SOME FACTORS ASSOCIATED WITH MOTHER-TO-CHILD TRANSMISSION OF HUMAN IMMUNODEFICIENCY VIRUS AMONG ANTE-NATAL MOTHERS IN CATHOLIC HOSPITALS, MERU CENTRAL DISTRICT, KENYA

BY

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REG.NO. I 57/7175/2001

A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF PUBLIC HEALTH AND EPIDEMIOLOGY IN THE SCHOOL OF PURE AND APPLIED SCIENCES OF KENYATTA UNIVERSITY

APRIL 2005
DECLARATION

I, Koskei Justice Kiplangat, do hereby declare that the thesis is my original work and has
not been presented for a degree in any university or for any other award.

Signature Date 01/04/05

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DEDICATION

This thesis is dedicated to my father, Marcellly Kipkoskei Rop, an unrelenting reader and my late mother, Pauline Chepkorir Rop who together inspired in me the quest for learning. I wish to also dedicate this work to my wife Catherine W. Koskei and children: Joseph Kipkoch and Paulette Chebet.
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<tr>
<td>ANC</td>
<td>Ante-natal Care</td>
</tr>
<tr>
<td>ANOVA</td>
<td>Analysis of variance</td>
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<tr>
<td>ARV</td>
<td>Antiretroviral</td>
</tr>
<tr>
<td>CHWs</td>
<td>Community Health Workers</td>
</tr>
<tr>
<td><em>et al.</em>,</td>
<td>et alia</td>
</tr>
<tr>
<td>GOK</td>
<td>Government of Kenya</td>
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<tr>
<td>HBC</td>
<td>Home-based Care</td>
</tr>
<tr>
<td>HCWs</td>
<td>Health-care Workers</td>
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<tr>
<td>HIV/AIDS</td>
<td>Human Immunodeficiency Virus and its associated Acquired Immune Deficiency Syndrome.</td>
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<td>KDHS</td>
<td>Kenya Demographic Health Survey</td>
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<tr>
<td><em>lit.</em></td>
<td>Literally</td>
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<tr>
<td>MCHC</td>
<td>Maternal and Child Health Clinic</td>
</tr>
<tr>
<td>MOH</td>
<td>Ministry of Health</td>
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<tr>
<td>MTCT</td>
<td>Mother-to-child Transmission</td>
</tr>
<tr>
<td>NARESA</td>
<td>Network of AIDS Researchers in Eastern and Southern Africa</td>
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<tr>
<td>NASCOP</td>
<td>National AIDS &amp; STI Control Programme</td>
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<tr>
<td>PMTCT</td>
<td>Prevention of Mother-to-child Transmission</td>
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<tr>
<td>TBA</td>
<td>Traditional Birth Attendant</td>
</tr>
<tr>
<td>UNAIDS</td>
<td>United Nations Action on AIDS</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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<tr>
<td>&lt;</td>
<td>&quot;Less than&quot;; &quot;Fewer than&quot;</td>
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<tr>
<td>≥</td>
<td>&quot;Equals to or more than&quot;, or &quot;equals to or greater than&quot;</td>
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ABSTRACT

Mother-to-child transmission is a major route of infection for Human Immunodeficiency Virus (HIV) among children under age five in developing countries. HIV is one of the main causes of morbidity and mortality in Sub-Saharan Africa where 90% of all children born with HIV in the world live. The major routes of infection are pregnancy, delivery and breastfeeding. Out of 1.2 million births annually in Kenya, 106,000 children under five years are HIV positive. The study looked at factors associated with MTCT of HIV among ante-natal mothers and the role of TBAs in Meru Central District. Cross-sectional study design was used. A sample size of 863 ante-natal mothers was used. Twelve HCWs and 72 community members were interviewed. Data were collected using pre-tested questionnaires and analysed using frequencies, percentages and chi-square tests. Focus group discussions were used to validate data and tables, graphs and figures were used for presentation. Most of the ante-natal mothers were literate ($\chi^2=640; p<0.05$), poor and married young. The older they were the less likely they would be married ($\chi^2=703.2; p<0.05$). This predisposed them to early pregnancy and risks of MTCT of HIV. Spousal unfaithfulness was significant among risk factors ($\chi^2=331.5529; p<0.05$). Ante-natal care was mostly done by TBAs using shared surgical instruments with little knowledge on modes of HIV transmission. Inadequate counseling caused dissatisfaction among ante-natal mothers ($\chi^2=290.1664; <0.05$). No relationship existed between HCWs’ advice on baby weaning and when to begin ($\chi^2=2620.8693; p<0.05$). Though most of the HCWs had an additional job-relevant training, they were inadequate in basic training and hence in implementation. These findings are useful in understanding the level of knowledge, attitude and practice of ante-natal mothers as key factors in PMTCT of HIV and in recognizing the capacity of MCHCs in Catholic hospitals, staffing constraints, training needs of HCWs and the role of TBAs and teeth removers in MTCT. The findings reflect similar scenario in Mission Hospitals countrywide since they share similar policies mostly in rural setting. It is recommended that the hospitals train their HCWs in MTCT of HIV and deploy them appropriately. There is need to strengthen home-based care of ante-natal mothers by recognizing the role of TBAs, to retrain and collaborate with them for more effective prevention of mother-to-child transmission of HIV.
CHAPTER 1: INTRODUCTION

1.1 BACKGROUND INFORMATION

When a Human Immuno-deficiency virus (HIV) enters the body, it attaches to the CD\textsubscript{4} cell's receptors and their membranes fuse. HIV then injects its ribonucleic acid (RNA) and reverse transcriptase into the CD\textsubscript{4} cell. The viral RNA is changed into viral deoxyribonucleic acid (DNA) through reverse transcription and fuses with the CD\textsubscript{4} cell's DNA, causing it to produce more viral RNA. In turn viral RNA produces more HIV, which matures and infects more cells (Appendix 1). The factors that determine vertical transmission of HIV include maternal nutrition and viral load, obstetric and infant feeding practices, blood transfusions, invasive procedures and surgery using contaminated instruments. Mother-to-child transmission (MTCT) of HIV is the main source of HIV infection among children under five years and is one of the leading causes of child morbidity and mortality (GOK, 2000). When a mother is infected, she becomes infectious and if she conceives, she may transmit the virus to her baby (GOK, 1999). During pregnancy, 5% to 15% of MTCT of HIV occurs through the placenta and 10% to 20% during delivery as cord blood mixes with maternal blood. After delivery, 10% to 20% of HIV transmission occurs through breast-milk (Nduati and Mbori-Ngacha, 2002; Paolo, 1999). The progression of HIV is faster in babies and most of them will die of minor diseases and infections. Two thirds of babies will die within three years.

Without interventions, transmission rate ranges from 13% to 32% in developed countries and from 25% to 48% in developing countries (GOK, 2000). There are 1,600 daily infections, thus reversing gains made in child
survival (GOK, 2000). To avoid this risk, the standard care in the developed countries combines antiretroviral (ARV) drugs and the use of breast-milk substitutes (Heidemarie, 2001), an expensive approach in developing countries. Though there is need for feeding supplements (Horizons, 2001), HIV positive mothers face stigmatisation and supportive counseling on infant feeding is critical. Aggravated transmission of HIV has been attributed to poor maternal social negotiating skills due to poverty, alcohol and drug abuse (UNICEF, 2002) with severe consequences on public health (Jewkes, 1999).

1.2 PROBLEM STATEMENT AND JUSTIFICATION

1.2.1 Statement of the problem

As the proportion of HIV positive ante-natal mothers rises (WHO, 2001) so does Mother-to-child transmission. This occurs in 5% to 10% of chances during pregnancy, 10% to 20% at delivery and in breastfeeding (deCock and Fowler, 2000). Due to this, Kenya faces an AIDS orphans epidemic currently at 890,000 orphans, the third highest worldwide (UNAIDS, 2002). Maternal and infant risk factors are important in this (Abularach and Anderson, 2001; Brochert, 2001). Pregnant women with high concentrations of HIV and weak immunity are more likely to transmit it. Malnutrition in HIV positive pregnant woman, maternal infections, placental and umbilical diseases are associated with increased MTCT of HIV (Preble and Piwoz, 2001). Use of invasive procedures such as artificial rupture of membranes, episiotomy and cord milking are high risk factors that are preventable through health education and counseling. Prolonged breastfeeding increases the chance of transmission of HIV (Paolo, 1999).
With appropriate action, pregnancy and delivery do not change the course of HIV in mothers in developed countries that have implemented strategies to minimize contact of the infant with maternal blood and secretions (Burns, 1998); planned delivery to reduce MTCT of HIV (Riley and Greene, 1999) and vaginal cleansing with antiviral agents during delivery (Biggar, 1996; Newell, 2001; Gaillard, 2001). The developing countries that have acted quickly have had benefits (UNAIDS, 2002). For instance, the prevalence of HIV positive pregnant women in Kampala fell from 29.5 % in 1992 to 11.25 % in 2000. Among the strategies used were counseling, community mobilisation and teaching home-based use of nevirapine drug taken at home as soon as labour begins (Shannon and Amman, 2001).

However, morbidity is high in countries where action has not been fast. Kenya loses about 700 people, mostly mothers and babies, daily to AIDS and Meru Central District is among the worst hit (GOK, 2002). Lack of proper community mobilisation in the area hampers such interventions as voluntary counseling and testing, health education on nutrition and exclusive breastfeeding, at least for the first three months in all HIV positive mothers (KDHS, 1999).

1.2.2 Justification

Mother-to-child transmission of HIV is an important public health concern for it could lead to child neglect, abandonment and orphanhood. Kenya’s Ministry of Health (2000) has warned that without intervention, one third of Kenya’s HIV positive mothers could pass on the virus to their infants. Therefore, Community mobilization, education and PMTCT are the desired interventions.
Traditional practitioners such as TBAs play a significant role in public health especially in rural areas (Hahn, 1999).

Religious health systems lack formal client education and activities for PMTCT of HIV yet they have potential in community mobilization since their clients are readily receptive. Though it exists in some Mission Hospitals, community mobilization is on a voluntary basis and weak. These attempts have minimal impact since they are short-term reactive measures rather than long-term proactive strategies. It is necessary to re-examine the course of action so as to formulate more effective strategies of addressing MTCT of HIV. Meru Central District has been selected purposively since the Diocese of Meru plans to begin PMTCT program in Nkuene and Abogeta divisions because its three Mission Hospitals under my supervision are situated there. Other divisions include Igoji, Abothuguji East, Abothuguji West, Abothuguji Central, Miriga Mieru East, Miriga Mieru West, Buuri and Timau. The hospitals serve clients of all faiths. The findings of this study will be used to understand the community needs in the study area and how to improve community PMTCT mobilisation efforts; help set up PMTCT programs in religious health facilities in Kenya and to draw up training programs for hospital staff and community health workers; and form the basis for further research in MTCT of HIV.

1.3 RESEARCH QUESTIONS

(a) What factors are associated with Mother-to-child transmission of HIV among

(b) ante-natal mothers in Catholic Mission Hospitals in Meru Central District?
(c) What are the training needs for health-care workers caring for ante-natal mothers in Catholic Mission Hospitals in Meru Central District?

(d) What socio-cultural practices are associated with Mother-to-child transmission of HIV among ante-natal mothers attending Catholic Mission Hospitals in Meru Central District?

(e) What role do traditional birth attendants play in Mother-to-child transmission of HIV in Meru Central District?

1.4 HYPOTHESES

(a) Mother-to-child transmission of HIV has no relationship with knowledge, attitudes and practices of ante-natal mothers in Catholic hospitals.

(b) Catholic-sponsored Maternal-Child Health Clinics have no capacity to implement prevention of Mother-to-child transmission of HIV.

(c) Sociocultural practices are not associated with MTCT of HIV among mothers attending Catholic hospitals in Meru Central District.

(d) Traditional birth attendants play no role in mother-to-child transmission of HIV in Meru Central District.

1.5 OBJECTIVES

1.5.1 General objective

To determine the factors associated with Mother-to-child transmission of HIV among ante-natal mothers attending Catholic hospitals in Meru Central District, Kenya.
1.5.2 Specific objectives

(a) To determine knowledge, attitudes and practices of ante-natal mothers

(b) with regard to Mother-to-child transmission of HIV.

(c) To determine Maternal and Child Health services for HIV positive ante-natal mothers in Catholic hospitals in Meru Central District.

(d) To identify training needs of health-care workers attending to ante-natal mothers in Catholic hospitals in Meru Central District.

(e) To determine roles played by traditional birth attendants in MTCT of HIV in Meru Central District.

1.6 SIGNIFICANCE AND ANTICIPATED OUTPUT

1.6.1 Significance
For the first time a study on some factors associated with MTCT of HIV among ante-natal mothers was carried out in Catholic Mission Hospitals in Kenya. The study aimed at addressing strategies to reverse the consequences and mitigate their plight.

1.6.2 Anticipated Output
This study was expected to elicit some factors associated with MTCT of HIV among ante-natal mothers in the study area.
CHAPTER 2: LITERATURE REVIEW

2.1.1 Prevalence of Mother-to-child Transmission of HIV

Scarlati (1996) reported the first HIV positive child in 1983 in North America and by 1994, 1.4 million children had been infected worldwide. Since 1984, over 4.3 million children under five years have died of HIV, 90% of them were through MTCT. Globally, about 14 to 15 million children have HIV. Sub-Saharan Africa has over 11 million infected children (UNAIDS, 2002). It is projected that in 2010, AIDS will push the infant mortality rate 138% higher and child mortality rate, 304% higher than they would have been without it (UNAIDS, 2001; UNAIDS and UNICEF, 1999). In Cote d’Ivoire child mortality would rise by two thirds. One-third of child hospitalization in Soweto is HIV-related. Unless action is taken, over 96,000 Kenyan babies will be born with HIV annually resulting in 106, 000 HIV positive children below 5 years (GOK, 2000). In Botswana, HIV prevalence among pregnant women rose from 38.5% in 1997 to 44.9 % in 2001. In Zimbabwe, it rose from 29% in 1997 to 35% in 2000 (UNAIDS, 2002). Over 890,000 children are infected with HIV in Kenya with mother-to-child transmission rate varying from 13% to 40% (UNAIDS, 2002). Over 65% of child infections occur during the final six weeks of pregnancy and at delivery (Dunn, 1992). The infant mortality rate is currently around 74 per 1000 while child mortality rate is around 112 per 1000 live births. Without AIDS, infant mortality rate might have been expected to decline to 45 and child mortality rate to 70 by 2005 (UNAIDS and UNICEF, 1999).
Interventions for prevention of mother-to-child transmission (PMTCT) of HIV include use of anti-retroviral drugs for both mother and baby (Horizons, 2000; Heidemarie, 2001), improved ante-natal and delivery practices (Gaillard, 2001; Riley and Greene, 1999; Biggar, 1996) appropriate infant nutrition and early weaning (Preble and Piwoz, 2001; Pere, 1997), health education and change of sexual behaviour (Wang and Celum, 2001). Mother-to-child transmission of HIV can be reduced in developing countries through education, counseling and focused care (deCock and Fowler, 2000). Whereas counseling has changed lifestyles of many mothers and reduces transmission of HIV to babies (Evian, 1993), many still lack autonomy to join PMTCT activities (Maman and Mbwambo, 2001). Transmission through breastfeeding adds to risks (Pere, 1997; Trinh, 1999; Nduati and Mbori-Ngacha, 2002), accounting for 70% of postnatal transmission in Rwanda.

Introduction of breastfeeding alternatives at six months further reduces transmission of HIV (GOK, 2002). For example, HIV positive British mothers who had not breastfed had a transmission rate of 2.2%; a fall from 19.6% in 1993 (Trinh, 1999) and in Cote d'Ivoire weaning at six months is a public health recommendation. Most of Kenya’s populations (56%) under the poverty levels (GOK, 2002) are mothers and children, who will not afford the cost of milk substitutes. Hence, it is necessary to explore how to mobilize communities to scale up PMTCT.

2.1.2 Socio-cultural practices and MTCT

Some socio-cultural practices around marriage and initiation to womanhood are among the leading factors in MTCT yet they are reinforced by ethnic doctrines of privacy and family sanctity (Gordon and Crehan, 1999). Norms,
values and beliefs may be modified to reduce risks, a challenge the health authorities may venture into (Vitillo, 2002). Behavioural intervention models may be helpful in community mobilization (Wang and Celum, 2001). As such advocacy for safer sex counseling may be beneficial to discordant couples.

