Predisposing factors that lead to HIV seropositivity during pregnancy among women in Kakamega and Nairobi county Hospitals

Abednego Ongeso (corresponding author)
PhD in Community Health and Development – Reproductive Health (Great Lakes University of Kisumu - Kenya), MSc.N – Maternal and Neonatal Health (Moi, Kenya), BSc.N (Moi, Kenya)
School of Nursing Sciences University of Nairobi
P.O Box 19676 – 00200 Nairobi
Tel +254720775815
E mail: aongeso2015@gmail.com

Grace Omoni
PhD in Midwifery (Curtin, Australia), MSc. (Leeds, UK), PG Dip (Leeds, UK), PG Dip MCH (London, UK), Neonatal Nursing (KNH, Kenya), KRN/KRM (KMTC, Kenya)
School of Nursing Sciences University of Nairobi
P.O Box 19676 – 00200 Nairobi
Tel +254727466460
E mail: omonigrace@hotmail.com
Abstract on predisposing factors that lead to HIV seropositivity during pregnancy among women in Kakamega and Nairobi county Hospitals:

In Kenya, there is limited empirical data on determinants of seropositivity in late pregnancy due to low uptake of HIV retesting in late pregnancy despite there being a policy directive to do so. Study objective was to determine the predisposing factors that lead to HIV seropositivity during pregnancy among women in Kakamega and Nairobi county Hospitals.

A ten month longitudinal study was conducted employing both qualitative and quantitative design whereby 1,156 HIV positive and negative women were recruited in early pregnancy and followed up through pregnancy; they were interviewed, and retested.

Results showed that having multiple sex partners was associated with seropositivity. Cultural belief of men not having sex spouses in pregnancy encouraged extra marital affairs leading to seropositivity.

In conclusion HIV seropositivity in pregnancy was mainly due to the risky sexual behavior. There is therefore need for behavior change to reverse retrogressive cultural beliefs and practices.

Key words
Human immunodeficiency Virus (HIV)
Initial testing
HIV Seropositivity
HIV seroconversion
Retesting

1.1 HIV Seroconversion in late pregnancy

Studies conducted in Botswana by (Thaczuk & Safreed-Harmon 2009) reported cases of HIV positive children being born from initially HIV negative women. Another study conducted by (Umeononihu et.al 2013), in Nigeria reported an HIV prevalence of 3.9% among initially HIV negative pregnant women in late pregnancy. A similar study conducted by (Ongeso 2013), in Kakamega established an HIV prevalence of 2.98% among initially HIV negative pregnant women. These studies bring to the fore the magnitude of missed opportunity associated with a single routine antibody rapid test for pregnant women in early pregnancy. Therefore, routine repeat antenatal HIV testing and counseling in late pregnancy is advocated. Retesting later in pregnancy is important in curbing MTCT according to (Kenyan pMTCT Guidelines 2012). HIV seroconversion results mainly from exposure to the virus through sexual intercourse. Risky sexual behavior is the main factor driving HIV infections, according to (Mugo et.al 2011). A study in Nigeria by (Umeononihu et.al 2013) concluded that sexual activity put pregnant women at risk for HIV infection regardless of whether they had single or multiple partners and also regardless of whether they were in polygamous or monogamous unions. Cross generational sex, whereby older men engage with younger women in sex also predisposed these women to HIV infection. Seroconversion may at times be wrongly indicated due to misdiagnosis from HIV test kits with low sensitivity.
1.2 Statement of the Problem
Over the past five years there have been many studies conducted on seropositivity in late pregnancy globally and in Africa and its contribution to the high incidences of Mother to Child Transmission of HIV (Drake et.al, 2014; Steele, 2011; & McHugh et.al, 2015). There is limited empirical data explicitly assessing the determinants and outcomes of Human Immunodeficiency Virus (HIV) seropositivity in late pregnancy partly due to the fact that majority of the pregnant women globally start seeking antenatal care late in pregnancy and are rarely retested. This leaves a gap in the Elimination of Mother to Child Transmission (eMTCT) strategy which aims at virtual elimination of HIV thus contributing to high maternal and neonatal morbidity and mortality rates in Kenya.

