

# Health Facility Factors Influencing Pregnancy Preparedness by HIV Positive Women in Seme Sub-County, Kenya

<sup>1</sup> Stephen Otieno Oyule\*, <sup>2</sup> Dr Louisa Ndunyu, <sup>3</sup>Prof David Sang

<sup>1,2,3</sup>, Maseno University, Kenya.

**Correspondence author:** soyulez@yahoo.com

**Abstract:** *Pregnancy preparedness is a precautionary measure for readiness to conceive. It encompasses readiness of a health provider and HIV positive women to contain possible risk factors for mother-to-child HIV transmission. Government efforts on health facility pregnancy-preparedness have been in place since 2016 through availability of key healthcare services itemized in a standard Reproductive Health Screening tool for all HIV positive women of reproductive age. The prevalence of pregnant HIV positive women in Seme Sub-County is 18%. Despite pregnancy preparedness, perinatal HIV transmissions are still reported. A cross sectional study was conducted in 24 public health facilities in Seme Sub-County using a sample size of 132 from a target population of 200. Data was collected using questionnaires. Frequency and percentages were used to assess health facility factors. Bivariate logistic regression analyses were used to test the association between the health facility factors and pregnancy preparedness. HIV positive women using contraceptives were more likely to be prepared as compared to HIV positive women who did not use (OR=1.914; 95%CI=1.511–4.672). Women who underwent pregnancy assessments during routine ART visits were more likely to be prepared (OR=2.65; 95%CI=1.117 – 5.578); women whose pregnancy intentions were screened were one and half times more likely to be prepared (OR=1.562; 95%CI= 0.584– 4.533) compared to those who were not screened for pregnancy intentions. HIV positive pregnant women initiating / continuing with ART and adhering to the same were more likely to be prepared (OR=2.97; 95%CI = 1.245 – 4.669) compared to those who did not. Clinicians and other health care providers should optimize the utilization of the Ministry of Health standard Reproductive Health Screening tool for women on ART as a way of strengthening health facility factors for pregnancy preparedness.*

**Keywords:** *Pre-pregnancy Contraceptive usage, Pregnancy assessment, Pregnancy intention screening and ART initiation/continuation and adherence in pregnancy.*

## 1. Introduction

Pregnancy preparedness is a precautionary measure for readiness to conceive. It encompasses readiness of a health provider and HIV positive women to contain possible risk factors based on the available information for mother-to-child HIV transmission (National AIDS & STI Control Program [NASCOP], 2018). At the health facility level, HIV Care providers in Antiretroviral (ART) clinics are to use an assessment tool that encompasses pregnancy status, pregnancy intentions, contraceptive status and a suppressed viral load level as a trigger to

preparedness for desired outcome. Currently the total Kenyan fertility rate is 2.8 births per woman, which is higher in rural areas, at 4.5 children, compared with urban women's 2.8 children. In a report (PEPFAR, 2018) based on parity, since the 1970s, a Kenyan woman has had an average of more than eight births, thereby increasing the country's population steadily every ten years. However, this growing population is threatened by HIV infections especially new infections through mother to child HIV transmissions.

In 2017, an estimated 330,000 children became newly infected with HIV worldwide. Over 90% of these infections were acquired through mother-to-child transmission (MTCT), and more than 90% of these occurred in sub-Saharan Africa. Worldwide, HIV accounts for 1.5% of all deaths in infants younger than 12 months of age and 4.9% of deaths in 1 - 4-year-old children. In Namibia, according to the National Sentinel Serosurvey (2016), the prevalence of HIV among pregnant women has increased from 4.2% in 1992 to 19.9% in 2016. The estimated number of pregnant women in 2006 was 64,134. Given the ANC HIV prevalence rate of (19.9%), an estimated 12,634 pregnant women were therefore infected with HIV. Without any intervention, it is estimated that about a third, or 4,211 babies born to these mothers, would be infected with HIV (UNAIDS, 2016).

In 2015, a Global Plan was launched to minimize cases of new HIV infections through mother-to-child transmission by 99% by 2022. WHO acknowledged 22 countries, with top 10 being Botswana, Angola, Cameroon, Burundi, Côte d'Ivoire, Chad, Democratic Republic of the Congo, Ethiopia, Ghana and India) justifying 75% of the world PMTCT service required. It is approximated that efficient interventions in these countries would avert over 300,000 new cases of infections yearly. Kenya is also one of the 22 countries that jointly justify 90% of all pregnant women living with HIV. The country justifies 4% of all new pediatric HIV cases globally and 7% of all infant deaths, and every year an approximated 13,000 new HIV cases takes place among Kenyan children. Kenya became part of the *Global Plan towards the Eradication of New HIV Infections among Children*

*by end of 2020 and Keeping Their Mothers Alive*, which seeks to minimize MTCT to below 5% by 2015 and avert maternal mortality. For these goals to be achieved, over 90% of HIV-infected mothers required to be identified via screening and receiving antiretroviral drugs and other intervention measures for preventing MTCT (KNBS, 2014).