Since most rural mothers walk 7 to 8 Km in high potential areas and up to 25 Km in remote areas (KDHS, 1999) to reach the nearest Maternal-child health clinic (MCHC), the need for community mobilization and strengthening of home-based care is crucial. Community postnatal support workers in Britain have effectively educated rural mothers in holistic care, counseling, nutrition and social support (Morrel, 2000). It provides for active monitoring and follow-up of HIV positive mothers and their infants and, by extension, the father (Hahn, 1999). Home-based care strategies may be achieved by the use of CHWs and TBAs in collaboration with mothers and community co-operation to maximise their participation (Macauley, 1999). Capacity-building for HCWs needs to target training in MTCT, appropriate ante-natal counseling and follow-up of mothers. Strategizing small social structures in communities may offer new avenues to effective community mobilisation. It is imperative to link hospital ante-natal care with those of the community for effective mobilisation (GOK, 2002). Consultation between health professionals and traditional practitioners in the care of ante-natal mothers should be encouraged.

2.1.3 Ecumenical support and MTCT

As part of prevention, the National AIDS Control Council (2000) believes that the role of religious institutions is to carry out socio-pastoral and spiritual services, support to affected families and orphans, besides inculcation of moral
values for behaviour change. This needs pragmatic and proactive actions. The Catholic Church has, as has the Anglican Church, produced strategies that include prevention, counseling and care (Mpango and Amman, 2001). To be more assertive on PMTCT of HIV, Church policies should advocate community actions and stricter laws to protect the girl-child and women from rape and sexual abuse. HIV positive mothers should also be protected from ridicule, stigma and abandonment. Stigma goes away with the desire and willingness to change the fatalistic language used on HIV/AIDS (Byamugisha, 2003). The *African Regional Forum on Reproductive Health* noted that health workers in religious health institutions are challenged with matching the needs of communities with religious teachings (International Family Health, 2001). Mission Hospitals need to extend care for the sick into their homes.

### 2.1.4 Mother-to-child Transmission of HIV and Professionalism

In church health institutions, little expertise is seen in the field of prevention of Mother-to-child transmission of HIV. Information is lacking in thorough analysis of the process of Mother-to-child transmission of HIV, a necessity in designing community and hospital countermeasures and initiation of new approaches to prevention. This affects the quality of measures implemented to ensure safe maternal and child health. If identification of priorities for prevention is not complemented by understanding MTCT, a gap will exist between the contributing factors and health action. This is one reason why little use has been made of the knowledge on prevention of MTCT of HIV.

Health actions by traditional birth attendants (TBAs) and community health workers (CHWs) in communities and some hospitals have little knowledge of MTCT and of the interaction between community’s socio-cultural behaviour,
and factors that determine Mother-to-child transmission of HIV. Their little understanding of physiology of labour may lead to incidence of MTCT of HIV (WHO, 2001). Professional midwives should teach TBAs how to prevent prolonged labour using simple partography – labour monitoring technique (Bennett and Brown, 2000).

2.1.5 Prevention of Mother-to-child transmission of HIV

Among attempts made to minimise Mother-to-child transmission of HIV, voluntary counseling and testing has been advocated to effect behavior change (Harris, 2002). The reasons why 90% of infected people in Africa do not know their HIV sero-status include shortage of PMTCT services, poor uptake and counseling, denial by individuals and communities and failure by policy-makers and HCWs to link PMTCT and prevention to care. Though, it has been discovered that PMTCT strategies augmented public health impact by reaching uninfected mothers who receive information, training skills and support for preventive behavior (Horizons, 2000), integration of services in ante-natal clinic (ANC) is still a challenge. Family planning services linked with PMTCT need community support.

Enforcement of policies on safer care of ante-natal mothers through pregnancy, delivery and postnatal period is imperative. Nurses, midwives and counsellors must be trained to strengthen home-based care strategies through outreach programs. Success may be achieved with specific, comprehensive and effective PMTCT training and change of attitude among community members, HCWs and health authorities (GOK, 2002).
CHAPTER 3: MATERIALS AND METHODS

3.1 STUDY AREA

The study was carried out in Nkuene and Abogeta Divisions of Meru Central District. (Appendix 3). Meru Central District is one of the thirteen districts that form the Eastern Province and among the few centrally located on the map of Kenya. The district lies to the east of Mt. Kenya, shares borders with Laikipia District to the west, Nyeri and Kirinyaga to the south-west, Meru South to the south, Meru North and Isiolo to the north. The district straddles the Equator lying within latitude $0^\circ 3' 45"$ north and $0^\circ 2' 30"$ south, longitudes $37^\circ$ and $38^\circ$ east and altitude 3,000 m to 5,199 m above sea level (KDHS, 1999).

Meru Central District covering an area of 2,982 Km$^2$ with a population of 521,518 is an agricultural area with maize, potatoes and beans grown for subsistence. Coffee, tea, and pyrethrum are the main cash crops. Meru receives an average annual rainfall of about 385.4 mm during long rains and 760.8 mm during short rains. Unreliable rainfall had led to crop failure and drought during this study. High rates of school dropouts, consumption of illegal brews and drug taking had led to poverty (GOK, 2002).

The most common diseases in the Meru Central District are malaria, respiratory diseases and intestinal worms (GOK, 2002). The prevalence of HIV is 38% of the general population, 69% of whom are ante-natal mothers. The district has the following health indices: Crude birth rate of 48/1000 (National 467/1000); Crude death rate of 11/1000 (National is 112/1000); infant mortality rate of 74/1000 (National is 62/1000) and the under-five years mortality rate of 164/1000. It has three Mission Hospitals: Consolata Hospital, with a capacity of 272 beds, has a mean of 2,402 deliveries annually from a
population of 2,630 ante-natal mothers. St. Anne’s Maternity has a bed capacity of 79 and a mean of 713 deliveries annually from a population of 800 ante-natal mothers. Cottolengo Mission Hospital has a bed capacity of 88 and a mean of 350 deliveries annually from a population of 600 ante-natal mothers. The study covered all the Catholic Mission Hospitals.

3.2 STUDY POPULATION

The study population was ante-natal mothers visiting Maternal and Child Health Clinic and those who were reached by mobile clinics. A total of 863 ante-natal mothers were interviewed.

3.2.1 Inclusion criteria
(a) All ante-natal mothers attending MCHC in Consolata, St. Anne’s Maternity and Cottolengo Mission Hospitals.

(b) Midwives attending to ante-natal mothers in the three hospitals.

3.2.2 Exclusion criteria
(a) All respondents and interviewees who declined to participate in the study.

(b) Ante-natal mothers with diagnosis of mental disease.

3.2.3 Ethical considerations
Clearance was sought from Kenyatta University Ethical Committee through the Dean of School of Pure and Applied Sciences and other relevant authorities (Appendix 4). Study objectives were clarified to ante-natal mothers and informed consent for interview obtained from each respondent before interview and any respondent who wished to discontinue did so at own will. Confidentiality was also assured. Serialization of ante-natal cards was used to identify ante-natal mothers and respondents.
3.3 STUDY DESIGN

A cross-sectional study was carried out on factors associated with Mother-to-child transmission of HIV among ante-natal mothers in Catholic hospitals in Meru Central District. This design was chosen because the focus was on the current situation and practice the Catholic hospitals in Meru Central District were purposively selected because they are in high incidence area for MTCT (35%) and operate in similar circumstances as all other Catholic hospitals. Semi-structured questionnaires were used to obtain data from ante-natal mothers and HCWs. Focus group discussions were used on randomly selected groups of 72 people.

3.3.1 Sampling

Nkuene and Abogeta divisions were purposively selected. Nkuene Location in Nkuene Division was conveniently selected since Consolata Mission Hospital was situated there. Kanyakine Location in Abogeta Division was similarly selected because St. Anne’s Mission Hospital was situated there. Mitunguu Location also in Abogeta Division was conveniently selected since Cottolengo Mission Hospital was situated there. Through MCHC, simple random sampling was used to get ante-natal numbers of mothers in the selected locations. Those were used to track and interview them. Once interviewed, a sticker was placed on their Ante-natal Card to avoid re-interview during revisits or in another study hospital or mobile clinic. A similar technique was used to get the following centres for focus group discussions: Kanyakine Parish, Maraa, Nciru, Mitunguu, Ithitwe and Kiamuri. In each centre, random selection was used to get participants who included 2 male and 2 female members of the congregation, 1 catechist or priest, 2 nuns, first Traditional
Health Practitioner to agree to participate, 2 members of parish council/women leaders and 2 members of Small Christian communities.

### 3.3.2 Sample size determination

The sample size for ante-natal mothers was determined using the formula as used by Fisher *et al.* (1998):

\[
n = \frac{Z^2pqD}{d^2}
\]

Where:
- **n** = Sample Size
- **Z** = Standard Normal Deviate (1.96) which corresponds to 95% Confidence level
- **P** = Proportion of ante-natal mothers attending MCHC.
- **q** = 1 - **P**
- **d** = Degree of accuracy (level of statistical significance set)

\[
= 0.05
\]

\[
D = \text{Design effect} = 3
\]

Thus, \[n = \frac{1.96^2 \times 0.69 (0.31)}{0.05^2} = 328.687 \approx 300 \times 3 \approx 900\]

Since the target population for Nkuene, Kanyakine and Mitunguu was 4,030 the final sample was as follows:

\[
n_f = \frac{n}{1 + n/N}
\]

Where \[n_f = \text{Final sample}; \quad N = 4,030\]

Thus \[n_f = \frac{900}{1 + 900/4030} \approx 800\]

To arrive at the number of ante-natal mothers as sample in each hospital, equal numbers, 267, were recruited. A randomised 10% of HCWs, 4 from each hospital, were interviewed.

### 3.4 DATA COLLECTION METHODS AND RESEARCH INSTRUMENTS

#### 3.4.1 Research Instruments

Questionnaires and an FGD guiding instrument were pre-tested through a pilot study among 50 ante-natal mothers and 12 midwives in Mathari Division, Nyeri District between January and May 2003.
3.4.2 Questionnaires
There were two different coded semi-structured questionnaires: one for ante-natal mothers and one for HCWs. The former was designed to elicit information on knowledge, attitudes and practices of ante-natal mothers relating to factors on Mother-to-child transmission of HIV. The questionnaire was written in Kiswahili and Kimeru for mothers to be able to fill them out by themselves (Appendix 2). Those who were not literate were guided in reading the questionnaire. Research assistants, supervised by the researcher recorded the responses. The study hospitals had PMTCT services in their MCHC and a total of 12 HCWs attending to ante-natal mothers were sampled and given a separate questionnaire to fill in order to get comparative responses. All of my findings were based on them. Their questionnaire sought to elicit services offered and related training needs. Completed questionnaires were given to the researcher at the end of each day.

3.4.3 Focus Group Discussions
For the purpose of validating the data on factors associated with Mother-to-child transmission of HIV among ante-natal mothers, focus group discussions were conducted in two centers in every location. Each center had 12 randomly selected individuals from congregation, religious leaders, community members, parish council and a small Christian community. The participants sat in a circular manner, introduced themselves and each was given a reference number. While guiding the discussion, the moderator referred to each speaker using the numbers. Being in a homogenous Meru Community, Kimeru Language was mainly used though some participants felt at ease expressing their views in Kiswahili and English. The Moderator prompted questions in Kimeru and probed discussions as data recording was done by two note-takers.
He would then translate in English and back to either language as discussion progressed. Information was later entered in computer.

3.5 DATA ANALYSIS
Data were cleaned and coded before entry in computer. Data analysis was done using the statistical package for social scientists (SPSS) version 8.0.

3.5.1 Quantitative Data
Descriptive statistics was used to present data, showing their distribution and to present initial results. Results were then summarized using frequency tables where distribution of ante-natal mothers' attributes was presented and their correlations with health-care workers' responses expressed in cross-tabulations. Contingency tables were used to show the relationship between the professional training background of the HCWs and their work. Chi-square was used to show statistical tests of association and significance where applicable. Level of significance was given at 0.05 (p=0.05).

3.5.2 Qualitative Data
Qualitative data from each FGD were transcribed, coded and descriptive analysis done relative to objectives of the study. Summary of analysis provided necessary explanation for the quantitative data. Comparative analysis and discussion of all data were carried out in order to draw conclusions and make recommendations relating to the factors associated with Mother-to-child transmission of HIV.
CHAPTER 4: RESULTS AND DISCUSSION

4.1 RESULTS

4.1.1 Quantitative and Qualitative Data
Quantitative results included data from responses of 863 ante-natal mothers relating to socio-demographic characteristics, knowledge, attitude and practice regarding mother-to-child transmission of HIV and baby feeding practices. It also included educational background of 10% of HCWs, 4 responses in each hospital, as regards their basic training in the care of both mother and baby in the era of HIV. The qualitative results were from focus group discussions held in Kanyakine, Maraa, Nciru, Mitunguu, Ithitwe and Kiamuri centres.

4.1.1.1 Socio-Demographic Characteristics of the Study Population
Age distribution of ante-natal mothers.

Most of the ante-natal mothers attending the clinics in the areas visited were significantly young ($x^2=703.2; \ df=7; \ p=0.0000$). Over 90 % ($n=786$) of them
were below the age of 35 years and almost 50% (n=423) of these were below 24 years. The ante-natal mothers between 20 to 24 years were 34.5% (n=298) and those in age group 25 – 29 years followed at 23.2% (n=200). Those between 30 – 34 years were third with 18.9% (n=163), followed by 4.5% (n=125) in 15 – 19 years (Fig.1).

**Distribution of ante-natal mothers by marital status**

More of the younger ante-natal mothers were married as compared to the older ones who were either single or widowed and this was significant ($x^2=5752.5; \text{df}=3; \text{p-value}=0.0000$). Out of 856 mothers, 77% (n=659) were monogamously married, 5.4% (n=46) married polygamous and 17% (n=147) were single (see Fig.2). The mean age at marriage was 22 years. Those who were either widowed or separated from their husbands were insignificant at 0.5% (n=4).

![Fig. 2: DISTRIBUTION OF ANTENATAL MOTHERS BY MARITAL STATUS](image)

\[ x^2=5752.5; \text{df}=3; \text{p}=0.0000 \]

- 78% single
- 5.4% Married monogamous
- 17% Married polygamous
- 0.5% Widowed/sepervised

**Distribution of age of ante-natal mothers at marriage**

Most of the married ante-natal mothers did so at a tender age of between 17 to 24 years and this was significant ($x^2=3603.9810; \text{df}=49; \text{p}=0.0000$). Out of 617 married ante-natal mothers, over 97% (n=601) were married before or at
age 24 years, 70.8% (n=437) married between ages 20 – 24 years and 22.4% (n=138) in the bracket of 15 – 19 years (Table 1). About 4.2% (n=26) mothers were under 15 years at time of marriage. Only 2.3% (n=14) of the ante-natal mothers were within age 30 – 34 at marriage and 0.3% (n=2) were above 35 years.