1.3 Purpose of the study
The purpose of this study was to find out the determinants of HIV seropositivity among pregnant women attending Maternal and Child Health services in Nairobi and Kakamega counties.

1.4 Objective:
1. To establish the determinants of Human Immunodeficiency Virus seropositivity among pregnant women attending antenatal clinics in Kakamega and Nairobi County Hospitals

1.5 Research Question:
1. What factors predispose pregnant women to HIV seropositivity during pregnancy in Kakamega and Nairobi county Hospitals?

1.6 Study justification
The study was conducted in Kakamega and Nairobi counties since they were among the top three leading former provinces in HIV infection rates (KDHS, 2009). The study was therefore instrumental in addressing the problem facing the people of these counties in so far as uptake of eMTCT is concerned. Pumwani in Nairobi being mainly an urban setting and Kakamega mainly a peri-urban setting provided a rich source of data in so far as factors eMTCT uptake are concerned. Nairobi and Kakamega counties had almost similar HIV prevalence rates of 11 and 9 percent respectively (KDHS, 2009) and therefore the outcomes from the counties could be compared. Furthermore no similar study has been conducted in the study areas investigating the outcomes of eMTCT in the two counties and highlighting the challenges facing the implementation of this program. Furthermore there is limited empirical data on the cohort of women who turn seropositive in late pregnancy with regard to challenges they undergo immediately after diagnosis and how this affects their pregnancy and delivery outcomes.

1.7 Significance of the Study:
The study findings, if used by policy makers, will help address challenges facing the uptake of the eMTCT program in Kenya. The information provided from the study will also be instrumental in the evaluation of the effectiveness of eMTCT programs in reducing mother to child transmission of HIV to zero by the year 2015, as envisaged by the UN General Assembly High Level Meeting on AIDS.
2.0 Literature Review

2.1 Factors Leading to HIV Infection during Pregnancy

2.1.1 Predisposing Factors Globally

At the global level, the reasons for HIV seroconversion during late pregnancy are poorly understood. HIV negative women in early pregnancy carry a disproportionate burden of sexual ill health, yet the range and frequency of their sexual health risks, morbidities and service engagement are poorly understood. The researcher sought to review the risk factors that most likely predispose these women to the risk of acquiring HIV infection.

A study done by (Edelman, Patel, Glasper, & Johnston 2014), indicated that substance abuse plays a major risk in HIV transmission. A study by (Klunklin & Greenwood 2005), established that the current spread of HIV/AIDS in Thailand is primarily a function of the inferior status of women, which in turn is a function of Buddhism and Thai cultural beliefs.

2.1.2 Predisposing Factors in Africa

The reasons for HIV seroconversion during late pregnancy in Africa are poorly understood as well. African women generally carry a huge burden of sexual ill health. Just like the global scenario, the range and frequency of their sexual health risks, morbidities and service engagement are poorly understood. There are many challenges that afflict the African woman ranging from low socioeconomic status, cultural inequalities, and low educational background, among others. The researcher sought to find out risk factors that most likely predispose these women to the risk of acquiring HIV infection.

According to (Dunkle et.al 2004), in a publication on transactional sex among 1,366 ANC attendees in Soweto South Africa found out that transactional sex may place women at increased risk for HIV, and is associated with gender-based violence, substance use and socio-economic disadvantage (OR = 1.54, 95% CI: 1.07, 2.21). (Dunkle et.al 2004) also established that high levels of male control in a woman's current relationship were associated with HIV seropositivity (OR= 1.48, 95% CI 1.15-1.89).

