

**UTILIZATION OF KNOWLEDGE ON PREVENTION OF  
MOTHER-TO-CHILD TRANSMISSION OF HIV AMONG  
PREGNANT WOMEN ATTENDING SELECTED HEALTH  
FACILITIES IN EMBU DISTRICT, KENYA**

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UNIVERSITY**

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## DECLARATION

I, Simon Kivuti Kiura hereby declare that this thesis is my original work and has not been presented for degree award in any other university or for any other award

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We confirm that the candidate, under our supervision carried out the work reported in this thesis.

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## **DEDICATION**

To my daughter Ann-Sheila, with great affection and admiration for her good work in  
school.

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## TABLE OF CONTENT

<b>TITLE PAGE .....</b>	<b>i</b>
<b>DECLARATION.....</b>	<b>ii</b>
<b>DEDICATION .....</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT .....</b>	<b>iv</b>
<b>TABLE OF CONTENT.....</b>	<b>v</b>
<b>LIST OF TABLES.....</b>	<b>ix</b>
<b>LIST OF FIGURES.....</b>	<b>x</b>
<b>LIST OF ACRONYMS.....</b>	<b>xi</b>
<b>DEFINITION OF TERMS.....</b>	<b>xii</b>
<b>ABSTRACT.....</b>	<b>xiii</b>
<b>CHAPTER ONE: INTRODUCTION.....</b>	<b>1</b>
<b>1.1 Background.....</b>	<b>1</b>
<b>1.2 Problem statement.....</b>	<b>3</b>
<b>1.3 Research questions.....</b>	<b>3</b>
<b>1.4 Research hypotheses.....</b>	<b>4</b>
<b>1.4.1 Null hypotheses.....</b>	<b>4</b>
<b>1.5 Research objectives.....</b>	<b>5</b>
<b>1.5.1 Broad objective.....</b>	<b>5</b>
<b>1.5.2 Specific objectives.....</b>	<b>5</b>
<b>1.6 Significance and justification of the study.....</b>	<b>6</b>
<b>1.7 Delimitation.....</b>	<b>7</b>
<b>1.7.1 Study delimitation.....</b>	<b>7</b>

1.7.2 Study limitation.....	7
1.8 Conceptual framework.....	8
<b>CHAPTER TWO: LITERATURE REVIEW .....</b>	<b>9</b>
<b>CHAPTER THREE: METHODS AND MATERIALS.....</b>	<b>15</b>
<b>3.1 Research design .....</b>	<b>15</b>
<b>3.2 Variables under study.....</b>	<b>15</b>
<b>3.3 Location of the study.....</b>	<b>15</b>
<b>3.4 Study population.....</b>	<b>16</b>
<b>3.5 Selection criteria.....</b>	<b>16</b>
<b>3.5.1 Inclusion criteria.....</b>	<b>16</b>
<b>3.5.2 Exclusion criteria.....</b>	<b>16</b>
<b>3.6 Sampling technique and sample size .....</b>	<b>17</b>
<b>3.6.1 Sampling technique.....</b>	<b>17</b>
<b>3.6.2 Sample size determination.....</b>	<b>18</b>
<b>3.7 Research instruments.....</b>	<b>19</b>
<b>3.8 Interview schedule design.....</b>	<b>20</b>
<b>3.9 Pilot study .....</b>	<b>20</b>
<b>3.9.1 Validity.....</b>	<b>20</b>
<b>3.9.2 Reliability.....</b>	<b>21</b>
<b>3.10 Data collection techniques .....</b>	<b>22</b>
<b>3.11 Data analysis.....</b>	<b>22</b>

<b>3.12 Logistical and ethical consideration .....</b>	<b>22</b>
<b>3.13 Ethical approval .....</b>	<b>23</b>
<b>CHAPTER FOUR: RESULTS.....</b>	<b>24</b>
<b>4 Results .....</b>	<b>24</b>
<b>CHAPTER FIVE: DISCUSSION.....</b>	<b>52</b>
<b>5 Discussion.....</b>	<b>52</b>
<b>5.1 Demographic characteristics.....</b>	<b>52</b>
<b>5.2 Knowledge on prevention of MTCT of HIV.....</b>	<b>53</b>
<b>5.3 Knowledge on HIV prevention by use of condoms.....</b>	<b>54</b>
<b>5.4 Knowledge on condom retail outlets.....</b>	<b>55</b>
<b>5.5 Approval of condom use by respondent's community.....</b>	<b>55</b>
<b>5.6 Source of information on prevention of MTCT of HIV.....</b>	<b>56</b>
<b>5.7 Knowledge on provider-initiated counselling and testing.....</b>	<b>57</b>
<b>5.8 Attitude towards HIV positive women by respondent's community...57</b>	
<b>5.9 Community attitude towards HIV test as reported by respondents.....58</b>	

<b>CHAPTER SIX: SUMMARY OF RESULTS, CONCLUSION AND RECOMMENDATIONS.....</b>	<b>60</b>
<b>6 Summary of results.....</b>	<b>60</b>
<b>6.1 Conclusion.....</b>	<b>63</b>
<b>6.2 Recommendations.....</b>	<b>65</b>
<b>6.3 Further research .....</b>	<b>67</b>
<b>REFERENCES:.....</b>	<b>68</b>
<b>APPENDIX 1: INTERVIEW SCHEDULE .....</b>	<b>72</b>
<b>APPENDIX 2: PILOT STUDY – SAMPLE STRUCTURE.....</b>	<b>80</b>
<b>APPENDIX 3: MAP OF EMBU DISTRICT.....</b>	<b>81</b>
<b>APPENDIX 4: RESEARCH AUTHORIZATION.....</b>	<b>82</b>

**LIST OF TABLES**

Table 4.1: Respondent's age.....	24
Table 4.2: Respondent' education level against part.....	49
Table 4.3: Parity against respondent's age .....	50
Table 4.4: Frequency of exposure to information on prevention of MTCT of HIV...	51

**LIST OF FIGURES**

Figure 4.1: Parity of respondents .....	25
Figure 4.2: Number of children .....	25
Figure 4.3: Respondent's education level.....	26
Figure 4.4: Occupation of respondent.....	27
Figure 4.5 Marital status of respondent .....	28
Figure 4.6: Age at first marriage of respondent .....	29
Figure 4.7: Methods of protection against HIV after conception .....	29
Figure 4.8: Economic activity of spouse .....	30
Figure 4.9: Nature of economic activity among spouses.....	31
Figure 4.10: Education level of the spouse.....	32
Figure 4.11: Knowledge on the mode of spread of HIV.....	33
Figure 4.12: Groups at risk of infection with HIV according to respondents.....	34
Figure 4.13: Knowledge on signs and symptoms of HIV and AIDS.....	34
Figure 4.14: Knowledge on prevention of HIV and AIDS .....	35
Figure 4.15: Knowledge on condom retail outlets .....	35
Figure 4.16: Knowledge on condom use and approval of use by respondent's community	37
Figure 4.17: Reasons for disapproval of condom use by respondent's community	37
Figure 4.18: Knowledge on cultural practices influencing spread of HIV.....	38
Figure 4.19: Source of information on prevention of MTCT of HIV.....	39
Figure 4.20: Health educators on prevention of MTCT of HIV.....	40
Figure 4.21: Frequency of exposure to information on PMTCT of HIV.....	41
Figure 4.22: Methods of reducing spread of HIV from mother-to-child.....	42
Figure 4.23: Services offered by prevention of MTCT of HIV programme to pregnant women .....	43
Figure 4.24: Services offered during provider-initiated counselling and testing.....	44
Figure 4.25: Reason for visiting provider-initiated counselling and testing.....	45
Figure 4.26: Hindrance to utilization of provider-initiated counselling and testing.....	46
Figure 4.27: Decision making regarding HIV test among respondents .....	47
Figure 4.28: Prevalence of HIV infection as reported by respondents .....	47
Figure 4.29: Attitude towards HIV positive women by respondent's community.....	48
Figure 4.30: Community attitude towards HIV test as reported by respondents.....	49

**LIST OF ACRONYMS**

<b>AIDS</b>	Acquired Immune-Deficiency Syndrome
<b>ANC</b>	Ante-Natal Clinic
<b>APHIA</b>	AIDS Population Health Integrated Assistance
<b>ART</b>	Anti-Retro-Viral Treatment
<b>BCC</b>	Behaviour Change Communication
<b>CHW</b>	Community Health Worker
<b>HIV</b>	Human Immunodeficiency Virus
<b>ICAP</b>	International Center for AIDS Care and Treatment Programs
<b>IEC</b>	Information, Education and Communication
<b>KAIS</b>	Kenya AIDS Indicator Survey
<b>KMTC</b>	Kenya Medical Training College
<b>MTCT</b>	Mother-to-Child Transmission
<b>PICT</b>	Provider-Initiated Counselling and Testing
<b>PMTCT</b>	Prevention of Mother-to-Child Transmission
<b>PSI</b>	Population Services International
<b>SPSS</b>	Statistical Package for Social Science
<b>VCT</b>	Voluntary Counselling and Testing

## **DEFINITION OF TERMS**

**Knowledge** Understanding on mother-to-child transmission of HIV.

**Child** Child between the ages of 1-5 years.

**Infant** Baby under (1) year old.

**Gravida** Pregnant woman.

**Uptake of provider-initiated counselling and testing** Number of pregnant women attending the clinic.

**Woman** Female between the ages of 15-49 years.

**Primagravida** Woman pregnant for the first time.

**Parity** Number of times a woman has been pregnant for example *para* 1+0 gravida 2 means the woman has had one delivery and no abortion (below 28 weeks) and is currently pregnant.

## ABSTRACT

According to KAIS 2007, nearly 1 out of 10 pregnant women in Kenya are infected with HIV (9.6 percent). The objective of the study was to investigate the impact of utilization of knowledge on prevention of mother-to-child transmission of HIV among pregnant women attending selected public health facilities in Embu District. In this study, utilization of knowledge on prevention of mother-to-child transmission of HIV, utilization of provider-initiated counselling and testing and the common risky practices for HIV transmission among pregnant mothers was investigated. The study was a hospital-based cross-sectional study conducted in selected public health facilities in Embu District. Convenience sampling was applied to select the facilities then systematic random sampling technique was used to select respondents for the interview and participation in the study. A sample of 241 pregnant women was recruited on informed consent for the study. The data collection was by use of exit interview schedule. Data, including both coded answers and text responses, were entered into Microsoft Access and analysis was conducted using Statistical Package for Social Science (SPSS) version 18.0 (SPSS Inc.,Chikago.,IL). Of the respondents interviewed, majority (82%) were married while 1% were widowed; an important background characteristic when exploring patterns of HIV transmission in a population as about two-thirds of HIV-infected Kenyan adults are currently in a union. Majority (98%) of the respondents knew about condoms with 58% having been educated on condom use and 67% having used condoms. About half of the respondents said that they knew of a place where condoms are dispensed. To gauge the respondent's community approval of condom use, 55% thought that the community approved use, with only 1% not knowing. The findings also showed that out of the 56% who had not visited provider-initiated counselling and testing clinic, 44% expressed fear of knowing their status, 17% trusted themselves and their partners, 4% experienced spouse refusal while 1% had not made a choice. On decision making regarding HIV test, 93% believed that their choice to the test was an independent decision. Analysis of parity trends revealed that women with primary education level's parity to be increasing while that of secondary and post-secondary seemed to be decreasing. Chi - square analysis of education versus parity showed that there was no significance association ( $n=241$ ,  $\chi^2=142.8$ ,  $df=1$ ,  $p<0.05$ ).

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background**

According to the Kenya Demographic Health Survey (2003), majority (72% women and 68% men) of those interviewed knew HIV could be transmitted through breastfeeding. Only 33% of women and 38% of men interviewed knew that the risk of transmission from mother-to-child could be reduced by the mother taking certain drugs during delivery. At the same time the knowledge on transmission through breastfeeding and knowledge on antiretroviral drugs is lower for the younger women and men, as well as those who never had sex. The Kenya AIDS Indicator Survey (2007) and the Kenya Demographic Health Survey (2008/2009) have shown a marked increase in prevalence among older married, divorced or separated groups. Kenya also reports one of the highest couple discordance rates in Africa. It is estimated that nearly 50% of HIV infected married couples have an HIV negative partner. The rise in prevalence among this group could be attributed to the fact that they consider themselves as being at low risk of infection. The perceived safety that comes with longer-term relationships leads to a lack of condom use, even where infidelity is rife, making this group at high risk of HIV infection. Such high discordance rates would not be possible if infidelity was not taking place. Having concurrent sexual partners exposes one to higher risk of HIV infection.

Given this scenario increasing the level of general knowledge on transmission of the virus from mother-to-child and reducing the risk of transmission by use of antiretroviral drugs among other interventions, are critical to achieving the millennium targets of

halting and reversing the spread of HIV and AIDS (GOK, 2005). Prevention of mother-to-child transmission of HIV has become an important intervention in the prevention and control of HIV and AIDS in developing countries and particularly Kenya, with commitment being made to improve maternal and child health and survival. Infant and child mortality rates in Kenya show increasing trends, which have attributed mainly to HIV and AIDS. Studies have shown that the rate of mother-to-child transmission of HIV in infected women is between 30 to 50% while transmission in pregnancy is 5 to 10% (Guay *et al.*, 2007). Approximately 25% of HIV infected children survive beyond their fifth birthday and are increasingly contributing to the numbers of children with chronic illness (Nduati *et al.*, 2006).

The result is that the mortality of children under age five continued to increase from about 90 per 1000 in 1990 to 112 per 1000 in 1998 and 115 per 1000 in 2003 (KDHS, 2003). In recent years, mother-to-child transmission rates have fallen to as low as 2 - 5% of births among HIV-infected women in developed countries (UNAIDS, 2002). This reduction in transmission was made possible by the introduction of comprehensive services including HIV counselling and testing, antiretroviral therapy, elective caesarean section delivery and the safe use of infant feeding formula instead of breastfeeding (Thompson and Rees-Jones, 2005). In Africa where these interventions have generally not been available and prolonged breastfeeding is the norm; between 25% and 40% of HIV- infected mothers transmit the virus to their infants (Kevin *et al.*, 2006). The severity of mother-to-child transmission problem in sub-Saharan Africa is due to high rates of HIV infection in women of reproductive health, a large total population of

women of reproductive age, high birth rates and the lack of effective mother-to-child transmission prevention interventions. The United Nations General Assembly Special Session on HIV and AIDS has the goal to reduce the proportion of infants infected with HIV by 50% by 2010 (UNICEF / UNAIDS, 2006).

### **1.2 Problem statement**

Mother's adoption and adherence to recommended feeding alternatives is a problem as overall, of the 50% breast milk transmission takes place by 6 weeks, and 75% by 6 months (Guay *et al.*, 2007). In addition, there is early evidence that mixed feeding increases the risk of breast milk transmission of HIV (Nduati *et al.*, 2006). Studies conducted in Uganda show that non-compliance to exclusive infant formula feeding is as high as 30% (Taverne, 2007). This poses a serious public health problem since mixed feeding may be more risky for HIV transmission (Preble *et al.*, 2001).

### **1.3 Research questions**

- a) What is the level of utilization of knowledge on prevention of mother-to-child transmission of HIV among pregnant women attending the selected public health facilities in Embu District?
- b) What information is presented to pregnant women before consent is obtained for HIV test in the selected public health facilities in Embu District?
- c) What is the perception about provider-initiated counselling and testing among pregnant women attending the selected public health facilities in Embu District?

- d) What is the willingness of utilizing provider-initiated counselling and testing among pregnant women attending the selected public health facilities in Embu District?
- e) What are the factors preventing access to provider-initiated counselling and testing among pregnant women attending the selected public health facilities in Embu District?

## **1.4 Research hypotheses**

### **1.4.1 Null hypotheses**

- a) Utilization of knowledge on prevention of mother-to-child transmission of HIV does not influence uptake of HIV test among pregnant women attending the selected public health facilities in Embu District.
- b) Information presented to pregnant women before consent is obtained during provider-initiated counselling and testing does not influence uptake of HIV test among pregnant women attending the selected public health facilities in Embu District.
- c) Perception about provider-initiated counselling and testing does not influence uptake of HIV test among pregnant women attending the selected public health facilities in Embu District.
- d) Willingness of utilizing provider-initiated counselling and testing does not influence uptake of HIV test among pregnant women attending the selected public health facilities in Embu District.

- e) Factors preventing access to provider-initiated counselling and testing does not influence uptake of HIV test among pregnant women attending the selected public health facilities in Embu District.

## **1.5 Research objectives**

### **1.5.1 Broad objective**

To investigate utilization of knowledge on prevention of mother-to-child transmission of HIV among pregnant women attending the selected public health facilities in Embu District.

### **1.5.2 Specific objectives**

- (a) To establish utilization of knowledge on prevention of mother-to-child transmission of HIV among pregnant women attending the selected public health facilities in Embu District.
- (b) To determine the nature of information given to pregnant women before and after HIV test is carried out among pregnant women attending the selected public health facilities in Embu.
- (c) To determine the level of utilization of provider-initiated counselling and testing services among pregnant women attending the selected public health facilities in Embu District.
- (d) To identify socio-demographic characteristics influencing utilization of provider-initiated counselling and testing services among pregnant women attending the selected public health facilities in Embu District.

## **1.6 Significance and justification of the study**

The target population is continuously exposed to comprehensive and standardized information, education and communication (IEC) materials through focused antenatal care (FANC) concept during pregnancy care at antenatal clinics so as to increase the level of general knowledge on prevention of mother-to-child transmission of HIV. The accessibility of pregnant women to provider-initiated counselling and testing causes concern due to the increasing trends in HIV prevalence in children as the current estimates indicate that about 10% of the reported AIDS cases in children are under five years of age and that over 90% of the HIV infection is due to mother-to-child transmission (NASCOP/CDC, 2006).