Table 1: Marital status of ante-natal mothers by age group

<table>
<thead>
<tr>
<th>Age group</th>
<th>Single</th>
<th>Married monogamous</th>
<th>Married polygamous</th>
<th>Widowed/separated</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>15-19</td>
<td>66</td>
<td>53</td>
<td>2</td>
<td>3</td>
<td>124</td>
</tr>
<tr>
<td>Row %</td>
<td>53.2</td>
<td>42.7</td>
<td>1.6</td>
<td>2.4</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>44.9</td>
<td>8.0</td>
<td>4.3</td>
<td>75.0</td>
<td>14.5</td>
</tr>
<tr>
<td>20-24</td>
<td>55</td>
<td>225</td>
<td>15</td>
<td>0</td>
<td>295</td>
</tr>
<tr>
<td>Row %</td>
<td>18.6</td>
<td>76.3</td>
<td>5.1</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>37.4</td>
<td>34.1</td>
<td>32.6</td>
<td>0.0</td>
<td>34.5</td>
</tr>
<tr>
<td>25-29</td>
<td>21</td>
<td>167</td>
<td>11</td>
<td>0</td>
<td>199</td>
</tr>
<tr>
<td>Row %</td>
<td>10.6</td>
<td>83.9</td>
<td>5.5</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>14.3</td>
<td>25.3</td>
<td>23.9</td>
<td>0.0</td>
<td>23.2</td>
</tr>
<tr>
<td>30-34</td>
<td>4</td>
<td>145</td>
<td>12</td>
<td>1</td>
<td>162</td>
</tr>
<tr>
<td>Row %</td>
<td>2.5</td>
<td>89.5</td>
<td>7.4</td>
<td>0.6</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>2.7</td>
<td>22.0</td>
<td>26.1</td>
<td>25.0</td>
<td>18.9</td>
</tr>
<tr>
<td>35-39</td>
<td>1</td>
<td>55</td>
<td>3</td>
<td>0</td>
<td>59</td>
</tr>
<tr>
<td>Row %</td>
<td>1.7</td>
<td>93.2</td>
<td>5.1</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>0.7</td>
<td>8.3</td>
<td>6.5</td>
<td>0.0</td>
<td>6.9</td>
</tr>
<tr>
<td>40-44</td>
<td>0</td>
<td>12</td>
<td>3</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Row %</td>
<td>0.0</td>
<td>80.0</td>
<td>20.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>0.0</td>
<td>1.8</td>
<td>6.5</td>
<td>0.0</td>
<td>1.8</td>
</tr>
<tr>
<td>45-49</td>
<td>0</td>
<td>1</td>
<td>0</td>
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<td>1</td>
</tr>
<tr>
<td>Row %</td>
<td>0.0</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>0.0</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>Below 15</td>
<td>0</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Row %</td>
<td>0.0</td>
<td>100.0</td>
<td>0.0</td>
<td>0.0</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>0.0</td>
<td>0.2</td>
<td>0.0</td>
<td>0.0</td>
<td>0.1</td>
</tr>
<tr>
<td>TOTAL</td>
<td>147</td>
<td>659</td>
<td>46</td>
<td>4</td>
<td>856</td>
</tr>
<tr>
<td>Row %</td>
<td>17.2</td>
<td>77.0</td>
<td>5.4</td>
<td>0.5</td>
<td>100.0</td>
</tr>
<tr>
<td>Col %</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Chi-squared  df  Probability
3603.9810  49  0.0000

Distribution of ante-natal mothers by marital status and age

Age group had a significant ($x^2=3603.9810; df=49; p=0.0000$) association with the marital status of ante-natal mothers interviewed (Table 1). The relationship was that the younger the group the less likely that the individual was married
and vice versa. Most of the mothers, 57.7% (n=494) were married between age 20 – 29 years. Majority (n=382) were in monogamous marriages, 76.3% (n=225) being in the age bracket 20 – 24 years and 83.9% (n=167) in 25 – 29 years age bracket. However, early marriage existed among ante-natal mothers with 4.2% (n=26) under 15 years at time of marriage.

**Distribution of ante-natal mothers by their live births**

**Table 2: Ante-natal mothers and their live births**

<table>
<thead>
<tr>
<th>Live births</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>164</td>
<td>23.3%</td>
<td>23.3%</td>
</tr>
<tr>
<td>1</td>
<td>262</td>
<td>37.3%</td>
<td>60.6%</td>
</tr>
<tr>
<td>2</td>
<td>136</td>
<td>19.3%</td>
<td>79.9%</td>
</tr>
<tr>
<td>3</td>
<td>95</td>
<td>13.5%</td>
<td>93.5%</td>
</tr>
<tr>
<td>4</td>
<td>30</td>
<td>4.3%</td>
<td>97.7%</td>
</tr>
<tr>
<td>5</td>
<td>14</td>
<td>2.0%</td>
<td>99.7%</td>
</tr>
<tr>
<td>Over 5</td>
<td>2</td>
<td>0.2%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>703</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

\(\chi^2 = 533.3116; \text{df}=6; \ p=0.0000\)

Most, 80% (n=572) of the mothers had no more than 2 live births \(\chi^2 = 533.3116; \text{df}=6; \ p=0.0000\) (Table 2). Over 37% (n=262) of these had had one live birth and 23.3% (n=164) had none. Only 19.8% (n=139) had had between 3 – 5 live births and 0.2% (n=2) had had between 5 – 7 live births. About 78.7% (n=496) respondents had had no abortion (Fig. 3). 16.8% (n=106) of them had had one abortion; 3.2% (n=20) had had 2, 1.2% (n=8) had had 3 and 0.1% (n=1), 4. This reveals a decreasing number of ante-natal mothers had had high number of abortions and reflects either a high regard to babies by the prospective mothers or good ante-natal care by the HCWs, or both. This is a pre-requisite to reduced infant mortality and better child survival.
Fig. 3. DISTRIBUTION OF ANTENATAL MOTHERS BY ABORTIONS

\[ X^2 = 1411.1313; \text{df} = 4; p = 0.0000 \]

Fig. 4: DISTRIBUTION OF ANTENATAL MOTHERS BY LIVING CHILDREN

\[ X^2 = 629.49816; \text{df} = 6; p = 0.0000 \]
Distribution of ante-natal mothers by their living children

Over 56% (n=396) of the ante-natal mothers had had no more than 2 living children. Majority, 39% (n=275) of them had only 1 ($x^2=629.4981; df=6; p=0.0000$), while 27% (n=190) had none. About 16.8% (n=119) had between 3 – 7 living children. Most, 12.2% (n=86) of the mothers in this category had 3 living children (Fig.4).

Distribution of Age of children at death

There were 88 ante-natal mothers who had lost at least one child. Death does not occur uniformly at certain ages and this was statistically significant ($x^2=15.15; df=6; p=0.025$). However, most of the children died within the first year of life. Over 88.6% (n=68) of the children born alive did not see their fifth birthday. Majority, 25% (n=22) of the children had died under 1 year of age followed by 21.6% (n=19) who died when at 3 years of age. About 14.8% (n=13) died during birth. Those who died at age 2 were 10.2% (n=9), those at age 4, 8.0% (n=7), and at age 5, 9.1% (n=9) (Table 3).

Table 3: Age of children at death

<table>
<thead>
<tr>
<th>Age at death (in years)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>13</td>
<td>14.8%</td>
<td>14.8%</td>
</tr>
<tr>
<td>1</td>
<td>22</td>
<td>25.0%</td>
<td>39.8%</td>
</tr>
<tr>
<td>2</td>
<td>9</td>
<td>10.2%</td>
<td>50.0%</td>
</tr>
<tr>
<td>3</td>
<td>19</td>
<td>21.6%</td>
<td>71.6%</td>
</tr>
<tr>
<td>4</td>
<td>7</td>
<td>8.0%</td>
<td>79.5%</td>
</tr>
<tr>
<td>5</td>
<td>8</td>
<td>9.1%</td>
<td>88.6%</td>
</tr>
<tr>
<td>Over 5</td>
<td>10</td>
<td>11.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>88</td>
<td>100.0%</td>
<td></td>
</tr>
</tbody>
</table>

$x^2=15.15; df=6; p=0.025$
Cause of death of children of the ante-natal mothers

Causes of death had statistically significant difference ($x^2=2602.04$; df=8; $p=0.0000$). While malaria had killed over 59% (n=62) of the children (Fig 5), AIDS with Pneumonia had killed 11.2% (n=11) and TB, 1% (n=1). About 7% (n=7) of children had died of asphyxia (difficulty in breathing after birth), 2% (n=2) of abortion and 1% (n=1) of birth injuries. About 12.2% (n=17) were said to have died of unknown causes but suspected by ante-natal mothers to be AIDS. One was murdered and one believed to have been bewitched.

Fig 5. Cause of death of children of the ante-natal mothers

![Pie chart showing causes of death]

$x^2=2602.04$; df=8; $p=0.0000$
Distribution of ante-natal mothers by monthly income

The difference in ante-natal mothers' monthly income was statistically significant ($x^2 = 172; df = 4; p = 0.0000$). Out of 862 respondents, 32% ($n=278$) earned nothing (Fig. 6). About 24% ($n=211$) of the respondents earned less than Ksh.3,000, closely followed by 22% ($n=190$) who earned between Ksh.3,000 – 5,000. About 15.5% ($n=134$) of the respondents earned between Ksh.5,000 – 10,000 and those who earned over Ksh.10,000 were only 5.7% ($n=49$).
Distribution of ante-natal mothers by completed level of education

There was a significant difference ($\chi^2=640; df=4; p=0.0000$) among ante-natal mothers with completed basic educational level (Fig.7). Literacy level was 93% ($n=796$). Most, 41.4% ($n=356$) of the 859 respondents had completed secondary school education and 39.9% ($n=343$) primary level. Few, 11.3% ($n=97$) had tertiary education and 7.1% ($n=61$) had none.

4.1.1.2 Knowledge, Attitude and Practices Regarding Mother-to-Child Transmission of HIV

Distribution of ante-natal mothers with knowledge of children with HIV/AIDS

There is significantly high rate of awareness of MTCT of HIV among ante-natal mothers ($\chi^2=2549.1956; df=5; p=0.0000$). Out of 855 ante-natal mothers, 55.9% ($n=478$) reported to have ever come across a child with HIV/AIDS; 44.1% ($n=377$) had not (Table 4). Similarly, there is high rate of awareness of HIV/AIDS people in the community ($\chi^2=768.29; df=5; p=0.0000$). While
54.3% (n=279) averred that people said the child got HIV from its mother and that 34% (n=175) said people blamed witchcraft, 80% (n=692) of the respondents believed that children under five years acquired HIV from their mothers and only 8.5% (n=73) agreed that it was from witchcraft. About 6.2% (n=32) said people thought it was from insect bite and 3.2% (n=27) of the respondents themselves agreed so. While 1.9% (n=10) said people did not know how, 4.6% (n=39) did not know either. An insignificant number 0.4% (n=2) of ante-natal mothers said that people believed that sharing of household facilities was responsible for transmission of HIV and 0.5% (n=4) agreed with this view.

Table 4: Ante-natal mothers with knowledge of how people say the child caught HIV/AIDS

<table>
<thead>
<tr>
<th>How people say the child got AIDS (Upper row)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>From its mother</td>
<td>279</td>
<td>54.3%</td>
<td>54.3%</td>
</tr>
<tr>
<td>Insect bite</td>
<td>32</td>
<td>6.2%</td>
<td>60.5%</td>
</tr>
<tr>
<td>From witchcraft</td>
<td>175</td>
<td>34.0%</td>
<td>94.6%</td>
</tr>
<tr>
<td>Sharing house hold-facilities</td>
<td>2</td>
<td>0.4%</td>
<td>94.9%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>10</td>
<td>1.9%</td>
<td>96.9%</td>
</tr>
<tr>
<td>Others</td>
<td>16</td>
<td>3.1%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>514</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

According to FGDs, responses on MTCT of HIV were recorded in all centers. Most of them were specific about transmission during labour and birth by a HIV positive mother. They also thought breast-feeding was among the main
routes of transmission. Traditional removal of false teeth was counted among routes of transmission when babies shared contaminated instruments.

Other perceptions included breast-feeding by HIV positive mother, some saying transmission occurred only when the baby had an injury inside the body, especially after *gukura nguani* (meaning the traditional removal of false teeth in neonates in Kimeru local language). Home delivery by HIV positive mother and subsequent cutting of umbilical cord using shared instruments was also cited as other cultural practices that may enhance the risk of HIV transmission in children. Early sexual debut and forced early marriage were all linked to increased risks of MTCT of HIV and so to unfaithful parents with lack of sexual control. Though less significant, other factors include tattooing of children using shared instruments to cure pneumonia and other diseases.

Among 854 respondents, 60% (n=512) said that a pregnant woman infected with HIV could transmit it to her unborn child while 31.1% (n=266) did not agree with this view and only 8.9% (n=76) did not know (Table 5).

**Table 5: Distribution of ante-natal mothers on whether a HIV positive mother could transmit it to her child**

<table>
<thead>
<tr>
<th>Mother-to-child transmission of HIV</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
<th>x²</th>
<th>df</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>There is MTCT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td>512</td>
<td>60.0%</td>
<td>60.0%</td>
<td>335.76</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>Breast-feeding</td>
<td>198</td>
<td>60.7%</td>
<td>60.7%</td>
<td>144.185</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>No MTCT</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td>266</td>
<td>31.1%</td>
<td>91.1%</td>
<td>335.76</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>Breast-feeding</td>
<td>107</td>
<td>32.8%</td>
<td>93.6%</td>
<td>144.185</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>Don’t know if there is MTCT in:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pregnancy</td>
<td>76</td>
<td>8.9%</td>
<td>100.0%</td>
<td>335.76</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>Breast-feeding</td>
<td>21</td>
<td>6.4%</td>
<td>100.0%</td>
<td>144.185</td>
<td>2</td>
<td>0.0000</td>
</tr>
<tr>
<td>Total</td>
<td>854</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>326</td>
<td>100.0%</td>
<td>100.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The belief by ante-natal mothers that MTCT of HIV could specifically take place in pregnancy was significant ($x^2=335.766; \text{df}=2; \text{p}=0.000$) and so in breast-feeding ($x^2=144.185; \text{df}=2; \text{p}=0.000$). Among 326 respondents, 60.7% (n=198) equally conceded that the pregnant mother could still transmit HIV through breast-feeding, while 32.8% (n=107) said no and only 6.4% (n=21) did not know (Table 5).

**How HIV/AIDS is discussed in the community and means of protection**

Participants of focus group discussions gave a wide variety of terminologies of HIV/AIDS in community. Most of them said that the disease was referred to as witchcraft or curse caused by *Mdudu* (worm), *Kathua* (*lit.* a disease that eats one slowly till death), *Kanyaru* (*lit.* withering slowly until death), *Mutheero* (*lit.* something very slim) and *Kamatisha* (*lit.* to give someone something to carry).

Although participants of FGDs suggested partner-faithfulness to protect themselves from HIV infection, people's risky behaviour include wife inheritance, life in concubine relationships, shared surgical instruments, *gukura nguani* (traditional removal of false teeth) and promiscuity. Other protective measures included condoms but some would not care, leaving it to fate and behaving as they had always done.

Table 6 indicates major ways suggested for reducing HIV/AIDS among mothers in community. Out of 849 respondents, 58.7% (n=498) said that it was through faithfulness to one’s partner, 13.1% (n=111), prayers and 12.5% (n=106), improving voluntary counseling and testing. About 12.6% (n=107) mentioned use of condoms and the other methods, 3.2% (n=27).
Table 6: Distribution of suggested ways of reducing HIV infection among mothers in community

<table>
<thead>
<tr>
<th>Suggested ways of reducing HIV infection among mothers</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Faithfulness to one’s partner</td>
<td>498</td>
<td>58.7%</td>
<td>58.7%</td>
</tr>
<tr>
<td>Prayers</td>
<td>111</td>
<td>13.1%</td>
<td>71.7%</td>
</tr>
<tr>
<td>VCT</td>
<td>106</td>
<td>12.5%</td>
<td>84.2%</td>
</tr>
<tr>
<td>Condoms</td>
<td>107</td>
<td>12.6%</td>
<td>96.8%</td>
</tr>
<tr>
<td>Others</td>
<td>27</td>
<td>3.2%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>849</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

$x^2=822.13$ df=4; p=0.000

Most, 58.7% (n=498) of the ante-natal mothers suggested faithfulness to one’s partner as the main way to reduce HIV/AIDS among mothers in the community ($x^2=822.13$ df=4; p=0.000), a fact underlined by participants in all focus group discussions. This suggestion also has a direct relation with the major obstacles in reducing HIV/AIDS in the community being unfaithfulness and promiscuity with 39.8% (n=337) (Fig.8). The use of prayers was suggested by 13.1% (n=111) of the ante-natal mothers indicating an important role of clergy. While 12.5% (n=106) of mothers suggested improved VCT an equal number, 12.6% (n=107) suggested use of condoms. In some of the focus group discussions the use of condom was likened to “eating sweets with their cover on”. Men especially were said to detest condoms.

By show of hands 29 FGD participants argued that MTCT of HIV was only preventable through faithfulness to one’s wife/husband or love partner. Some suggested hospital and not home delivery of babies, others, voluntary counseling and testing while educating parents on how HIV infects babies. Other participants urged for avoidance of idleness, alcohol consumption and drug abuse and advocated for increased HIV/AIDS awareness, practice of abstinence until marriage and discouragement of cultural practices such as
wife inheritance. Improved communication between spouses regarding HIV, use of condom, avoidance of shared surgical instruments and encouragement of good nutrition were also suggested.

Participants of FGDs noted that when a couple discovers that one partner was un-infected while the other was, participants reported that the infected one was blamed for infidelity and isolated. If the infected is the woman she is expelled to her parents; if it is the man he is isolated but within his house. At other times, the spouse who is not infected might run away, breaking the marriage and getting another spouse, or would wait and helplessly leave it to fate as they lived together. A few would sexually spread HIV or misuse family property before dying. Some couples would consequently abstain from sexual contact with each other.

