding in public was off putting to most respondents. Embarrassment about breastfeeding in front of others, including close family, was also commonly mentioned (Hoddinott and Pill, 1999).

Women use diverse methods to stop breastfeeding. In the study area, a majority take a child to a relative while others give cow's milk or apply pepper. Other studies have also come up with the same findings. Coutsoudis (2005), in her study in South Africa, reported that women discontinue breastfeeding by expressing breast milk, applying chillies or sending the child away to a relative. Larvijsen and Jansen (1983) reported that abrupt ways to stop breastfeeding were applying hot pepper to the nipples, sending the child to relatives, and the mother sleeping dressed. Among the Luo of Kenya, women apply bitter herbs on their breasts to stop a baby from breastfeeding (Ndegwa, 1999). This abrupt cessation usually has a negative effect on a child's health, since it can lead to malnutrition.

Breastfeeding for long durations was observed in this study since 48% of the respondents would breastfeed for 24 months while 28% would do so for 18 months. A few reported going beyond 2 years. Breastfeeding for long durations has also been reported in other studies (Dop, 2002; Pool et al., 2001; Oguta, 2001). Continued breastfeeding beyond 2 years assists the development of children especially in rural settings where there is inadequate water and poor sanitation.

6.1.1 Health knowledge and women's perceptions of infant feeding options

The women reported a high level of MTCT knowledge in respect of the probability of transmission of HIV through breastfeeding. This high level of MTCT knowledge through breastfeeding has also been reported by Oguta (2001). This is in contrast with a study that was done in Nigeria, which revealed that less than a half of the women (41.7%) were not aware of the association of HIV transmission and breastfeeding (Ekanem and Gbadegesen, 2004).

Health providers are key gatekeepers in influencing mother's decision on infant feeding. They can help to reduce rates of postnatal transmission of HIV and increase child survival by providing HIV infected mothers with accurate information on infant feeding that captures the risks and benefits of different feeding options.

In many African countries, communities often take the recommendations of health providers as the final word (Piwoz et al., 2006). Most of the respondents (88%), knew replacement feeding as an infant feeding option for HIV-positive mothers. Likewise, a majority (92%) would agree to adopt replacement feeding as an infant feeding option. This shows that women are likely to adopt what they already know than what they do not know.

Expressing breast milk (by hand or by pump into a clean glass or hard plastic storage container) and heating it to kill the HIV for the baby's use when the mother cannot nurse, was a new concept to most women. This has also been reported by Manuela de Paoli and colleagues (2004) and Oguta (2001). A few respondents knew about the options of heat-treating breast milk (5%), and wet-nursing (3%), and thus those agreeing to adopt the options were 17% and 16%, respectively. For some respondents,

they would only agree to adopt the options if a health provider promised that an option was safe, for example, exclusive breastfeeding. Although only 21% would agree to exclusively breastfeed, 58% would do so on condition that they had enough information from a health provider about the option. In a study done in Tanzania, the women questioned the safety of exclusive breastfeeding (De Paoli et al., 2004).

Health providers are among agents of socialization who provide useful knowledge, especially when offering prevention of mother-to-child transmission of HIV (PMTCT) services, which encompass providing information and counselling on infant feeding options for HIV-positive mothers. They influence women's behaviours and attitudes on infant feeding. While the mother is in the hospital, she receives and is likely to follow health workers' advice on infant feeding. When she goes back home, the way she feeds the infant is based on her own beliefs and experience, the advice she received from a health worker, and the influence of her partner, family and community. She also has the capacity for independent thought and action and knows what infant feeding option will work best for her. She is, therefore, able to process the diverse types of information and evaluate the consequences for any action she might take.