***Pregnancy Preparedness in the context of Prevention of Mother to Child Transmission, Ministry of health, Kenya***

In 2012, Kenya launched a plan for elimination of MTCT which involved the joint United Nations Programme on HIV/AIDS (UNAIDS) four-pronged strategy that included providing HIV prevention services for women of reproductive age with reproductive health services; opt-out HIV testing during pregnancy and for HIV-infected pregnant women, an access to antiretroviral prophylaxis during pregnancy and the immediate postpartum period; safe delivery methods, anti-retroviral prophylaxis for infants during breastfeeding and promotion of exclusive rather than mixed breastfeeding; provision of contraceptives to women living with HIV for family planning and provision of treatment, care and support for women and children living with HIV infection and their families.

Coverage of HIV testing among pregnant women in Kenya is now above 80%. In line with the Global Plan towards the Elimination of New HIV Infections among Children by 2020 and keeping their mothers alive, pregnant women living with HIV must take ARVs, give birth safely in hospitals, ensure appropriate infant feeding, have their children tested within two months of birth and continue with other

post-natal healthcare services. Therefore, pregnancy preparedness among HIV positive women is one of the elements of focused ante-natal care, with the aim of reducing or eliminating the HIV incidences in infants attributable to MTCT (World Health Organization; United Nations AIDS; United Nations Children's Fund, 2015).

Current Kenya HIV guidelines (2018) are aimed at Prevention of Mother-to-Child Transmission of HIV (PMTCT) and is offered as part of a comprehensive package of integrated, routine antenatal care interventions. The guidelines recommend that ART be initiated for all pregnant and breastfeeding women living with HIV, regardless of gestational age, WHO clinical stage and at any CD4 count, and continued lifelong. ART should be started, ideally, on same day as HIV diagnosis with ongoing enhanced adherence support including community-based case management and support. For pregnant and breastfeeding women newly initiated on ART, a Viral Load (VL) sample is obtained 6 months after initiation, if more than 1,000 copies/ml, intensify adherence and a repeat of VL after 1 month and is advised. If still more than 1,000 copies/ml, ARV regimen is changed to an effective regimen. If less than 1,000 copies/ml, repeat viral load every 6 months until end of breastfeeding then follow-up as for general population, annually (PEPFAR, 2018). For HIV positive women on ART for > 6 months, obtain a VL as soon as pregnancy is confirmed. If the VL is more than 1,000 copies/ml, intensify adherence, repeat the VL after 1 month and if still above 1,000 copies/ml, change to an effective regimen (National AIDS & STI Control Program [NASCO], 2018). If < 1,000 copies/ml, repeat viral load every 6 months

until end of breastfeeding then follow-up as for general population, annually. HIV exposed infant (HEI) should receive 12 weeks of ARVs for infant prophylaxis, consisting of 6 weeks consisting of AZT+ NVP, followed by 6 weeks of daily NVP. Early Infant Diagnosis (EID) is recommended for prompt diagnosis and HAART initiation for infected infants, and discharge from follow up – of HIV negative infants. This is done through DNA PCR tests by 6 weeks, 6 months and 12 months, with a follow up antibody test at 18 months as per national algorithm for EID (National AIDS & STI Control Program [NASCO], 2018).

#### ***Prevention of Mother to Child Transmission/MOH Program in Kisumu County***

In Kisumu County, the HIV prevention, care and treatment program in Seme Sub-County is managed through a hub and spoke model with Kombewa County Hospital as a central site and 23 other satellite clinics feeding into it. There are 24 health facilities all of which are supported by US-PEPFAR HIV program implementation. Operationally, the National AIDS & STI Control Program, Ministry of Health Kenya and implementing supporting partners run the program in line with MOH guidelines, which are reviewed from time to time. Currently, the 2018 edition of the “*Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV Infection in Kenya*” is being implemented in both ART and PMTCT clinics (PEPFAR, 2018).

The guideline consists of substantial changes and a paradigm shift in the treatment and prevention of HIV infection by recommending ART as prevention, despite level of immunity and recommends same day

initiations, especially for pregnant HIV positive females. The HIV prevalence is 14.9% according to the UNAIDS Estimate for Nyanza, 2016 with an estimated 3,535 expected annual pregnancies in the program site catchment population (National AIDS & STI Control Program [NAS COP], 2018). As a central site, key operational activities for the rest of the clinics are coordinated through Kombewa include personnel deployments, drug and lab reagent central stores, monthly indicator data tracking and liaison / technical staff offices. Additionally, clients are referred for further medical and psychosocial services from the lower level health facilities. In this approach, the quality of care is sustained through staff and client empowerment via continuous training, regular updates and clinical mentorship.