Table 7: Distribution of initial treatment commonly used when a pregnant mother is thought to have HIV

<table>
<thead>
<tr>
<th>Initial treatment commonly used</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traditional medicine</td>
<td>240</td>
<td>28.2%</td>
<td>28.2%</td>
</tr>
<tr>
<td>Hospitalization</td>
<td>357</td>
<td>41.9%</td>
<td>70.1%</td>
</tr>
<tr>
<td>Blames witchcraft</td>
<td>156</td>
<td>18.3%</td>
<td>88.4%</td>
</tr>
<tr>
<td>Don’t know</td>
<td>86</td>
<td>10.1%</td>
<td>98.5%</td>
</tr>
<tr>
<td>Other</td>
<td>13</td>
<td>1.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>852</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

$x^2 = 421.1807$ df=4; $p=0.000$

There was significant difference in the initial treatment sought for a HIV positive ante-natal mother ($x^2 = 421.1807$ df=4; $p=0.000$). Out of 852 respondents, 41.9% (n=357) of the ante-natal mothers said that hospitalization was mostly sought as 28.2% (n=240) reported use of traditional medicine (Table 7). About 18.3% (n=156) said witchcraft was blamed while 1.5% (n=13), other traditional practices such as tattooing. 10.1% (n=86) did not know what was done. From FGDs, it was the husband and family members
who took care of a pregnant mother from conception till delivery, and only in the hospitals that nurses and doctors took over. Care by traditional birth attendants in community was crucial.

As regards factors that an ante-natal mother with HIV does to reduce the risk of transmitting it to her baby, 59.4% (n=504) would seek medical attention, 25.9% (n=220) would do nothing and 11.7% (n=99) did not know what to do. 0.7% (n=6) would resort to abortion and 2.4% (n=20), other interventions as prayers.

Perception of ante-natal mothers known to be HIV positive

There was a significant difference \( (x^2=441.9101; \ df=3; \ p=0.000) \) in the perception of HIV positive ante-natal mothers. Fellow women accounting for 52% (n=464), ranked highest among groups that despised HIV positive pregnant women (Table 8). Religious members accounted for 26% (n=230), HCWs, 16.9% (n=149) and traditional health practitioners, 45% (n=40).

**Table 8:** Distribution of groups perceived to despise HIV positive ante-natal mothers

<table>
<thead>
<tr>
<th>Groups perceived to despise HIV positive pregnant women (Upper row)</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fellow women</td>
<td>464</td>
<td>52.5%</td>
<td>52.5%</td>
</tr>
<tr>
<td>Religious members</td>
<td>230</td>
<td>26.0%</td>
<td>78.6%</td>
</tr>
<tr>
<td>HCWs</td>
<td>149</td>
<td>16.9%</td>
<td>95.5%</td>
</tr>
<tr>
<td>Traditional health practitioners</td>
<td>284</td>
<td>75.5%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>883</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

However, about 55% (n=398) of those who sought treatment to HIV positive ante-natal mothers were mainly the religious members, 29.1% (n=211), healthcare workers, 26.9% (n=195) and their fellow women, 25.8% (n=187).
Traditional health practitioners accounted for 18.2% (n=132). Interestingly, these are the very groups, especially their fellow women and the religious members who despised them the most (Table 8). This indicates that most of the time of the HIV positive mothers is spent with these groups and hence any stigmatization of the sick mothers is deeply felt if it is coming from them especially if she is seen not to be breast-feeding.

Similarly, witchcraft was significantly thought to cause HIV among ante-natal mothers ($x^2=512.936; df=3; p=0.000$). Over 75.5% (n=284) of all who blamed witchcraft were traditional health practitioners (Table 8). Fellow women who blamed witchcraft were 10.1% (n=38); health-care workers were 7.4% (n=28) and religious members, 7% (n=26).

Most of the traditional health practitioners – traditional birth attendants and false teeth removers – blamed witchcraft on HIV positive mothers. Participants of FGDs in all centers supported this fact. This factor may be a hindrance to strategies for the prevention of mother-to-child transmission of HIV and ways must be sought for addressing it.
There was a significant difference in obstacles in the fight against HIV/AIDS among women ($\chi^2=331.5529; \text{df}=4; p=0.0000$) in the community (Fig. 8). Out of 846 respondents 39.8% ($n=337$) said it was unfaithfulness among spouses. 27% ($n=228$) indicated poverty; 18.6% ($n=157$), ignorance; 10.4% ($n=88$), lack of awareness and 4.3% ($n=36$), other reasons.

The major obstacles in fighting HIV/AIDS among women in the community in the survey included unfaithfulness among spouses, also supported by participants of all FGDs. Another major obstacle was poverty, a factor found out by FGDs as responsible for compromising the negotiating power of women in general.
Practices Regarding HIV/AIDS Counseling and Testing in the Community

Whether or not ante-natal mothers should be tested for HIV

There were 854 ante-natal mothers of whom 56.2% (n=480) thought that HIV counseling and testing should be done before delivery while 43.8% (n=374) were against it. Nearly all FGD participants were for mandatory testing of ante-natal mothers, adding that if they were done in recognized hospitals it would facilitate looking for means of supporting ante-natal mothers. Those who were against mandatory testing argued that it would cause spousal separation, divorce or other family ills altogether.

Table 9: Distribution of the type of counseling ante-natal mothers received

<table>
<thead>
<tr>
<th>Type of counseling ante-natal mothers received</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre- &amp; Post-test counseling</td>
<td>132</td>
<td>64.2%</td>
<td>64.2%</td>
</tr>
<tr>
<td>Only pre test</td>
<td>50</td>
<td>24.9%</td>
<td>89.1%</td>
</tr>
<tr>
<td>Only post test</td>
<td>11</td>
<td>5.5%</td>
<td>94.6%</td>
</tr>
<tr>
<td>No counseling</td>
<td>9</td>
<td>4.4%</td>
<td>99.1%</td>
</tr>
<tr>
<td>Others</td>
<td>2</td>
<td>1.0%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>204</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

$x^2=290.1664; \text{ df}=4; \text{ p}=0.000$

Counseling differed significantly from one ante-natal mother to another ($x^2=290.1664; \text{ df}=4; \text{ p}=0.000$). As such there is no consistency. Out of 845 ante-natal mothers, 75.9% (n=641) had never had a test while 24.1% (n=204) had had. For those who had had HIV test, 69.9% (n=146) voluntarily decided to have it while 30.1% (n=58) were required to have it. Among these, 64.2% (n=132) said they had ever received pre- and post-test counseling (Table 9). While 24.9% (n=50) had had only pre-test counseling, 5.5% (n=11) had had only post-test counseling. 4.5% (n=9) had had no counseling. While 72.5% (n=148) were satisfied with the pre- and/or post-test counseling they received,
23.5% (n=48) were not and 3.9% (n=8) did not know whether they were or not satisfied.

Table 10: Distribution of whether or not Ante-natal Mothers are/should be tested for HIV in MCHC by HCWs

<table>
<thead>
<tr>
<th>No. of HCWs who said ante-natal mothers:</th>
<th>By free choice HIV testing</th>
<th>By mandatory HIV testing</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Were tested in MCHC</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Were not tested in MCHC</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Should be tested</td>
<td>10</td>
<td>2</td>
<td>12</td>
</tr>
<tr>
<td>Should not be tested</td>
<td>2</td>
<td>10</td>
<td>12</td>
</tr>
</tbody>
</table>

The facilities had PMTCT services and all ante-natal mothers were being tested. Most (9 out of 12) of the mothers were tested for HIV by requirement and few (3 out of 12) were tested by free choice. When asked about their opinion on testing ante-natal mothers, majority of the respondents (10 out of 12) were against mandatory HIV testing of both ante-natal and postnatal mothers but were for free choice HIV testing (Table 10).

4.1.1.3 Baby Feeding and Weaning Practices

Fig. 9 indicates a significant age difference in the weaning of babies ($\chi^2=2620.8693; \ df=6; \ p=0.000<0.05$). Over 60% (n=511) of the respondents said weaning in the community was from 4 – 6 months; 21.1% (n=179) reported 2 – 4 months; 7.5% (n=64), 1 – 2 months; 5.1% (n=43), over 6 months; 3.1% (n=26), less than one month and 1.9% (n=16), did not know when to wean babies. The implication is that weaning instructions are not uniform.
Table 11 shows the common foodstuffs mothers use to wean their babies. Significant differences exist in the distribution of foodstuffs used for weaning ($x^2=859.8586; \text{df}=4; p=0.000$). Majority, 54.2% (n=461) of the respondents indicated use of porridge/"uji as commonly used followed by mashed bananas with 29.3% (n=249). Use of milk ranked third with 13.1% (n=111) of the respondents indicating it. Those who indicated use of fruits were 2% (n=17) and 1.4% (n=12) for other foodstuffs.

Table 11: Distribution of common foodstuffs used for weaning babies

<table>
<thead>
<tr>
<th>Common foodstuff for weaning babies</th>
<th>Ante-natal mothers</th>
<th>Health-care workers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency</td>
<td>Percent</td>
<td>Cum Percent</td>
</tr>
<tr>
<td>-----------</td>
<td>---------</td>
<td>-------------</td>
</tr>
<tr>
<td>Porridge/&quot;uji</td>
<td>461</td>
<td>54.2%</td>
</tr>
<tr>
<td>Mashed bananas</td>
<td>249</td>
<td>29.3%</td>
</tr>
<tr>
<td>Milk</td>
<td>111</td>
<td>13.1%</td>
</tr>
<tr>
<td>Fruits</td>
<td>17</td>
<td>2.0%</td>
</tr>
<tr>
<td>Others</td>
<td>12</td>
<td>1.4%</td>
</tr>
<tr>
<td>Total</td>
<td>850</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

$x^2=859.8586; \text{df}=4; p=0.000$
About 32.5% (n=269) of the respondents said there were mothers in the community who do not breastfeed their babies even though they may have adequate breast-milk. This showed a significant difference in breast-feeding alternatives they use ($x^2=206.6876; \text{df}=3; \ p=0.000$) (Table 12). Most of them were said to use cow’s milk by 57.7% (n=152) of the respondents (Table 13). 41.9% (n=106) of the respondents reported use of grain porridge mainly *wimbi* (sorghum) 33.2% (n=84) and maize, 8.7% (n=22). From the HCWs, 9 out of 12 of the respondents reported that mothers used porridge, 5 of them specific on use of *wimbi* porridge and 4 reported use of maize porridge.

<table>
<thead>
<tr>
<th>Options used by non-breast feeders</th>
<th>Frequency</th>
<th>Percent</th>
<th>Cum Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cow’s milk</td>
<td>152</td>
<td>57.7%</td>
<td>57.7%</td>
</tr>
<tr>
<td>Maize porridge</td>
<td>22</td>
<td>8.7%</td>
<td>66.4%</td>
</tr>
<tr>
<td><em>Wimbi</em> porridge</td>
<td>84</td>
<td>33.2%</td>
<td>99.6%</td>
</tr>
<tr>
<td>Others</td>
<td>1</td>
<td>0.4%</td>
<td>100.0%</td>
</tr>
<tr>
<td>Total</td>
<td>269</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

$x^2=206.6876; \text{df}=3; \ p=0.000$

### Advice on breast-feeding as regards to HIV
Health-care workers interviewed differed on advice given. Five (5) reported that the mothers were advised to breastfeed as usual and 5 reported that mothers were advised to avoid it. Only 2 said there was no advice given.

### Age of weaning babies and counseling on baby-feeding options
Eight HCWs gave advice on breast-feeding counseling only while 3 gave advice on bottle-feeding counseling only. Many (8 out of 12) of the respondents said that mothers were advised to wean babies at between 4 to 6 months. Only 3 HCWs reported that mothers were advised to wean after 6 months. One respondent was not sure when to start weaning.
Distribution of proportion of babies born to HIV positive mothers
Out of 12 respondents, 5 of them thought that the proportion of the babies born to HIV positive mothers in the study hospitals was up to 20% and so were those who did not know. One midwife thought that the proportion was between 35% and 50%. Similarly, one thought it was over 50%.

4.1.1.4 Characteristics of Maternal and Child Health Services

Characteristics of Health-care Workers in the Study Hospitals
Table 18 shows the distribution of MCHC staff by their basic and additional job-relevant training. Among the health-care workers interviewed 8 out of 12 were enrolled community health nurses and one was enrolled nurse/midwife. There was only one Community Health Registered Nurse and one Clinical Officer. One other was only trained in maternal/child health-care.

Table 13: Distribution of MCHC health-care workers by basic and additional job-relevant training

<table>
<thead>
<tr>
<th>Basic training</th>
<th>Additional job-relevant training</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MTCT of HIV</td>
<td>Plain counseling</td>
</tr>
<tr>
<td>Enrolled Community Health Nurse</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Registered Community Health Nurse</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Registered Clinical Officer</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Other</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Majority, (10 out of 12) had additional training in mother-to-child transmission of HIV, HIV/AIDS and counseling. Of the 12 interviewed 4 had training only in mother-to-child transmission of HIV and so were those trained
only in HIV/AIDS and counseling. There were two health-care workers with additional training in counseling and relevant short courses.

**Distribution of community support groups in the study area**

Seven out of 12 HCWs indicated the use of other mission’s health facilities and 2 mentioned the use of NGO health facilities. Two HCWs indicated the use of government health facilities. As for the distribution of ante-natal outreach services in MCHC, 9 out of 12 of the HCWs mentioned maternal/child health services and 3 mentioned treatment of minor ailments only. These are the only common services offered as outreach in the study hospitals. Mother-to-child transmission services seem to be lacking.

From FGDs, participants reported the presence of community members themselves only during burial through extended family members, relatives and Small Christian Communities as source of support. Community-based distributors and HIV/AIDS information from speeches given by health inspectors in chief’s *barazas* were occasionally organized. Seven out of 12 of the health-care workers indicated the use of other mission’s health facilities adding that they offered fairly more accessible maternal/child health services, mobile clinics and treatment of minor ailments, and health education through seminars than the NGO and government health facilities. This determined the links between the community and Mission Hospitals. The commonest health concern was inability to fight causes of HIV/AIDS, poverty ignorance, alcohol consumption and lack of clean water. There is also the problem of distant and few health facilities.
HCWs' perception of ways in which a baby acquires HIV

Eleven out of 12 of the HCWs thought that a baby acquires HIV either in uterus, during delivery or through its mother's milk. Only one thought it might be witchcraft. On whether MTCT surveys had ever been done in the respective hospitals, 9 out of 12 respondents reported that MTCT surveys had never been done, 3 did not know whether they have been done or not. No respondent reported any knowledge of any MTCT survey done.

Distribution of ways of reducing MTCT in community according to HCWs

Four out of 12 HCWs suggested improvement of partner faithfulness and reduced promiscuity, 3 suggested increasing knowledge on MTCT of HIV and, while 2 suggested fighting stigmatization of infected mothers an equal number suggested reducing ignorance. One respondent suggested fighting harmful traditional practices that include role of traditional birth attendants.

On the distribution of major obstacles hindering efforts to reduce MTCT of HIV in community, majority (7 out of 12) of the respondents interviewed linked unfaithfulness to spouse as the main hindrance to prevention of MTCT.

Distribution of counseling services offered in MCHC as regards HIV/AIDS

Eight out of 12 HCWs interviewed said that pre- and post-test counseling services were offered in MCHC of the hospitals. However, 4 out of the 12 respondents said there were no counseling services. On being asked about the distribution of persons who conducted PMTCT services, 6 out of 12 of them said that nurses conducted counseling, 3 said all HCWs offered the service and
3 said no one did PMTCT. Clearly, the persons trained in counseling were not many. This compares well with what FGD participants complained about shortage of counseling services in the community. HCWs who conduct VCT portray non-uniform counseling services. Poor counseling uptake results in mothers unwilling to take up VCT and hence exacerbate MTCT of HIV. Ten out of 12 respondents reported that most of the HIV/AIDS community education and prevention activities covered awareness creation yet VCT were minimal. It confirms FGD participants’ decry for lack of counselors.

Regarding follow-up of HIV positive ante-natal mothers (Table 14), 7 out of 12 of the respondents indicated the use of HCWs, mainly enrolled community health nurses. Five out of 12 HCWs indicated that there were no follow-up services. This trend may become a factor in the mother-to-child transmission of HIV since it is difficult to know what factors impact on the ante-natal mothers that could have been prevented through follow-up.