According to Kenya Demographic and Health Survey (2003), the prevalence of HIV in pregnant women who went to hospitals and health centers for pregnancy care was estimated at 10.1%. In addition, for female aged 15-24 years, the HIV prevalence was estimated at 4.9% and heterosexual intercourse accounts for 75% of all HIV infections in Kenya (KDHS, 2003). Reluctance to provider-initiated counselling and testing, manifested by either postponing or declining the HIV test by pregnant women, has resulted in low risk perception among sexually active women, many of whom have multiple sex partners. Furthermore, many such women are neither aware of their HIV status nor that of those partners (PSI, 2001). Benefits of the study include enhancement and strengthening applications of health sector's reform policy and strategy to realize effective prevention and control of mother-to-child transmission of HIV. Finally, the study findings will add to the existing knowledge in the area of study.

## **1.7 Delimitation**

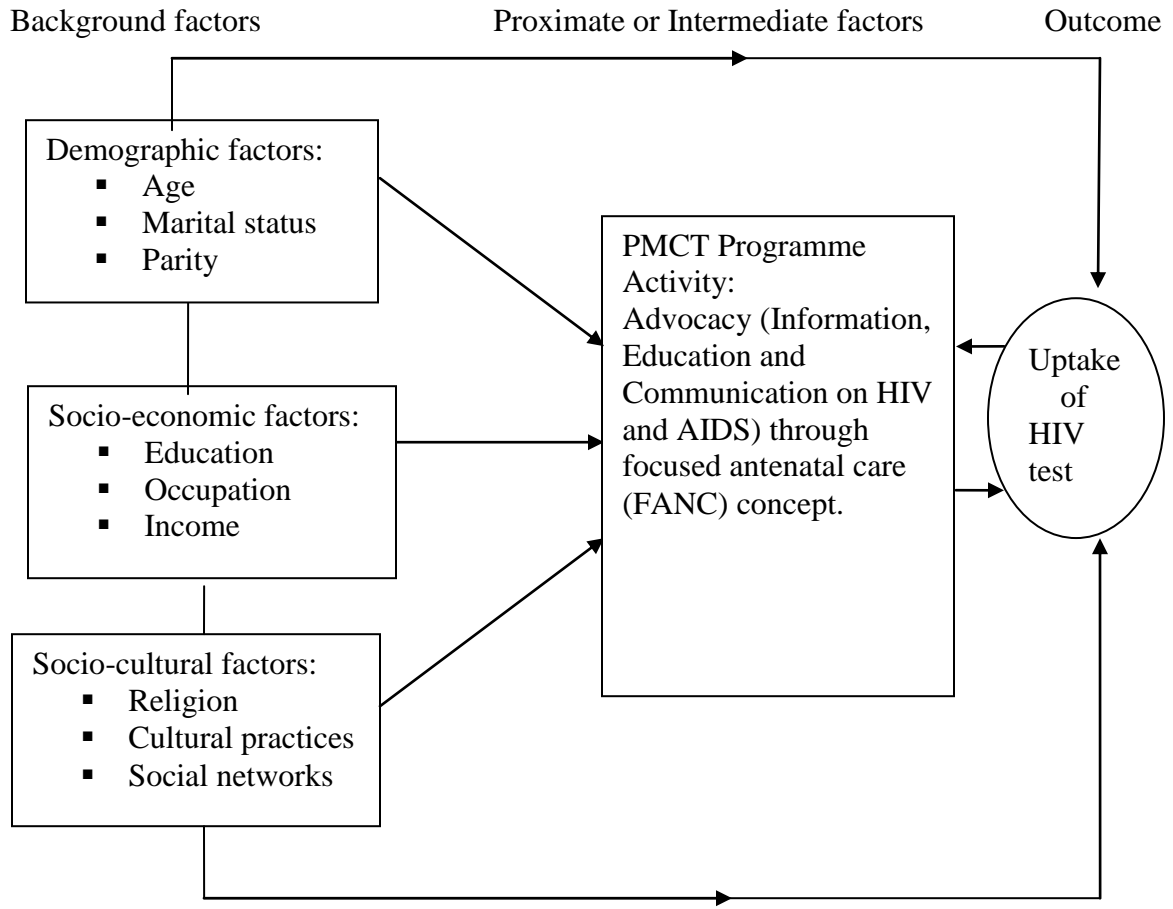
### **1.7.1 Study delimitation**

The findings of this study can only be generalized to the population of subjects from which the study sample was randomly selected.

### **1.7.2 Limitation**

The study was hospital-based; therefore, rates in this population may be different from those found in the community (Berkson's bias).

## 1.8 Conceptual framework



## CHAPTER TWO

### LITERATURE REVIEW

The majority of people living with HIV/AIDS are women. Women aged 15 and older make up 58% of the 42 million people who are living with HIV/AIDS (UNAIDS, 2002). Over 90% of these women live in the developing world. Mother-to-child transmission (MTCT) of the virus - also known as vertical transmission - is the main route of HIV infection in children under 10 years of age with more than 600,000 infants becoming infected with HIV yearly (UNICEF/UNAIDS, 2006). Without treatment, when a mother has HIV infection, the risk of infection transmission to her child is reported to be 20-42% (Connor *et al.*, 2004). This has over the last two decades resulted in reversals of previous gains in child survival. Since the beginning of the epidemic, an estimated 5.1 million children worldwide have been infected (UNICEF/UNAIDS, 2006). Of those, the overwhelming majority are in Africa. This is due to high fertility rates and high HIV prevalence in pregnant women, reaching level of 40% in some cases (UNICEF/UNAIDS, 2006). The virus can be transmitted during pregnancy, labour and delivery (perinatal transmission) or through breastfeeding, among infected infants who are not breastfed; two-thirds are believed to have contracted HIV around the time of delivery. Some condition that may increase risk of transmission during breastfeeding are the advanced disease stage of the mother, maternal vitamin A deficiency, breast abscesses or infections, certain patterns of breast-feeding and oral infection in the infant.

Until recently, there was no means of preventing mother-to-child transmission for those HIV positive women who wished to give birth. Two interventions using antiretroviral

(nevirapine and azidothymidine) concurrently with feeding adjustments have proven to be very effective in reducing mother-to-child transmission of HIV (NASCO, 2001). The successful implementation of these programs is highly dependent on the choice and effective implementation of an appropriate feeding regimen. For women who are HIV negative, breastfeeding is the preferred child survival strategy for providing nutrition and avoiding infectious diseases during the first two years of life. When a baby of an HIV positive mother is breastfed and given other liquids or solids, there is continued concern that if no drugs are administered, the risk of infection is about 30 – 35% (Guay *et al.*, 2007). The risk is reduced to 20% if the child is not breastfed. Complete avoidance of breastfeeding (using artificial feeding) is considered the most reliable way to avoid neonatal transmission. When mothers breastfeed for 18 to 24 months, 10-15% of infants become infected, thus in non-breastfeeding population without antiretroviral treatment approximately 15-30% of infants become infected (Nduati *et al.*, 2006). There is evidence to suggest that exclusive breastfeeding for the first three months may result in lower transmission rates than mixed feeding (Countsoudis *et al.*, 2006). Improper use of breast-milk substitutes (if mixed with tainted water or if over-diluted) can cause severe malnutrition and fatal infectious diseases. The risk associated with replacement feeding may outweigh the benefits. In sub-Saharan Africa diarrhoea is the leading cause of death in children under 5 years. A sound assessment of the safety of replacing breastfeeding depends on access to clean water, a reliable supply of formula and availability of instructions.

Even though the WHO/UNAIDS guidelines on feeding HIV/AIDS settings are quite clear, many factors affect mother's choice of feeding. Desclaux *et al.* (2006) have argued that preventive measures applied successfully in developed countries cannot be generalized. Some of these measures (like formula feeding) entail infections and nutritional risks in health contexts of low-income countries where they are not economically or socially accessible for all women. Furthermore, HIV and AIDS-related stigma, and its associated discrimination, is known to negatively affect all aspects of HIV prevention, diagnosis, treatment and care (Macintyre *et al.*, 2005). Increased uptake of prevention of mother-to-child transmission of HIV in general and improved adherence to optimum feeding practices can be attained if factors affecting the choice of feeding of mothers are identified and appropriate interventions put in place.

Results from Kenya AIDS Indicator Survey (2007) indicate that 7.4% of Kenyan adults aged 15- 64 years are infected with HIV, the virus that causes AIDS. According to the survey, more than 1.4 million Kenyans are living with HIV and AIDS. The Kenya Demographic and Health Survey (2003) estimated a prevalence of 6.7% among 15-49 years old. For the same age group, Kenya AIDS Indicator Survey (2007) estimated that 7.8% are infected. The National Prevention of Mother-to-Child Transmission (PMTCT) of HIV strategy is the current strategy geared towards improving the health of HIV infected mother and reducing the transmission to the foetus during pregnancy, labour, delivery and post-delivery and during breastfeeding. Labour and delivery poses the greatest risk of transmission with 10% - 20% of exposed infants becoming infected at the time (NAS COP, 2002). Routine HIV testing of pregnant women has dramatically

lowered the rate of mother-to-child transmission of HIV to 2-5% in some developed countries and has made paediatric HIV infection a rare occurrence (Buckley *et al.*, 2002). Since the year 2000, about 10% of the reported cases in children are under five years of age. About 90% of HIV infection in children is due to mother-to-child transmission (NASCO, 2005). Approximately 14.3% of the married or cohabitating respondents in the Kenya Demographic Health Survey (2008) were HIV positive, compared to 6.3% prevalence in the adult population. This highlights the importance of prioritizing married men and women as key vulnerable populations in the country, as having multiple concurrent partnerships is common. The observation has since led to the promotional programme popularly known as "mpango wa kando". The survey also estimates that approximately 81,000 HIV positive pregnant mothers need access to prevention of mother-to-child transmission of HIV programme and basic care package (BCP) kits provided at comprehensive care clinics (CCC).

Marital status can be an important risk factor when exploring patterns of HIV transmission in a population. Nearly two out of three women aged 15 -64 years are in a union (married or cohabitating). Kenyans in polygamous unions are more likely to be HIV infected (11%) than those in monogamous unions (7%) (KAIS, 2007). Also, women who have ever been widowed and women who are currently divorced or separated have high HIV prevalence rates of between 17% and 21% (KAIS, 2007). Ten percent of monogamous married couples and 14% of polygamous couples are living with HIV, with one or more partners infected with HIV (KAIS, 2007). According to the same report, nearly one out of ten pregnant women in Kenya is infected with HIV (9.6%) though with

minimal differences by urban and rural residence. The rate among women who gave birth in the last four years is similar to the rate among pregnant women at 9% (NAS COP/CDC, 2006).

The recently inaugurated plan to prevent mother- to- child transmission of HIV involves providing drugs (ARVs) to pregnant women diagnosed with HIV. The shift in strategy will provide for drugs for pregnant women to use at home and would also increase their chances of taking them as some avoid hospitals and health centres soon after being diagnosed with HIV (Taverne, 2007). It is worth noting that the rate of mother- to- child transmission of HIV is 37% (MOH, 2009). Despite availability of methods to halt infections of children at birth, there is little change. While HIV and AIDS prevention rate has been on a steady decline in Kenya, 22,000 children are infected with HIV annually through mother-to- child transmissions (UNICEF/USAID, 2009). Overall, 1.4 million people are living with HIV in Kenya, including 81,000 pregnant women (GOK/UNICEF, 2010).

The country has made progress in increasing its mother-to-child transmission of HIV programmes over the past years, with services being offered in 4,000 out of about 4,500 provider -initiated testing and counselling (PITC) clinics country wide (MOH, 2009). While a large percentage of pregnant women attend provider- initiated testing and counselling clinics, less than half complete the four ante- natal visits and more than a half give birth at home (Piot, 2008). Thus a large proportion of pregnant women miss out on the life saving methods available that could protect their babies from getting infected

with the virus. Prevention of mother-to-child transmission of HIV is further hampered by the fact that about a third of pregnant women living with HIV receive Nevirapine only, instead of the more effective combinations of drugs (ARVs). There is also the fact that babies born to mothers with HIV are not tested early enough. Kenya hopes to eliminate mother-to-child transmission of HIV by 2015 and to achieve transmission rates of less than 5% (NASCO, 2005).

## **CHAPTER THREE**

### **METHODS AND MATERIALS**

#### **3.1 Research Design**

This was a hospital-based cross-sectional study design.

#### **3.2 Variables**

Independent variable: Utilization of knowledge on prevention of MTCT of HIV.

Dependent variable: Uptake of provider-initiated counselling and testing.

#### **3.3 Location of the study**

The study was conducted in four selected public health facilities namely; Embu General Hospital, Runyenjes Hospital, Kibugu Rural Health Centre and Kianjokoma Rural Health Demonstration Centre, all of Embu District. Convenience sampling was applied to select the participating public health facilities. However, within the selected health facilities, systematic random sampling was then applied to obtain the actual sample of respondents. The catchment population of the public health facilities comprises Embu District. The district lays approximately between latitudes 00 degrees 8" and 0 degrees 35" South and Longitude 37 degrees 42" East and occupies a total area of 708 Km<sup>2</sup>. It is divided into five administrative divisions namely, Manyatta (208 Km<sup>2</sup>), Runyenjes (186 Km<sup>2</sup>), Nembure (111Km<sup>2</sup>), Kyeni (139 Km<sup>2</sup>) and Central (64 Km<sup>2</sup>).

### **3.4 Study population**

Pregnant women in Embu District but a more modest accessible population comprised of all pregnant women attending the selected public health facilities in the District. The total population of women of reproductive age (that is, 15-49 years) was 138, 827 with a distribution of 79, 121 (rural) and 59,706 (urban) (KDHS, 2003). The prevalence of HIV infection among pregnant women attending provider-initiated counselling and testing clinics in Embu District was estimated at 7.4% and the average number of pregnant women attending each of the selected public health clinics in the district for pregnancy care was estimated at 1,200 women during the period of data collection (Embu District Annual Sentinel Surveillance Report, 2003). The target population is continuously exposed to comprehensive and standardized provider-initiated counselling and testing through focused antenatal care (FANC) concept during pregnancy care at the clinics. In addition, the said group is also a beneficiary to information, education and communication and behaviour change communication (IEC/BCC) materials on prevention of mother-to-child transmission of HIV from a wide variety of sources, including the community health workers (CHWs). The accessible population is predominantly Embu tribe with a few other ethnic groups like Kikuyu, Mbeere, Meru and Kamba.

### **3.5 Selection criteria**

#### **3.5.1 Inclusion Criteria**

Consenting pregnant women.

### 3.5.2 Exclusion Criteria

Non-consenting pregnant women.

## 3.6 Sampling technique and sample size

### 3.6.1 Sampling technique

Simple random sampling of first respondent followed by systematic random sampling was applied, so chosen because the sampling frame was established and the accessible population was fairly small. In addition, the method is quick, simple, convenient to use and easy to check for errors. The principle of the systematic random sampling is as follows: A systematic sample is one in which every  $K^{th}$  item is selected in a list representing the target population. The number  $K$  is called the *sampling interval*. The items of the population are arranged in a systematic order on the basis of its important characteristics, like the alphabetical order of christian names and then they are serially numbered. The first number is chosen at random from the first  $K$  items, and subsequent items are selected by taking every  $K^{th}$  items from the list where ‘K’ refers to the sampling interval or sampling ratio, that is, the ratio of sampling frame to the size of the sample.

Symbolically:

$$K=N/n.$$

Where,  $K$ = sampling interval (or sampling ratio).

$N$ =Sampling frame (or size of the universe).

$n$  = sample size.

This sampling procedure ensures greater representatives because the items sampled are spaced evenly throughout the population (Gupta, 2004).

$$\begin{aligned}
 \text{Now} \quad K &= N/n. \\
 &= 1200/275. \\
 &= 4.
 \end{aligned}$$

Therefore, every time we selected an item we moved four places along the list.

### 3.6.2 Sample size determination

The sample size was determined by a standard formula as used by Fisher *et al.*, (1998).

$$n = z^2 pq/d^2.$$

Where,

$n$  = desired sample size (if the target population > 10,000).

$z$  = standard normal deviate, set at 1.96 (or simply at 2.0) which corresponds to the 95% confidence level.

$p$  = proportion in the target population estimated to have a particular characteristic. In absence of reasonable estimate, use 50% (or 0.50).

$$q = 1.0-p.$$

$d$  = degree of accuracy or precision desired, usually set at 0.05 significance level (or occasionally at 0.02).

However,  $P$  in the target population was 0.074,  $Z$  statistic was 1.96 and  $d$  was set at 0.03 significance level to allow for a larger sample size and therefore a greater degree of accuracy desired was achieved.

The sample size was determined as follows:

$$\begin{aligned}
 n &= z^2 pq/d^2 \\
 &= (1.96)^2 (0.074) (0.926) / (0.03)^2 \\
 &= 292
 \end{aligned}$$

The average number of pregnant women expected in the antenatal clinics (ANC) in each of the four selected public health facilities in Embu District during the period of data collection was estimated to be 300 pregnant women by 4 public health facilities giving a total of 1,200 women.

Since, N (total population) is less than 10,000; therefore the required sample size will be smaller. To calculate the final sample size, the following formula was used:

$$nf = n/1 + (n)/N \text{ (Fisher } et al., 1998)$$

Where, nf= the desired sample size (when the total population, N is less than 10,000).

n = the desired sample size (when the total population, N is more than 10.000).

N = the estimated population size (in this case 4,800).

Thus;

$$nf = \frac{292}{1} + \frac{292}{4800} = 275.$$

The sample size used for the study was 275.

### **3.7 Research instruments**

An exit interview schedule was designed for use to collect information (data) and each item in it (interview schedule) was developed to address a specific objective. The interview schedule consisted of three basic components (parts):

- a) Guidelines on the introduction to, and the ending of, the study interview.
- b) A section giving precautionary statement, respondents consent and instructions to interviewer.

- c) Interviewer guidelines usually dispersed (spread) throughout the interview schedule.