This implies that the care of an HIV-infected pregnant woman is multidisciplinary and involves HIV specialists, obstetricians, and paediatricians, as well as educators and social service providers. Initial assessment of the parturient should include an evaluation of CD4 cell counts, HIV RNA plasma load, determination of the need for prevention of opportunistic infection, and baseline evaluation of general maternal health, including vaccinations, comorbidities, complete blood cell count, and renal and liver function testing (NAS COP, 2018). A history of previous exposure to antiretroviral medications and documented resistance is essential. The women are counselled about the known benefits and the potential risks of antiretroviral therapy. Women with very low or undetectable viral loads are also counselled about the use of antiretroviral therapy, because it has been shown to be efficacious, even among this group of women. According to

District Health Information System 2 (DHIS 2, 2019) the prevalence of pregnant HIV positive women in Seme Sub-County is 18%. Kenya Demographic Health Survey (NAS COP, 2014) demonstrates that of the 33% self-reported HIV positive women, 56% of infants born to these women were reported to be HIV-infected.

From latest program-level data, (DATIM, 2018) 7 out of every 10, and 8 out of every 10 women were already diagnosed with HIV prior to ANC visits for the periods October 2016 to September 2017 & Q1FY19 and between October 17 to September 2018, respectively. Table 1 shows the summary of the latest program-level data on Prevention of Mother to Child Transmission (PMTCT) status indicator, revealing higher-than national (60%) known-positivity trends of the HIV positive pregnant women.

TABLE 1:  
THE TREND OF THE HIV POSITIVE PREGNANT WOMEN

Period	(KPs)	NP	TP	% KPs
Oct 2016 – Sept 2017	546	415	131	76%
Oct 2017– Sept 2018	672	549	123	81%
Q1 FY19 -Oct 2018- Dec 2018)	129	100	29	78%

Source: PEPFAR (2018)

Key: *Known positives (KPs), NP (New positives), TP (Total Positives)*

### 1.2 Statement of the Problem

Pregnancy preparedness is precautionary measures for being ready to conceive and encompasses readiness of a health provider and HIV positive woman to contain possible risk factors based on the available information for mother-to-child HIV transmission. It encompasses assessment pregnancy status, pregnancy intentions, contraceptive status and

a suppressed viral load level for HIV positive women of reproductive ages of 14 to 49 years. According to (National AIDS & STI Control Program [NASCOPI], 2018), the prevalence of pregnant HIV positive women in Seme Sub-County is 18%. Besides, Seme Sub-County recorded the highest percentages of known positives among pregnant mothers as compared to the neighboring Sub-Counties in Kisumu County (DATIM, 2018). Government efforts on pregnancy preparedness have been in place since 1992 through NASCOPI strategies. Despite this, 33% of women aged 15-54 years with self-reported HIV positive status who had a live birth between 2012-2016 in Seme Sub-County, had 56% of their infants reported to be HIV-infected. The present study therefore, sought to investigate health facility factors influencing pregnancy preparedness among the HIV positive women in Seme Sub-County.

### **1.3 Purpose of the study**

The purpose of this study was to investigate health facility factors influencing pregnancy preparedness by HIV positive women in Seme Sub-County.

## **2.0 LITERATURE REVIEW**

### **2.1 Empirical Literature Review**

The importance of studying the health facility factors influencing pregnancy preparedness lies in the fact that it is the site that readily lends itself to interventions. In a study conducted in Botswana, women receiving treatment and those who declined treatment, community members and health workers stated that the negative

attitude of some health workers posed a barrier to participation in PMTCT services (Asefa & Mitike, 2014). The two studies illuminated the ways in which health facility factors' dynamics shape the uptake of services, pointing to the need to explicitly examine the structures in which services are provided and the processes involved in provider-patient interactions, to fully understand the influence of the service delivery context on women's uptake of and follow-through with PMTCT services and pregnancy preparedness. Similarly, (Rujumba, James, Tummine, Stella, & Harald, 2012) conducted a study in Eastern Uganda aimed at listening to health workers and gaining lessons for strengthening the programme for the prevention of mother to child transmission of HIV. They noticed that there was no consistency of drugs supply to the facilities and hence another challenge for running the PMTCT programme had cropped up. Consequently, some of the study sites reported running out of test kits and Nevirapine for mothers and babies. Other sites even decided to refer the needy mothers to the larger centres and hospitals where drugs were more readily available. Generally, the whole process of going to one clinic and then being referred to another large centre or hospital became very costly for women and their families.

Findings from the study done in Eastern Uganda by (Rujumba, James, Tummine, Stella, &

Harald, 2012) while listening to the health workers on ways of strengthening the PMTCT programme showed the need of more training on PMTCT to update their own knowledge and skills. The participants emphasized the importance of continuous skill development and up-dating of health workers on the latest developments and knowledge in PMTCT and HIV/AIDS fields as vital measures for effectively managing PMTCT programmes. The same study indicated the need for adequate numbers of health workers to minimize the ever-expanding heavy load in order to strengthen the PMTCT programme. The study done in South Africa by (Sprague, Mathew, & Black, 2011) investigated if health system weakness constrained access to PMTCT and maternal HIV services. The study findings showed that there was poor data management in PMTCT programmes. Some participating sites where there was no computer the information was recorded manually, and after comparing the recorded indicators and the actual tallied figures the result reflected only a portion of PMTCT and ART activity, and generally the data collected was of poor quality.