Table 14: Distribution of follow-up services for HIV positive ante-natal mothers by health-care workers

<table>
<thead>
<tr>
<th>Health-care Workers</th>
<th>Enrolled Community Health Nurse</th>
<th>Registered Community Health Nurse</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>By use of community members</td>
<td>2</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>By use of hospital staff (HCWs)</td>
<td>3</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>By use of others</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>No follow-up services</td>
<td>3</td>
<td>2</td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>3</td>
<td>12</td>
</tr>
</tbody>
</table>
4.2 DISCUSSIONS:

4.2.1 Socio-Demographic Characteristics of the Study Population

4.2.1.1 Characteristics of ante-natal mothers and their children

It appears that age has an effect on the time of pregnancy (Fig. 1, Table 1). There were more ante-natal mothers below the age of 35 years than those above this age. Most ante-natal mothers were between ages 20 – 24 years, the age group characterized by high sexual activity. Most of them were in monogamous marriages (Fig. 2) with the mean age at marriage being 22 years. Age also had a significant effect on the marital status of ante-natal mothers. Most of those in younger age groups were married as compared to just a few in the older groups (Table 1). Participants in FGD blamed this practice for reproductive health problems including infection with HIV. Healthwise, the vaginal mucosa during youth is not mature enough to withstand the abrasions of active sexual life and is prone to infections that may increase risks of MTCT of HIV. A high number of mothers had no history of abortion and most had no more than two living children (Fig. 3 & 4). This may explain some practice of family planning. For those mothers whose children had died, the causes of death differed significantly and varied from malaria, AIDS with pneumonia to asphyxia (Fig. 5) as cited in GOK, 2002. A large number of them had not gone beyond secondary school and had either completed primary or secondary school education. Few ante-natal mothers had tertiary education and fewer still had none. This reflects the Government of Kenya (2002) reports that the area had high literacy levels. Most of the ante-natal mothers had just completed either primary or secondary education when they got
pregnant and were poor since a significant number of them (32%) did not earn any monthly income (Figures 6 & 7). This relates well with the reported Kenya’s poverty levels that stand at 56% of the general population (GOK, 2002).

About 80% of the ante-natal mothers had no more than two live births with a decreasing number who had had abortion, an indicator for ante-natal morbidity probably due to HIV/AIDS, which is of high prevalence (38%) in the study area (Table 2). This situation is similar to that in Botswana with 44.9% in 2001 and Zimbabwe with 35% in 2000 (UNAIDS, 2002). The results show that child mortality was age-specific as most (88.6%) of the children born alive did not see their fifth birthday. Infant mortality was highest in the first year of life with 25% followed by 21.6% who died at three years of age and compares well with the cited literature. Conversely, as age advanced, mortality decreased with 8.0% dying at age 4 and 9.1% at age 5 (Table 3). This is an indicator that the first 5 years of life are critical for a child’s survival. This is why it is important to have interventions such as focused ante-natal care, nutrition and exclusive breast-feeding at least in the first three months of life (KDHS, 1999).

The results indicate that among the childhood diseases, malaria had killed over 59% and was the leading cause of mortality. Associated with HIV/AIDS is pneumonia, which had killed 11.2%. Among the birth complications were asphyxia, and birth injuries. About 12.2% of the ante-natal mothers did not know the cause of death of their children but associated it with AIDS. These compare favourably with literature results that up to 106,000 children under 5 years could die of various diseases (GOK, 2000). Results from HCWs on
proportions of babies born to HIV positive mothers have similarities. Out of 12 HCWs, 5 thought that the proportion of babies born to HIV positive mothers was up to 20% and those who did not know were also 5. This proportion is slightly below that quoted in the literature, which is between 30% and 40%. (UNAIDS, 2002).

4.2.1.2 Characteristics of MCHC health-care workers

It is apparent from the results that most (10 out of 12) of HCWs taking care of ante-natal mothers in the hospitals were trained at certificate level. Majority of them (10 out of 12) had additional job-relevant training. Considering the potential health circumstances and demand for care that ante-natal mothers require, personnel at this level only may not suffice. These findings agree with WHO report that little understanding of the physiology of labour may lead to high incidence of MTCT of HIV (WHO, 2001). Nearly all the HCWs interviewed knew of the ways in which a baby can acquire HIV. The fact that one mentioned witchcraft in this case means that the HCWs themselves needed further training in PMTCT as it shows that there exist health-care workers who doubt known scientific methods of transmission yet professional midwives are expected to be knowledgeable and skilful in handling the needs of ante-natal mothers (Bennet and Brown, 2000). The HCWs also indicated that there had never been any surveys on MTCT in all the study hospitals. This may reflect low or no PMTCT activities going on in the hospitals.

4.2.1.3 Characteristics of ante-natal mothers’ knowledge of children with HIV/AIDS

The results show a significant number of ante-natal mothers who shared similar view with what people say on how children get infected with HIV
While most, 80% (n=692) of the ante-natal mothers themselves believed that children below five years acquired HIV from their mothers, 54.3% (n=279) said that people believed that children acquired it from their mothers. Furthermore, 34% (n=175) of the ante-natal mothers said that people believed it was from witchcraft and only 8.5% (n=73) agreed with them and this was significant. From this, it can be deduced that there is high level of HIV/AIDS awareness. This high level of awareness may translate into preventive behaviour (Horizons, 2000).

Quite a high percentage (60%) of mothers are aware that a pregnant mother infected with HIV could transmit it to her unborn baby and 60.7% said transmission could still occur through breast-feeding (Table 5). It is, however worrying to know that a significant number 31.1% of ante-natal mothers do not believe so and worse still, 32.8% could not believe it occurs through breast-feeding. This group of non-believers could pose difficulty in the attempts to initiate prevention of mother-to-child transmission of HIV. These findings compare well with the claim that certain norms, values and beliefs increase risks to MTCT of HIV (Vitillo, 2002). The 8.9% of mothers who did not know anything about ante-natal transmission and again 6.4% who did not believe in postnatal transmission via breast-feeding are a potential group for creation of in-depth awareness through community mobilization as is the case with Britain’s rural mothers (Morrel, 2000) and by strengthening the use of community health workers in collaboration with the hospital personnel.

Related views were shared by participants of FGDs as regards reducing transmission of HIV in pregnancy, delivery and breast-feeding. They felt that ante-natal clinic and hospital delivery were preferable to home delivery.
Transmission of HIV through blood transfusion in pregnancy could be minimized if blood was screened well and re-use of needles (and other disposable medical supplies) stopped. There was a strong feeling that HIV positive parents should not conceive and it is advisable that couples think seriously about this idea. As for breast-feeding, the mother with absolutely no alternative or capacity for alternatives would rather breast-feed exclusively than give the baby mixed feeds as that would harm the infant’s gut. The idea of using breast-milk substitutes as one of the combinations in interventions used in developed countries (Heidemarie, 2001) was seen as costly (Horizons, 2001) and not socially acceptable. In some families the babies left behind by their dead HIV positive mothers are taken and breastfed by a relative who may also be HIV positive, or vice versa, without knowing. Research indicates 20% chance of transmission of HIV through breast-feeding (deCock and Fowler, 2000) and that it accounted for 70% of postnatal transmission in Rwanda (Nduati et al., 2002).

**4.2.1.4 Cultural Factors that may Risk HIV Infection in Children**

Results from the FGDs indicate that often, adult men have sex with or rape young girls with the hope of being cured if they passed HIV on to someone young, consequently infecting them with HIV if they were positive. In turn the girls would then infect their male peers when they play sex. Sometimes those who knew they were infected would deliberately spread the disease by having sex with other people’s spouses, taking advantage of their poverty and poor maternal negotiating skills (UNICEF, 2002). Unfaithfulness to one’s spouse is a promiscuous behaviour that seems enshrined among community norms (Gordon and Grehan, 1999). This is a pointer to loose moral values among
men generally amid poor law enactment in the rural communities and lack of focus counseling. In regard to overall parent-to-child transmission of HIV, FGD participants resolved to discourage multiple sexual partners because no one knew who would bring HIV into their families.

The practice of traditional teeth removal locally referred to as *gukura nguani* is among the cultural practices that increase the risk of HIV transmission among children who often share traditional surgical instruments. The FGD participants also advised that the traditional teeth removers should be educated on infection prevention and use of one instrument brought by each parent for their child if this practice is to continue. Also reported but less significant factors in MTCT include tattooing of children using contaminated instruments to cure pneumonia and other diseases.

Some ante-natal mothers prefer TBAs because they are with them all the time and help them in daily activities and delivery at home is cheaper than in hospital. Asked about what should be done to reduce transmission through delivery, the participants in FGDs felt that the shaving of mothers’ pubic hair by TBAs should be discouraged and instead thoroughly wash the area with soap and warm water. These views compare well with citation in the literature for the need to have comprehensive and effective PMTCT training and change of attitude among community members and TBAs as well (GOK, 2002). If home delivery was unavoidable TBAs should deliver only ante-natal mothers with normal labour and refer abnormal cases early in labour. The umbilical cord of each baby should be cut using unused razor blade brought by its mother and not TBA’s own traditional cutting tools. While home delivery should be discouraged as much as possible, traditional birth attendants should
be trained on infection prevention and maximize their participation in designing safer PMTCT home-based care strategies (Macauley, 1999). Initiation to womanhood/manhood is still a cherished practice that ushers in a new status in community and readiness for marriage – often culturally sanctioned – irrespective of age. Such socio-cultural norm has been associated with increased risks in MTCT of HIV (Gordon and Grehan, 1999). Some have either modified or stopped the practices because of Christianity and encouragement by church leaders (Vitillo, 2002).

4.2.1.5 General Awareness of HIV/AIDS in Meru Central District

Though HIV and AIDS awareness is high in Meru Central District (Table 4), it is apparent from the FGDs that the disease is shrouded in fear, ignorance and non-acceptance that it was present. This is reflected in the way the community refers to it in a variety of terminologies such as Mdudu (worm), Kathua (lit. a disease that eats one slowly till death), Kanyaru (lit. withering slowly until death), Mutheero (lit. something very slim) and Kamatisha (lit. to give someone something to carry), Kiuti (the infection) and Kailikia (lit. to finish) among others. Most of the time it is generally discussed in whispers; reflecting an escapist way of addressing the killer disease. An example of expressed escapist behaviour is noted where some community members refuse to directly acknowledge the presence of the disease in their midst saying it was in media, “not here”. Terming HIV and AIDS as bad malaria, bad tuberculosis or other bad disease – associated with hair loss, diarrhoea, skin rash (Kiuti), oral thrush, coughing and weight loss – gave the community members a leeway of acknowledging its presence. To say that the disease is spread by sexual behaviour during youth is ascribing blame to some period in life and not the
present. As such, the manner of discussion only enhances stigma and un-readiness to stem the disease through straight talk and bold behaviour change. FGD results also indicate that alcoholism, drug abuse and rape cases by those infected with HIV were linked to careless sexual practice and prevalence of MTCT of HIV and that they should be stopped. Similar results have been reported among rural communities in Sub-Saharan Africa (UNICEF, 2002). The minimal discussions of the disease in gatherings such local *barazas* and churches reflects some uneasiness in talking about it and normally coming as an additional matter. This calls for proper community mobilization to facilitate interventions such as voluntary counseling and testing and health education (KDHS, 1999). This may be achieved by use of CHWs and TBAs in collaboration with community co-operation to maximize their participation (Macauley, 1999). In terms of preventive strategies, the use of condom was not as much in the minds of the people as that of attitudinal behaviour; neither does the traditional advice to abstain. The FGD participants emphasized faithfulness to one's spouse and an urge by community to stop having many sexual partners as key in prevention of MTCT of HIV.

### 4.2.1.6 Means of Protection against HIV Infection in the Community

From the FGDs the strategies used for protection against HIV infection are about interpersonal relationship, especially sexual intercourse and practices surrounding marriage. These strategies are warped in cultural practices (Gordon and Grehan, 1999). People talk against concubine relationships saying it should be discouraged yet practice it privately and in the same way, practice wife inheritance. There is, therefore an element of promiscuous behaviour.
Similarly from FGD participants, people believed that AIDS was like any other disease and when it came there was nothing one could do. Such an attitude is a defeatist one that makes people engage in reckless sexual behaviour. As for HIV and AIDS awareness campaigns, it was reported that nurses from Mission Hospitals gave education on HIV/AIDS transmission but people were yet to take it seriously and continued with their sexual behaviour. A few who have taken the teachings are said to be mostly Christians who have changed their traditional ways but are despised for not following customs – a sign of stigmatization. This compares well with reports that HWCs in religious health institutions are challenged with matching the needs of communities with religious teachings (International Family Health, 2001). Condom is detested as men do not like using them saying they “cannot eat sweets with their cover on”.

4.2.1.7 Suggested Ways of Reducing HIV Infection among Mothers in the Community
According to HCWs and FGD participants the most important obstacle against efforts to reduce MTCT in community is the unfaithfulness to spouse. Antenatal mothers also noted this factor as the main obstacle (Fig. 8). This relates well with reports that such social practices surrounding marriage are factors in MTCT of HIV yet reinforced by ethnic doctrines of privacy (Gordon and Grehan, 1999).

Though most of the respondents argued that it was only through faithfulness to one’s love partner that HIV/AIDS prevalence could be reduced, it was apparent that people practiced promiscuity privately, a fact supported by one third of HCWs and all FGDs. Men especially were said to have out-of-
wedlock affairs claiming that they were chased away by their pregnant wives using such phrases as, “I am already pregnant; what else are you looking for? Go away!” They would then take an excuse to keep concubines with little or no regard to protection as can be seen from the low (12.6%) condom use (Table 6). Male partners are critical for the success in the implementation and sustainability of PMTCT of HIV and efforts need to be made to change the behaviour of men in this community. In the same way people talk openly against wife inheritance but they practiced it privately yet they – especially men – do not like to go for testing for HIV. Perhaps this could be due to lack of PMTCT services or poor uptake or community mobilization and compares well with reports that this is partly the reason why 90% of infected people in Africa do not know their HIV status (Harris, 2002). From FGD results, the use of TBAs is still preferred by many mothers mainly because of the inability to have hospital delivery due to poverty, traditional considerations and distance. This fact is supported by Kenya’s report about rural mothers having to cover up to 25 Km in remote areas to reach the nearest health facility (KDHS, 1999). Therefore strengthening the link between TBAs and health facilities is crucial. However, some practices of TBAs and teeth removers favour mother-to-child transmission of HIV. The community members seem oblivious of the dangers of home deliveries.

FGD results also indicate rampant consumption of alcohol and abuse of drugs leading to idleness and other forms of vice especially rape in Meru Central District and this reflects similar reports among rural communities in Sub-Saharan Africa (UNICEF, 2002). These factors hamper communication between spouses regarding MTCT of HIV and its prevention. This is a major
concern since most of the spouses do not talk about it; regarding it almost a taboo.

All these factors increase the risks of mother-to-child transmission of HIV even among the otherwise uninfected couples. The priority in fighting MTCT of HIV in a community seem to be improvement of partner faithfulness and reduced promiscuity, deeper awareness on MTCT and fighting stigma. Prevention strategies, therefore, would augment public health impact by reaching uninfected mothers who receive information and support for preventive behaviour (Horizons, 2000).

4.2.1.8 Care of Couples Infected With HIV/AIDS
Most (41.9%) of ante-natal mothers said that hospitalization was first sought when a pregnant mother got AIDS in their village. This underscores their belief in getting appropriate health-care in hospital. However, a good number (28.2%) of them who reported initial use of traditional medicine and those (18.3%) who blamed witchcraft indicated strong value attached to traditional practices. A few (10.1%) mothers who did not know what was done are an indication of a deplorable situation left to fate (Table 7).

It is apparent from the results that most of the ante-natal mothers who are HIV positive are despised by fellow women, accounting for 52.5% (n=464). The second most important group is that of religious members, 26% (n=230). The two groups commonly form a strong psychosocial support. Once one is shunned, this support disappears and in comes social stigma. The call, therefore, by the National AIDS Control Council (2000) for religious institutions to carry out socio-pastoral support to affected families cannot be over-emphasized. Strategizing on Small Christian Communities may be new
avenues to community mobilization in this case (Macauley, 1999). On the other hand, the HCWs who despised HIV positive mothers were 16.9% (n=149) and traditional health practitioners, 45% (n=40). These two groups play a major role mainly when sick women consult them for health-care. Their despicable attitude too determines how negatively HIV positive women may perceive their social status.