### **3.8 Interview schedule design**

The interview schedule was designed as to offer a list of options (answers or responses) that are mutually exclusive that is, any one option chosen excludes all the others. This was easily achieved where necessary by adding a 'residual' or 'dumping' category at the end of the list of options. However, not all closed questions offered mutually exclusive response options. Questions in which the respondent chose more than one response in her reply (often referred to as multiple response questions) were also included.

### **3.9 Pilot study**

Karurumo Rural Health Demonstration Centre (RHDC) Embu District was used during the pilot study. A cross-section of the population eventually to be studied was covered during the pilot study and under conditions and in an environment similar to those that will be encountered during the full scale study (Appendix 2).

#### **3.9.1 Validity**

- a) Establishment of a theoretically derived hypothesis involving the concept under consideration that is, an instrument to measure utilization of knowledge on prevention of mother-to-child transmission of HIV and uptake of provider-initiated counselling and testing among pregnant women was developed.

- b) But first, the argument that uptake of provider-initiated counselling and testing was related to utilization of knowledge on prevention of mother-to-child transmission of HIV firmly holds.
- c) The theoretical hypothesis was that the higher the uptake of provider-initiated counselling and testing, the higher the level of utilization of knowledge on prevention of mother-to-child transmission of HIV.
- d) To use the instrument in assessing uptake of provider-initiated counselling and testing, one would have to determine the utilization of knowledge on prevention of mother-to-child transmission of HIV levels.

The two measures correlated positively, showing therefore evidence to support that the “utilization of knowledge of prevention of mother-to-child transmission of HIV and uptake of provider-initiated counselling and testing instrument” yielded data that had construct validity within this environment. The validity coefficient was computed by correlating measurements from the two instruments.

### **3.9.2 Reliability**

The test-retest technique of assessing reliability of data was used, and involved administering the same instrument (interview schedule) twice to the same group of respondents, usually with a time lapse between the first test and the second test. The scores from both testing period were correlated and the correlation coefficient obtained (often referred to as “the coefficient of reliability or stability”); the correlation coefficient was high and therefore the instrument yielded data that had high test-retest reliability.

### **3.10 Data collection technique**

The respondent was asked to provide answers to specific questions (refer to appendix 1) during the face-to-face contact with the interviewer and the response neatly and legibly written down in full. If the interviewer had difficulty in understanding the respondent, she would ask for the answer to be repeated before writing it down. Sometimes the respondent's reply would not make sense or in some way seemed incorrect. In such cases the interviewer would read the answer back to the respondent who could then confirm whether or not what has been recorded is really what was meant.

### **3.11 Data analysis**

Summary data sheets were produced, together with frequency and cross-tabulations. Graphics in the report were prepared in power point and MS-Excel. The data was processed using computer Statistical Package for Social Science (SPSS) software. Chi-square ( $\chi^2$ ) test was used to test the research hypothesis. Correlation analysis was done to determine the relationships between variables under study. The data was presented using pie charts, histograms and bar charts.

### **3.12 Logistical and ethical consideration**

**3.12.1** The pre-field logistics included the following;

- a) Obtaining research permit (Appendix 4).
- b) Selection, training and supervision of research assistants.
- c) Pre-testing of research instrument (interview schedule).
- d) Sampling.

**3.12.2** Field work logistics which included the following;

- a) Occasional need for transport.
- b) Office accommodation and equipments like photocopier.
- c) Language constraints.
- d) Good rapport to curb suspicion and mistrust by respondent.

**3.12.3** Post - field work logistics which included getting completed instruments from the field to the office where data coding and analysis was done.**3.13 Ethical approval**

Authority to undertake the study was sought from the following authorities:

- a) Board of Graduate School, Kenyatta University.
- b) National Council of Science and Research, Ministry of Science and Technology (Appendix 4).
- c) Informed consent from respondents where privacy and confidentiality of information given was assured.
- d) Consent of the District Health Management Board and the Hospital's Ethical Committee, Embu District was sought before commencement of the study.

Overall the principles and foundations of research ethics in human research were strictly observed throughout the study period.

## CHAPTER FOUR

### RESULTS

#### 4.1 Demographic characteristics of respondents

##### 4.1.1 Respondent's age

The findings showed that 46% of the respondents were aged between 18-24 years, 43% were aged 25 – 34 years, 10 % were aged 35 – 44 years while only 1% was aged 45 years and above (Table 4.1).

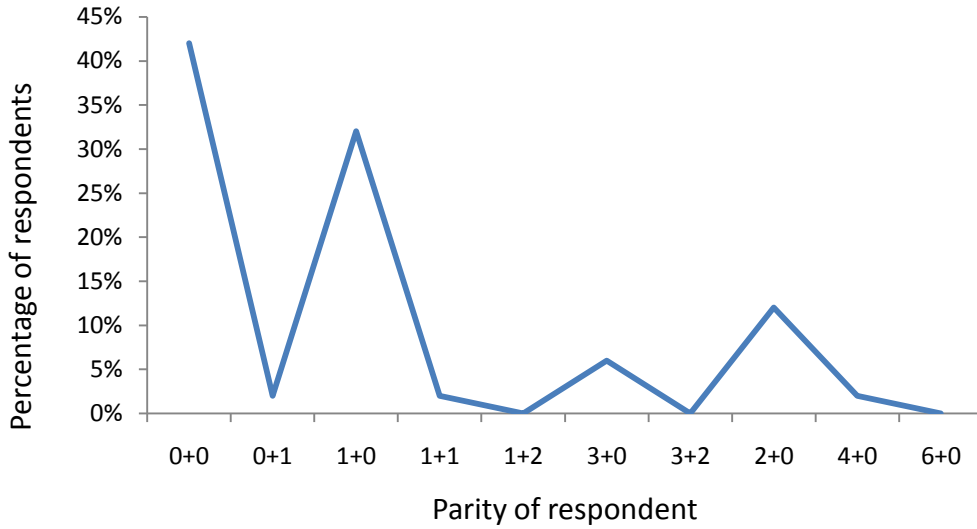
**Table 4.1 Respondent's age**

Age (years)	No. of respondents	Percentage (%)
18 to 24	111	46
25 to 34	104	43
35 to 44	24	10
Above 45	2	1
<b>Total</b>	<b>(n) 241</b>	<b>100%</b>

##### 4.1.2 Parity of respondents

The study revealed that 42% (101) of the respondents had not delivered and had no abortion, 2% (5) had not delivered and had one abortion, 32% (77) had one delivery and no abortion, 2% (5) had one delivery and one abortion, 6% (14) had three deliveries and

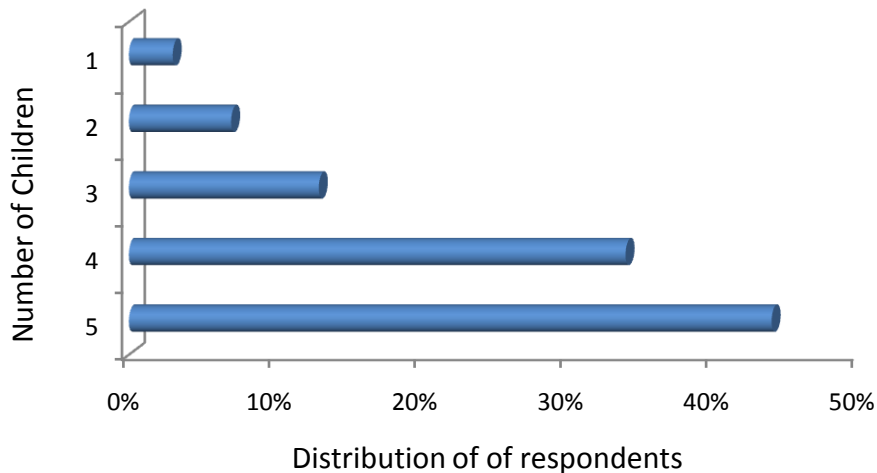
no abortion, 12 % (29) had two deliveries and no abortion, while 2% (5) had four deliveries and no abortion (Figure 4.1).



**Figure 4.1 Parity of the respondents**

**4.1.3 Number of children of respondent**

The findings showed that, 44 % (106) of the respondents had five children, 34% (82) had four children, 12% (29) had three children, and 7% (17) had two children while 3% (7) had one child (Figure 4.2).



**Figure 4.2 Number of children of respondent****4.1.4 Religion of respondents**

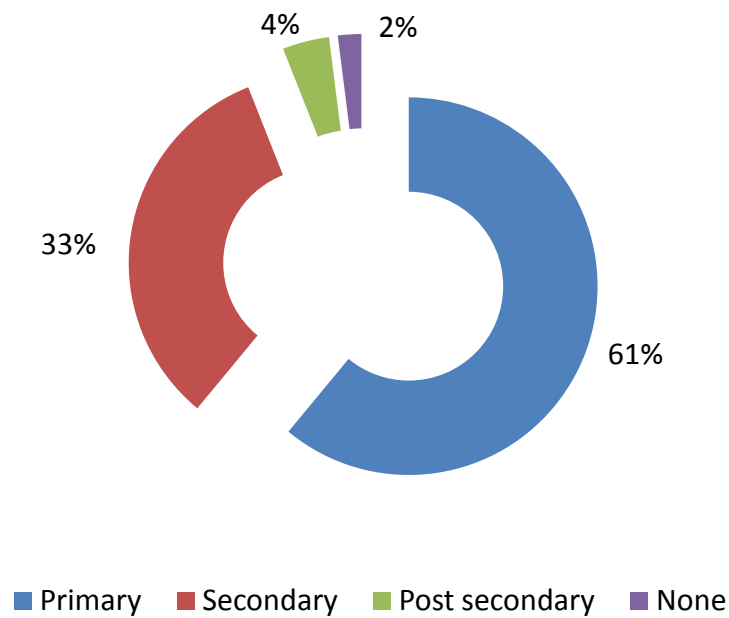
The findings revealed that majority of the respondents (69%) (166) were protestants while the rest (31%) (75) were catholics.

**4.1.5 Ethnicity of respondents**

The study showed that 99% (239) of the respondents were from Embu community while 1% (2) were from other communities.

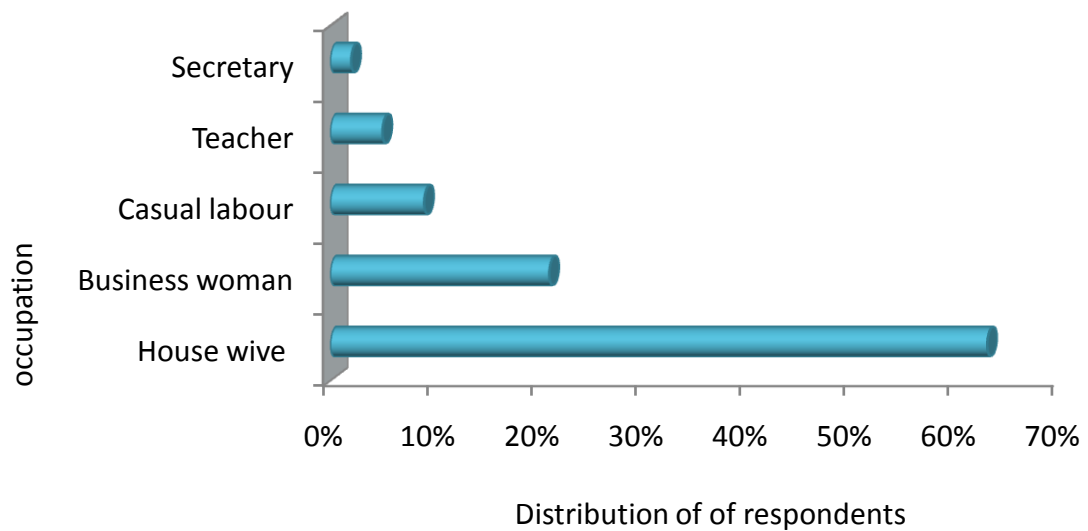
**4.1.6 Respondent's level of education**

The findings revealed that 61% (147) of the respondents had attained primary level of education, 33% (80) secondary level, 4% (10) post secondary level while 2% (5) had never been to school (Figure 4.3).

**Figure 4.3 Respondent's level of education**

#### 4.1.7 Occupation of respondent

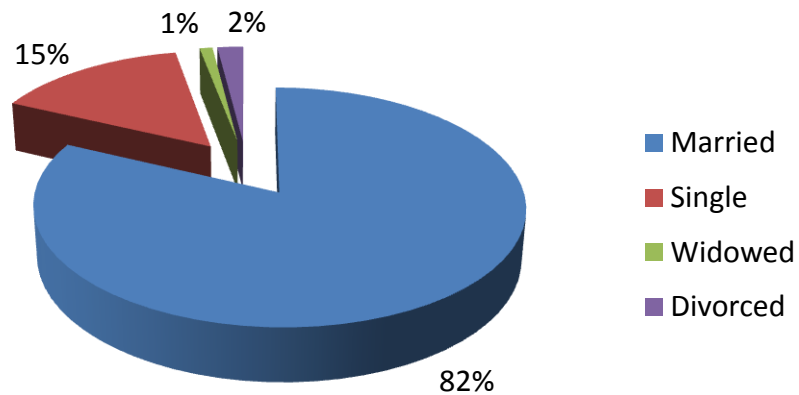
Majority of the respondents (63%) (152) were housewives, 21% (51) were business women, 9% (22) were casual labourers, and 5% (12) were teachers while 2% (5) were secretaries (Figure 4.4).



**Figure 4.4 Occupation of respondent**

#### 4.1.8 Marital status of respondent

Majority (82%) (198) of the respondents was married, 15 % (36) were single, 2% (5) were divorced while 1% (2) were widowed (Figure 4.5).



**Figure 4.5 Marital status of respondent**

#### **4.1.9 Respondents ever married before**

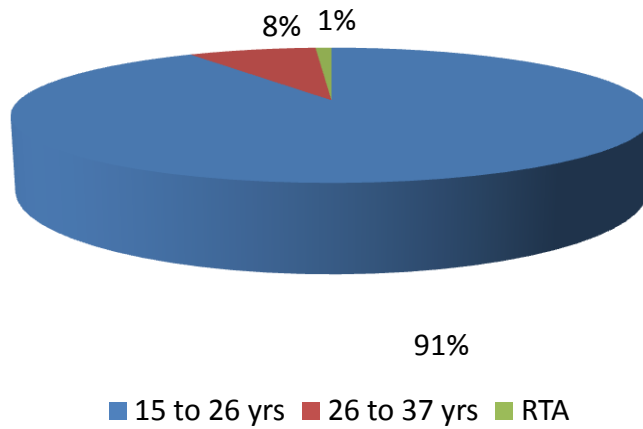
The study revealed that out of the 82% (198) who were married, 8% (16) had been in another marriage.

#### **4.1.10 Number of times respondent married before**

Out of the 8% (16) of the respondents who had been in another marriage, 87% (14) had been married 2 to 3 times.

#### **4.1.11 Age at first marriage of respondent**

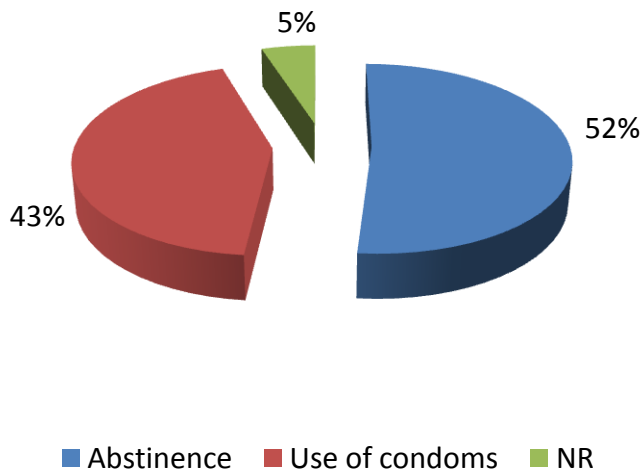
The findings revealed that 91% (180) of the respondents were aged between 15 to 26 years at first marriage, 8% (16) were aged 26 to 37 years while 1% (2) refused to answer (Figure 4.6).



**Figure 4.6 Age at first marriage of respondent**

#### 4.1.12 Methods of protection against HIV after conception

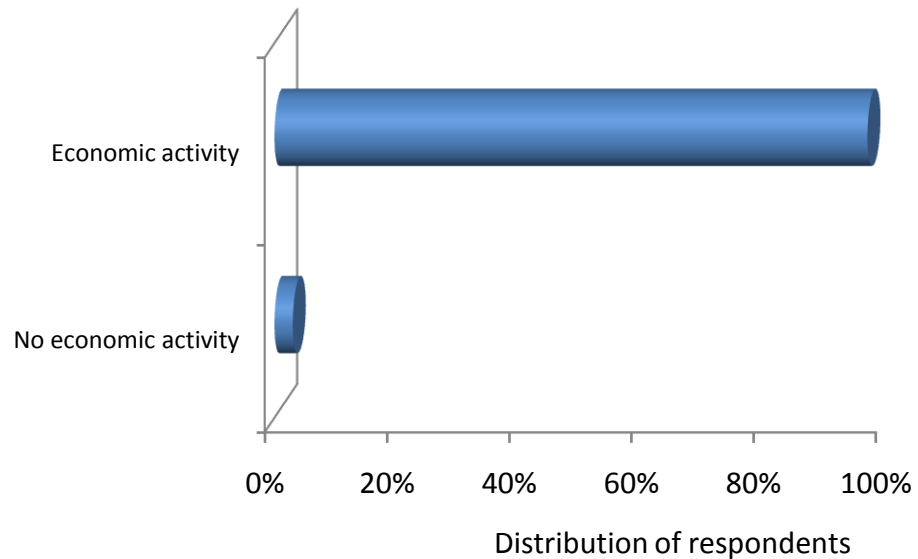
Out of the 18% (43) of the respondents who were single, divorced and widowed, 52% (22) abstained, while 43% (19) used condoms, 5% (2) did not respond (Figure 4.7).