Although over 70% of the respondents had received information and counselling on breastfeeding and infant weaning, only 51% had received information and counselling on infant feeding alternatives. In a study by Oguta (2001), a few women reported to have information on infant feeding alternatives. Since a majority of respondents knew about replacement feeding, it seemed that such an option was what various agents of socialization advocated for, especially those offering information and counselling on PMTCT through breastfeeding. According to a health provider in Nanyuki District Hospital, a source where a majority of women reported to have received information and counselling, the uptake of PMTCT services is very low (21%), a probable explanation why fewer women had received information and counselling on infant feeding alternatives.

Some infant feeding alternatives have been recommended and seem to have merit in theory. In practice, not many women who are HIV-positive adopt replacement feeding. According to a health provider from Nanyuki District Hospital, most of the

women in the area cannot afford to give their infants breast milk alternatives due to the widespread poverty and poor sanitary conditions. Among those infected, only 4 mothers chose the option of replacement feeding while 7 mothers chose to exclusively breastfeed their infants. It is not well established whether the options chosen by infected mothers are well practised since there is no well-systematized follow-up mechanism.

The fact that options like wet-nursing and heat-treating breast milk are perceived negatively in the study area is also observed by Coutsoudis (2005) in her study on infant feeding dilemmas in South Africa. According to her, limited success was achieved in promoting heat-treatment of breast milk. Similarly, a study in urban and rural districts of Tanzania reported that less common infant feeding methods, such as expressed heat-treated breast milk and wet-nursing, were not regarded as viable options (De Paoli et al., 2004).

The high level of knowledge about the association between HIV and breastfeeding influence the option of wet-nursing. For those who would accept to adopt the option, it was on condition that they knew HIV status of the wet nurse. This is because an infected woman can pass the virus to an infant if she breastfeeds. Taking an HIV test is still not something accepted by most people. In Kenya, by 2003, only 13% of women and 14% of men knew their HIV status despite the many Voluntary Counselling and Testing (VCT) centres (CBS et al., 2003). This means that most Kenyans still do not know their own HIV status. This could be the reason why one would find it hard to trust anyone with regard to the HIV/AIDS status.

Due to lack of information on heat-treated breast milk, such a concept was met with disbelief since most respondents could not comprehend how HIV which, according to them is very strong, could be destroyed by heat. To some, the practice was dirty and very involving. They also believed that the breast milk would evaporate in the process. Similarly, Oguta (2001) found that heat-treating breast milk was strange and unacceptable to the community. The concept was also met with scepticism. It was claimed that breast milk could not be expressed to produce enough to satisfy the baby and heating it would make it evaporate.

6.1.2 Influence of socio-economic status to infant feeding options for HIV-positive mothers

A majority of women in the study area (64%) are from the middle class. The findings show that the more one is educated, the higher the level of awareness of HIV transmission through breast milk and its prevention. All respondents who had college/university education knew about the possibility of HIV transmission through breastfeeding and that it could be prevented. In contrast, among those who had primary or secondary education, at least 9% in either case, did not know that it could be prevented.

The higher the MTCT knowledge through breastfeeding, the higher the knowledge of infant feeding options. This could possibly be explained given that MTCT knowledgeable mothers also happened to be better educated. Higher educational qualifications expose one to a variety of information from diverse sources making one more willing to accept new procedures more effectively. A study by Oguta (2001) reported that women with high MTCT knowledge considered other options like heat-treated expressed breast milk and commercial infant formula.

If one is poor, adopting replacement feeding is problematic. The cost of the formula is prohibitive for many women. Water may also be unclean or contaminated. Contrary to expectations, one's level of income did not affect the option of replacement feeding. A study done in Tanzania revealed that infant feeding formula was regarded as too costly, but if recommended by health workers and distributed free of charge, most women were willing to choose the option (De Paoli et al., 2004).

The results reveal that the more one is educated, the more likely it is to accept the option of heat-treated breast milk. This option needs some understanding on the process behind what happens when breast milk that has HIV is heated. More educated women seem to understand and somehow believe that HIV is destroyed through heating. For those working away from home, the option ensures that the baby benefits from breast milk even when the mother is away. More women in businesses and those formally employed would accept to feed their babies heat-treated breast milk.