In a study by (Bingenheimer 2010) entitled “Men's multiple sexual partnerships in 15 Sub-Saharan African countries” established that men's multiple sexual partnerships contribute to the spread of HIV in sub-Saharan Africa, The author indicated that men's institutionalized authority over women and their control of economic resources were key facilitators of multiple partnerships in this region. The men’s control over resources played a role in multiple relationships that fanned the spread of HIV.

(Lindgren, Rankin & Rankin 2005) in their study Malawian study established that Sociocultural factors, especially gender roles and relationships, played a significant role in the transmission of HIV in Africa . One emergent theme from a focused group discussion revealed this theme, "We are just vessels for our husbands". This shows how vulnerable the women are to the men and could end up contracting HIV since they have no control over their reproductive health.

From these studies sampled, transactional sex, unprotected sex and cultural beliefs coupled with gender inequality are major predisposing factors to HIV acquisition in Africa.
2.1.3 Predisposing Factors in Kenya

The reasons for HIV seropositivity during late pregnancy in Kenya as is in Africa are poorly understood. Kenyan women face numerous challenges many of which are socio-cultural, technological, economic, and political among others which generally carry a huge burden of sexual ill health. There is very little empirical data on frequency of sexual health risks and morbidities. The researcher sought to find out risk factors that most likely predispose women to the risk of acquiring HIV infection. Being young especially for women, multiple sex partners, exposure to Herpes simplex Type 2 and lack of male circumcision are some of the risky sexual behaviors that lead to HIV seropositivity in pregnancy. This is the case according to (Kaiser et.al 2011), in their KAIS Study Group. Increasing number of sexual partners leads to increased exposure to the HIV virus hence increased rate of transmission. There is compelling evidence that male circumcision reduces the risk of heterosexually acquired HIV infection. Three randomized controlled trials have shown that male circumcision reduces infection rates by close to 60% among men (WHO, 2015). (Ongeso 2013), conducted a study among HIV negative pregnant women in Kakamega PGH and found out that that of the 302 respondents, the majority (159 respondents representing 56% of the sample) engaged in risky sexual behaviors as follows. Out of 159 the majority 116 (73%) were living with partners and having sex yet they did not know about the partners’ status, while twenty (12%) had engaged in extramarital sex and used condoms inconsistently. Eighteen respondents (11%) had multiple sex partners, and six (11%) had been inherited following the demise of their husbands. From these studies, young age in women, increasing number of lifetime sexual partners, ignorance regarding HIV status of partner, extra marital sex and inconsistent condom use came out as the predictors of HIV transmission.

3.0 Methodology

3.1 Study Design

The researcher employed mixed methods in data collection. Qualitative and quantitative approaches were used to corroborate findings that would otherwise be missed by the deployment of only either one of the study approaches (Polit and Beck 2010). Under quantitative methods, a descriptive longitudinal quasi experimental study design was adopted while phenomenological approach was adopted for the qualitative methods.

3.2 Study Site background

All study activities were conducted at Kakamega County Hospital and Pumwani Maternity Hospital, which are the largest government antenatal facilities in Kakamega and Nairobi County. Both hospitals provide antenatal, delivery, postnatal, and family planning services, including antenatal pMTCT and labor ward HIV testing using “opt-out” approach for HIV testing. Repeat HIV testing is also practiced at both facilities.

3.3 Target Population

The target population consisted of all women of reproductive age (WRA) i.e. 15-49 years of age attending antenatal care services in the two Kenyan Counties – Kakamega and Nairobi. (According to KDHS 2008-09 WRA were aged between 15-49 years
3.4 Inclusion criteria
All HIV positive and HIV negative women in early pregnancy below 26 weeks were enrolled into the study. The HIV negative women were then followed up for three months after which they were retested to ascertain their serology status.
All women attending antenatal care below 18 years both married and unmarried were considered as mature minors and included into the study, however consent was sought from their parents before enrolling them into the study.

3.5 Exclusion criteria
Pregnant women with medical conditions or major complications in pregnancy were excluded from the study.