**Figure 4.7 Methods of protection against HIV after conception**

#### 4.1.13 Economic activity of spouse

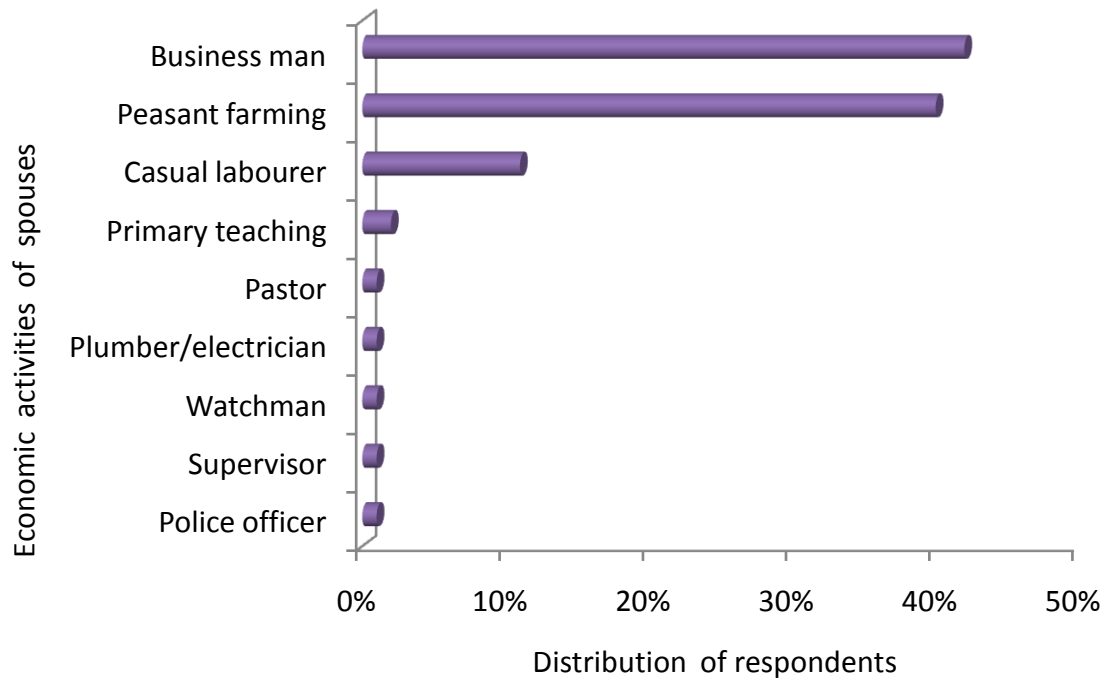
The study revealed that 97% (192) of the married respondents (198) had spouses engaged in an economic activity, while 3% (6) were not involved in any economic activity (Figure 4.8).



**Figure 4.8 Economic activity of spouse**

#### 4.1.14 Nature of economic activity among the spouses

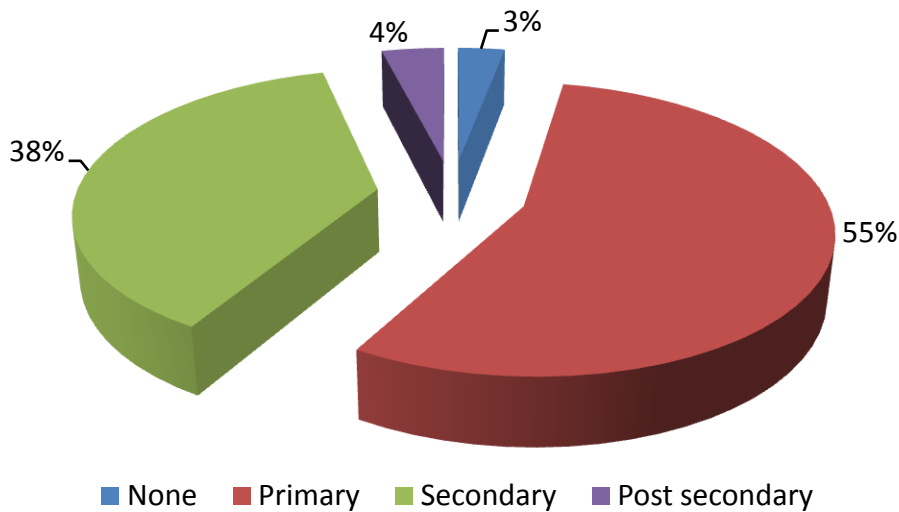
The findings revealed that 42% (83) of the respondent's spouses were business men, 40% (79) were peasant farmers, 11% (22) were casual laborers, and 2% (4) were primary school teachers. Finally, 1% (2) were pastors, plumber/electricians, watchmen, supervisors and police officers each (Figure 4.9).



**Figure 4.9 Nature of economic activity of spouses**

#### **4.1.15 Education level of spouse**

The findings showed that 55% (109) of the respondent's spouse had attained primary education, 38% (75) had attained secondary education, and 4% (8) had post-secondary education while 3% (6) had no formal education (Figure 4.10).



**Figure 4.10 Education level of spouse**

#### **4.2 Level of knowledge on mother- to- child transmission of HIV**

##### **4.2.1 Ever heard about prevention of mother- to- child transmission of HIV**

Majority (96%) (231) of the respondents had previously heard about prevention of mother-to-child transmission of HIV.

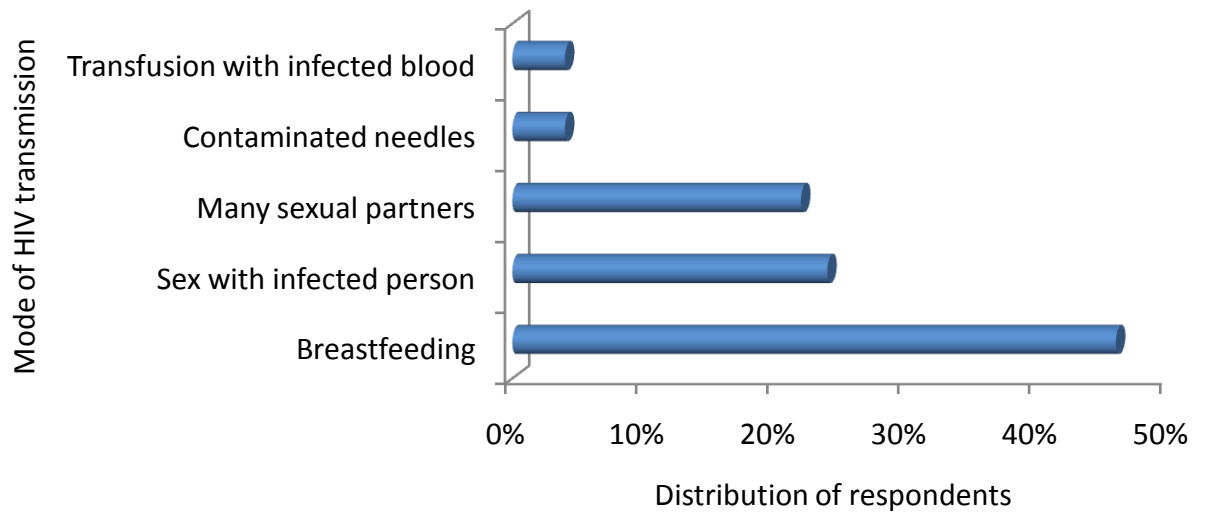
##### **4.2.2 Causes of HIV infection**

Almost all (98%) (236) of the respondents knew that HIV infection was caused by a virus while 2% (5) did not know.

##### **4.2.3 Knowledge on mode of spread of HIV**

The findings showed that 46% (110) of the respondents attending the clinics were aware that breastfeeding was a major mode of transmission of HIV from mother- to- child, sex

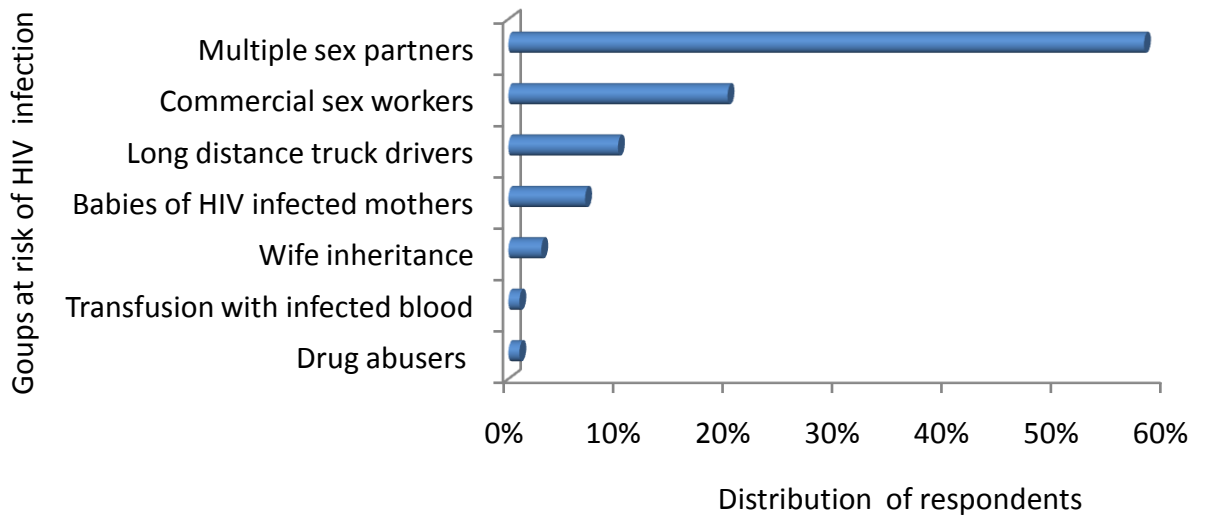
with infected partner (24%) (58), multiple sex partners (22%) (53), use of contaminated needles (4%) (10), transfusion with infected blood (4%) (10) as other modes of transmission of HIV (Figure 4.11).



**Figure 4.11 Knowledge on the mode of spread of HIV**

#### **4.2.4 Groups at risk of HIV infection according to the respondents**

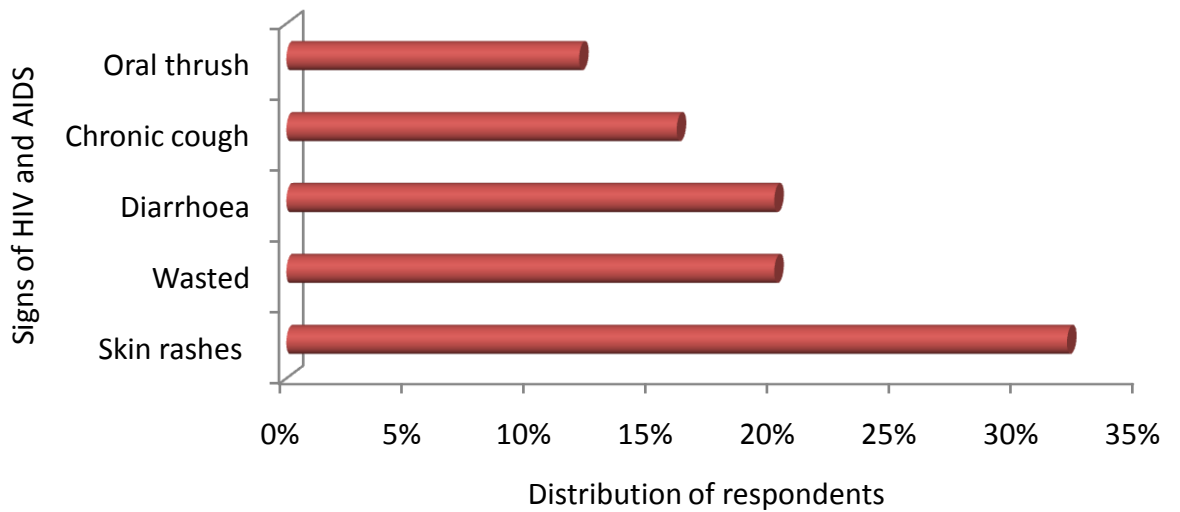
The findings showed that 58% (140) of the respondents knew that promiscuity posed the highest risk to mother-to-child transmission of HIV, followed by commercial sex trade (20%) (48), long distance truck drivers (10%) (24), babies born to HIV infected mothers (7%) (17), wife inheritance (3%) (7), transfusion with infected blood (1%) (2) and drug abusers (1%) (2) (Figure 4.12).



**Figure 4.12 Groups at risk of HIV infection according to respondents**

**4.2.5 Knowledge on signs and symptoms of HIV and AIDS**

The findings revealed 32% (77) skin rashes, wasting 20% (48), and chronic cough (16%) (39), oral thrush (12%) (29), diarrhoea 20% (48) (Figure 4.13).



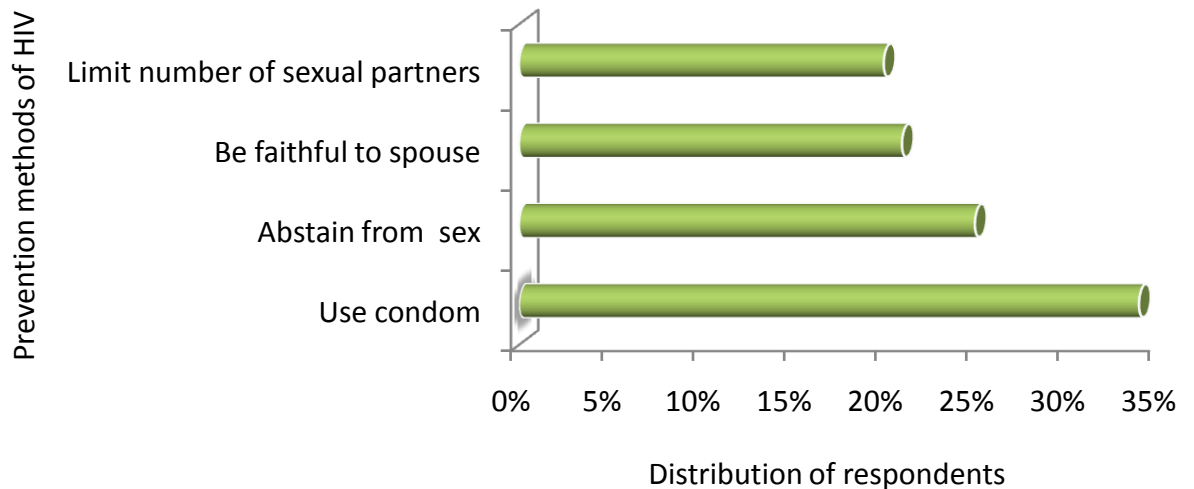
**Figure 4.13 Knowledge on signs and symptoms of HIV and AIDS**

#### 4.2.6 Cure for HIV

Majority (98%) (236) of the respondents knew that HIV was not curable.

#### 4.2.7 Knowledge on prevention of HIV infection

The most known method of avoiding getting HIV infection was by use of condom 34% (82), abstaining from sex 25% (60), being faithful to spouse 21% (51), and limiting number of sexual partners 20% (48) (figure 4.14).



**Figure 4.14 Knowledge on prevention of HIV infection**

#### 4.2.8 Condom awareness

Almost all (98%) (236) of the respondents knew about condoms.

#### 4.2.9 Knowledge on condom retail outlets among the respondents

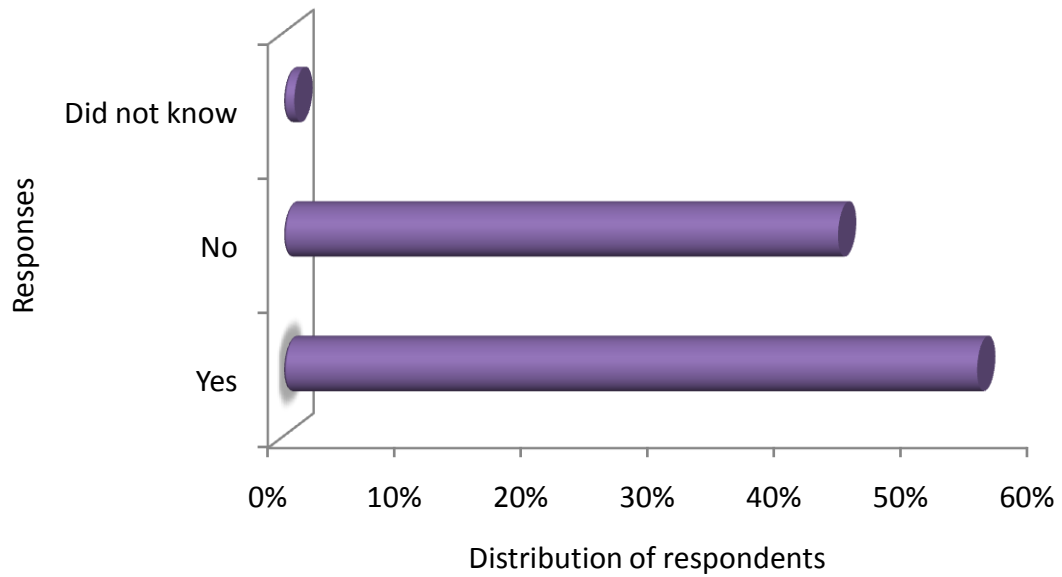
Out of the 98% who knew about condoms, 41% (97) obtained them from bar and restaurants, 20% (47) from GOK health facilities, 20% (47) from community health workers, chemists 16% (38), and 3% (7) from private clinics (Figure 4.15).