Exclusive breastfeeding demands presence of the mother so that the baby breastfeeds on demand. It is a demanding option that requires the mother to feed well so that the baby gets enough breast milk and is satisfied. Exclusive breastfeeding has been shown to have a lower risk of HIV transmission than mixed feeding (Tindyebwa et al., 2004; Coutsoudis et al., 1999). None of the respondents with college/university education would agree to exclusively breastfeed while some of the respondents with primary and secondary education would agree to do so.

When asked if they would accept to exclusively breastfeed, a majority of housewives (83%) agreed they would give it a try. They also reported breastfeeding on demand. Since they are available most of the time, they are able to breastfeed on demand.

Those with high MTCT knowledge tended to be more receptive to the option of wet nursing. The knowledge that a child could get HIV if breastfed by a woman who is HIV-positive, makes many women not comfortable giving other women to breastfeed on their behalf. A few women would come into the open and declare their HIV-status if positive, due to the HIV/AIDS stigma. A study in South Africa revealed that children are exposed to HIV infection because some babies are breast-fed by women who are not their mothers and who are HIV-positive. This shows that wet-nursing is a mode through which HIV is transmitted to infants. HIV positive children were 17 times more likely than HIV-negative children to have been breastfed by a woman other than their mother (Sidley, 2005)

Heat-treating breast milk needs financial resources since the process requires maintaining breast milk at 62.5 degrees Centigrade for 30 minutes. A more practical way is to put breast milk in a clean container and then place it inside a bigger pot/*sufuria* of water at 62.5 degrees Centigrade. Either way, one will need more fuel for the process. Refrigerators, freezers and stoves for heat treatment of breast milk are often not available, if not non-existent, to most mothers in a slum dwelling. In addition, the preparation must be done in a hygienic environment. More respondents in formal employment with salaried incomes would agree to heat treat breast milk than those in other occupations. This is possibly because they could afford the fuel and other necessities required for the option.

6.1.3 Cultural norms and beliefs and infant feeding options for HIV-positive mothers

Breastfeeding, a cultural norm in the study area, influences perceptions towards the option of replacement feeding. Women are less optimistic and express great concern for the social consequences of not breastfeeding. This was also observed in a study done in Tanzania, which revealed that women were scared of social consequences that might befall them if they did not breastfeed. This included possible lack of support from their partners and potential negative reactions from the community (De Paoli et al., 2004). The HIV/AIDS stigma, which arises if a mother does not breastfeed, was also observed in a study done in South Africa (Thairu et al., 2005).

When one is identified as living with the virus, one is likely to face discrimination or violence and abandonment by one's family. The results show that a mother who opts not to breastfeed is regarded by a high number of respondents (69%) as HIV-positive. The stigma of HIV continues to be so heavy that women say that they would not formula-feed because doing so would be equivalent to disclosing their HIV status. Such women report that they fear recriminations, raging from social rejection and isolation, to physical abuse and even life-threatening violence. In a study done in south-western Kenya, women who did not breastfeed were viewed as irresponsible or did not love their babies (Oguta, 2001). Manuela de Paoli and colleagues (2004) reported that HIV-positive women would not show in public that they were using breast milk substitutes. Even if they do not fear physical violence, many women breastfeed simply because it is something that 'good mothers' do without fail, a norm that some mothers find overwhelmingly compelling.

Breastfeeding in public is something normal for most women. Women who might have chosen the option of replacement feeding would find it hard to give breast milk substitutes in public, if breastfeeding is advocated in the society. This would make them breastfeed in public but give breast milk substitutes when alone in their homes. This would mean that a baby is more at risk of HIV infection because of mixed feeding. The option of heat-treated breast milk is also faced with the same problem. The women would normally breastfeed when in the company of other people, but heat-treat breast milk when alone.