One of the National Reproductive Health Policy 2007 objectives of the Kenya Government is to contribute to reduction of the HIV and AIDS burden and improve the reproductive health status of the affected and infected persons. It acknowledges that there is an unmet need for

reproductive health services among HIV-infected persons especially among the HIV positive pregnant women. The government needs to address stigma, negative attitudes of service providers, knowledge gaps regarding interactions of antiretroviral drugs and contraceptive methods (National AIDS & STI Control Program [NAS COP], 2018). The Division of reproductive health in the year 2016 identified the following weaknesses in Kenya: Inadequate space, insufficient training and inadequate numbers of health workers to cope with the PMTCT workload. A study done by the Ministry of health at one hospital and 4 health centers in Embu, eastern province, Kenya in the year 2006, observed that health care providers' knowledge on prenatal care was weak in several components of maternal and unborn care and they needed training on a comprehensive package of skills. In the year 2001, member states of the United Nations set targets as part of the UNGASS declaration to reduce the proportion of infants infected with HIV by 50% by 2010. This was by ensuring that 80% of pregnant women accessing antenatal care have information, counseling and other HIV prevention services available to them. Currently the programme has faced challenges mainly because the services are not enough and existing services do not reach many women in need due to poor resources and infrastructure. In a study (Puchalski, Lettow, & Straus, 2019) conducted in Nairobi Kenya found that only 20% of antenatal

mothers had been given single dose Nevirapine at the first clinic visit, 31% receiving contraception counselling while there was high coverage (88%) of PMTCT counselling since the study focused on sending text messages reminding mothers on the same. Improving efficiency of PMTCT programs means addressing certain issues: Accessibility, clinic resources especially well trained human resource, testing methods, fear and distrust of health workers, disclosure and discrimination, drug effectiveness, treatment of mothers and feasibility of replacement feeding (World Health Organization; United Nations AIDS; United Nations Children's Fund, 2015). At each clinic visit, the health workers are expected to continue with adherence counseling. Adherence counseling should be an ongoing process carried out by all health care workers to reinforce the messages (National AIDS & STI Control Program [NAS COP], 2018).

## 2.2 Conceptual Framework

### Independent Variable

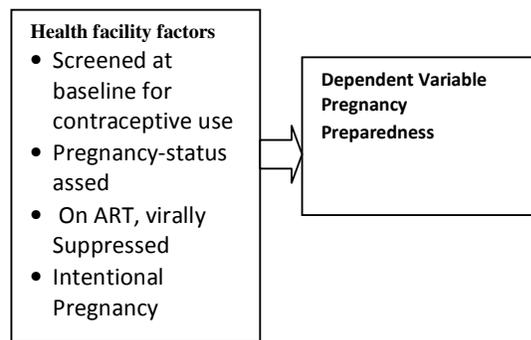


Figure 1: Conceptual Framework

### 2.2.1 Measurement of variables

In this study, independent variable was health facility factors: The health facility factors measured in the study were availability of key healthcare services with an impact on pregnancy preparedness using a standard MOH RH screening tool, which are screened at baseline for contraceptive use, pregnancy-status asessed, On ART, virally Suppressed and Intentional Pregnancy. The dependent variables were measured through pregnancy preparedness. According to the frame work Fig. 1, the independent variable influences directly the dependent variable.

## 3.0 METHODOLOGY

### 3.1 The Study Area

This study was done in Seme Sub-County within Kisumu County.

#### *Population Characteristics of the Study Area*

The region has four administrative divisions namely Upper Kombewa, East Othany, West Othany and Lower Kombewa. Based on gender distribution, the female constitute of 52% of the entire population, while their male counterparts composed of 48% of the population. Most of the households in this Seme

Sub-County male-headed (68%) while female-headed households constituted 28% and youth headed households 8%. A typical household in the sub county had an average of six members. Based on education, level of the head of household to some extent usually influences pregnancy preparedness among the HIV positive women (County Government of Kisumu, 2018). In Seme Sub-County, about 76% of all the household heads had attained upper primary and secondary school level of education. Those who had attained certificate/vocational level of education and above are only 11%. Female adult headed households constituted 18% of all the households interviewed, 25% of whom have no formal education, while 63% had attained upper primary and secondary level of education (County Government of Kisumu, 2018).