**Figure 4.15 Knowledge on condom retail outlets**

#### 4.2.10 Knowledge on condom use and approval of use by respondent's community

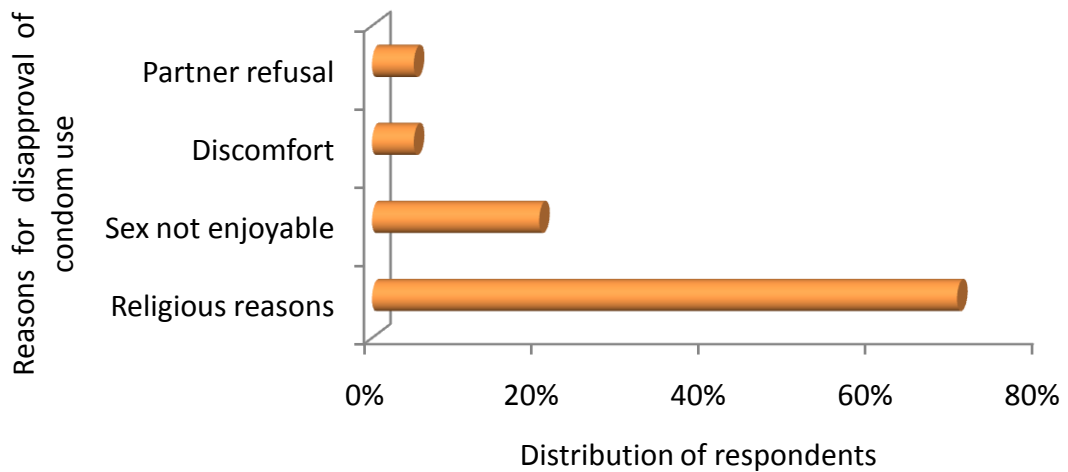
Over half (58%) (140) of the respondents knew how to use condoms correctly and 67% (161) of them had actually used condoms. Further, the findings showed that 55% (133) of the respondents knew that their community approved condom use, 44% (106) did not approve it while 1% (2) did not know (Figure 4.16).



**Figure 4.16 Approval of condom use by respondent's community**

#### 4.2.11 Reasons for disapproval of condom use by respondent's community

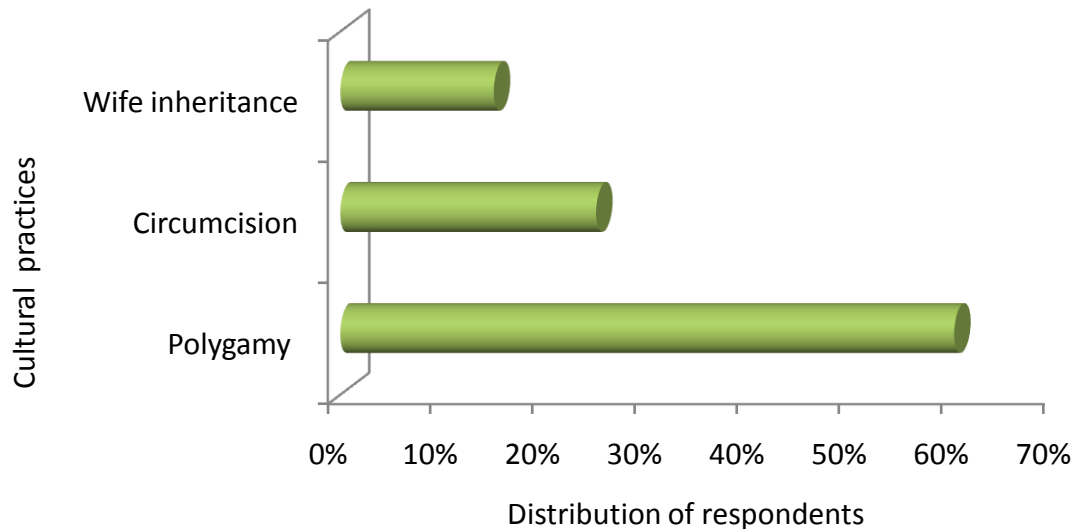
Out of the 44% respondents who said their community did not approve condom use, 70% (74) of them was due to religious reasons, 20% (22) sex not being enjoyable while discomfort and partner refusal accounted for 5% (5) each (Figure 4.17).



**Figure 4.17 Reason for disapproval of condom use by respondent's community**

#### 4.2.12 Knowledge on cultural practices influencing spread of HIV

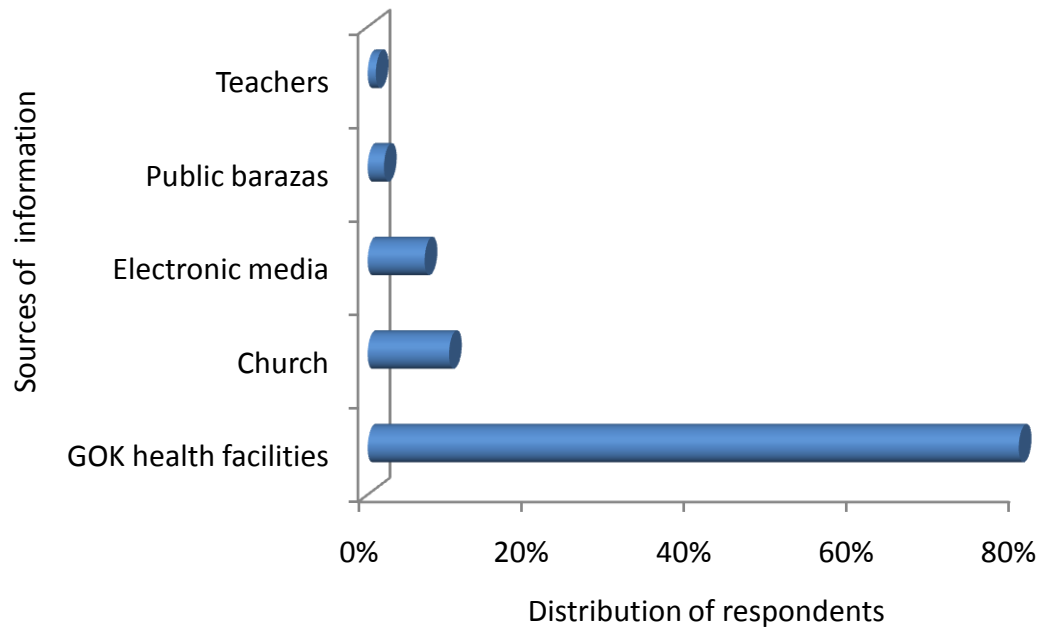
Majority (60%) (145) of the respondents knew that polygamy was a cultural practice that could influence the spread of HIV, circumcision accounted for 25% (60) while 15% (36) knew that wife inheritance could influence the spread (Figure 4.18).



**Figure 4.18 Knowledge on cultural practices influencing spread of HIV**

#### 4.2.13 Source of information on prevention of MTCT of HIV

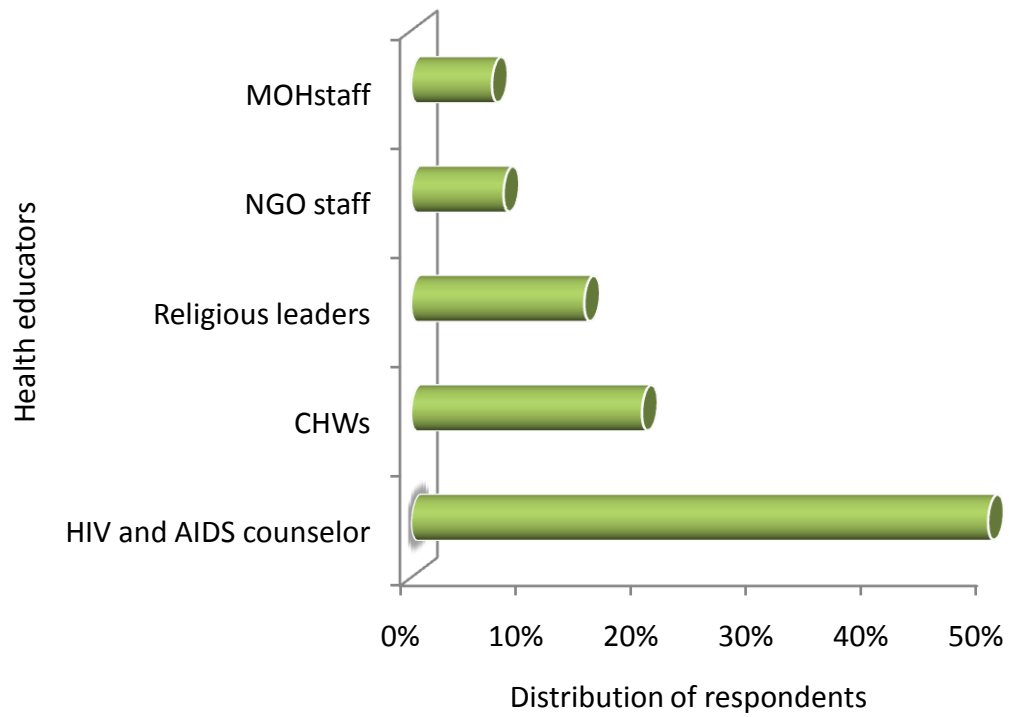
Almost all (94%) (227) of the respondents had information on prevention of mother-to-child transmission of HIV. The finding revealed that out of the 94% (227) who had information on prevention of MTCT of HIV, 80% (182) obtained the information from GOK health facilities, 10% (23) from the churches, 7% (16) from electronic media, 2% (5) from public barazas while 1% (2) obtained the information from teachers (Figure 4.19).



**Figure 4.19 Source of Information on prevention of MTCT of HIV**

#### **4.2.14 Health education sessions on prevention of MTCT of HIV**

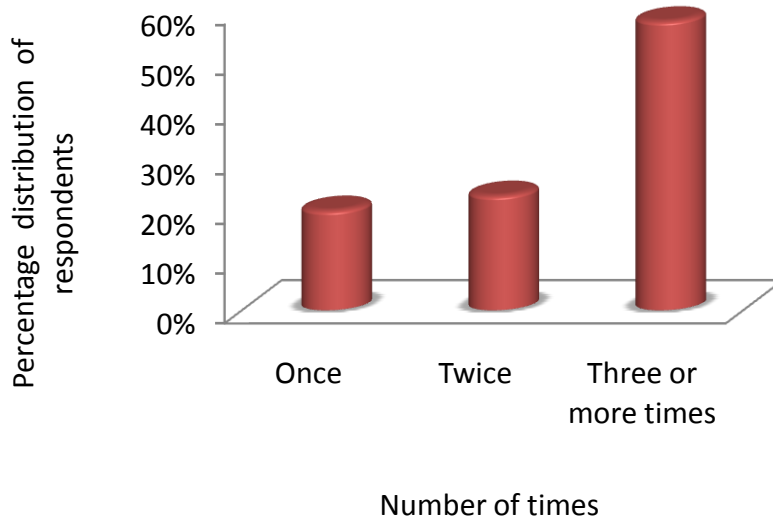
Majority of the respondents attended health education sessions on prevention of MTCT of HIV conducted by counsellors 50% (121), community health workers 20% (48), religious leaders 15% (36), NGO staff 8% (19), and MOH staff 7% (17) (Figure 4.20).



**Figure 4.20 Health educators on prevention of MTCT of HIV**

#### **4.2.15 Frequency of exposure to information on prevention of MTCT of HIV**

Over half (57%) (138) of the respondents attended health education sessions on prevention of MTCT of HIV three or more times, 23% (55) twice while 20% (48) attended only once (Figure 4.21).



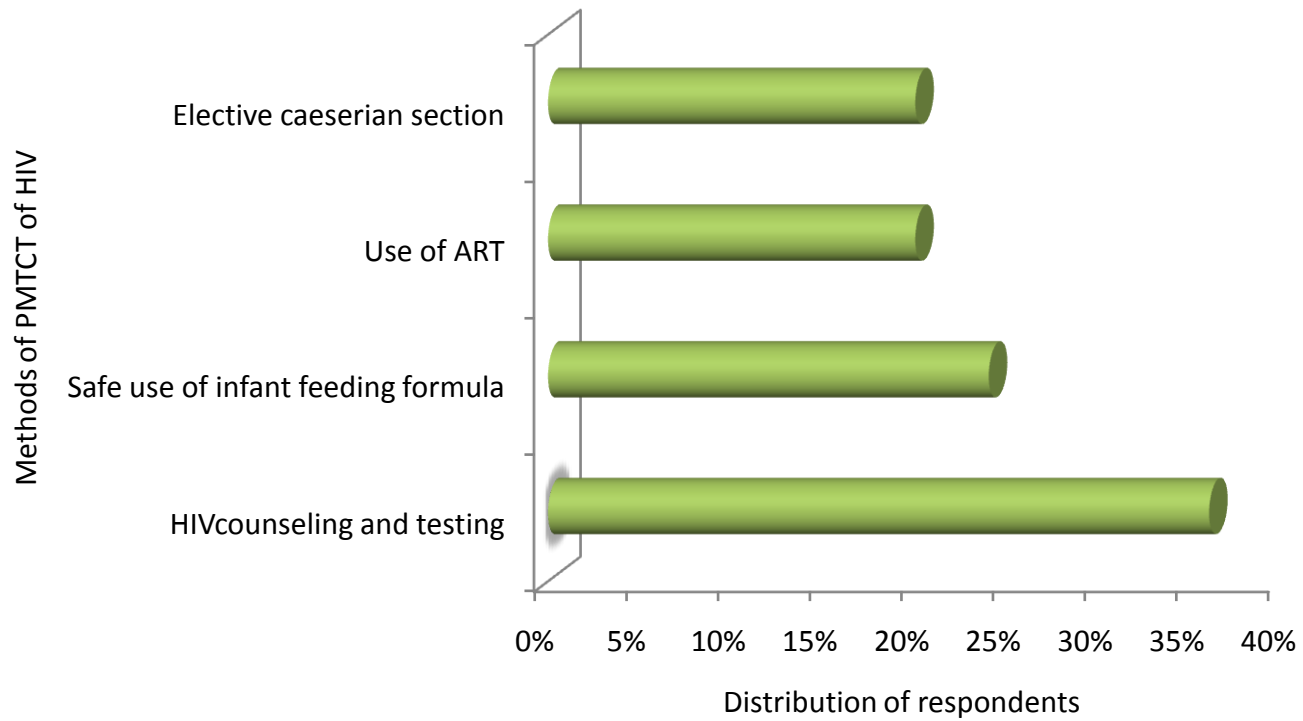
**Figure 4.21 Frequency of exposure to information on PMTCT of HIV**

#### **4.2.16 Risk of transmission of HIV**

All the respondents (100%) (241) knew that the risk of transmission of HIV from mother-to-child could be reduced.

#### **4.2.17 Methods of reducing spread of HIV infection from mother-to-child**

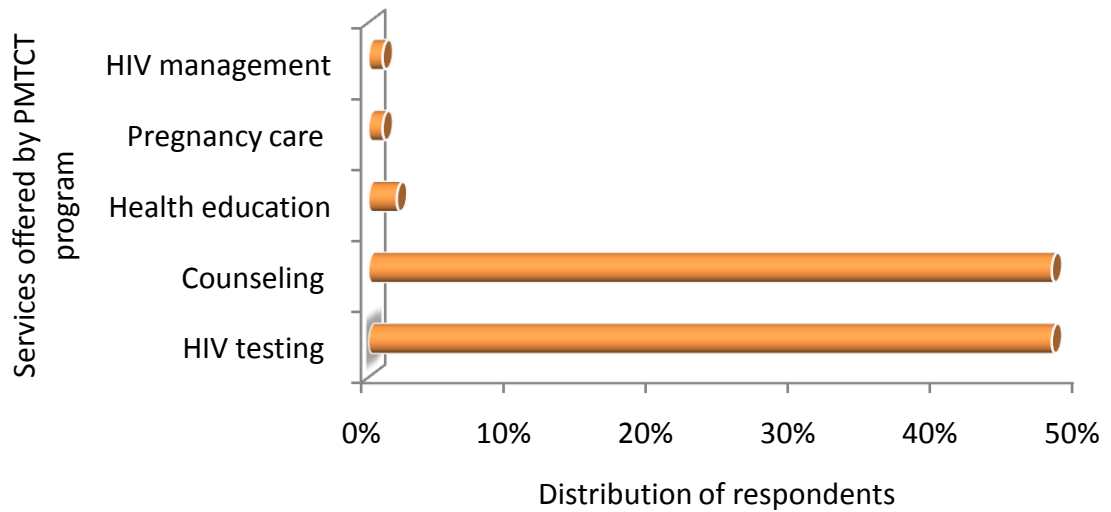
The most popular method of prevention of mother-to-child transmission (MTCT) of HIV as reported by the respondents was counselling and testing (36%) (87), followed by safe use of infant feeding formula 24% (58) , use of ART 20% (48) and elective caeserian section 20% (48) (Figure 4.22).