Wet nursing is not a norm in the study area. An infant whose mother has died at birth or is ill and thus cannot breastfeed is either taken to a children's home (89%) or fed with home prepared formula (76%). As a baby sucks from her mother's breast, ancestral power is passed from one generation to the next (Winikoff et al., 1988). This is the reason why it raises concern if a child is breastfed from another woman other than her mother. This is in contrast with a study done in south-western Kenya by Oguta (2001) which found that elderly women in the community who had reached menopause readily accept wet nursing as ideal for an orphaned baby.

In addition, the importance of the psychological bond that is created between mothers and infants through breastfeeding has been well described by mothers. The breastfeeding mother and her baby continue the physical bond begun in pregnancy. Mothers share a unique relationship with their babies and such a bond is not easily sacrificed.

Mixed feeding is a practice that is deeply ingrained in the traditional culture. Traditionally among the Agikuyu of Kiambu, a baby received complementary foods just a few days after birth (Leakey, 1977). The respondents, therefore, viewed exclusive breastfeeding negatively, arguing that the baby would not get satisfied with breast milk alone. Many women are resistant to deviating from the average 2 years of breastfeeding because doing so simply is not the norm. There is also the fear of drawing attention to themselves if they were to stop breastfeeding their infants earlier than the norm. A primary concern is that refraining from breastfeeding could avert others in their community to their positive HIV serostatus. This has also been reported in other studies (for example, Kakute et al., 2005; Pool et al., 2001).

6.2 CONCLUSION

In conclusion, the women in this study area have negative perceptions of infant feeding options for HIV positive mothers. There are cultural norms and beliefs, which negatively influence their perceptions. Breastfeeding, and doing so for long durations, is a cultural norm in the study area and affects the infant feeding options. In addition, mixed feeding and early introduction of complementary foods (between 2 and 3

months) is a norm in the study area. Furthermore, wet-nursing and heat-treating breast milk is unacceptable in the study area.

Although knowledge of mother-to-child transmission of HIV through breastfeeding is high among the women in the area, knowledge on the various infant feeding options is low, thus affecting their perceptions of the options.

A woman's socio-economic status affects her perception of the infant feeding options. The higher the level of education, the more the awareness of HIV infection through breastfeeding and infant feeding options, and thus the likely adoption of some of the options. Contrary to expectations, however, one's level of income did not affect the option of replacement feeding but affected the option of heat-treated breast milk.

Exclusive breastfeeding for the first few months (preferably 3 months) is a viable option in the study area if only the women are offered the necessary information, counselling and guidance. This is because most women introduce complementary foods at 3 months.

In practice, not many HIV-infected women choose replacement feeding. This is probably due to the cost involved when one chooses such an option. There are many HIV-infected women who cannot afford to formula-feed or are afraid of HIV/AIDS stigma and thus choose to breastfeed after risks and benefits are presented to them.

There is no satisfactory solution to the problem of breastfeeding by a majority of HIV infected women in this area. The individual woman has to make the extremely difficult choice between dealing with the likelihood of sickness and death from common infections when infants are not breastfed, against the prospect of transmitting a lethal disease to her child through breastfeeding. She also has to deal with the social repercussions when she opts not to breastfeed, since breastfeeding is a cultural norm. In addition, HIV/AIDS is still a stigmatised disease, something that most women take into account when choosing infant feeding options.

6.3 RECOMMENDATIONS

- Breastfeeding is a norm in this area and women who do not breastfeed may be labelled as HIV-infected and in return stigmatised, resulting in a range of additional problems. Measures are thus required to provide social support to HIV-positive mothers who use replacement feeding. There is also need to intensify education and counselling on HIV/AIDS, especially mother-to-child transmission of HIV (MTCT). This will assist in fighting the HIV/AIDS stigma and discrimination. Communication on prevention of mother-to-child transmission of HIV (PMTCT) through breastfeeding should take place outside as well as inside the clinic walls.

- Innovative information and education techniques need to be developed to efficiently provide HIV-positive mothers with knowledge and skills that can enable them make informed choices about infant feeding options, as well as other forms of care.

