FACTORS INFLUENCING HUMAN IMMUNODEFICIENCY SEROPOSITIVE STATUS DISCLOSURE AND ADHERENCE: COMPARISON OF PREGNANT AND NON-PREGNANT WOMEN ATTENDING ANTERETROVIRAL CLINICS IN OSUN STATE, SOUTHWEST NIGERIA.

BY

ADEOLA-MUSA OLUWATOYIN OMOLARA

MB,CH.B (IFE)

MATRICULATION NUMBER: 180458

A DISSERTATION TO THE DEPARTMENT OF EPIDEMIOLOGY AND MEDICAL STATISTICS

FACULTY OF PUBLIC HEALTH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF PUBLIC HEALTH IN FIELD EPIDEMIOLOGY PRACTICE

OF THE

UNIVERSITY OF IBADAN

DECEMBER, 2016

ABSTRACT

Disclosure of Human immunodeficiency virus (HIV) sero-status is reported low in developing countries particularly among non-pregnant women. For pregnant women, considering the attendant risks for mother to child transmission and special health support (implementation of HIV-risk reduction with partners, improving access to treatment as well as motivate partners for voluntary counselling and testing) required by this vulnerable population, information on disclosure status and factors affecting willingness for disclosure is critical for adopting effective public health management strategies.

A comparative cross-sectional, hospital-based study among HIV-positive women (pregnant and non-pregnant n= 235 each), using a two- stage sampling technique was undertaken between July-September 2016 in Osun state, Nigeria. Stage-one involved the proportionate selection of the facilities among the Private, State and Tertiary owned facilities (2:4:1). Stage- two, sampling of respondents that met the inclusion criteria. Pretested semi-structured questionnaire was used. Chi-square and logistic regression were performed. Statistical outputs were considered significant at $p<0.05$.

Descriptive analysis of respondent showed that, of 235 respondent from each study group, 126 (53.6%) pregnant and 128 (54.5%) non-pregnant respondent were within the age range 35-49 years. Two hundred and twenty-six (96.2%) were presently married , 177 (76.6) been in relationship for more than 2 years, and 200 (86.2%) were in monogamous type of marriage among those pregnant. Also among the non-pregnant respondents, 153 (65.1%) were presently married, 197 (91.2%) in relationship for more than 2 years and 158 (73.5%) in monogamous marriage. Prevalence of HIV disclosure status among this population showed 198 (84.3%) pregnant respondent have disclosed their status to their spouse compared with 141 (60.0%) non-pregnant respondent. Anti retroviral therapy has been commenced among, 223 (94.9%) pregnant and 228 (97.0%) non-pregnant women. One hundred and eighty-five

(83.0%) of those pregnant were recorded to have high self reported adherence, compared with 123 (53.9%) among non- pregnant. Bivariate analysis revealed significant association ($p<0.05$) between disclosure status and type of marriage, length of relationship, level of education, number of children ever had, been accompanied by spouses, pre-test counselling and social support. Predictors of HIV disclosure among pregnant women were; informing spouses before going for HIV test, (AOR 11.58; CI 2.16 – 60.97) and awareness of partner's HIV status, (AOR 18.16; CI 3.82-86.48). However, among the non-pregnant women the predictors of HIV seropositive status disclosure were; been presently married , (AOR 3.65; CI 1.39 – 9.63), been in monogamous type of marriage (AOR 3.58; CI 1.36 – 9.46). Also pre-test counselling (AOR 9.39; CI 1.13 – 78.10) and awareness of partner's HIV status (AOR 25.95; CI 9.57 - 70.42).

Disclosure of HIV seropositive status was higher among pregnant compared to the non-pregnant women which might indicate that Spousal involvement in HIV management is important. Effective awareness strategies, targeted at spouses of HIV-positive women should be adopted and couple councelling strengthened as it could help improve partner participation in prevention of mother to child transmission and subsequently, achieving zero case of HIV.

Key words: HIV, Disclosure, Pregnant, women, Influencing factors

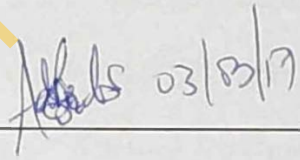
Word count: 479

CERTIFICATION

We certify that this work was carried out by Dr. Oluwatoyin O. Adeola-musa in the Department of Epidemiology and Medical Statistics, Faculty of Public Health, University of Ibadan.

Supervisor

Prof. Olufunmilayo Fawole
MBBS (IB), MSc MMed (Wits), FMCPH, FWACP, FMEd (SA)
Department of Epidemiology and Medical Statistics Honorary Medical Consultant



Supervisor

Dr. Babatunde Adedokun

MBBS (IB), MSc

Department of Epidemiology and Medical Statistics

ACKNOWLEGDMENTS

My deepest appreciation goes to the almighty God, the author and the giver of life, the beginning and the end, who has been my stay through the study period.

My profound gratitude also to my dear academic supervisors, Professor Olufunmilayo Fawole who was part of the people that counselled me to start the programme at a time that it was essential for me to acquire the necessary skill to function in a new post, and Dr. Babatunde Adedokun, for their time and guidance in the completion of this work. I want to sincerely appreciate my program supervisor, Dr. Abisola Oladimeji for the gentle encouragements during dark times that I never imagine I could go on. The contributions of Dr. and Mrs.O. Olarewaju, of Biosun global solutions is appreciated.