**Figure 4.22 Methods of reducing spread of HIV infection from mother-to-child**

#### **4.2.18 Services offered by prevention of MTCT of HIV programme to pregnant women**

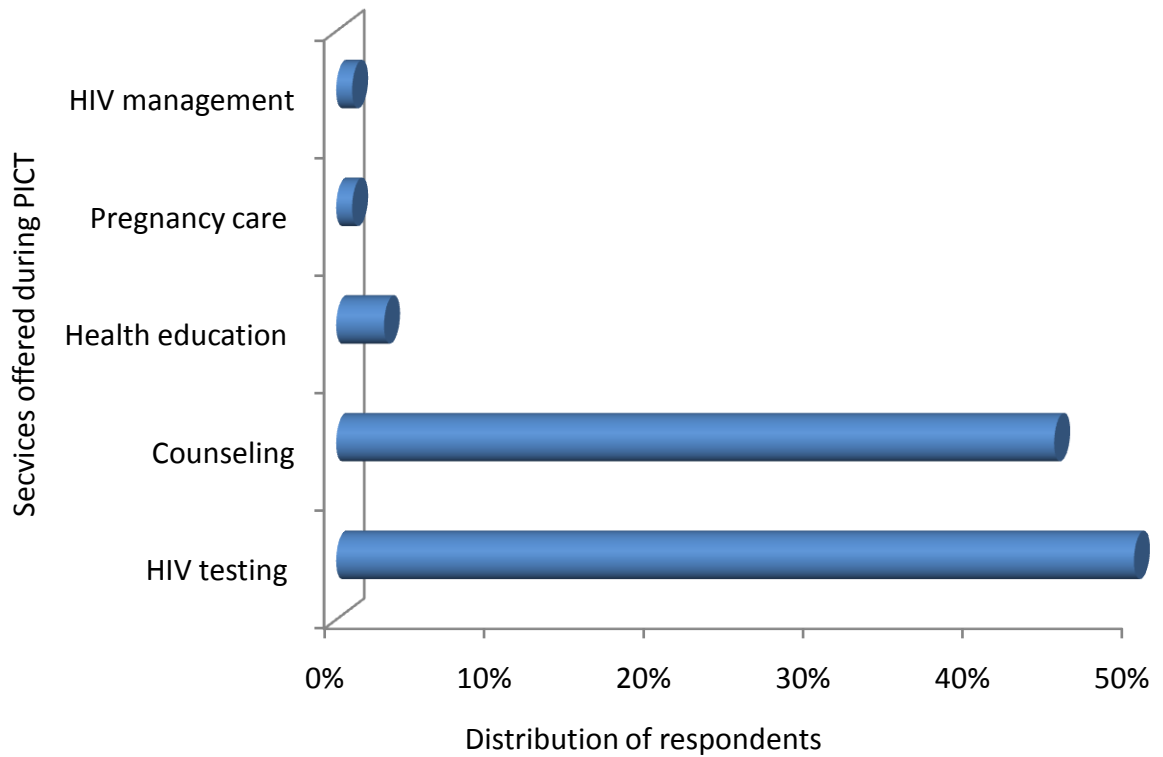
Provider-initiated HIV testing and counselling was the most popular service offered by the program to the respondents, as both had 48% (116) respectively, 2% (5) health education, 1% (2) pregnancy care and HIV management 1% (2) each (Figure 4.23).



**Figure 4.23 Services offered by prevention of MTCT of HIV programme to pregnant women**

#### **4.2.19 Services offered by provider-initiated counselling and testing clinics**

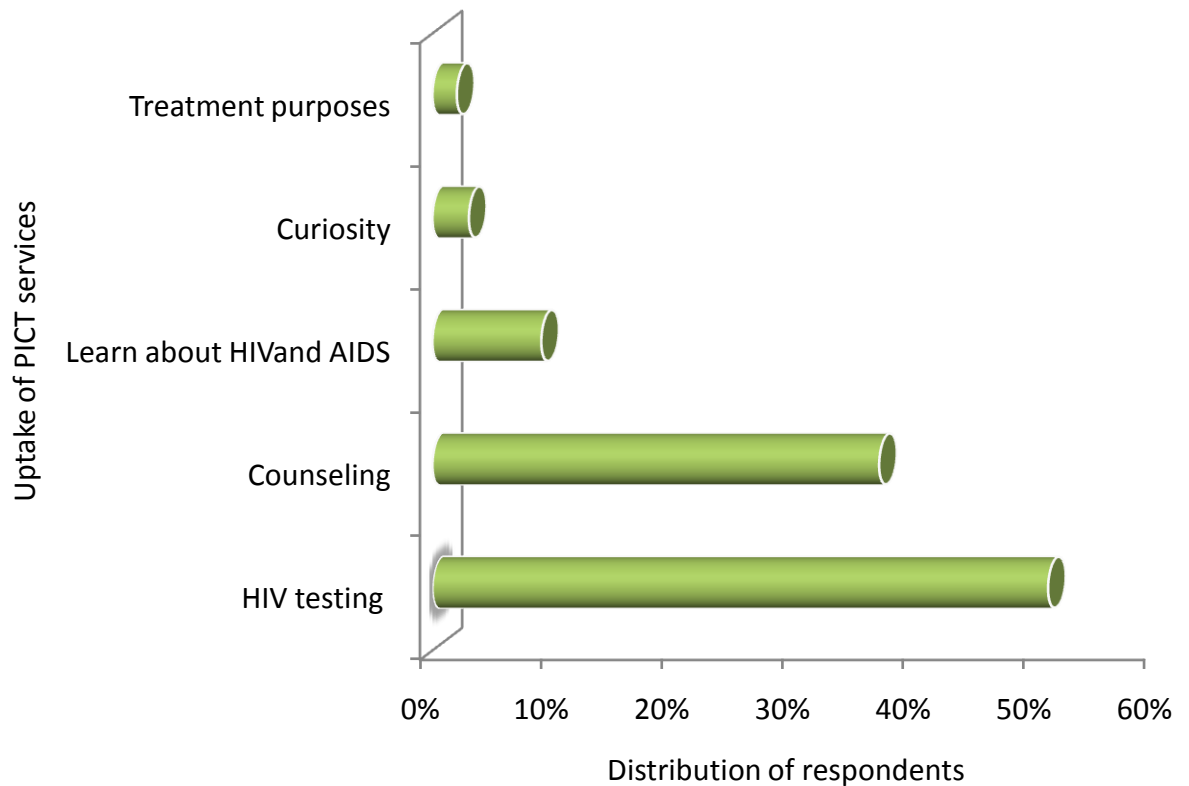
Majority (92%) (222) of the respondents had knowledge of provider-initiated counselling and testing. Further, the study revealed that the respondents knew the various services offered during provider-initiated counselling and testing sessions with 50% (121) stating HIV test and 45% (109) counselling, 3% (7) health education while 1% (2) stated pregnancy care and 1% (2) HIV management (Figure 4.24).



**Figure 4.24 Services offered by provider-initiated counselling and testing clinics**

#### **4.2.20 Uptake of provider-initiated counselling and testing services**

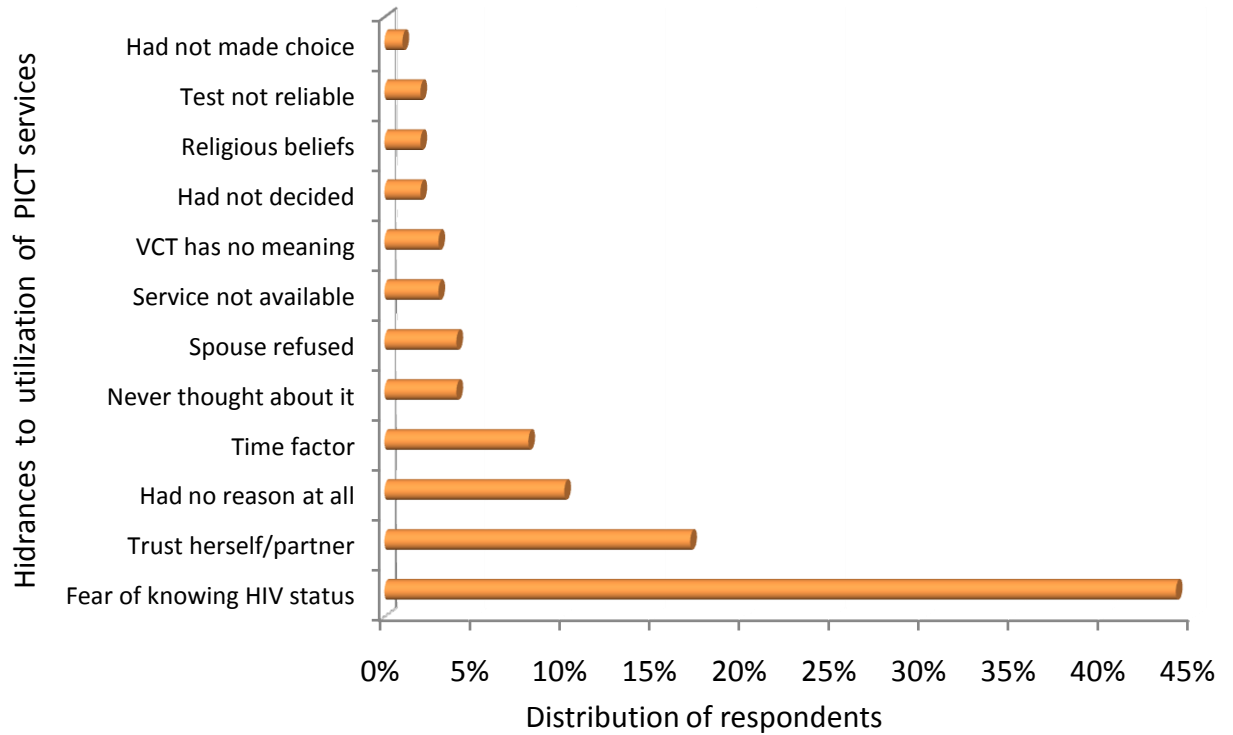
The findings revealed that 56% (135) of the respondents had not visited provider-initiated counselling and testing clinics while 44% (106) had visited, out of the 44% who had visited, 51% (54) had visited for the purpose of HIV testing and 35% (37) for counselling, 9% (10) of the respondents was to learn about HIV and AIDS, 3% (3) for curiosity and 2% (2) had visited the clinic for treatment purposes (Figure 4.25).



**Figure 4.25 Reason for visiting provider-initiated counselling and testing clinics**

#### **4.2.21 Hindrance to utilization of provider-initiated counselling and testing clinics**

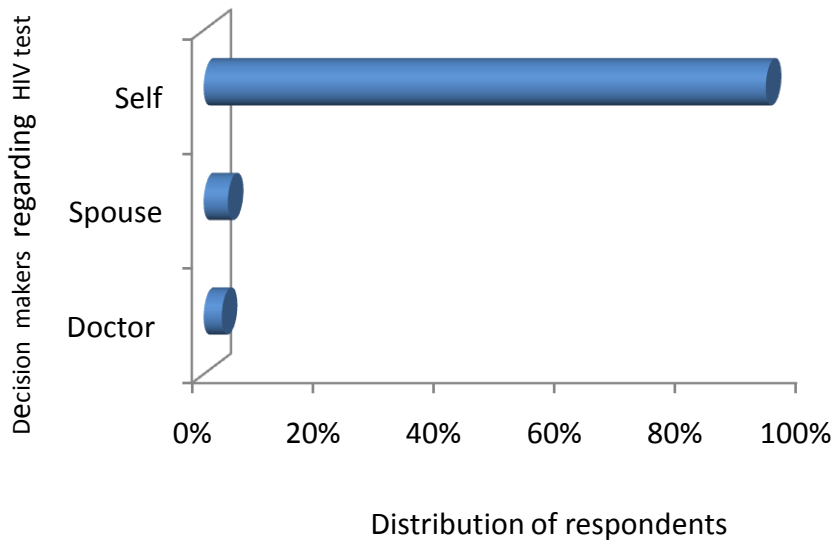
The findings showed that out of the 56% (135) of the respondents who had not visited the clinics, 44% (59) had fear of knowing self HIV status, 17% (23) trusted themselves and their partners, 10% (14) had no reason, 8% (11) lacked time, (4%) (5) never thought about it and spouse refusal accounted for 4% (5), service was not available 3% (4), VCT had no meaning 3% (4), had not decided 2% (2), religious beliefs 2% (2) and HIV test not being reliable 2% (2) while 1% (1) of the respondents had not made a choice (Figure 4.26).



**Figure 4.26 Hindrance to utilization of provider-initiated counselling and testing clinics**

#### 4.2.23 Decision making regarding HIV test among respondents

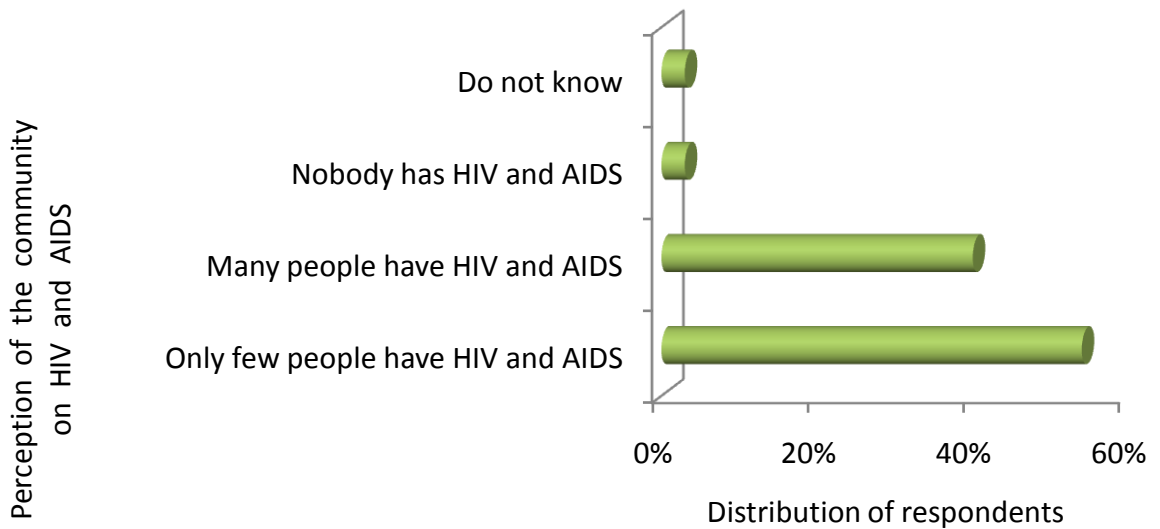
From the findings, 93% (224) of the respondents believed that decision making regarding HIV test should be an independent decision, 4% (10) believed that it was a spouse's decision while to 3% (7) a doctor was to make the decision (Figure 4.27).



**Figure 4.27 Decision making regarding HIV test among respondents**

**4.2.24 Prevalence of HIV infection as reported by respondents**

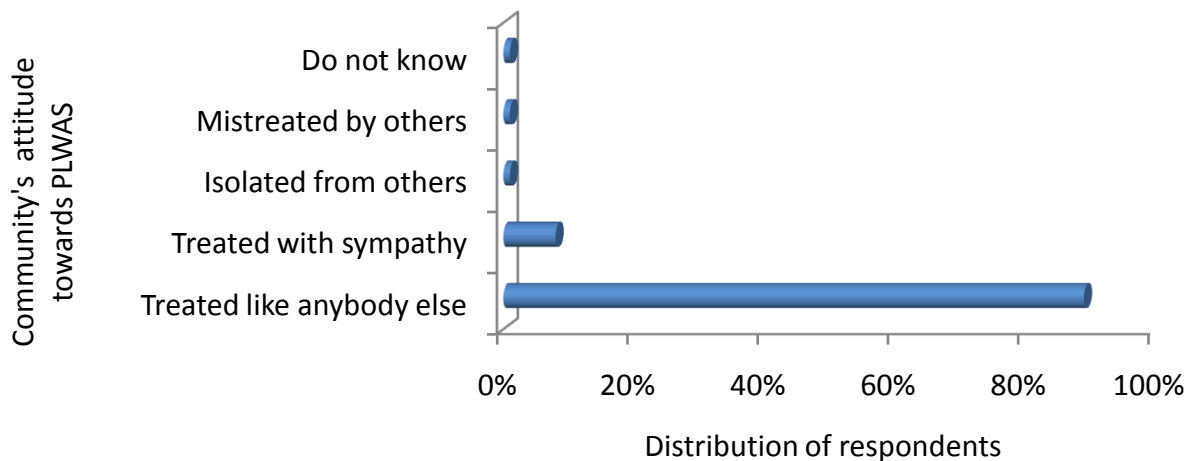
The findings showed that 54% (130) of the respondents estimated that only few people had HIV infection in their community, 40% (96) believed that many people had HIV, 3% (7) of the respondents estimated that nobody had HIV in the community while 3% (7) did not know (Figure 4.28).



**Figure 4.28 Prevalence of HIV infection as reported by respondents**

#### 4.2.25 Attitude towards HIV positive women by respondent's community

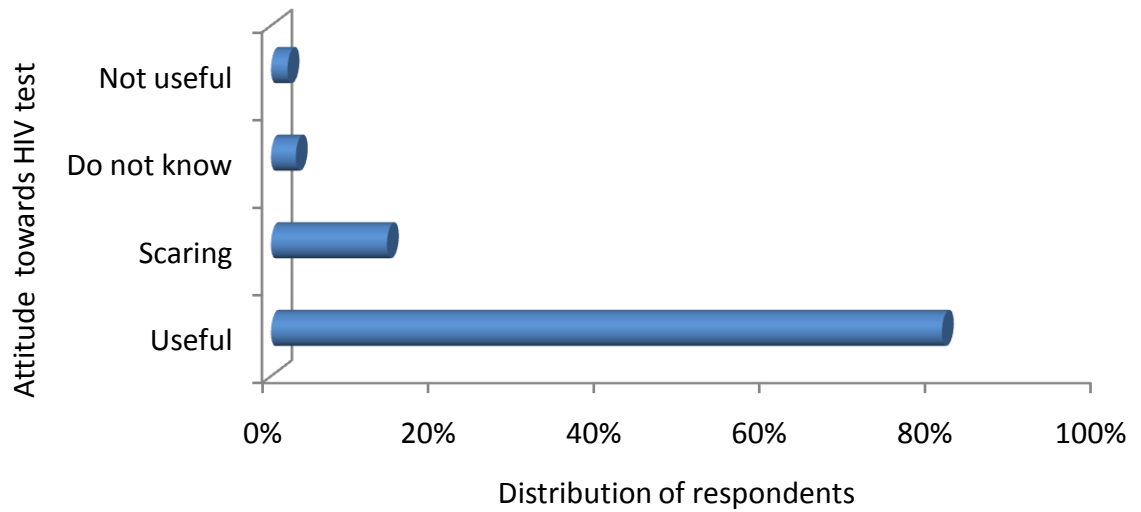
Majority of respondents (89%) (215) expressed a willingness to care for HIV-infected people in the community; (8%) (20) treated them with sympathy. Those that isolated them from others were 1% (2), mistreated them (1%) (2) while those who did not know were 1% (2) (Figure 4.29).