3.6 Sample Size Determination:
Different sample sizes were picked from different hospitals; that is Pumwani and Kakamega County Hospital. Secondly quantitative and qualitative methodologies were used to arrive at the sample sizes for the different sets of data required.
For quantitative data, the researcher set out to enroll many respondents into the study to cater for the ones who were likely for one reason or another to drop out of the study. Hospital records in June 2013 revealed a total monthly first time attendance of 256 and 213 for Kakamega and Pumwani study sites respectively. The researcher therefore decided to enroll the clients over a period of ninety days (three months) to be able to cater for attrition. The sample size was 213*3 = 768 and 213*3 = 639 for Kakamega and Pumwani sites respectively giving a total of 1,407 respondents.
Qualitative data at both study sites was collected during the second phase of the study upon retest. The sample size was determined by data saturation method. This means sampling to the point at which no new information is obtained and redundancy is achieved (Polit and Beck, 2010). Qualitative sample size determination is usually determined based on informational needs. Data saturation usually occurs after interviewing between 10 to 50 respondents. Saturation was achieved after interviewing 19 respondents and after conducting 4 key informant interviews.

3.7 Sampling Procedure
Consecutive sampling technique was employed whereby all accessible women in the hospital at the time of data collection period were approached.
Data collection was an ongoing process. It took between two to three months to finish enrolling all the women in the two study sites. Sampling procedure for qualitative data was done conveniently on first come first served basis and was concluded upon realization of data redundancy.

3.8 Pilot Testing
A month prior to commencement of the study, a pilot test was conducted at Mbagathi District Hospital during the month of May 2014, to ascertain questionnaire validity and reliability. According to (Hertzog 2008) and (Connelly 2008) 10% of the sample size is appropriate for use in a pilot test; the researcher recruited 116 clients for the pilot test, thirty five males (30%) and the rest (70%) were females. The questionnaire was mainly used to check for the adequacy of the research instruments as follows.
The questionnaire was evaluated for internal consistency whereby Cronbach’s alpha of +0.70 was realized and for equivalence the degree of error observed through interrater reliability procedures where the index of equivalence was calculated and found to be strong. Content validity of the questionnaire was also measured, giving a content validity index of 0.9. Quality control measures were deployed to ensure that the test kits were working correctly and that they were reporting accurate test results with a high degree of confidence. The test kits sensitivity and specificity was evaluated from literature. Sensitivity (95% CI) of 100% (99.1–100%) and an initial specificity (95% CI) of 97.9% (96.4–98.8%) was found.

For qualitative data, the in-depth interview guides were peer reviewed. These guides were developed in September 2013. Member check was also employed whereby the researcher allowed respondents to read the transcription of their interviews to ensure that these had been accurately recorded as recommended by (Koch 1994), (Cormack 2000), (Stake 2006) and (Polit & Beck 2010). The participants checked the guides to see whether they were clear concise and complete from 7th to 12th May, 2014 a month prior to commencement of the study at Mbagathi District Hospital.

### 3.9 Data Collection Tools

Quantitative data collection tools included interviewer administered semi-structured questionnaires. The respondents were given the option of using either English or Kiswahili questionnaires. HIV Rapid test kits were also used to test the clients to ascertain their serostatus. A Checklist was used to ascertain the important events during delivery and at the postpartum period. Qualitative data collection tools were an open-ended unstructured interviewer guide for clients as well as Key Informant Interviewees and a digital audio-recorder for capturing the interviews. For those who could not speak English the researcher and assistants used an interviewer guide translated in Kiswahili.

### 3.10 Data collection Methods

The respondents were taken through the questionnaire and their responses documented. They were then taken through pretest counseling for HIV before being tested, they were given the results after which post test counseling was done. The HIV test was done to generate data on initial HIV status for all the respondents. A repeat rapid HIV test was done at least three months after the initial test and interviews conducted on selected clients to determine determinants of seropositivity.