All FGD participants reported that in a situation where couples were discordant, the case of stigma, especially along gender lines, is clearly reflected. Women suffer more because they are stigmatized and blamed. Husbands are only isolated but they are cared for by looking for them medicine and food. The husband is more likely to run away from a sero-positive wife or deliberately break the marriage and marry another woman than the wife who is more likely to leave it to fate as they live together. In extreme of cases, the husband might either resort to sexually spreading the virus so that they did not die alone, or misuse family property. This gender imbalance bordering on norms, values and beliefs could worsen MTCT and has been reported in a Southern African community where men held all the sexual and reproductive rights of their spouses (Vitillo, 2002).

From the data, however, husbands and family members take care of most of the ante-natal mothers with HIV/AIDS at home. The kind of home-care is often palliative support and most families have no money to buy medicine. From focus group discussions it was revealed that most of the sick ante-natal mothers preferred home-care to hospital care because they are offered an opportunity to be with family members for palliative and psychological support. The data show that the care of ante-natal mothers by community
health nurses and doctors only happens when the patients are admitted in hospital.

The fact that HCWs interviewed indicated different responses on follow-up services reflects a gap in health-care (Table 14) – either little or no follow-up of HIV positive ante-natal mothers once they get discharged for home-care in the community. This trend may become a factor in the mother-to-child transmission of HIV since it is difficult to know what factors impact on the ante-natal mothers that could have been prevented through follow-up. This may indicate lack of community ante-natal support workers especially where mothers have to travel long distances in rural areas to the nearest MCHC as reported by FGDs. The opposite is true in Britain where community postnatal support workers have effectively educated rural mothers through home-based care, a lesson that could be tried in other communities (Morrel, 2000).

There is a considerable amount of home-care given by traditional birth attendants. The use of herbs is common among TBAs and traditional health practitioners and since they offer most of their time to the ante-natal mothers, they are popular. As for the care given by the fellow faithful members of church, friends and neighbours, it only happens during occasional visits especially for prayers and sitting together for some time for psychological support.

4.2.2 Direct Factors in Mother-to-Child-Transmission of HIV

Pregnancy and delivery were most associated with transmission of HIV (Table 4). Over 44% were specific about transmission during labour and birth by a HIV positive mother compared to 65% of child infections that occur during the final six weeks of pregnancy and at delivery in Kenya (Dunn, 1992), while
those who thought breast-feeding was the main route of transmission were 36.50%. This compares well with studies in Botswana and Zimbabwe where HIV prevalence among pregnant women rose from 38.5% and 29% in 1997 to 44.9% and 35% in 2001 respectively (UNAIDS, 2002). It may be as a result of lack of proper delivery care or lack of clinic attendance by mothers, hence poor planning.

Although most (59.4%) of the ante-natal mothers in the study area indicated that a pregnant mother with HIV would seek medical attention in order to prevent her baby from getting infected, it is interesting that a good number (25.9%) of them would do nothing (Table 7). Perhaps this is a group that either left their health to fate or to their domineering husbands as supported by their culture (Gordon and Grehan, 1999).

4.2.3 People’s Approach to HIV/AIDS Counseling and Testing in the Community

Although the results show that majority of the HCWs said that there were counseling services in their MCHCs, over a third said there was none. This compares well with the results of FGDs that there were no VCT counselors in their communities. However, discussions about HIV/AIDS are treated with fear, stigma and associated with prostitution. Hardly anyone talks about it freely or openly. This individual denial coupled with lack of VCT services, poor uptake and counseling account for some infected people who do not know their HIV sero-status in this community and indeed 90% in Africa (Horizons, 2000). Stigma is such that it is only relatives and friends who talk to the patients in bed and offer some foodstuffs. Others will only pray for them far away in the church and during death, although everybody may guess, no
one is said to have died of AIDS but "bad malaria". This apparent silence may help in the spread of the disease and counseling may be the avenue to effect behaviour change (Harris, 2002). From the literature it is clear that counseling has changed the lives of many (Maman and Mbwambo, 2001; Evian, 1993). Everybody in the study area, however, thinks that others should go for Voluntary Counseling and Testing but not themselves and to avoid careless sexual behaviour, yet they are engaged in it themselves. Such behaviour would later translate into unplanned pregnancies that may result in mother-to-child transmission of HIV as reported by FGD participants.

4.2.3.1 Ante-natal mothers and HIV counseling and testing

From among ante-natal mothers’ responses results it is seen that a large number (56.2%) supported HIV counseling and testing for ante-natal mothers before delivery. Their view compares well with results of most of the FGD participants who asserted that mandatory testing would facilitate looking for means of supporting them as long as tests were done only in recognized ante-natal clinics. They also believed that HIV testing of ante-natal mothers would form the basis of being advised on how to prevent mother-to-child transmission of HIV and other ways of supporting them sought. There were arguments that knowing one’s status would help plan what to do next if they were positive and how to live positively with mdudu (HIV worm). However, a significant number (43.8%) of the respondents thought PMTCT counseling should not be done before delivery. The findings compare with the groups, mostly fellow women perceived to despise HIV positive pregnant mothers (Table 8). In all the centers, some participants in the FGDs cited possible spousal separation, divorce or other family ills and believed that if they knew
their HIV status they feared to be known and isolated. This may hinder community mobilization necessary for behavioural intervention models (Wang and Celum, 2001).

It is clear that most of the ante-natal mothers in the study area had never had an HIV test. This could explain the fact that most of the mothers in the community did not know their HIV status (Horizons, 2000). It further explains the need to strengthen community mobilization with the involvement of all members. The knowledge of one’s HIV status makes one adopt behaviour change.

There is, however, a significant number (24.1%) of ante-natal mothers who had had the test. Though over 94% of them received counseling, 30.4% of these either received only pre- or post-test counseling, making the quality of testing to be of a questionable value (Table 9). This is further compounded by the fact that 4.4% (n=9) had no counseling even where the service is available. Although results show that two thirds of HCWs said that there were counseling services in their MCHCs, a third of them said there were no counseling services and the results of the FGDs acknowledged lack of VCT counselors in communities. It gives credence to the argument by ante-natal mothers who saw no value in VCT, with some opting not to have the test. This is a factor that may fuel social stigma, enhance MTCT of HIV and complicate prevention strategies since ante-natal mothers will not develop autonomy to join PMTCT services as has been reflected in the literature (Maman and Mbwambo, 2001).

Those who had voluntarily decided to have the test (69.9%), were more likely to be satisfied as seen from those who received pre- and/or post-test
counseling (72.5%) than would those who were required to have it (23.5%). As such, those who were required to have the test were more likely to be dissatisfied with it than those who volunteered. Most ante-natal mothers often preferred to remain untested to avoid stigma, discrimination and isolation. Though it may look insignificant, the 3.9% (n=8) of ante-natal mothers who did not know whether they were or not satisfied is an indication for refocusing counseling services, having exit MCHC questionnaires and effective follow-up. Inculcating voluntarism through education, community mobilization and counseling can therefore make ante-natal mothers adopt a positive view necessary for the prevention of mother-to-child transmission of HIV (Harris, 2002).

Health-care workers interviewed were against mandatory testing of mothers in MCHC and supported free choice (Table 10). However, those for mandatory testing of ante-natal mothers believed that it would form the basis of being advised on how to prevent mother-to-child transmission of HIV and other ways of supporting them sought. There were arguments that knowing one’s status would help plan what to do next if they were positive and how to live positively with mdudu (HIV worm).

From FGD participants, those against mandatory testing of ante-natal mothers believed that if they knew their HIV status they feared to be known and isolated by friends and would deteriorate fast and die. Others thought it might lead to wasting of property on medications or deliberately before one died or intentional spreading of the virus. Men were said to refuse ante-natal testing of their spouses for HIV for fear of being blamed of promiscuity and isolated by them if they turned positive and that they were ignorant of what was tested in
MCHC. This may aggravate HIV transmission due to poor maternal negotiating skills (UNICEF, 2002) and further lead to stigmatization and isolation.

4.2.4 Characteristics of Baby-Feeding and Weaning Practices

The Ministry of Health policy for exclusive breast-feeding is well understood by majority of the ante-natal mothers as 60.2% said babies were exclusively breast-fed for 4 – 6 months after birth (Fig. 9). Exclusive breast-feeding offers the baby all the required nutrients and immune factors for six months. The only disadvantage is the 10% - 20% risk of HIV transmission. However, it is comparatively riskier to use mixed feeds as it denies the baby adequate micronutrients and immune factors that they may never have, making them susceptible to frequent infections. A number of the mothers in the community were reported to be weaning their babies outside this recommendation because of the feeling that they had little breast-milk or that their babies did not get satisfied with breast-milk alone. For example 21.1% weaned their babies at 2 – 4 months and 7.5% did so at 1 – 2 months. This practice was found beneficial to British HIV positive mothers who used alternative feeds and heated expressed breast-milk and had a fall in transmission rate of HIV (Trinh, 1999). However, the mothers in the study area face stigma and lack capacity to practice it. Most (54.2%) of the mothers use grain porridge/ujji and others (29.3%) use mashed bananas to wean babies in the study area (Table 11). The commonest food is wimbi (sorghum) porridge followed by maize flour porridge. One of the most recommended weaning food; milk is not widely used though available. Given the most common weaning foodstuffs and those weaning their babies between 1 – 4 months, it is not surprising that
malnutrition among children below five years abound in the study area. The extreme is found in 3.1% of babies weaned in less than one month of age. This situation lowers growth and development and increases the risks of HIV transmission among other infections in babies. This may reflect the general unawareness in the community (GOK, 2002). The large number of non-breastfeeders as reported by 32.5% of ante-natal mothers may indicate a number of things ranging from lack of knowledge as regards to the importance of breast-milk for the baby to uptake of Western culture, not supported by education and to ignorance. However, 67.5% of the ante-natal mothers reported that most mothers still breastfeed their babies in the study area. Again this may show how important cultural practices are in MTCT of HIV in the community.

Most of the non-breast-feeding mothers use cow's milk on a wide range (Table 12). As a public health policy, a child below 4 months in Kenya must breastfeed exclusively. In the literature, we find that breast-feeding adds to risks accounting for 70% of postnatal transmission of HIV (Nduati et al., 2002; Trinh, 1999; Pere, 1997) and introduction of breast-feeding alternatives at 6 months reduces this transmission (GOK, 2002). Most of the HCWs advised mothers to wean their babies between 4 and 6 months, with breast-feeding counseling only dominating the type of advice to HIV positive mothers. As such, there is no uniformity in advising breast-feeding mothers in the HIV/AIDS scenario. This may be a factor that may have influence on mother-to-child transmission of HIV.
4.2.5 Community Support Systems for Maternal and Child Healthcare

From the results it is apparent that the Mission health facilities depend on each other so much in collaboration and client referral. Collaboration with government facilities is weak. The inadequate health infrastructure and staffing may be a barrier to service provision such as counseling and testing and community sensitization for PMTCT (Table 13). The mechanisms for clinical follow-up, sustained care and treatment of HIV positive mothers and their exposed infants are poor, inconsistent or lacking in all health facilities. From FGDs, most of the time the communities in Meru Central District seem to rely on mission health facilities and on their own community members especially for prayers in the homes of the HIV positive ante-natal mothers. Interestingly, the support from extended family members is not without costs: some come to help genuinely, but others come to take away the remaining property of the dying patients claiming that they would use it to bring up the orphans and vulnerable children left behind. Though there is some support from community-based distributors most of them are frustrated by the lack of supplies and are demoralized. Moreover, they can only distribute mainly contraceptives and cannot offer any other support. They are therefore not very reliable. As for the social gatherings, barazas are not regular and most of the chiefs themselves are ignorant about HIV/AIDS.

By and large, Catholic Mission Hospitals offer affordable and accessible medical-check ups, mobile clinics and treatment of minor ailments to the community. Their nurses, giving health talks as they offer cheap treatment in homes. Voluntary counseling and related mother-to-child transmission services seem to be lacking. This reflects the literature report that midwives
and counselors must be trained to strengthen home-based care strategies of PMTCT, counseling and care (Mpango and Amman, 2001). The mobile clinics offered regular medical check-ups, treatment of minor illnesses and referral of serious cases to major hospitals without charging or at minimal transport costs. From the literature, community support workers may effectively offer education to rural mothers on counseling, nutrition, social support (Morrel, 2000) and active monitoring and follow-up of ante-natal mothers (Hahn, 1999). Stigma however, makes strategies for support and care difficult to design, implement and evaluate (Byamugisha, 2003). It seems, therefore imperative to link hospital services with those of the community for effective mobilization (GOK, 2002).

All these factors increase the risks of mother-to-child transmission of HIV even among the otherwise uninfected couples. Prevention strategies, therefore, augmented public health impact by reaching uninfected mothers who receive information and support for preventive behaviour (Horizons, 2000).
CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 A SUMMARY OF CONCLUSIONS

1. Age had an effect on the marital status of ante-natal mothers. The older they are the less likely they would be married and vice versa. Most of them were literate and poor. This socio-economic status adversely impacts on young mothers who become vulnerable to early marriage pregnancy and hence mother-to-child transmission of HIV.

2. Pregnancy, delivery and breast-feeding are the routes mostly associated with mother-to-child transmission of HIV in the study area.

3. There is inconsistency in the advice given to ante-natal mothers as regards the period of weaning. Most mothers use porridge/uji and mashed bananas to wean babies in the study area. Early weaning with mixed foods gives rise to malnutrition and is a risk factor in mother-to-child transmission of HIV.

4. The quality of testing of HIV is questionable because there is no consistency in counseling in the study hospitals. This raises dissatisfaction with counseling, a factor that may fuel social stigma and complicate PMTCT strategies.

5. Although some of the ante-natal mothers support HIV testing before delivery, most of them had never been tested during their pregnancy.

6. Ante-natal mothers in the survey had similar views on how children get infected with HIV.

7. Social stigma is enhanced in the way HIV and AIDS are discussed in secrecy as reflected in the way the community members refer to it in a variety of terminologies and when HIV positive members are blamed and isolated.
8. Factors that have facilitated MTCT of HIV include:

(a) Spousal unfaithfulness
(b) Alcoholism and drug abuse
(c) Promiscuous behaviour
(d) Raping or enticing young girls to sex in the hope of being cured of HIV
(e) Poor maternal negotiating skills mainly due to poverty and ignorance
(f) The practice of *gukura nguani* and sharing of traditional surgical instruments
(g) Wife inheritance
(h) Refusal by men to know their HIV status

9. Socio-cultural constraints hinder ante-natal mothers from seeking health-care. Most of them have a strong regard to life as few of them would resort to abortion as a remedy.

10. Lack of accompanying behaviour change makes means of protection against HIV infections in the community not work. Abstinence is cherished and not practiced. The use of condom is detested.

11. Many ante-natal mothers prefer TBAs because of inability to have hospital delivery due to poverty and traditional practices.

12. Mission Hospitals lack the expected capacity to adequately address MTCT of HIV among ante-natal mothers.

13. The first five years of life greatly depend on the type and quality of ante-natal care given and its outcome.

14. There is little communication between spouses regarding HIV/AIDS. This is a health concern since most of the spouses do not talk about it, regarding it almost a taboo.
5.2 OPERATIONAL RECOMMENDATIONS

1. There is need for intensive counseling services and strengthening community mobilization to generate deeper awareness of the factors surrounding MTCT, stigma reduction and the practice of faithfulness to one’s spouse to facilitate interventions such as counseling and testing and health education. This may be achieved by training and mobilizing community health workers in collaboration with community members and own resource persons.

2. Health-care workers need to follow-up HIV/AIDS positive ante-natal mothers through community outreach programs for home-based care. Involvement of midwives and TBAs could provide the necessary link.

3. There is need to strengthen the training of HCWs on PMTCT strategies. There is need to improve consistent ante-natal counseling by refocusing services that have exit MCHC questionnaires for effective follow-up.

4. It is important to link hospital services with those of the community for effective health education and to sensitize communities on the dangers of home deliveries and campaign against cultural sharing of surgical instruments is imperative.

5. Male partners should accompany their spouses attending ante-natal clinic at least once to improve deeper awareness on how babies get infected with HIV and counseling on importance of pre-natal care, proper care at birth and how to prevent mother-to-child transmission.