**Figure 4.29 Attitude towards HIV positive women by respondent's community**

#### 4.2.26 Community's attitude towards HIV test as reported by respondents

According to the findings, 81% (195) of the respondents had the opinion that HIV test was useful, 14% (34) saw it scaring, 3% (7) did not know while 2% (5) responded that it was not useful to the community (Figure 30).



**Figure 4.30: Community's attitude towards HIV test as reported by respondents**

#### 4.2.27 Respondent's education level against parity

**Table 4.2 Respondent's education level against parity**

Educational level	Mean parity
Non	2
Primary	2
Secondary	1
Post –secondary	1

Analyses of parity trends show that women with primary education's parity were higher than that of women with secondary and post-secondary education. Chi-square analysis of education versus parity showed that there was significance association ( $p < 0.05$ ).

#### 4.2.28 Parity against respondent's age

**Table 4.3 Parity against respondent's age**

<b>Age group</b>	<b>Mean parity</b>
18-24	1
25-34	2
35-44	3

Chi-square analysis on age versus parity showed that there was significance association at  $P < 0.05$  confidence level.

#### 4.2.29 Hypothesis testing

Utilization of knowledge on prevention of mother-to-child transmission of HIV does not influence uptake of HIV test among pregnant women attending the selected public health facilities in Embu District.

**Table 4.4 Frequency of exposure to information on prevention of MTCT of HIV**

<b>Uptake of HIV test</b>	<b>Once</b>	<b>Twice or more</b>	<b>Totals</b>
Yes	28	78	106
No	20	115	135
<b>Totals</b>	<b>48</b>	<b>193</b>	<b>241</b>

There was therefore, significant statistical association between utilization of knowledge on prevention of mother-to-child transmission of HIV and uptake of HIV test among pregnant women attending the selected public health facilities in Embu District.

## CHAPTER FIVE

### DISCUSSION

#### 5 DISCUSSION

##### 5.1 Demographic characteristics

The age group 18-24 years had the highest number of respondents (46%), followed by the age group 25-34 years (43%) (Table 4.1). In terms of parity 42% of the respondents had not delivered previously and had no abortion followed by 32% that had one previous delivery and no abortion. Kenya AIDS Indicator Survey (2007) found that 90% of women who had delivered attended provider-initiated testing and counselling clinics during pregnancy and among the attendees, more than 57% were tested for HIV. According to the Ministry of Medical Services and The National Guidelines on the Prevention of Mother-to-Child Transmission (PMTCT) of HIV, it is a policy all pregnant women attending Maternal Child Health and Family Planning services are offered provider-initiated testing and counselling of HIV as part of routine pregnancy care (NASCO,2002). Testing of pregnant women and neonates helps to prevent mother-to-child transmission of HIV. Mothers and neonates who are infected receive HIV care and treatment.

The respondents were Protestants (69%) and Catholics (31%). About 44% of the respondents had five children while a large population (61%) had attained primary level of education. The smallest group (2%) comprised those who have never attended school at all. It was observed that over half (63%) of the women did not carry out any income generating activity and were totally dependent on their husbands, partners or parents. A

majority of respondents (82%) were married while widowed mothers constituted 1% of the group. This compares with Kenya Demographic and Health Survey (2003) whose findings are in line with current national trends where differences by background characteristics like education level indicate that women are more likely to be dependents than in employment. Majority of women were less than 30 years of age, which reflects the fact that in the area of study women got married at an early age. Most (82%) of the teenage mothers were married and the findings revealed that 91% of the respondents were aged between 15 to 26 years at first marriage and this being presumably the prime age for sexual debut. However out of the 82% who were married, 8% had been in another marriage. The respondents were asked to state the number of times they were married before - two to three times accounted for the highest proportion (87%) of the total respondents. These findings concur with the Kenya AIDS Indicator Survey (2007) survey results which showed that almost three-quarters of the teenage women had short time sexual partners by the time they turned 18 years age. Furthermore, out of the 18%, single, divorced or widowed, it is only 43% who used condoms to protect themselves from HIV infection.

## **5.2 Knowledge on prevention of mother -to- child transmission of HIV**

The fact that majority (96%) of the respondents had previously heard about prevention of mother-to-child transmission of HIV shows the strong role the programme plays in the provision of HIV information to pregnant women. The study show that provider -initiated HIV testing and counselling to be the most known service offered to the respondents as both had 99% and 98% respectively. Similarly 81% of the respondents had the opinion

that HIV test was useful to the community. Further 98% of the respondents knew that HIV infection is caused by a virus. Almost three - quarters (71%) of the women knew that HIV infection can be transmitted through breastfeeding, 56% knew that having sex with an infected person can spread the virus and 47% knew that promiscuity posed similar dangers. The study shows that women with no education were less likely to know about the transmission of HIV through breastfeeding than those who had primary or have some secondary and higher education. This compares with Kenya AIDS Indicator Survey (2007) report which stated that women continue to be disproportionately infected with HIV (8.7%) compared to men (5.6%).

### **5.3 Knowledge on HIV prevention by use of condoms**

Condom use is an important tool in curtailing the spread of HIV and AIDS. Availability of condoms in high-risk social establishments such as bars and guest-houses needs to be dramatically increased. Currently it is estimated that only 65% of these high-risk settings stock any condoms (NASCO, 2005). Although truly effective protection would require condom use at every sexual encounter to cover those considered to be at 'higher risk'. In the context of this study, higher risk sex was defined as sex with a non married, non-cohabitating partner in the last twelve months preceding the study. Because the definition of higher - risk sex includes premarital sex, involvement in it is highest among women age 18 - 34 years and decreases with increasing age. The percentage of respondents who had knowledge that consistent condom use can prevent HIV infection in higher-risk partners was alarmingly low (5%). The findings agree with the National HIV and AIDS

Strategic Plan 2005/6-2009/10 report which documents efforts to improve on the current knowledge trends through advocacy of consistent and correct condom use.

#### **5.4 Knowledge on condom retail outlets**

Knowledge of condom retail outlets plays an important role in preventing new HIV infection and transmission. With nearly 98% of the women stating that they knew of a condom dispensing outlet, knowledge of condom outlets was considerably higher among teenage women than older women. The leading condom outlet was GOK Health Centers/Dispensary accounting for 56% and shops/kiosks at 54% probably due to social marketing by other partners like Population Services International (PSI). However, the probable justification to the high level (98%) of knowledge about condom outlets may be the fact that 58% were exposed to numerous (training) sessions on condom use and with 67% having actually used it. This has proven effective in reducing mother-to-child transmission of HIV and whose findings agree with Guay *et al.* (2007).

#### **5.5 Approval of condom use by respondent's community**

Questions were added in the interview schedule to determine respondent's community approval of condom use and 55% thought that their community approved condom use with only 1% not knowing. However, the reasons behind community's disapproval of condom use were mainly due to religious restrictions. Polygamy was cited as a cultural practice that would influence the spread of HIV. Use of condoms has become signifiers of the epidemic, leading to possible rejection of those who initiate their use (Link *et al.*, 2004). Thus many youths are scared to use condoms due to felt implications like self-

guilt (Leclerc-Madlala, 2007). Even the option of being faithful can be stigmatized. In a community where multiple partners are seen as an indicator of success or manhood, a person who has one partner may be marginalized. This compares with data findings by Welsh *et al.* (2006) which show that in addition to cultural practices like polygamy and wife inheritance, societal stigma associated with condoms coupled with low knowledge levels regarding how to use them correctly are some of the hindrances to preventing new HIV infections.

### **5.6 Source of information on prevention of MTCT of HIV**

Almost all (94%) of the respondents had been educated on prevention of mother-to-child transmission of HIV and a similar proportion had got information from GOK health facilities. From the study findings over half (58%) of the respondents in all age groups were exposed to information on prevention of mother-to-child transmission of HIV three or more times. All the respondents knew that the risk of transmission of HIV from mother-to-child can be reduced. However, knowledge on specific options that mothers could take to prevent mother-to-child transmission was low, and less than a third of the respondents in all age groups suggested that medication (antiretroviral treatment) could reduce the transmission. Dealing with incomplete knowledge of ways to reduce mother-to-child transmission remains an important challenge for the national program. This is in an agreement with studies by Fleming *et al.* (2006) and Kube (2005) who have documented similar challenges in the setting up of prevention of mother-to-child transmission of HIV pilot sites and their gradual scaling up in many countries in south of Sahara.

### **5.7 Knowledge on provider-initiated testing and counselling**

Almost all (92%) of respondents had heard about provider-initiated testing and counselling and knew the type of services offered during the clinic sessions with 50% stating HIV testing and 45% counselling. The findings also revealed that 56% had not visited a provider-initiated testing and counselling clinic and that those who had visited did so for purpose of HIV testing (51%) and counselling (35%). Fear of knowing self HIV status (44%) was the main reason for not taking HIV test. As regards decision making on whether to take the test, 93% believed that it was an independent decision while 4% believed it was a spouse's decision. This finding compares with a study reported by Brown *et al.* (2004). The prevalence of HIV infection in the community according to the respondents, 54% estimated that only a few people had HIV, 40% believed that many people had HIV while only 3% estimated that nobody had HIV in the community. This means that there is low perception of risk by the women when they should be encouraged to use condoms even with their spouses and trusted partners to protect against HIV and other STDs as unprotected sex during pregnancy and breastfeeding may be associated with increased risk of HIV transmission to the baby. This underscores the importance of the ongoing campaigns to improve on utilization of knowledge about risk factors for HIV and attitudes towards HIV testing.

### **5.8 Attitude towards HIV positive women by respondent's community**

Large majorities of women (89%) expressed a willingness to care for HIV infected people in the community, far fewer (8%) said they treated them with sympathy. Survey results further indicate that only 1% isolated them from others and also mistreated them.

This compares with Kenya AIDS Indicator Survey (2007) report which showed that health care workers and counsellors have addressed stigma and discrimination in a way that it is now not difficult relating with someone with HIV and also has helped people living with HIV and AIDS experience acceptance and develop a sense of safety in the community.

### **5.9 Community attitude towards HIV test as reported by respondents**

Similarly large majorities of women (81%) expressed the opinion that HIV test was useful, 14% saw it scaring, 3% did not know while 2% responded that it was not useful to the community. This was intended to determine acceptability of the test by the respondent's community. Provider-initiated counselling and testing is the most commonly understood in the context of information, advice and its services appear on continuum ranging from information, counselling to testing. This finding compares with a study done by Kipp *et al.* (2006) in Uganda. Analysis on parity trends showed that women with primary education's parity to be higher than that of women with secondary and post-secondary education. Parity as would be expected increases with age. Chi-square analysis on age versus parity showed that there was no significance association at  $P < 0.05$  confidence level. Similarly, there was no significant statistical association between utilization of knowledge on prevention of mother-to-child transmission of HIV and uptake of HIV test among pregnant women attending the selected public health facilities in Embu District..

The study has showed that apart from stigma and other socio -cultural factors that affect a mother's decision to take HIV test, there is an inherent determination by the government to reduce the risk of transmission of HIV infection from mother-to-child. The benefits of the current Prevention of Mother-to-Child Transmission (PMTCT) of HIV programme may be insufficient if children who are protected during pregnancy and delivered are contaminated during breastfeeding. Intensive education to raise the level of knowledge among pregnant women on mother-to-child transmission of HIV, use of antiretroviral drugs and safe use of infant feeding formula, for example need to be addressed. Also, the strong influence of stigma on condom use. Utilizing the terminology 'parent - to - child' transmission may be helpful in this regard.

However, the focus of the interventions should not only be saving the child and providing for the long term medical and psychological needs of the mother, but also for the father and if possible for the entire family. Furthermore, the provision of breast milk substitutes by the health care services and the issue of cost need to be addressed. Given the diverse socio -economic and cultural resources available to women, it would be inappropriate to assume that blanket policies would effectively be implemented with expected impact in all areas. Health care workers should be given a central role in identifying what works in their specific regimes. Evidenced - based policies should be adopted in national policies.

## CHAPTER SIX

### SUMMARY OF RESULTS, CONCLUSION AND RECOMMENDATIONS

#### 6 Summary of results

A total of 275 respondents attending the selected public health facilities were recruited in the study. The objective of the study was to investigate utilization of knowledge on mother-to-child transmission of HIV among pregnant women attending the selected health facilities in Embu District. Most of the women were less than 30 years of age, which reflects the fact that they got married at early age. Majorities (82%) of these teenage mothers were married and the study showed that 91% were aged between 15-26 years at first marriage. This was presumably the prime age for sexual debut. Also almost three-quarters of the teenage women had short time sexual partners by the time they turned 18 years of age as when asked to state the number of the times they were married before- two to three times accounted for the highest proportion (87%). Almost half of the respondents (43%) had used condoms. This was probably due to religious permissiveness or freedom as 69% were protestants as compared to 31% catholics.

A large percentage (61%) had attained primary education while those who had never attended school comprised 2%. Women with primary education's parity seemed to be higher than that of women with higher education level. Also as expected parity increased with age. It was observed that over half (63%) of the women did not engage in any income generating activity and were dependants on their husbands. These among other factors show that women were more likely to be housewives than on employment and other income generating activities.

The fact that majority (91%) of the women had previously heard about prevention of mother-to-child transmission (PMTCT) of HIV program and almost three-quarters (71%) of the women knew that HIV infection can be transmitted through breastfeeding was an indication of utilization of knowledge on prevention of mother-to-child transmission of HIV. The programme continues to provide for HIV education, testing and counselling as part of routine care to pregnant women. The proportion of women who had knowledge that consistent condom use can prevent HIV infection in higher risk partners was alarmingly low (5%), yet the study findings showed that over half (58%) of the women in all age groups were health educated on prevention of mother-to-child transmission of HIV three or more times. The findings also indicate that out of the 18% single, divorced or widowed, 43% reported using condoms to protect themselves from HIV infection. Knowledge on specific options that mothers could take to prevent mother-to-child transmission was low, with less than a third suggesting that medication could reduce transmission of HIV from mother to infant.

Dealing with incomplete knowledge of ways to reduce mother-to-child transmission remains an important challenge to the national program. With nearly all (98%) the respondents stating that they knew of a place where one could get condoms, knowledge of condom retail outlets was considerably higher among teenage women. The leading outlet being GOK health facilities (56%) followed by shops/kiosks at 54%. However the reasons behind the community's disapproval of condom use were mainly due to religious restrictions coupled with societal stigma associated with condom use. Almost all (94%)

of the mothers were educated three or more times on prevention of mother-to-child transmission of HIV in an effort to addressing knowledge gaps on ways to reduce the transmission of the virus. Fear of knowing self HIV status was the main reason for declining an HIV test.

As regards decision making on whether to take the test, majority responded that it was an independent decision. Morality has also become a key factor in the development of stigma in HIV and AIDS. A judgmental discourse has distinguished sharply between those “innocents” who test HIV negative and those who are considered guilty and almost “deserve it”. Religious groups may intentionally or inadvertently contribute to discrimination on the basis of HIV status by making explicit or implicit judgments against those who are infected with HIV.

Attempts to label the epidemic as God’s punishment for sinners, especially prostitutes, unfaithful partners, drug users and even gays have been documented (Crawrod *et al.*, 2004). Large majorities of women expressed willingness care for HIV infected people in the community; however the attachment of gender discrimination to HIV stigma has led to women being blamed for spreading the epidemic. These women are contradictorily expected to provide sexual services to men generally, be chaste and pure and take on the responsibility of preventing pregnancy and disease (Leclerc-Madlala, 2007). Most mothers supported the opinion that HIV test was useful, an indication that these clinic sites play an increasingly important role in the prevention of mother-to-child transmission of HIV. In addition, given the geographical and socio-economic changes in the study area

the demand for provider-initiated counselling and testing clinics keeps growing. In response to this demand a large number of clinics are being opened to offer optimum services to women. Most of clinics are regulated and controlled by the Ministry of Public Health and Sanitation in addition to other partners like Liverpool VCT, International Centre for AIDS Care and Treatment (ICAP).

### **6.1 Conclusion**

The study has shown that a large majority (96%) of women had previously heard about prevention of mother-to-child transmission (PMTCT) of HIV and almost three-quarters of them knew that HIV infection can be transmitted through breastfeeding. This is an indication of the impact of the Prevention of Mother-to-Child Transmission (PMTCT) of HIV programme and which continues to provide for HIV education, testing and counselling to women as part of routine pregnancy care. However, knowledge on specific options that women could take to prevent transmission was low, with less than a third suggesting that medication could reduce the transmission from mother to infant. Dealing with incomplete knowledge of ways to reduce mother-to-child transmission of HIV and the low perception of risk remains an important challenge to the national programme. Most respondents had information about prevention of MTCT of HIV from counsellors (93%), 8% community health workers (CHW's), 4% NGO's and religious leaders respectively, 3% MOH staff while the least was from the organized support groups.

This suggests the need for intensification of more sensitization and education by all the stakeholders in the programme so as to develop and execute a common plan of action in

order to address these challenges. Gradual scaling up of the prevention of MTCT of HIV programme by introducing these services in at least 80% of all health facilities offering antenatal care while at the same time addressing the issue of non-users of the services due to self-exclusion, social withdrawal and fear of knowing self HIV status. It is worth noting that many women who have access to provider-initiated counselling and testing clinics do not agree to be tested for HIV. Acceptance of testing at the various PMTCT clinics varies from 25% to over 95%, with an average of 65% (NASCOP, 2005). The stigma of HIV is one factor affecting the mother's decision to get tested for HIV and seek care.