### 3.11 Data Management and Analysis

For quantitative data, participants provided details on demographics, HIV status, sexually transmitted infection (STI) symptoms, sexual activity with their husband and any other sexual partners and their husband’s behavior. The quantitative data was captured into Epidata then exported to Statistical Package for Social Sciences (SPSS) Version 20. Measures of central tendency and dispersion were generated for continuous variables for example age and income, while frequency tables displayed categorical variables for example marital status and level of education, among others. Chi-square test of association was used to check for any relationships between selected categorical variable and the outcome such as HIV infection, for example seroconversion states between the two sites Kakamega and Pumwani. A P-value of <0.05 was considered statistically significant.
For qualitative data, audio recorded responses were typed, a process called transcribing, the researcher engaged the services of a translator who translated the transcripts from Kiswahili to English. The Kiswahili version was then translated back to English to check whether any meaning had been lost. Each transcript was then checked against the original recording to ensure data accuracy. The researcher downloaded N-Vivo 10 computer assisted qualitative data analysis software. The transcripts were then exported into the computer software. The researcher used the software to do data coding, classification and synthesis as described. The researcher read through the transcript carefully while creating nodes and sub nodes in the computer software. The researcher worked closely with a qualitative research expert who examined the data for reliability and validity. Validity relates to the honesty and genuineness of the research data, while reliability relates to the reproducibility and stability of the data. The expert confirmed that the data was valid and reliable.

3.12 Data Presentation
After analysis of data from the two sites the report generated was in form of tables, graphs pie charts and narration. Qualitative data was presented in narration format whereby themes and subthemes were elicited from the recorded data. Poignant quotes were selected to support the themes. These quotes were italicized and underlined. The report that was generated was printed and bound with a hard cover.

3.13 Ethical Considerations
The researcher sought ethical approval from Great Lakes University of Kisumu Ethics Review Committee. Ethical clearance was also sought from the National Commission for Science and Technology (NACOSTI). NACOSTI then wrote letters to the county executives for Nairobi and Kakamega counties requesting them to allow the researcher carry out the study in their counties. This facilitated community entry of the researcher to the counties. The county executives then instructed the medical superintendents of the two hospitals to allow the researcher collect data in their facilities. Kakamega and Pumwani Maternity Hospitals Ethical Review Committees also scrutinized the proposal before granting the researcher an approval to carry out research. The researcher having been granted permission to conduct the research by the respective hospitals, then approached the ward in charges in the facilities prior to the commencement of the study and sought permission after informing them of the intent carry out research and the process that had been followed in gaining access to the hospitals. Informed consent was sought from adult respondents. For mature minors aged below 18 years, informed consent was sought from the respondents and their parents or guardian as well before engaging them in the study. This was done through detailed informed consent form that was read to the respondents, who in turn signed the consent form, showing that they had understood and agreed to participate in the research. In the letter, the researcher had highlighted the aims and purposes for research as well as perceived benefits and risks associated with the study. The respondents had been informed that participation was voluntary. Permission was sought from the respondents before recording the conversations on an audio recorder. Anonymity of participants was maintained by not using any identifiers or personal information in the data collection tools. All the information collected from respondents was treated with utmost confidentiality and the respondents had been informed that no information divulged to anyone unless they said so. Respect and dignity was upheld while collecting data by ensuring that no part of the procedure subjected the respondent to undue psychological discomfort by doing pre test and post test counseling. The women who were found to be HIV positive were started on antiretroviral therapy according to the Ministry of Medical services protocol.
4.0 Results:
4.1 Factors leading to HIV seropositivity - Quantitative findings;
Respondents were asked whether they had engaged in risky sexual behaviors during the current pregnancy and the responses were as follows; Majority of the clients in both sites had sex with a partner whose HIV status was unknown to them 72.2% vs. 98.1% for Kakamega and Pumwani sites respectively. However there was more extramarital affairs in Kakamega than Pumwani as follows; more respondents in Kakamega had engaged in sex with another partner other than their husband/partner (a one night stand) 10.5% vs. 9.1%, more respondents were aware that their spouses had other sex partners 4.4% vs. 3.2%, more respondents reported that they had co wives 5.9% vs. 3.7% more respondents reported that they had regular sexual partner other than their partner than husband 1.9% vs. 0.7% in Kakamega and Pumwani respectively. On the other hand, The chance of inconsistent condom use while engaging in sex with a non marital partner was higher in Pumwani than Kakamega 37.5% vs. 0%, the chance of respondent taking alcohol was twice as higher in Pumwani 4.7% than Kakamega 2.1%, the chance of engaging in sex with a non marital non cohabiting partner while high on alcohol was higher in Pumwani than Kakamega 16.7% vs. 0%. The chance that respondent’s spouse took alcohol was twice as high in Pumwani (30.4%) as in Kakamega (18.6%). However, there was a significant difference in the two sites in terms of inconsistent condom use with non marital partner; p = 0.028, sex with partner of unknown HIV status; p = 0.004, respondents taking alcohol; p = 0.015, spouses to respondents taking alcohol; p <0.001 and having a co wife p = 0.043 where p<0.05 as shown in the table 4.4 below;