#### *Health Status*

The national figures show Nyanza has the highest HIV prevalence rates in Kenya at 16.1 per cent compared to the national average of about six per cent. According to (MOH/NASCOP guideline, 2016) nearly 50 percent of all the people living with HIV in the Country live in six counties with the four from the lake region, that is Kisumu, Siaya, Homabay and Migori topping the list and Nairobi and Mombasa clocking the six. In fact, source report revealed that eight women between the age of 15-45 contract HIV every single day in Kisumu a county that has a higher prevalence rate at 25 higher than that of the national estimates which was at six percent (National AIDS & STI Control Program [NASCOP], 2018). Seme Sub-County being one of the sub counties in Kisumu County has also registered high HIV prevalence rate especially among the sexually active and fertile women (PEPFAR, 2018). Therefore, the study was

conducted in Seme Sub-County, in health facilities linked to Kombewa County Hospital and targeted HIV positive pregnant women attending ANC in public hospitals in the region. According to data obtained from (DHIS 2, 2019) this region is one of the sub-counties in Kisumu County. The region has 14 dispensaries (Arito Langi, Asat beach, Barkorwa, Kolenyo, Korwenje, Onyinjo, Oseure, Otieno Owalla, Oriang Alwala, Oriang Kanyadwera, Lwala Kadawa, Dago Jonyo, Kuoyo Kaila , Langi Kawino), 8 Health centers (Bodi, Manyanda, Miranga, Nduru Kadero, Oapla, Ratta, Rodi, Lolwe) and 2 Hospitals: Kombewa County Hospital, MUH (see Appendix VIII). As at March 2018, 10,361 people were reportedly on antiretroviral therapy cumulatively in the health facilities. With the release of current ‘*Guidelines on Use of Antiretroviral Drugs for Treating and Preventing HIV Infection in Kenya, 2018 edition*’ by NASCOP all health facilities offer ART to HIV positive pregnant women and continuously also implement the reproductive health package in HIV settings for females of reproductive age of 14 to 49 years. Apart from ART and reproductive health packages, the other services offered as MOH policy include Positive health, dignity and prevention, gender based violence, HIV education/counselling. These encompass disclosure of HIV status; partner/ family testing, condom use, family planning, sexually transmitted infections screening and adherence services. The other packages include screening for and prevention of specific opportunistic infections, non-communicable diseases, mental health, nutrition services and prevention of other infections. Kombewa county hospital is the central site for the rest of the facilities in terms of

referrals, technical support, supplies and HIV program data management.

### ***Geographical Description of the Study Area***

Seme Sub-County is one of the Sub-Counties in Kisumu County and lies within *longitudes* 33° 20'E and. 35° 20'E and *latitudes* 0° 20'South and 0° 50'South. The Sub-County borders Siaya County to the west and Kisumu West Sub-County to the north, Rachuonyo Sub-County to the South and Kisumu Central Sub-County to the east. The Sub-County has one division (Kombewa division). It has a geographical area of 190.20 sq. Km, including water surfaces, and a population of 98805 persons (KNBS, 2010).

### ***Socio-Economic Description of the Study Area***

The main economic activities include, small scale fishing, crop farming in the area includes cereals, vegetables, legumes and tuber crops narrowed to maize grains, sorghum, *sukuma wiki*, groundnuts, and fruits. It has tourist attractions at Ndere Islands, Kit Mikayi volcanic remains. Even though the Kisumu Bondo highway passes through the Sub-County, its road network is not yet fully developed, most roads are weather roads hence some schools, most of which are day schools, are not accessible so the learners have difficulties in reaching their schools in the required time (County Government of Kisumu, 2018).

### **3.2 Research Design**

A research design refers to the way or plan to be followed when conducting the study. Given that this study was facility based and retrospective in nature, it adopted a cross sectional descriptive design. A cross-sectional design collects data to make inferences about a population at one point in time. According to (Bryman, 2008) this design is a snapshot of the

populations about which they gather data. Cross-sectional studies may be repeated periodically; however, in a repeated cross-sectional descriptive design respondents to the survey at one point in time are not intentionally sampled again, although a respondent to one administration of the survey could be randomly selected for a subsequent one. Therefore, data was collected from the study population at one time to examine factors influencing pregnancy preparedness by HIV positive women in Seme Sub-County. This design was chosen because it is applicable for collecting data on perceptions, attitudes and behaviour using questionnaires in studies which involve larger samples.

### 3.4 Study Population

Population means all elements and people who share one or some common quality in a special geographical scale. In addition, (Babbie, 2003) describe a population as the total collection of elements whereby references have to be made. The study population was HIV positive pregnant women and clinical officers. This study was conducted among HIV positive pregnant women. According to program level data in the President’s Emergency Plan for AIDS Relief (PEPFAR) reporting system for Data for Accountability, Transparency and Impact Monitoring (DATIM) database, there were 200 HIV

positive pregnant women in the Sub-County. This was the target population from which the sample size was drawn for the study.

### 3.5 Sample Size

The sample size was determined using the (Krejcie & Morgan, 1970) table which allows a sample of 132 to be a representative sample of the targeted 200 accessible population of HIV positive pregnant women and those that delivered, in Seme Sub-County. The sample size was further calculated by the simplified Krejcie and Morgan formula as depicted below;

$$n = \frac{x^2NP(1 - P)}{d^2(N - 1) + x^2P(1 - P)}$$

Where;

$x^2$ = table value of chi-square @ d.f =1 for desired confidence level 0.05

$N$ =Population Size

$P$ =Population proportion (assumed to be .50)

$d$ = degree of accuracy (expressed as a proportion 0.05)

This implies that;

$$n = \frac{3.84 \times 200 (.50)(1 - 0.50)}{0.05^2 (.50) + 3.84 (.50)(1 - .50)}$$

$$n = 132$$

Seme Sub-County and have consented to the study.