Mothers with HIV and AIDS may not have any visible signs of the disease, yet they are more likely to be stigmatized because others may view them as contributors to their own problems and unworthy of the care diverted to more legitimate victims of illness. A strong gender bias where women are more stigmatized than men, often lead to rejection by their families, domestic violence, increased suspicion, gossip and social isolation. Apart from cost and stigma, other socio-cultural factors affect mothers' choice of alternative feeding. For sero-positive mothers, this decision is an inherent determinant of the immediate risk of transmission of HIV from mother to child. The benefits of many prevention of MTCT of HIV programmes may be insignificant if children who are protected during pregnancy and delivery are contaminated during breastfeeding. With increased availability of antiretroviral (ARV's) treatment it would be naïve to assume that a pregnant mother could be taking ARV's and replace breastfeeding with artificial milk

without relatives knowing her status. The traditional values and their impact need to be recognized and impact-mitigation intervention put in place.

Prior to the advent of HIV and AIDS, a great deal of emphasis was placed on the importance of breastfeeding; thus it will take many years for mothers to accept artificial feeding as a valid alternative free of stigma. Critical activities that are necessary for national implementation of the programme include improving the infrastructure, re-training of health workers because although some curricula address the basics of HIV and AIDS home-based care, the attitude and behaviour related to stigma receive little attention, improving communication about PMTCT of HIV, strengthening management and administrative systems, monitoring and evaluation and improving existing delivery of services. Lack of male involvement in the programme remains to be a significant barrier to accepting these services. Finally, the prevention of MTCT of HIV policies in place in Kenya and other sub-Saharan countries do not adequately address some of these issues, especially the strong influence of stigma.

## **6.2 Recommendations**

- (a) Gradual scale up of the prevention of mother-to-child transmission of HIV programme activities by introducing provider-initiated counselling and testing services and provision of basic care package (BCP) kits in the comprehensive care clinics (CCC) in all the public health facilities offering pregnancy care. This is further supported by Kenya AIDS Indicator Survey (2007) which indicated that 90% of women who had delivered attended provider-initiated counselling and

testing clinics for pregnancy care and among the attendees, more than 57% were counselled and tested for HIV.

- (b) Enhance efforts to improve on the current knowledge trends through advocacy of consistent and correct condom use and other factors like religious restrictions and societal stigma associated with condom use. Moreover, the percentage of respondents who had knowledge that consistent condom use can prevent HIV infection in higher-risk partners was alarmingly low (5%).
- (c) Ensure availability of condoms particularly in high-risk social establishments such as bars and guest-houses. This is also supported by NASCOP (2005) whose report estimated that only 65% of this high-risk settings stock any condoms. This will curb new HIV infection and transmission.
- (d) Measures to address the issue of non-users of provider-initiated counselling and testing clinics within the existing implementation framework as more than half (56% ) had not attended the clinics due to factors such as self-exclusion, social withdrawal and fear of knowing self -HIV status.
- (e) Intensification of health education to raise the level of knowledge among pregnant women on mother- to- child transmission of HIV, use of antiretroviral drugs and safe use of infant feeding formula. Utilizing the terminology 'parent-to-child' transmission may be helpful in this regard. It is appreciated that majority (96%) of the respondents had knowledge about mother-to-child transmission of HIV and which shows the strong role the programme continues to play in the provision of HIV information to pregnant women.

### **6.3 Further research**

- (a) Research into the best methods for reaching other vulnerable groups who are left out of the current targeting by prevention of MTCT of HIV program, for example widowers.
- (b) Research to evaluate the distribution of condoms and to seek ways of improving it.
- (c) Studies to assess the quality of prevention of MTCT of HIV programme.
- (d) Studies to measure stigma and its impact on the quality of care for HIV positive pregnant women.

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**APPENDIX 1**

**INTERVIEW SCHEDULE - KNOWLEDGE ON PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV AMONG PREGNANT WOMEN.**

**Precautionary statement**

- (i) This interview schedule is strictly for Masters of Public Health degree requirement and shall not be used for any other purpose.
- (ii) Information obtained from respondents shall be treated with strict privacy and confidentiality. In addition, the respondent has the right to full disclosure.
- (iii) The results of this study may be published, but the respondent’s name or identify will not be revealed and the records will remain confidential.
- (iv) Prospective respondent has the right to withdraw from the study even after consenting to participate.

**INSTRUCTIONS**

- 1. Tick or complete where appropriate
- 2. Ask, probe where necessary and write down respondent’s response, especially section **B. However, care must be taken not to influence (bias) the responses by this friendly discussion.**
- 3. Introduce yourself to the respondent and briefly inform her about the purpose of the study, what use will be made of the data and under whose auspices the study is being conducted.
- 4. In case a potential respondent declines to participate in the study, write down the reason (s).....

**Respondent’s consent/assent form**

**Declaration of consent/assent by respondent: by my signature I consent/assent to participate in this study voluntarily and without coercion whatsoever.**

**SECTION A. PERSONAL INFORMATION AND DEMOGRAPHIC DATA.**

Client’s code No.

- 1. Age (in years).....
- 2. Parity..... Gravida .....
- 3. Residence

Variables	Name (s)	
District		
Division		
Location		
Sub- location		
village		

**4. Religion**

- Catholic [ ]
- Protestant [ ]
- Muslim [ ]
- Traditional [ ]
- No religion [ ]
- Others (specify) [ ]

**5. Ethnicity**

- Embu [ ]  
 Mbeere [ ]  
 Kikuyu [ ]  
 Kamba [ ]  
 Meru [ ]  
 Others (specify).....

**6. Education level (state the highest level of education attained)**

- None [ ]  
 Primary [ ]  
 Secondary [ ]  
 Post- secondary [ ]

**7. Occupation**

- Casual laborer [ ]  
 House wife [ ]  
 Nursery teaching [ ]  
 Primary teaching [ ]  
 Secondary teaching [ ]  
 Business woman [ ]  
 Others (specify).....

**8. Marital status**

- Married [ ]  
 Single [ ]  
 Widowed [ ]  
 Separated/divorced [ ]

**9. If married, have you been in any other marriage?**

- Yes [ ] No [ ]

**10. If yes, how many times have you been married?**

- Once [ ]  
 2 – 3 [ ]  
 3 times and above [ ]

**11. What was your age at first marriage?**

- 15- 26 years [ ]  
 26-37 years [ ]  
 37- 49 years [ ]

**12. If unmarried, how do you protect yourself against HIV infection?**

.....  
 .....

**13. Is your spouse/partner presently employed/ engaged in any economic activity?**

- Yes [ ]  
 No [ ]  
 No spouse/partner [ ]

**14. If yes, what is the nature of economic activity?**

- Peasant farming [ ]  
 Businessman [ ]  
 Primary teaching [ ]  
 Secondary teaching [ ]  
 Casual labourer [ ]  
 Others (specify) .....

**15. What is the education level of your spouse/partner?**

- None [ ]  
 Primary [ ]  
 Secondary [ ]  
 Post-secondary [ ]

**SECTION B. KNOWLEDGE ON PREVENTION OF MOTHER-TO-CHILD TRANSMISSION OF HIV AMONG PREGNANT WOMEN.****16. Have you heard about mother- to- child transmission of HIV?**

- Yes [ ] No [ ]

**17. If yes, what do you think causes HIV infection?**

- Virus [ ]  
 Curse [ ]  
 Witchcraft [ ]  
 Contaminated sharps [ ]  
 Blood transfusion [ ]  
 Do not know [ ]  
 Others (specify).....

**18. How is HIV spread?**

- Sex with infected person [ ]  
 Many sexual partners [ ]  
 Transfusion with infected blood [ ]  
 Breastfeeding [ ]  
 Contaminated needles [ ]  
 Mosquito bite [ ]  
 Do not know [ ]  
 Others (specify).....

**19. Who among the following groups of people are likely to be infected with HIV?**

- |  |     |
|--|-----|
| Commercial sex workers                     | [ ] |
| Practicing wife inheritance / Re marriages | [ ] |
| Multiple sex partners                      | [ ] |
| Long distance truck drivers                | [ ] |
| Drug abusers                               | [ ] |
| Babies born to HIV infected mothers        | [ ] |
| Persons transfused with infected blood     | [ ] |
| Caretakers of infected persons             | [ ] |
| Do not know                                | [ ] |
| Others (specify).....                      |     |

**20. How do you recognize a person suffering from HIV and AIDS?**

**21. Is HIV and AIDS curable?** Yes [ ] No [ ]

**22. If yes, how?**

- |  |     |
|--|-----|
| Traditional medicine (herbs)           | [ ] |
| Medical drugs                          | [ ] |
| Seek treatment from traditional healer | [ ] |
| Having sex with a virgin               | [ ] |
| Prayers                                | [ ] |
| Do not know                            | [ ] |
| Others (specify) .....                 |     |

**23. What can one do to avoid getting infected with HIV?**

- |   |     |
|---|-----|
| Abstain from sex                                      | [ ] |
| Use condom  | [ ] |
| Use condom with high risk partners                    | [ ] |
| Limit sex to one uninfected partner and stay faithful | [ ] |
| Limit number of sexual partners                       | [ ] |
| Avoid sex with commercial sex workers                 | [ ] |
| Avoid blood transfusion                               | [ ] |
| Avoid injection                                       | [ ] |
| Avoid kissing   | [ ] |
| Avoid mosquito bites                                  | [ ] |
| Seek protection from traditional healer               | [ ] |
| Do not know   | [ ] |
| Others specify).....                                  |     |

**24. Have you heard about condoms?**

Yes [ ] No [ ]

**25. If yes, where are condoms obtained in your community?**

- Shops/Kiosk [ ]  
 Bars/Lodging/Hotels [ ]  
 GOK health centers/Dispensary [ ]  
 Private clinics [ ]  
 Chemists [ ]  
 Community health workers [ ]  
 Do not know [ ]  
 Others (specify).....

**26. Have you been educated on condom use?**

- Yes [ ] No [ ]

**27. Have you ever used a condom?**

- Yes [ ] No [ ]

**28. In your view, do you think your community approves of condom use?**

- Yes [ ] No [ ]

**29. If no, give reasons.**

- Religious reasons [ ]  
 Uncomfortable [ ]  
 Makes sex not enjoyable [ ]  
 Not readily available [ ]  
 Partners refuse [ ]  
 Allergy [ ]  
 Not reliable [ ]  
 Others (specify) .....

**30. What cultural practices do you think influence the spread of HIV and AIDS?**

- Polygamy [ ]  
 Wife inheritance [ ]  
 Circumcision [ ]  
 Re- marriage [ ]  
 Early marriage [ ]  
 Festivities [ ]  
 Do not know [ ]  
 Others (specify).....

**31. Have you ever been educated on mother-to-child transmission of HIV?**

- Yes [ ] No [ ]

**32. If yes, where?**

- Church [ ]  
 GOK health centre/Dispensary [ ]  
 Funeral gathering [ ]

Print/Electronic media [ ]  
 Market/Public baraza [ ]  
 Others (specify) .....

**33. By who?**

Community health workers [ ]  
 HIV and AIDS counselors [ ]  
 School teachers [ ]  
 MOH staff [ ]  
 NGO's [ ]  
 Organized support groups [ ]  
 Religious leaders [ ]  
 Others (specify).....

**34. How many times?**

Once [ ]  
 Twice [ ]  
 Thrice or more [ ]

**35. Is it true that the risk of transmission of HIV from mother- to- child can be reduced?**

Yes [ ] No [ ]

**36. If yes, mention the various ways through which this can be achieved.**

HIV counseling and testing [ ]  
 Use of Antiretroviral Therapy [ ]  
 Elective caesarean section [ ]  
 Safe use of infant feeding formula instead of breastfeeding [ ]

**37. What services are offered by Prevention of Mother-to-Child Transmission of HIV Program (PMCT)?**

Counseling [ ]  
 HIV testing [ ]  
 HIV management [ ]  
 Health education [ ]  
 Pregnancy care [ ]  
 Do not know [ ]  
 Others (specify).....

**38. Have you ever head of voluntary Counseling and Testing (VCT)?**

Yes [ ] No [ ]

**39. If yes, what services does Voluntary Counseling and Testing (VCT) offer?**

Counseling [ ]  
 HIV testing [ ]  
 HIV management [ ]

Health education [ ]  
 Do not know [ ]  
 Others (specify).....

**40. Have you ever visited a voluntary Counseling and Testing (VCT) centre?**

Yes [ ] No [ ]

**41. If yes, what was the purpose of your visit?**

Curiosity [ ]  
 Be counseled [ ]  
 Be tested for HIV [ ]  
 Learn about HIV AND AIDS [ ]  
 Treatment [ ]  
 Watch video [ ]  
 Others (specify) .....

**42. If no to question 40 above, give your reason.**

Spouse refused [ ]  
 Service not available [ ]  
 Test not reliable [ ]  
 Religious reasons [ ]  
 Fear of knowing self HIV status [ ]  
 Others (specify) .....

**43. In your view, who should make decision regarding Voluntary Counseling and Testing (VCT)?**

Doctor [ ]  
 Spouse [ ]  
 Relatives [ ]  
 Self [ ]

**44. By your own estimate would you say that in your community or in your neighbourhood:**

Only few people have HIV and AIDS [ ]  
 Many people have HIV and AIDS [ ]  
 Nobody has HIV and AIDS [ ]  
 Do not know [ ]

**45. If you were to describe the way people with HIV and AIDS are treated in your community, would you say they are:**

Treated like everybody else [ ]  
 Treated with sympathy [ ]  
 Isolated from others [ ]  
 Mistreated by others [ ]  
 Do not know [ ]  
 Others specify.....

**46. In your view, what is the general opinion of the community members regarding Voluntary Counseling and Testing (VCT)?**

- Useful [ ]
- No useful [ ]
- Scaring [ ]
- Do not know [ ]
- Other (specify).....

**DATE**

--	--	--	--	--	--	--	--

**Name of interviewer** .....

**Signature**.....

**APPENDIX 2**  
**PILOT STUDY**

**Pretesting was done using a purposive sample of 24 respondents recruited on consent from Karurumo RHC.**

**Sample structure**

<b>MARITAL STATUS</b>	<b>N= 24</b>
Married	82%
Single	15%
Widowed	1%
Separated/Divorced	2%

<b>EDUCATION LEVEL</b>	<b>N= 24</b>
Primary	61%
Secondary	33%
Post secondary	4%
No education	2%

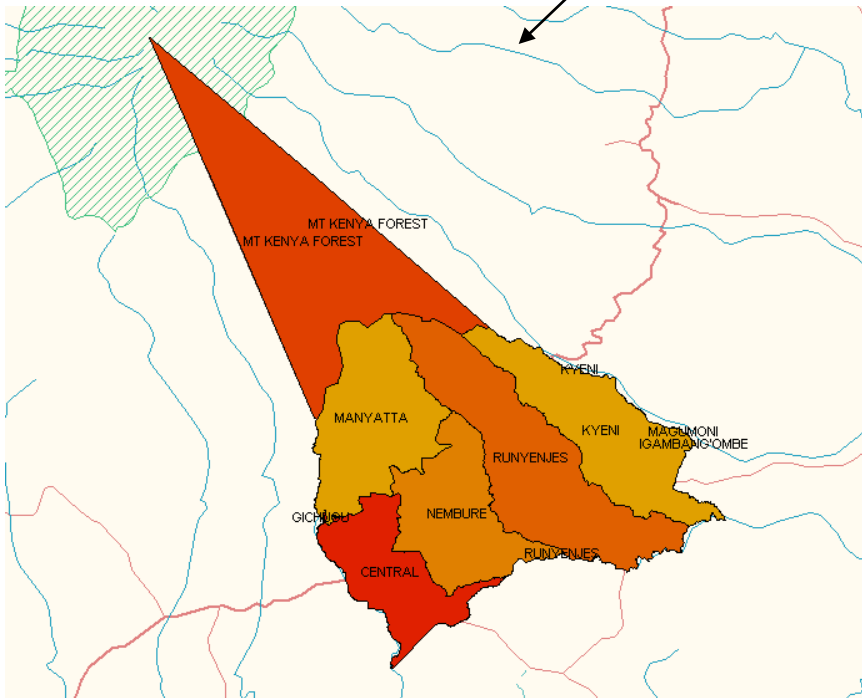
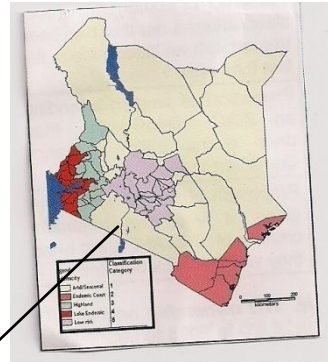
<b>OCCUPATION</b>	<b>N = 24</b>
House wife	63%
Business woman	21%
Casual labourer	9%
Teacher	5%
Secretary	2%

<b>AGE</b>	<b>N = 24</b>
18-24	46%
25-34	43%
35-44	10%
>45	1%

### APPENDIX 3

## MAP OF EMBU DISTRICT



Source: Kenya Bureau of Statistics-Embu



## APPENDIX 4

### REPUBLIC OF KENYA

#### MINISTRY OF SCIENCE & TECHNOLOGY

Telegrams: "SCIENCE TEC", Nairobi  
 Telephone: 02-318581  
 E-mail: [ps@scienceandtechnology.go.ke](mailto:ps@scienceandtechnology.go.ke)  
 When replying please quote  
**Ref. MOST 13/001/37C 819/2**

JOGOO HOUSE "B"  
 HARAMBEE AVENUE  
 P.O. Box 9583-00200  
 NAIROBI  
 10<sup>th</sup> December 2008

Simon Kivuti Kiura  
 Kenyatta University  
 P.O Box 43844  
 NAIROBI

#### RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on,  
**'Knowledge on Prevention of Mother to Child Transmission of HIV among  
 Pregnant Women attending selected Public Health Facilities in Embu District,  
 Kenya'**

I am pleased to inform you that you have been authorized to carry out research in Embu District for a period ending 30<sup>th</sup> April 2008.

You are advised to report to the District Commissioner and the Medical Officer of Health Embu District before embarking on your research.

On completion of your research, you are expected to submit two copies of your research to this office.

M.O. ONDIEKI  
 FOR: PERMANENT SECRETARY

Copy to:

The District Commissioner  
 Embu

The Medical Officer of Health  
 Embu