6. Health authorities should strengthen home-based care of ante-natal mothers with HIV/AIDS since it offers them opportunity to be with family members for palliative and psycho-social support. Small Christian
Communities should form Volunteer Community Ante-natal Support groups especially in remote areas.

7. Reducing stigma through education, community mobilization and counseling may make ante-natal mothers adopt a positive view necessary for the prevention of mother-to-child transmission of HIV.

8. Decontamination of needles by boiling in hot water in clinics should be stopped and should be used once and discarded.

9. Feeding the baby with foods other than breast-milk soon after birth may have serious nutritional deficiencies and compromised immunity and should be discouraged. Maternity leave should be extended to support expressed breast-feeding.

5.3 **SUGGESTIONS FOR FUTURE RESEARCH WORK**

1. This study did not involve postnatal mothers. Therefore, a study on factors associated with postnatal HIV infection should be carried out.

2. Male involvement. This was not studied due to time and needs urgent study.

3. Most of the factors associated with mother-to-child transmission of HIV are culture-based. Primary home-based care studies need to be carried out to determine how to improve maternal and child health-care.

4. Community mobilization studies ought to be carried out to enhance ante-natal PMTCT uptake reduce social stigma.

5. There is a significant role of TBAs and teeth removers in MTCT of HIV. A study on their involvement in maternal and child health-care need to be carried out.
REFERENCES


The HI virus attaches to the CD4 cell's receptors.
The CD4 cell and HI virus join membranes.
The HI virus injects its RNA (as well as reverse transcriptase) into the CD4 cell.
Viral RNA is changed into viral DNA through a process called reverse transcription.
The viral DNA joins with the cell's DNA in the core of the cell, causing it to produce more viral RNA.
The viral RNA produces more HI viruses.
The new viruses break free from the cell, killing it and infecting more cells.
APPENDIX 2: RESEARCH INSTRUMENTS

2.1a MSWALA KWA AKINA MAMA WAJAWAZITO

NAMBARI


SOCIO-DEMOGRAPHIC CHARACTERISTICS (UHUSIANO WA KIJAMII)

23. Wewe una umri gani?

24. Umeolewa?
(a) Bado
(b) Ndiyo, mume-mke mmoja
(c) Ndiyo, mume-wake wengi
(d) Nimefiwali tumefanana na mume

25. Ikiwa umeolewa, kufiwa au kuachwa ulikuwa na umri gani ulipoolewa?

26. Umezaa watoto wangu wakiwa hai?

27. Umezaa watoto wangu wakiwa wafu?

28. Una watoto wangu hai?

29. Ikiwa idadi ya watoto wanzaliza hai na idadi ya watoto wanaoishi sasa si sawa, eleza:
(a) Sababu ya kifo cha kila mtoto: 
   i) ………………………………………
   ii) ………………………………………
   iii) ………………………………………
(b) Umri aliokufa kila mtoto:
   i) ………………………………………
   ii) ………………………………………
   iii) ………………………………………

(Ikiwa ni sawa, endelea na Swali 30.)

30. Mapato yako ya kila mwezi yako kiwango gani (Ksh.)?
(a) ≤ 3000
(b) > 3000 ≤ 5000
(c) > 5000 ≤ 10000
(d) > 10000
(e) Hakuna

31. Umehitimu shule katika kiwango gani?
(a) Sikuenda shule
(b) Shule ya msingi
(c) Shule ya sekondari
(d) Masomo ya juu (Chuo)
(e) Nyingine (sema ni gani)

KNOWLEDGE, ATTITUDE & PRACTICE REGARDING MTCT (TABLA KUHUSU MTCT)

32. Umewahi kuona mtoto katika kijiji chenu anayeshukiwa kuwa na ukimwi?
(a) Ndiyo
(b) La

33. Ikiwa jibu lako kwa swali 32 hapo juu ni Ndiyo, watu husema mtoto huyo alipataje ukimwi?
(a) Kutoka kwa mama yake
(b) Kuumwa na mduu (sema ni gani)
(c) Kutokana na urogi
(d) Kushirikiana kwa vyombo vya chakula nyumbani
(e) Sijui
(f) Nyingine (sema ni gani)
34. Vile ulewavyo, mtoto huambukizwa virusi vya HIV?
(a) Kutoka kwa mama yake
(b) Kuumwa na mdudu (sema ni gani)
(c) Kutokana na urogi
(d) Kusirikiana kwa vyombo vya chakula nyumbani
(e) Sijui
(f) Nyingine (sema ni gani)

35. a) Mama mjito aliye na virusi vya HIV anaweza kumwambukiza mtoto wake asiyezaliwa bado?
(a) Ndiyo
(b) La
(c) Sijui

b) Ikiwa jibu lako kwa swali 35 a) hapa juu ni La, mama yule anaweza kumwambukiza mtotowe kwa kumnyonyeza?
(a) Ndiyo
(b) La
(c) Sijui

36. Matibabu gani butumiwa kwanza mama mjito aliye na ukimwi Kijijini mwenu?
(a) Dawa za kienyeji
(b) Hupelekwa hospitalini
(c) Hulaumu uchawi
(d) Sijui
(e) Nyingine (sema ni gani)

37. Mama aliye na virusi vya HIV hufanyaje ili kupunguza uwezekano wa kumwabukiza mtotowe?
(a) Hutoa mimba
(b) Hufata uponyuaji (sema ni gani)
(c) Hana la kufanya
(d) Sijui
(e) Nyingine (sema ni gani)

38. Mama mjito anapojulikana kuwa na virusi vya HIV anachukuliwaje na: (Tia alama X)

<table>
<thead>
<tr>
<th>Hudharauliwa</th>
<th>Wake wenzie?</th>
<th>Waumini wenzake?</th>
<th>Wafanyi kazi wa afya?</th>
<th>Wakungwa wa kienyeji?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hutafuliwa matibabu</td>
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<tr>
<td>Hulaumu uchawi</td>
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<tr>
<td>Nyengine (ni ipi?)</td>
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<td></td>
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<tr>
<td>Sijui</td>
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</table>

39. Unavyoelewa ni pingamizi gani kubwa huzuia pampano dhidi ya ukimwi baadhi ya wake waja wazito kijijini mwenu?
(a) Usheratii kuwa na waume wengi
(b) Umasikini
(c) Hali ya kutojua na kutojali
(d) Hali ya kutolewa jinsi ya kuambukizwa na virusi vya HIV
(e) Nyingine (sema ni gani)

40. a) Usiniambie matokeo, lakini umewahi kufanyiwa uchunguzi wa virusi vya HIV?
(a) Ndiyo
(b) La (Ikiwa jawabu lako ni La, acha maswali 41-43, na uende kwa swali 44.)

41. Ikiwa jawabu lako ni Ndiyo, ulijiamulia kupimwa au ulitakiwa kupimwa?
(a) Kujiamulia
(b) Kutakiwa kupimwa

42. Ulishauriwa kuhusu upimwaji wa virusi vya HIV kabla au baada ya kwenda kupimwa?
(a) Ushauri wa kabla na wa baadaye
(b) Ushauri wa kabla
(c) Ushauri wa baadaye
43. Ulitosheka na ushauri wa kabla na wa baada ya upimwaji uliopata?
(a) Ndiyo
(b) La
(c) Sijui

44. a) Je, unafikiri upimwaji wa virusi vya HIV unapaswa kufanywa kabla ya kuzaa?
(a) Ndiyo
(b) La
(c) Eleza sababu kwa jawabu lako kwa swali 44 (a) .........................................................

45. Ugonjwa gani mara nyingi huwaambukiza akina mama waja wazito kijijini mwenu?
(a) Ukimwi
(b) Malaria
(c) Magonjwa ya ngono (STDs)

46. Njia gani moja kubwa ya kupunguza rnaradhi ya ukimwi baadhi ya akina mama waja wazito kijijini mwako?
(a) Kuva mwaminifu kwa mchumbu wako
(b) Maombi
(c) Endeleza ushauri katika VCT
(d) Utumiwaji wa mipira (condoms)
(e) Nyingine (sema ni gani..........................................................)

BABY FEEDING PRACTICES (JINSI ALISHAWOYO MTOTO)

47. Ni wakati gani akina mama katikak kijijini mwenu huanzishia watoto chakula cha utu uzima?
(a) Chini ya mwezi mmoja
(b) Mwezi 1 hadi 2
(c) 2 hadi 4
(d) 4 hadi 6
(e) Baada ya miezi 6
(f) Sijui
(g) Nyingine (sema ni gani..........................................................)

48. Ni chakula gani hutumiwa sana na akina mama wanapoozishia watoto wao chakula cha utu uzima kijijini mwenu?
(a) Uji
(b) Ndizi iliyo twangwa
(c) Mazwiwa
(d) Matunda
(e) Nyingine (sema ni gani..........................................................)

49. Wako akina mama ambao havanyonyeshi watoto wao hata wakiwa na maziwa ya matiti ya kutosha kijijini mwenu?
(a) Ndiyo
(b) La
(c) Sijui

50. Ikiwa jawabu lako kwa swali 49 ni Ndiyo, wanalisha watoto wao na nini hata wakiwa na umri chini ya miezi 6?
(a) Maziwa ya ngombe
(b) Uji wa mahindi
(c) Uji wa wimbi
(d) Nyingine (sema ni gani..........................................................)

ASANTE SANA KWA KUJIBU MASWALI HAYA.
Ndi, Justice Koskei, umwe wa baria bagutegeera mantu jaria jaringene na utambia bwa murimo jwa ukimwi kuuma kiri muciari gwita kiri mwana uticiari gatigati ka ekuru baarito ndene ya cibitari cia catholic iria iri Meru. Gututhetheria gucokia biuria bibi kuri na uguni mono kiri batwi.

SOCIO-DEMOGRAPHIC CHARACTERISTICS

23. Uri na mianka ing’ana? 

24. Muturire jwaku ni juriku?
   (a) gwenka
   (b) uguri
   (c) uguri ni mukuru wa ekuru babaingi
   (d) ntigwa kana bwathukanire

25. Kethira nuguri/ntigwa kana bwathukanire, waguri uri na mianka ing’ana? ...

26. Uri na maewa/maciara jang’ana ja twana turi moyo? ...........................................

27. Ni magiitajang’ana kauma gatikinyite? ..................................................

28. Uri na twana tung’na turi moyo? ..............................................................

29. Kethira maewa/maciara ja twana turi moyo na turia turi o nandi tutigwitania andika gitumi:
   (a) Kiria giatimire o kaana gaku ing’ana
   i) ........................................ i) ........................................
   ii) ..................................... ii) ......................................
   iii) ................................... iii) ...................................
   (Kethira ni ing’anene ita namba 30)

30. Mucara jwaku ni jung’ana (Ksh.)?
   (a) <3000
   (b) >3000 <5,000
   (c) >5000 <10,000
   (d) >10,000
   (e) Guticio buru

31. Wetire cukuru mwanka ariku?
   (a) utathoma
   (b) primary
   (c) secondary
   (d) college kana university
   (e) kithomo kingi .................................................................

KNOWLEDGE, ATTITUDE & PRACTICE REGARDING MTCT.

32. Urona kaana nturene yaku karia antu bathuganagia kari na ukimwi?
   (a) li
   (b) Ari
33. ក់ថុមីក់កាល់ កន្លែងដំបូងនៅលើញ 32. អង្វរឈុតអំពីមុខរូប្រយោគឈុត។
(a) កើតា កើត់នៅពេលនេះ
(b) កាបូរ័បុរីនីការកំពូល (ឈ្មោះអតីតមក)
(c) កើតា កើត់មាសុធផ្សែមសូវឈុត។
(d) កាបូរ័បុរីតូលូតកុំព្យូទ័រប្រឈុត។
(e) ឈុតសម្រាប់
(f) និទានផ្លើង (នឹងនឹង)

34. កើរឈាននិងកើរសិក្សាយករីមាសនៅពេលថ្មីនេះ មុខរូប្រយោគឈុត។
(a) កើតា កើត់នៅពេលនេះ
(b) កាបូរ័បុរីនីការកំពូល (ឈ្មោះអតីតមក)
(c) កើតា កើត់មាសុធផ្សែមសូវឈុត។
(d) កាបូរ័បុរីតូលូតកុំព្យូទ័រប្រឈុត។
(e) ឈុតសម្រាប់
(f) និទានផ្លើង (នឹងនឹង)

35. មានការពណ៌នីមុខរូប្រយោគឈុតដ៏អស្ចារ្យឯករីមាសនៅពេលថ្មីនេះ
(a) ខ្លួន
(b) អូន
(c) ឈុតសម្រាប់

35b. ក់ថុមីក់កាល់ កន្លែងដំបូងនៅលើញ 35 ឬការពណ៌នីមុខរូប្រយោគឈុតដ៏អស្ចារ្យឯករីមាសនៅពេលថ្មីនេះ និទានផ្លើងនៅពេលថ្មីនេះ
(a) ខ្លួន
(b) អូន
(c) ឈុតសម្រាប់

36. ដើម្បីកើតុមីក់មានការពណ៌នីមុខរូប្រយោគឈុតដ៏អស្ចារ្យឯករីមាសនៅពេលថ្មីនេះ
(a) ដើម្បីឆ្លងកាស
(b) ការរុកះបញ្ចប់ការអោយកុំព្យូទ័រ
(c) ការរុកះបញ្ចប់ការអោយកុំព្យូទ័រ
(d) ឈុតសម្រាប់
(e) និទានផ្លើង (នឹងនឹង)

37. និតិឯកឈុតមានការពណ៌នីមុខរូប្រយោគឈុតសម្រាប់រឿងរឿងកុំព្យូទ័រកុំព្យូទ័រឈុតដ៏អស្ចារ្យឯករីមាសនៅពេលថ្មីនេះ
(a) ដើម្បីឆ្លងកាស
(b) ការរុកះបញ្ចប់ការអោយកុំព្យូទ័រ
(c) ការរុកះបញ្ចប់ការអោយកុំព្យូទ័រ
(d) ឈុតសម្រាប់
(e) និទានផ្លើង (នឹងនឹង)

38. មានការពណ៌នីមុខរូប្រយោគឈុតដ៏អស្ចារ្យឯករីមាសនៅពេលថ្មីនេះ
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<td>Ntikumenya</td>
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39. Ni kirigira kiriku kirio gatigatine keenu kuringana naugwe kiri ekuru niuntu bwa kirigiria murimo juju?
   (a) umaramari
   (b) thiina
   (c) kurita
   (d) kurigwa kumenya uria jugwatithanagua
   (e) njira ingi (andika cio

40. Ukauga ithimi biaku, indi ri uraigua kithimi kia ukimwi?
   (a) li
   (b) ari
   (Kethira ni ari kurukira 41,42 na 43)

41. Kethira ni li kawende kuthithirua kithimi gwenga kana kawakinyirirue?
   (a) kandendete
   (b) kandakinyirirue

42. Ni bwaririe mbere na nyuma ya kuthithirua kithimi?
   (a) twaririe mbere na nyuma ya kithimi
   (b) mbere ya kithimi aki
   (c) nyuma ya kithimi aki
   (d) tutaria buru
   (e) injira ingi (andika cio

43. Ni wang’anirwe in rwaria mbere na nyuma ya kithimi?
   (a) li
   (b) Ari
   (c) Ntikumenya

44. Nukuthugania kwaria iguru ria ukimwi na kuthithia kithimi mbere ya kuewa mwana ikubatere?
   (a) li
   (b) Ari
   (c) Ejana gitumi kia macokio jaku

45. Ni murimo juriku jugwataga ekeru babarito kaingi?
   (a) ukimwi
   (b) malaria
   (c) sexually transmitted disease
   (d) ingi andika

46. Ejana njira imwe ya kurigiria murimo juju kiri aciari nturene jaku?
   (a) gwitikania
   (b) maromba
   (c) improve vct
   (d) gutumira condoms
   (e) njira
   (ingi

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UMENYERI BWA MWANA

47. Ni ri aciari bambagiria kurumia twana irio nturene yaku?
   (a) unini bwa mweri 1
   (b) mweri 1 mwanka 2
   (c) mieri 2 mwanka 4
   (d) mieri 4 mwanka 6
   (e) nkuruki ya mieri 6
   (f) ntikumenya
   (g) magita jangi andika

48. Ni irio biriku baejaga twana mbere nturene yaku?
   (a) ucuru
   (b) marigu
   (c) iria
   (d) matunda
   (e) bingi

49. Kuri na aciari bationkagia aana bao na bari na iria ria kung’ana?
   (a) li
   (b) ari

50. Kethira ni li namba 49 nimbi baejaga aana bao riria bari nthiguru ya mieri 6?
   (a) iria ria ng’ombe
   (b) ucuru bwa mpempe
   (c) ucuru bwa ugimbi
   (d) bingi

NI BWEGA NIUNTU BWA GUCOKIA BIURIA BIBI.
QUESTIONNAIRE FOR HEALTH-CARE WORKERS

I, Justice Koskei, am involved in a study to determine factors associated with Mother-to-child transmission of HIV among ante-natal mothers in Meru Central District, Kenya. Your contribution in answering these questions will be highly appreciated.