### 3.6.2 Exclusion Criteria

- i. Pregnant HIV positive women who were ill or unwell requiring medical attention at the time of the study.

### 3.6 Inclusion and Exclusion Criteria

#### 3.6.1 Inclusion Criteria

- i. Pregnant HIV positive women attending ANC services at the health facility of Seme Sub-County
- ii. Pregnant HIV positive women attending ANC services at the health facility of

- ii. Pregnant HIV positive women who were not permanent residents of Seme Sub-County
- iii. Pregnant HIV positive mothers who attended ANC services outside the 24 study area health facilities but coming for enquiries.

### 3.7 Sampling Technique

In selecting the public health facilities in Seme Sub-County, the study used census-sampling technique to select all the 24 public health facilities in the sub County. For the respondents (HIV positive women) the study used systematic sampling technique. This is a type of probability sampling method in which sample members from a larger population are selected according to a random starting point and a fixed, periodic interval. This interval, called the sampling interval, is calculated by dividing the population size by the desired sample size. In this study, the sampling started by selecting a respondent from the list of 200 HIV positive pregnant women, at random and then every  $k^{\text{th}}$  element in the sampling frame was selected, where  $k$ , the sampling interval (sometimes known as the *skip*): this is calculated as:

$$K = \frac{N}{n}$$

where  $n$  is the sample size, and  $N$  is the population size.

From the sampling frame, a starting point was chosen at random, and choices thereafter were at regular intervals. Therefore, in selecting 132 respondents from a sample frame of 200 HIV

positive pregnant women, the sampling interval  $k$  was:

$$K = \frac{200}{132}$$

$$k = 1.5$$

This implies that in selecting 132 respondents from 200 population,  $200/132=1.5$ , so every second respondent was chosen until 132 respondents was attained. Using this procedure each respondent in the population has a known and equal probability of selection. However, it is not the same as simple random sampling (SRS) because not every possible sample of a certain size has an equal chance of being chosen (e.g. samples with at least two elements adjacent to each other was never chosen by systematic sampling). It is however, much more efficient (if variance within systematic sample is more than variance of population). This technique is also preferred because the given population is logically homogeneous. Participants were contacted during clinic visits and interviewed in private rooms within Maternal and Child Health Clinics.

### 3.8 Data Collection Instruments

This study used questionnaire, which was used to gather quantitative data from HIV positive pregnant women attending their ANC clinics at Seme Sub-County.

### 3.9 Data Analysis techniques

Data analysis was done using both descriptive and inferential statistics. Descriptive statistics (frequency and percentages) was used to assess health facility factors. The collected data was

entered and analyzed using SPSS version 22. Data was checked for consistency and completeness, and then descriptive and analytic computations were carried out. Bivariate binary logistic regression model was fitted to the data to identify variables associated with the dependent variable, where  $P \leq 0.05$  were considered statistically significant.

#### 4.0 FINDINGS

##### 4.6 Health facility factors and Pregnancy Preparedness by HIV positive Women

The forth study objective sought to investigate health facility factors influencing pregnancy preparedness among HIV positive women. To this end, each respondent was probed on whether her “current” pregnancy was planned. Additionally, the researcher utilized the MOH basic RH basic screening tool to establish prior contraceptive usage, pregnancy assessment and ART Initiation/continuation and adherence during pregnancy. Results were as shown in subsequent Tables and figures.

##### 4.6.1 Planned Current Pregnancy

Respondents were also asked to indicate whether their current pregnancies were planned. The results were as shown in Figure 2



Figure 2: Planned Current Pregnancy

The study found that out of the 132 respondents that took part in the study, majority of the respondents at 86% revealed that their current pregnancies were not planned, while only 14% indicated otherwise.

##### 4.6.2 Contraceptive Usage Discussion

Respondents were asked health care workers discussed contraceptive usage during their routine HIV care clinic appointments. Figure 3 shows the response

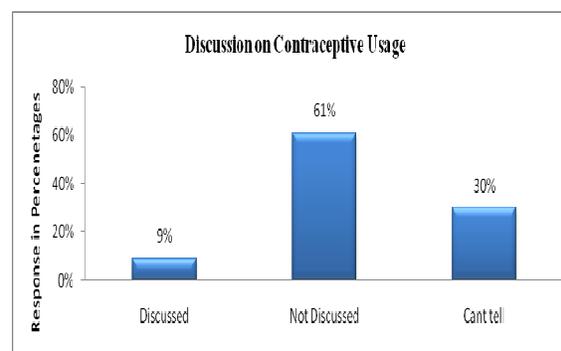
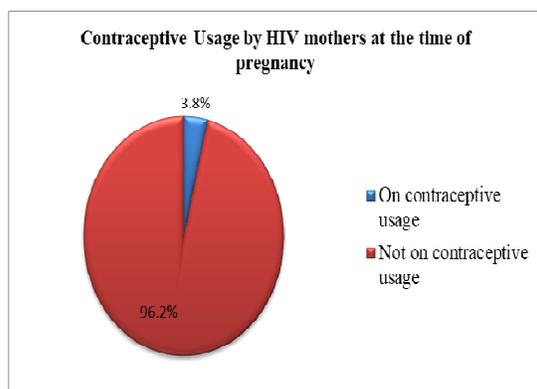


Figure 3: Contraceptive Usage

The study established that over two thirds of the respondents at 61% disagreed that they had discussed contraceptive usage with their healthcare providers. Only 9% had discussed this issue, while 30.0% remained neutral on the question.