- Ways should be determined to promote partner, family and community involvement to increase acceptance and support for infant feeding options and choices.

6.4 AREAS FOR FURTHER RESEARCH

- The option of exclusive breastfeeding for the first 3 months seems to be a viable option in the study area. There is need to carry out a full-scale survey to establish the feasibility of the option among women who are HIV-positive. Similarly, a comparative study needs to be done in rural and urban areas.

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Appendix 1

A QUESTIONNAIRE FOR STRUCTURED INTERVIEWS

INTRODUCTION

Good morning/afternoon. My name is Mary, a master's student from the University of Nairobi. I am undertaking a study for my degree, on the women's perception of infant feeding options for HIV-positive mothers in this area. I would like to know how you practice infant feeding, your knowledge of mother to child transmission of HIV through breastfeeding and your perception on infant feeding options for HIV-positive mothers. I will be grateful if you agree to answer the following questions. However, you are free to withdraw from the interview if you feel uncomfortable. All the information you give will be kept strictly confidential.

SECTION ONE: SOCIO- DEMOGRAPHIC DATA

1.

a) Name (optional) .....

b) Code number.....

c) Date of the interview .....

d) Age of the mother .....

e) Level of education

   a. Primary
   b. Secondary
   c. College/university
   d. None

f) Marital status

   a. Single
   b. Married
   c. Separated/divorced

g) Religion

   a. Christian

b. Muslim

c. Other (specify)_____

h) Occupation

a. Housewife

b. Business (specify)_____

c. Salaried (specify) _____

d. Casual labour (specify)_____

e. Other (specify)_____

If a housewife, ask who they depend on_____

i) Approximate income per month

a. Less than Kshs 2000

b. Between Kshs 2001 and Kshs 4000

c. Between Kshs 4001 and Kshs 6000

d. Kshs 6000 and above

INFANT FEEDING PRACTICE

2. How old is your baby? _____

3. Do you breastfeed your baby?

a. Yes

b. No

If no, skip to Q7.

4. If yes to Q3 above, how often do you breastfeed your baby?_____

5. Do you breastfeed your baby during the day?

a. Yes

c. No

b. If no to Q5 above, give reasons_____

6. Do you breastfeed your baby during the night?

a. Yes

b. No

b. If no to Q6 above, give reasons_____

7. Do you give him other foods/fluids (complementary foods)?

   a. Yes
   b. No

   If no, skip to Q17.

8. If yes what do you give _____

   _____

9. At what age did you introduce complementary foods? _____

10. What complementary food did you first give your baby? _____

11. Why do you give other foods?

   a. Onset of another pregnancy
   b. Lack of time/working
   c. Insufficient milk
   d. Other (specify) _____

12. How do you obtain these foods?

   a. Buying
   b. Donation
   c. Given at the clinic
   d. Growing them
   e. Other (specify) _____

13. If the foods are bought, approximate the money used per month.

   a. Less than Kshs 500
   b. Between Kshs 501 and Kshs 1000
   c. Between Kshs 1001 and Kshs 1500
   d. Kshs 1500 and above

14. How do you prepare these complementary foods? _____

   _____

15. What is your source of energy for food preparation?

a. Paraffin
b. Gas
c. Firewood
d. Charcoal
e. Electricity
f. Other (specify)----------

16. How much does your source of energy cost you per month?

a. Less than Kshs 500
b. Between Kshs 501 and Kshs 1000
c. Between Kshs 1001 and Kshs 1500
d. Kshs 1500 and above

17. At what age would you want to discontinue breastfeeding?

18. How do you plan to do it?

19. If by bad luck the mother dies at birth, or is ill and therefore not able to breastfeed, how is her baby fed?

a. Commercial infant formula
b. Home prepared formula (animal milk)
c. Wet nursing
d. Taken to children's home

KNOWLEDGE OF HIV TRANSMISSION THROUGH BREASTFEEDING

20. Can a baby get HIV from breastfeeding?

a. Yes
b. No
c. Do not know

b. If yes can this be prevented?