From the results the factors that were significant in leading to HIV seropositivity were linked to engagement in risky sexual behaviors by the pregnant women as well as their spouses. Some of the risky sexual behaviors included; inconsistent condom use with non marital partners which was reported more by clients in Pumwani. The other risky sexual behaviour was indulgence in sex with partner of unknown HIV status, Alcohol intake among the respondents, Spouses to the respondents taking alcohol and having a co wife.

4.2 Factors leading to HIV seropositivity - Qualitative findings;
There were mainly four themes under this objective. These were unfaithful husband, unfaithful wife, window period and cultural beliefs.

4.2.1 Theme 1: Unfaithful husband
Majority of the respondents cited unfaithfulness on the part of the husband as a predisposition to HIV seroconversion during pregnancy. Among these, the majority; were from Kakamega. The unfaithfulness was mainly occasioned by long distance relationship.

4.2.1.1 Subtheme 1: Unfaithfulness occasioned by a long distance relationship;
Most of the respondents interviewed cited unfaithfulness occasioned by the fact that they lived far away from their spouses. Majority of these respondents hailed from Kakamega. When asked about what they thought predisposed them to HIV;
“We don’t live together always. He at times goes to work far from home since he is a mason and may spend over a week before we meet whereby he sleeps with other women.”(Respondent 2, from Kakamega)
“I believe my husband infected me. Most of the time I lived in the rural area while he lived in town said (respondent 5, from Kakamega)
“Generally some of the factors include; couples not staying together due to some factors like work and this leads to unfaithfulness in marriage. Most of the time it is the men who are more unfaithful than the women.” (Key Informant 1 from Kakamega)
“Upon arrival from his hometown, my husband would display very bizarre behavior like making calls from the toilet. Whenever I moved close he used to disconnect.” (Respondent 6 from Pumwani)

4.2.1.2 Subtheme 2: Alcoholism:
One respondent from Kakamega cited alcoholism as a major predisposing factor to HIV infection.
“In fact he is an alcoholic and is very reckless when drunk” (Respondent 6 from Kakamega).

4.3 Theme 2: Window period
One respondent who was a key informant cited window period as one of the factors that could lead to seroconversion in late pregnancy.
“Some women may have acquired HIV earlier and at the time for testing would be in window period and so on retesting they turn HIV positive.” (Key Informant 2, from Kakamega).