##### 4.6.3 Contraceptive usage by HIV women at the time of pregnancy diagnosis

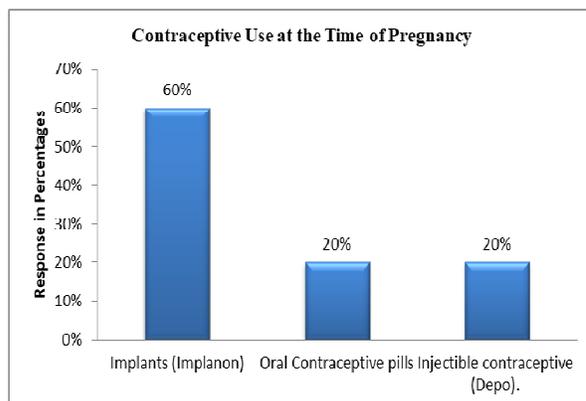
On contraceptive usage, the study found that at the time of pregnancy diagnosis, most of the respondents at 127(96.2%) were not on contraceptives. However, a few women 5(3.8%) were on contraceptives.



**Figure 4: Contraceptive usages by HIV women at the time of pregnancy diagnosis**

#### 4.6.4 Contraceptive Method used by HIV women at the Time of Pregnancy

Respondents were asked to indicate the type of contraceptive method they used prior to the current pregnancy diagnosis (Figure 5).

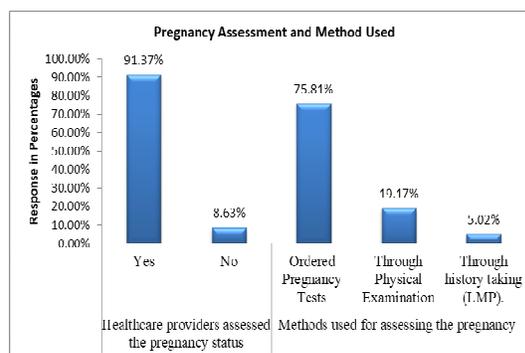


**Figure 5: Contraceptive Usage at the Time of Pregnancy**

The study found that 5(3.8%) of the respondents conceived while on a method, most 3(60%) of whom were on implants (Implanon), 1(20%) using oral contraceptive pills and 1(20%) on injectible contraceptive (Depo).

#### 4.6.5 Pregnancy Status Assessment

The study sought to find out whether healthcare providers assessed their pregnancy status and the method used for assessing the pregnancy (Figure 6).



**Figure 6: Pregnancy Assessment**

Majority of the respondents in fact all at 91.37% agreed that health care providers assessed their pregnancy status. Only 8.63% disagreed with statement. On method used, the study found that in most cases, ordered pregnancy tests were used as shown by three quarters of the respondents at 75.81%. Only 19.17% indicated that they were assessed through physical examination, while 5.02% were assessed through history taking (LMP).

#### 4.6.6 Pregnancy Intention Screening

As part of pregnancy preparedness, respondents were asked if the clinical officers in the HIV Care Clinics assessed their pregnancy intentions (Table 2).

**TABLE 2  
PREGNANCY INTENTION SCREENING**

Asked about Pregnancy intention (before pregnancy)	Frequency	Percentage
Yes	60	45.5
No	72	54.5

The study found that most 72 (54.5%) of the respondents were not screened for their future pregnancy intentions, while undergoing HIV care. Sixty respondents (45.5%) indicated that they were screened for their future pregnancy intentions as a way of reproductive health

screening in HIV care clinics, before conception and subsequent referral to ANC.

**4.6.7 ART Initiation/continuation and Adherence in Pregnancy**

Respondents were probed on their knowledge on ART practices and adherence during pregnancies (Table 3)

**TABLE 3**  
**ART INITIATION/CONTINUATION AND ADHERENCE IN PREGNANCY**

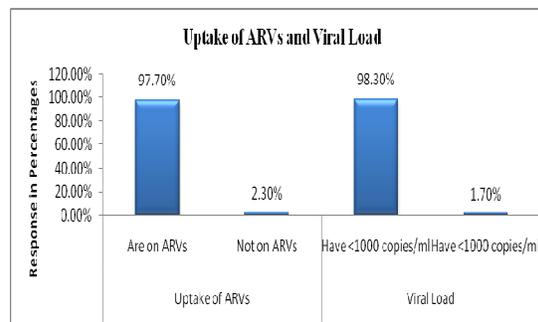
Statement	Yes		No	
	F	%	F	%
HCWs discussed ART practice to achieve viral load of <1000	127	96.2	5	3.8
Client believe that being on HAART and viral load of <1000 copies/ml reduces HIV transmission	124	94.0	8	6.1

The study found that most of the respondents at 96.21% confirmed that clinical officers discussed ART Initiation/continuation and adherence to achieve viral load of <1000 copies/ml, while only 3.79% indicated otherwise. Most respondents at 93.94% agreed with the statement that being on HAART and achieving viral load of <1000 copies/ml reduces HIV transmission. Only 6.06% did not agree with the statement.