EDUCATIONAL CAPACITY

1. State your basic professional training in health.
   (a) Enrolled Community Health Nurse
   (b) Registered Community Health Nurse
   (c) Registered Clinical Officer
   (d) Other (specify)

2. State your additional job-relevant training.
   (a) Mother-to-child transmission of HIV
   (b) HIV/AIDS
   (c) Counseling
   (d) HIV/AIDS & counseling
   (e) All the above
   (f) None Other (specify)

3. List the main ways in which a baby acquires HIV.
   (a) From witchcraft
   (b) From mother's breast-milk
   (c) In uterus
   (d) During delivery
   (e) From maternal diseases
   (f) Don't know
   (g) Other (specify)

4. a) Is there any MTCT survey/research that has been done in your hospital’s MCHC.
   1. Yes
   2. No If your answer to Q. 4 (a) is NO, skip Q. 4 (b).
   b) If so, state the study

5. Suggest ways of reducing mother-to-child transmission of HIV in a community.
   (a) Reduce ignorance
   (b) Increase knowledge on MTCT of HIV
   (c) Reduce poverty
   (d) Increase partner faithfulness and reduce promiscuity
   (e) Fight stigmatization of infected mothers
   (f) Fight harmful traditional practices (specify)
   (g) Other (specify)
6. What major obstacles, if any, hinder efforts to reduce mother-to-child transmission of HIV in the surrounding communities?
   (a) Traditional beliefs
   (b) Unfaithfulness to one's spouse: specifically
       i) to male spouse
       ii) to female spouse
   (c) Ignorance on HIV transmission
   (d) Social stigma
   (e) Poverty
   (f) Role of traditional birth attendants
   (g) Cost of HIV treatment
   (h) Other (specify……………………………………………………………)

7. Which community support groups does this hospital refer to or receive its client/patients from?
   (a) NGO health facility
   (b) Government health facility
   (c) Other mission's health facility
   (d) Private health facility
   (e) Other (specify……………………………………………………………)

8. What health outreach ante-natal services are offered in your MCH clinic?
   (a) Maternal/child welfare only
   (b) 8 (1) plus Voluntary Counseling
   (c) Treatment of minor ailments only
   (d) None is offered
   (e) Other (specify……………………………………………………………)

9. 

<table>
<thead>
<tr>
<th>Mothers are tested for HIV in our MCHC…</th>
<th>Mothers should be tested for HIV at all times</th>
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<tr>
<td>Ante-natally by</td>
<td>Post-natally by</td>
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<tr>
<td>Free choice Required</td>
<td>Free choice Required</td>
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<td>YES</td>
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BABY FEEDING CHARACTERISTICS

10. What proportion of babies is born to HIV positive mothers annually in this hospital?
    (a) ≤ 20%
    (b) 20 ≤ 35%
    (c) 35 ≤ 50%
    (d) 50%
    (e) Don't know
    (f) Other (specify……………………………………………………………)

11. What advice on breast-feeding are mothers given in this MCHC regarding HIV?
    (a) To breastfeed as usual
    (b) To avoid breast-feeding
    (c) None
    (d) Other (specify……………………………………………………………)
12. What counseling is given to an HIV\textsuperscript{+} mother regarding baby-feeding options after birth?
   (a) Breast-feeding counseling only
   (b) Bottle-feeding counseling only
   (c) Both breast-feeding and bottle-feeding counseling
   (d) Don’t know
   (e) Other (specify)

13. At what age of a baby are mothers advised to start weaning?
   (a) 1 month ≥ 2 months.
   (b) 2 months ≥ 4 months.
   (c) 4 months ≥ 6 months.
   (d) >6 months.
   (e) Don’t know
   (f) Other (specify)

14. What alternative foods do mothers use to wean their babies in this Community?
   (a) Animal milk (specify)
   (b) Porridge (specify type)
   (c) Other (specify)

MEDICATION CHARACTERISTICS

15. What is the main source of drugs/medicines for this hospital?
   (a) Ministry of Health
   (b) Mission for Essential Drugs Supplies (MEDS)
   (c) Don’t know
   (d) Other (specify)

16. What drugs does this hospital receive from the Ministry of Health?
   (a) Antibiotics
   (b) ARVs (specify)
   (c) Common essential drugs (specify)
   (d) Don’t know
   (e) Other (specify)

17. List the antiretroviral drugs (ARVs), if any, that are offered to HIV\textsuperscript{+} mothers in this hospital?
   (a) Nevirapine
   (b) Zidovudine
   (c) Don’t know
   (d) Other (specify)

COUNSELING SERVICES

18. What counseling is offered at your MCH clinic regarding HIV/AIDS?
   (a) Pre-test counseling only
   (b) Post-test counseling only
   (c) Pre- and post-test counseling
   (d) None
   (e) Other (specify)
19. Who conducts voluntary counseling and testing services, if any, in your hospital?
   (a) Nurse
   (b) Doctor
   (c) Laboratory staff
   (d) All above
   (e) Other (specify)

20. Is the person(s) conducting VCT services trained in counseling?
   (a) Yes
   (b) No
   (c) Don't know

COMMUNITY MOBILIZATION

21. What HIV/AIDS community education and prevention activities are available at your hospital?
   (a) Awareness creation
   (b) VCT
   (c) Other (specify)

22. How are HIV positive ante-natal mothers who are visiting this hospital followed up?
   (a) By use of community members (specify)
   (b) By use of hospital staff (specify)
   (c) By use of both hospital and community members
   (d) Don't know
   (e) No follow-up services
   (f) Other (specify)

THANK YOU VERY MUCH FOR RESPONDING TO THESE QUESTIONS.
MWORONTO WA RWARIA RWA GIKUNDI

KAUMO/MAHALI/CENTRE

MUNG'ANA WA ANTU/IDADI YA WASHIRIKI/NUMBER OF PARTICIPANTS

1. **MERU:** Ni mirimu iriku kwa wingi iguataga aana ba miaka nthiguru ya itano ndene ya ntuura iji?
   **SWAHILI:** Magonjwa gani makubwa yanayowakabili watoto wa umri chini ya miaka itano kijijini mwenu?
   **ENGLISH:** *What are the major diseases affecting children under five years old in your community?*

2. **MERU:** Nimbi ukuthugania niko kaumo ka mukingo kiri ana?
   **SWAHILI:** Nini husababisha ukimwi kwa watoto?
   **ENGLISH:** *What do you think causes AIDS in children?*

3. **MERU:** Ni atia mwana ombaga kugwatwa ni murimu juju?
   **SWAHILI:** Mtoto aliye na umri chini ya mwaka huambukizwaje virusi vya HIV?
   **ENGLISH:** *How does a baby under one year get infected?*

4. **MERU:** Ni mitugo iriku ya muturire ukuthugania yomba kwongera gutamba kwa mukingo kiri ana?
   **SWAHILI:** Ni mambo gani ya utamaduni yaweza kuzidisha kuambukizwa virusi vya HIV kwa watoto?
   **ENGLISH:** *What cultural behaviour in this area do you think may increase the risk of HIV infection?*

5. **MERU:** Ni ndwaria iriku itumwagirwa kwariria kuthimirwa murimo jwa mukingo ntuu rene?
   **SWAHILI:** Watu huongea vipi kuhusu virusi vya HIV na Ukimwi kijijini mwenu?
   **ENGLISH:** *How is HIV and AIDS discussed in your area? Any local name for AIDS?*

6. **MERU:** Ni njira iriku yumba gutumirwa gukinyia mataaro iguru ria mukingo nturene yaku?
   **SWAHILI:** Watu hushauri vipi kuhusu virusi vya HIV na ukimwi kijijini mwenu?
   **ENGLISH:** *How do people approach counseling in HIV and AIDS in your area?*

7. **MERU:** Ni ukuthugania ekuru babarito ibagirite kuthimirwa murimo jwa mukingo?
   **SWAHILI:** Je, inapasa akina mama waja wazito wapimwe kuhusu virusi vya HIV?
   **ENGLISH:** *Do you think ante-natal mothers should be tested for HIV?*

8. **MERU:** Ni njira iriku cia kwigitira atuuri batumagira kwirigiria kugwatwa ni mukingo?
   **SWAHILI:** Je, watu wa jumuia hii wangejikinga vipi kutokana na virusi vya HIV?
9. **MERU:** Ni atia gukaraga kaingi ndene ya mcii riria mukuru kana mwekuru amenya ati munyanya wawe ni agwati ni mukingo nawe atigwati niju?

**SWAHILI:** Nini hufanyika katika jumua hii hii moja wa wakilima na virusi vya HIV ilhali mwekuru ati munyanya wawe ni agwati niju?

**ENGLISH:** How do members of this community protect themselves from HIV infection?

10. **MERU:** Ni niukuagia mwekuru umurito riria ari na mukingo?

**SWAHILI:** Nani humtunza mama mja mzito aliye na virusi vya HIV na ukimwi hadi azac?

**ENGLISH:** Who takes care of a pregnant mother who has HIV and AIDS until delivery?

11. **MERU:** Ni utethio buriku bwa kugwatiira mantu ja ugima wa miiri atuuri batumagira?

**SWAHILI:** Watu wa jumua hii hitugemeea sitelemu za kwa afya yao kwa jumla?

**ENGLISH:** What community support systems do the members of this community use in general health?

12. **MERU:** Ni utethio buriku atuuri bonaga kiuma kiri cibitari cia kanisa Katoliki?

**SWAHILI:** Watu wa jumua hii hitugemeea sitelemu za kwa miiri na mwekuru za Katoliki?

**ENGLISH:** What health services do members of this community get from Catholic Mission Hospitals?

13. **MERU:** Ni ngwataniro iriku ituraga gatigati ka aturi baku na cibitari cia kanisa / miseni cia Katoliki?

**SWAHILI:** Viunganisho vipo viko baina ya jumua yenu na hospital za mwekuru za Katoliki?

**ENGLISH:** What links exist between your community and Mission Hospitals?

14. **MERU:** Nimbi ithangikagia aturi baku muno mantune ja ugima wa miiri?

**SWAHILI:** Ni mambo gani muhimu ya afya yanawakera watu wa jumua yenu?

**ENGLISH:** What are your community’s major health concerns?

15. **MERU:** Uga njira iria ciumba kunyiyia gutamba kwa murimo jwa mukingo kiri ekuru babarito ndene ya ntuura yenu.

**SWAHILI:** Eleza njia za kupunguza uambukizi wa virusi vya HIV na ukimwi kwa mama waja wazito katika jumua yenu.

**ENGLISH:** Suggest ways of reducing HIV/AIDS infection among ante-natal mothers in your community.

**MERU:** Ni bwega muno niuntu bwa kwija mucemanione juju.

**SWAHILI:** Asante sana kwa kuhudhuria mkutano huu.

**ENGLISH:** Thank you very much for availing yourself to this meeting.
APPENDIX 3: LOCATION OF MERU CENTRAL DISTRICT, KENYA

Inset: Map of Kenya

Below: Map of Meru Central District
APPENDIX 4: RESEARCH AUTHORIZATION

KENYATTA UNIVERSITY
BOARD OF POSTGRADUATE STUDIES
P.O. Box 43844,
NAIROBI
Tel. No. 810901/9 Ext. 57530
Email: kubps@yahoo.com

Our Ref: 157/7175/01
Your Ref:

Date: 15th Jan, 2004

The Permanent Secretary,
Ministry of Education, Science & Technology,
P.O.Box 30040
NAIROBI.

Dear Sir/Madam,

RE: RESEARCH AUTHORIZATION:

I write to introduce Mr. Justice K. Koskei who is a Postgraduate Student of this University. He is registered for a M.P.H.E degree programme in the Department of Zoology.

Mr. Koskei intends to conduct research for a project entitled, "Factors Associated with Mother-to-Child Transmission of Human Immunodeficiency Virus Among Antenatal Mothers in Catholic Hospitals, Meru Central District, Kenya," as a partial fulfillment of the requirement of his degree programme.

Any assistance given to him will be highly appreciated.

Yours faithfully,

J.K. LANGAT
FOR DIRECTOR, BOARD OF POSTGRADUATE STUDIES

C.C. Registrar, (Academic) Director, BPS, to see on file
Dean, School of Pure & Applied Sciences.
Chairman, Zoology Dept.

JKL:sa
Justice K. Koskei  
Kenyatta University  
P.O. BOX 43844  
NAIROBI

Dear Sir

RE: RESEARCH AUTHORIZATION

On the basis of your application for authority to conduct research on 'Factors Associated with Mother to child Transmission of Human Immuno Deficiency Virus Among Antenatal Mothers in Catholic Hospitals, Meru District, I am pleased to inform you that you have been authorised to conduct research on Meru Central District for a period ending 30th May, 2004.

You are advised to report to the District Commissioner, the District Education Officer and the District Medical Officer of Health Meru Central District before embarking on your research project.

You are further expected to avail two copies of your research report to this Office upon completion of your research project.

Yours faithfully

A. C. KARATIA

FOR: PERMANENT SECRETARY/EDUCATION

CC
The District Commissioner  
Meru Central District

The District Medical Officer of Health  
Meru Central District

The District Education Officer  
Meru Central District
APPENDIX 5: ABSTRACT FOR CONFERENCE

1. Koskei, J. K, Kenyatta University, P. O. Box 43844, Nairobi
2. Okelo, R.O, Kenyatta University, P. O. Box 43844, Nairobi
3. Kigondu, C.S, University of Nairobi, P. O. Box 19676, Nairobi

Mother-to-child transmission of Human Immunodeficiency Virus (HIV) has emerged as a major global public health concern. It is one of the leading causes of morbidity and mortality among children under five years of age in developing countries especially in Sub-Saharan Africa where there are about 90% of all children born with HIV in the world. Out of 1.2 million annual births in Kenya, 106,000 children under five years are HIV positive. The major routes of infection are pregnancy, delivery and breast-feeding. A descriptive cross-sectional survey was done in Meru Central District, Kenya in 2003. It determined factors associated with mother-to-child transmission of HIV among ante-natal mothers attending MCHC in Mission Hospitals with an aim of identifying preventable socio-cultural practices that enhance transmission. Ante-natal mothers were interviewed using pre-tested questionnaires and HCWs filled a related questionnaire. Focus group discussions were held with 72 randomly sampled community members. The results indicated factors and practices surrounding marriage, pregnancy, delivery and baby weaning as risks to MTCT of HIV. Most, 81.3%, of the ante-natal mothers were literate ($x^2=640; df=4; p=0.0000$), poor (32.3%) and married young. The older they were the less likely they would be married ($x^2=703.2; df=7; p=0.0000$). This predisposed them to early pregnancy and risks of MTCT of HIV. Spousal unfaithfulness was significant among risk factors ($x^2=331.5529; df=4; p=0.0000$). Ante-natal care was mostly done by TBAs using shared surgical instruments with little knowledge on modes of HIV transmission. Inadequate counseling has caused dissatisfaction among ante-natal mothers ($x^2=290.1664; df=4; p=0.0000$). No relationship existed between HCWs’ advice on baby weaning and when to begin ($x^2=2620.8693; df=6; p=0.0000$). Though most of the HCWs had an additional job-relevant training they were inadequate in basic training and hence in implementation. In this scenario, there is need for improved HCWs training in counseling and community mobilization and to staff the MCHCs appropriately. There is also need to strengthen home-based care of ante-natal mothers by recognizing the role of traditional health practitioners, re-training them and seeking collaboration.
APPENDIX 6: PLATES SHOWING SOME DATA COLLECTION AREAS

**PLATE 6.1** Justice Koskei interviewing an ante-natal mother in Consolata Hospital, Nkubu

**PLATE 6.2** Monica interviewing an ante-natal mother in Cottolengo Hospital, Chaaria.
PLATE 6.3 Mary and Karo getting ready for an FGD in Mitunguu Location

PLATE 6.4 Conducting an FGD with Prof. Christine Sekadde-Kigondu in Kanyakine Location