4.4 Theme 3: Cultural belief that sex is not right in pregnancy:
Most respondents all from Kakamega believed that sex is not the right thing to engage in while a woman is pregnant. This was a factor that encouraged couples straying from their matrimonial relationships.
“Some men don’t engage in sex with pregnant women with a belief that they will make the baby dirty. Since these women are still sexually active, perhaps even with higher libido, they decide to engage in extra marital affairs to gratify their urge and hence they contract the virus, since they have very low immunity the chance is far much great. (Key informant 1 from Kakamega).
Another reason is the sexually starved men who can’t sleep with their women with a belief of harming the babies seek sexual gratification from other women who might be infected and when they contract HIV they definitely will infect their wives at some point. Another issue is the culture of drinking mostly among men predisposes them to carelessly engaging in sex without using protection.” (Key informant 1 from Kakamega).
“I happened to be pregnant then, and he got into a relationship with another woman since I could not serve him due to my pregnancy.” (Respondent 3 from Kakamega)

4.5 Theme 4: Unfaithful wife
Some respondents cited that they had been unfaithful in their marriages and as such this had caused them to be infected in their pregnancy. Among these three the majority were from Pumwani.
“There was a man who was trying to get me a job so he cheated me and took me to a room. I told him to use protection and so I suspect he was the one who infected me, he slept with me twice and never got me the job.” (Respondent 8, from Pumwani).
“I had many sex partners I think since I was left alone, with no one monitored when I was coming at home or if I was coming at home all.” (Respondent 1, from Pumwani).
“Engaging in sex without protection…..” (Respondent 8, from Kakamega).
5.0 Discussion:

5.1 Factors leading to HIV seropositivity during pregnancy

Most of the factors leading to HIV seropositivity revealed in the study were mainly behavioural. Some of the predisposing factors included; Sex with non-marital partners, and having sex with multiple partners when high on alcohol. There was significance in the two sites in terms of inconsistent condom use with non marital partner popularly known as “mpango wa kando”, sex with partner of unknown HIV status; and having a co wife. These findings were consistent with those from a similar study done by (Dunkle et.al 2004, Dingeta et.al 2012 Kaiser et.al 2011, Ongeso 2013 & Bingenheimer, 2010) which revealed that multiple sex partners increased risk for HIV transmission, inconsistent condom use as well as substance use predisposed people to HIV seropositivity.

Qualitative study findings revealed the following four themes; Unfaithfulness on the part of the husband, unfaithfulness on the part of the wife, window period and cultural beliefs. The fact that there was Unfaithfulness by the male partner is consistent with study findings by (Dunkle et.al, 2004) that singled this out as a predictor to seropositivity. According to their study, high levels of male control in a woman’s current relationship were associated with HIV seropositivity.

The same findings were corroborated by (Dingeta et.al 2012), which highlighted the role of unfaithfulness in leading to HIV seropositivity. In their study, conducted among undergraduate students at Haramaya University, Ethiopia, they revealed that that half of the clients were having unprotected sexual intercourse with commercial sex workers. (Kaiser et.al 2011 & Ongeso 2013) also underscored the role played by extramarital sex in causation of HIV.

This study revealed that the unfaithfulness was occasioned mainly by long distance for the spouses not working in the same locality. These findings concurred with those from studies done by (Dunkle et.al 2004, Dingeta et.al 2012, Kaiser et.al, 2011 & Ongeso 2013) which revealed multiple sexual partners as a pinnacle to HIV transmission.

The finding that there was unfaithfulness from the part of the woman, agrees with those from a study done by (Dunkle et.al 2004, Kaiser et.al 2011, Ongeso 2013 & Kaiser et.al 2011) mentioned that transactional sex among the women in Soweto South Africa would place women at increased risk for HIV and increasing number of lifetime sexual partner as causation of HIV.

The theme on culture was raised by many women who cited beliefs that pregnant women should not engage in sex or at times are seen as unattractive to their husbands who seek sexual gratification from extramarital partners. The women as well would seek gratification from extra marital sexual partners. The other reasons for unfaithfulness on the part of the women would also be occasioned by absenteeism from the part of males either on duty far away from their homesteads. Some cultural practices have been known to propagate the spread of HIV. According to (Lindgren et.al 2005) women due to their social cultural socialization are vulnerable the women are to the men and could end up contracting HIV since they have no control over their reproductive health.