**4.6.8 Uptake of ARVs and Viral Load**

Using secondary data from the health facilities in Seme Sub-County, it was found that among

the 132 HIV pregnant women, 97.7% were on ARVs, while only 2.30% were not under ARVs (See Figure 7)



**Figure 7: Uptake of ARVs and Viral Load**  
On those on ARVs, 98.3% had <1000 copies/ml, while 2% have >1000. However, those who were not on ARVs explained that they are active follow up at the facility.

**4.6.9 Association between Health Facility Factors and Pregnancy Preparedness among HIV Positive Women**

In order to determine the association between Health Facility Factors and pregnancy-preparedness among HIV positive women, bivariate logistic regression analysis was conducted with indicators of health facility factors as the predictors namely; contraceptive usage, pregnancy assessment, pregnancy intention screening and ART initiation/continuation and adherence and pregnancy preparedness as the outcome variable. Binary logistic regression output (Table 4)

**TABLE 4**  
**ASSOCIATION BETWEEN HEALTH FACILITY FACTORS AND PREGNANCY PREPAREDNESS**

	Pregnancy Preparedness			OR (95% CI)	P value
	Total	Yes	No		
<b>Contraceptive Usage</b>					
Non usage	127	20(15.7%)	107(84.3%)	1	0.009
Usage	5	4(80.0%)	1(20.0%)	1.914 (1.511– 4.672)	
<b>Pregnancy Assessment</b>					
Not Assessed	12	2(16.7%)	10(83.3%)	1	0.001
Assessed	120	107(89.2%)	13(10.8%)	2.65 (1.117 – 5.578)	
<b>Pregnancy Intention Screening</b>					
Not Screened	72	7(9.7%)	65(90.3%)	1	0.043
Screened	60	55(91.7%)	5(8.3%)	1.562 (0.584 – 4.533)	
<b>ART Initiation/continuation and Adherence</b>					
Non Adherence	3	0(0.0%)	3(100.0%)	1	0.022
Adherence	129	123(95.3%)	6(4.7%)	2.974 (1.245 – 4.669)	

*Legend: 1=Reference Category; Statistical significance at 95% CI; dependent variable at  $P \leq 0.05$  were considered statistically significant*

From the bivariate logistic regression results in Table 4.11, Pregnancy Preparedness by HIV positive women had a significant association with health facility factors: Pre-pregnancy contraceptive usage, pregnancy assessment, pregnancy intention screening and ART initiation/continuation and adherence ( $P \leq 0.05$ ). In terms of contraceptive usage, HIV positive women using contraceptives were more likely to be prepared as compared to HIV positive women who did not use (OR=1.914; 95% CI = 1.511– 4.672). Women who are underwent Pregnancy assessments during routine ART visits were more likely to be prepared (OR = 2.65; 95% CI=1.117 – 5.578); women whose pregnancy intentions were screened were one and half times more likely to be prepared (OR = 1.562; 95% CI= 0.584 – 4.533) compared to those who were not screened for pregnancy intentions. HIV positive pregnant women initiating / continuing with ART and adhering to the same were more likely to be prepared (OR=2.97; 95% CI = 1.245 – 4.669) compared to those who did not.

**CONCLUSION**

The study sought to investigate health facility factors influencing pregnancy preparedness by HIV positive women. Most of the HIV positive pregnant women did not plan their current (at the time of the study) pregnancies. On contraceptive usage, health care providers did not discuss this with the women prenatally. Failure to discuss the usage of contraceptives led to limited knowledge on sexual reproductive health among pregnant women hence poor pregnancy-preparedness. In conclusion, HIV positive women who used contraceptives were more likely to be prepared as compared to HIV positive women who do not. HIV positive women who were assessed for pregnancy status during their ART clinic visits were more likely to be prepared compared to those who were not. On pregnancy Intention Screening, HIV positive women who were screened for their pregnancy intentions during ART clinic visits were more likely to be prepared than those whose intentions were never screened. Regarding ART initiation/continuation and adherence, HIV positive pregnant women were better prepared

while on ART with adherence compared to those who do not initiate and / or continue ART with ongoing adherence support.

### **5.0 RECOMMENDATIONS**

Clinicians and other health care providers should optimize the utilization of the Ministry of Health standard Reproductive Health Screening tool for women on ART as a way of strengthening health facility factors for pregnancy preparedness.

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