21. How can a mother who is infected with HIV prevent her newborn from becoming infected?

a. Replacement feeding
b. Exclusive breastfeeding for 6 months then abrupt weaning
c. Wet nursing
d. Heat-treating breast milk
e. Seeking treatment in case of breast disease
f. Seeking treatment in case of infant oral thrush
g. Taking ARVS
h. Eating a balanced diet
i. Avoiding unprotected sex during breastfeeding
j. Other (specify)_____

PERCEPTIONS OF INFANT FEEDING OPTIONS FOR HIV-POSITIVE MOTHERS

22. Would you accept to:

a. Wet-nurse your baby?_____
b. Feed your child from heat-treated breast milk?_____
c. Replacement feed from birth?_____
d. Exclusive breastfeeding for 6 months then abrupt weaning?_____

23. Give reasons for each answer

a. Wet-nursing _____

_____

b. Heat-treated breast milk _____

_____

c. Replacement feed from birth _____

_____

d. Exclusive breastfeeding for 6 months then abrupt weaning _____

_____

24. How would you view a woman who opts not to breastfeed her baby?

25. Have you ever received information and counselling on:

    a. Breastfeeding?
    b. Infant weaning?
    c. Infant feeding alternatives?

26. Where did you receive counselling?

27. Can you comfortably breastfeed in public?

    a. Yes
    b. No

Give reasons for your answer

Appendix 2

INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSIONS

1. Breastfeeding practice
    - When should a mother initiate breastfeeding?
    - How is it performed and for what duration is it supposed to last?
2. Weaning
    - How does a mother stop breastfeeding an infant?
    - What foods are given to the infant and at what age?
    - What sequence is followed in the introduction of these foods?
    - How do you prepare weaning foods?
    - Where were you informed on preparation of these foods?
3. Taboos and beliefs
    - Are there any beliefs or taboos related to breastfeeding?
4. Maternal attitudes to breastfeeding.
    - How do you view breastfeeding?
    - What is your opinion on breastfeeding in public?
5. Attitudes to infant feeding options for HIV-positive mothers.

    What are your views on?
    - Replacement feeding from birth
    - Wet-nursing
    - Heat-treating breast milk
    - Exclusive breastfeeding for 6 months then abrupt weaning

Appendix 3

AN INTERVIEW SCHEDULE FOR KEY INFORMANT INTERVIEWS

For the elderly women

1. How was a newborn fed in the old days? Was there any instructions given and by whom?
2. For how long was breastfeeding supposed to last?
3. What kinds of complementary foods were given to the baby?
4. When were complementary foods introduced?
5. What beliefs accompanied infant feeding? Are they functioning today?
6. How was an infant whose mother had died during birth cared for?
7. How did the society view a mother who has given birth but has opted not to breastfeed?
8. Can a child whose mother is HIV-positive be infected with the virus if breastfed? Is it preventable?
9. What is your opinion on:
    - Heat-treating breast milk?
    - Wet–nursing?
10. What do you think need to be done to improve the practice of breastfeeding in this era of HIV/AIDS?

Health providers

1. What is the rate of HIV infection among pregnant women in this hospital?
2. What steps has the hospital taken to prevent HIV infection to the newborns?
3. Do mothers adhere to the recommended infant feeding options (both the infected and those not infected)? What could be the reason for each case?
4. When proposing an option to the mother, are there factors to consider? What are they?
5. In your opinion, what do you think needs to be done to improve infant feeding?

Programme managers for local non-governmental organizations

1. What can you say about HIV/AIDS in this area?
2. Who do you think is more vulnerable and why?
3. What has your organization been doing to prevent HIV/AIDS infection among infants?
4. What are your views towards infant feeding options recommended for HIV-positive mothers?
5. In your opinion, are these options acceptable in this area and why?
6. What needs to be done to improve infant feeding and prevent infants from getting infected with the virus from breast milk?