Window period is another theme that came up and this was raised by one key informant who mentioned that at times women seroconvert due to the fact that they were in window period. This is the time between infection with HIV and the appearance of detectable antibodies (by the rapid test kit) to the virus. The average window period with HIV for this research was 3 months. According to (Chetty et.al 2008) some of the tests kits used for screening have low sensitivity and therefore chance for error when used to screen for HIV.
6.0 Conclusion:
Factors that led to HIV seropositivity revealed from the study included; sex with non-marital partners, having sex with multiple partners and when high on alcohol. There was significance in the two sites in terms of inconsistent condom use with non marital partner popularly known as “mpango wa kando”, sex with partner of unknown HIV status; and having a co wife. Qualitative study findings corroborated the above findings and elucidated the following five themes; unfaithfulness on the part of the husband, unfaithfulness on the part of the wife, window period and cultural beliefs.

7.0 Recommendations:
There is need for intensification of eMTCT programs in urban settings to curb the runaway prevalence of pregnant PLHIV residing in urban settings. The Ministry of health is expected to formulate of Information Education and Communication materials (IEC) with an aim of evoking Behavior Change Communication (BCC) with regard to engagement in risky sexual behavior specifically in pregnancy especially on matters of Abstinence and faithfulness to one partner in marriage.
There is need of a paradigm shift in fighting HIV spread from targeting the peri-urban poor uneducated women to targeting the urban, wealthier middle class religious group since they are more at risk of seroconversion and MTCT
There is need to intensify HIV retesting during late pregnancy in line with Ministry of Health (MOH) guidelines since the likely group to seroconvert have already tested and are mostly unsuspecting.
Paradigm shift when targeting multiple sex partnerships in marriage unions, to focus also on women.

References:


Table 4.4: Predisposing factors to HIV seropositivity

<table>
<thead>
<tr>
<th>Factor</th>
<th>Kakamega</th>
<th>Pumwani</th>
<th>$\chi^2$-Value</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sex with non-marital Partner</td>
<td>2(10.5)</td>
<td>1(9.1)</td>
<td>3.282</td>
<td>0.164</td>
</tr>
<tr>
<td>Inconsistent condom use with mpango wa kando</td>
<td>0(0)</td>
<td>3(37.5)</td>
<td>6.857</td>
<td>0.028</td>
</tr>
<tr>
<td>Sex with partner of unknown status</td>
<td>13(72.2)</td>
<td>51(98.1)</td>
<td>11.406</td>
<td>0.004*</td>
</tr>
<tr>
<td>Having sex with mpango wa kando when high on alcohol</td>
<td>0(0)</td>
<td>1(16.7)</td>
<td>2.794</td>
<td>0.273</td>
</tr>
<tr>
<td>Injection drug use</td>
<td>0(0)</td>
<td>0(0)</td>
<td>Not applicable</td>
<td>Not applicable</td>
</tr>
<tr>
<td>Take alcohol</td>
<td>12(2.1)</td>
<td>27(4.7)</td>
<td>5.971</td>
<td>0.015</td>
</tr>
<tr>
<td>Spouse take alcohol</td>
<td>104(18.6)</td>
<td>168(30.4)</td>
<td>20.711</td>
<td>&lt;0.001*</td>
</tr>
<tr>
<td>Spouse have other sexual partner</td>
<td>25(4.4)</td>
<td>18(3.2)</td>
<td>2.276</td>
<td>0.320</td>
</tr>
<tr>
<td>Have a co-wife</td>
<td>33(5.9)</td>
<td>21(3.7)</td>
<td>5.488</td>
<td>0.043</td>
</tr>
<tr>
<td>Other sexual partner</td>
<td>11(1.9)</td>
<td>4(0.7)</td>
<td>4.207</td>
<td>0.074</td>
</tr>
<tr>
<td>Know their HIV status</td>
<td>1(11.1)</td>
<td>0(0)</td>
<td>0.244</td>
<td>1.000</td>
</tr>
</tbody>
</table>