I thank the resident advisor, Dr. Patrick Uguku, for his concern and support. Special thanks to all my lecturers; Prof. A. Olayinka, Prof. K. Sabitu, Prof. G. Poggensee, Dr. P. Nsubuga, Dr. D. Dairo, Dr. S. Gidado to mention but a few, who impacted in me priceless knowledge both in and outside the classroom. Also I thank NFELTP administrative staffs; Mrs Chinyere Gana, Mrs Gloria Okara and Mr. Omaiye Benson, who made prompt arrangments for the smooth running of the programme.

I wish to appreciate my adorable children; Toluwanimi, Tunmise and Temiloluwa (God's precious gift to me during the programme), thank you for understanding why I had to be away from home. I love you all dearly

Finally, to my adorable mother, I thank you most sincerely for you were: Nanny to my new born baby, cook for the older siblings, laundry woman, instructor, and the woman on her bended kneels for my success. Mother, I am eternally grateful.

DEDICATION

This work is dedicated to my darling husband; for your support and encouragement through out the training programme, thank you for standing by me always.

Table of Contents

LIST OF TABLES

LIST OF FIGURES

ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ANC	Ante-Natal Clinics
ART	Anti-Retroviral Therapy
ARV	Anti-Retroviral
CD4+	Cluster of differentiation 4
CTR	Counsel Tested and received Result
eMTCT	Elimination of Mother-to-child transmission
FGON	Federal Government of Nigeria
FMOH	Federal Ministry of Health
GARPR	Global AIDS Response Progress Report
HAART	Highly Active Antiretroviral Therapy
HCT	HIV/AIDS Counselling and Testing
HIV	Human Immunodeficiency Virus
IGAs	Income generating activities
IVDU	Intra-venous Drug Users
LGA	Local Government Area
MOT	Mode of transmission
MTCT	Mother To Child Transmission

NACA	National Agency for the Control
NARHS	National HIV/AIDS Reproductive Health Survey
NARHS Plus	National HIV/AIDS Reproductive Health Survey Plus
NASCP	National AIDS & STIs Control Programme
O-SACA	Osun-State Agency for the control of AIDS
PLWHA	People Living with HIV and AIDS
PMTCT	Prevention of Mother-To-Child Transmission
PROM	Prolong Rupture of Membrane
SPSS	Statistical Package for Social Sciences
STDs	Sexually Transmitted Diseases
UA	Universal Access
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNGASS	United Nations General Assembly Special Session on HIV/AIDS
VCT	Voluntary Counselling and Testing
WHO	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background

The Human immunodeficiency virus and the Acquired Immune Deficiency Syndrome (HIV/AIDS) pandemic constitute one of the most pressing threats known to mankind. HIV, is retrovirus that infects cells of the human immune system destroying or impairing their functions, resulting in infected persons becoming susceptible to other opportunistic infection (Adesina, 2014). It is estimated that 24.7 million [23.5–26.1 million] people living with HIV are in sub-Saharan Africa,which is about 71% of the global total. Ten countries; Ethiopia, Kenya, Malawi, Mozambique, Nigeria, South Africa, Uganda, the United Republic of Tanzania, Zambia and Zimbabwe - account for 81% of all people living with HIV in the region, and half of these are in only two countries - Nigeria and South Afric. Nineteen per cent of AIDS-related deaths in Sub-Saharan Africa occurred in Nigeria inspite of improvement in the area of treatment (FMOH, 2014)

Nigeria is one of the 3 countries contributing 48% of the new HIV burden in the sub Saharan Africa, others are South Africa and Uganda (FMOH, 2014). The first case of AIDS in Nigeria was reported in 1986, in thirteen year old sexually active girl with features suggestive of HIV and AIDS tested sero-positive to HIV antibodies . HIV prevalence has increased exponentially since then until it peaked at 5.8% in 2001 before progressively declining over the years down to 4.1% in 2010 (ANC Survey 2010 Report) and further declined to 3.4% in 2014 according to the 2014 National HIV/AIDS and Reproductive Health Survey (FMOH, 2013). HIV prevalence varies considerably across the states; ranging from 1% to 12.7%, with Osun State having 2.6 HIV prevalence (NASCP-FMOH, 2014).

In sub-Saharan Africa, women comprise more than half the number of people living with HIV and the majority of these women were infected by their stable partners (Byamugisha et. al., 2010). Globally, an estimated 1.4 million women living with HIV become pregnant yearly, if left untreated, they have a 15-45% chance of transmitting the virus to their children during pregnancy, labor, delivery or breastfeeding (WHO, 2015). Pregnancy, brings about suppression of immune function in both HIV-infected and uninfected women, there is a decrease in immunoglobulin, reduced complement levels in early pregnancy and a more significant decrease in cell-mediated immunity (NASCP-FMOH, 2014). HIV incidence during late pregnancy is four times greater than in the non-pregnant population (Moodley et. al., 2009).

HIV Counselling and Testing (HCT), is considered as the entry point to HIV/AIDS control programme, is aimed at prevention, treatment, provision of care and support services. It is a strategy aimed at identifying new HIV cases, and reducing the spread of the HIV virus through adequate counselling services. The goal of the program is to make HCT services available, accessible, and affordable to all Nigerians to know their HIV status and have prompt access to appropriate treatment, care and support services (FMOH, 2014) which is in line with the vision 90-90-90. First 90 target; implies that by 2020, 90% of all people living with HIV will know their HIV status, second 90 target; by 2020, 90% of all people with diagnosed HIV infection will receive sustained antiretroviral therapy and finally the third 90 target implies that by 2020, 90% of all people receiving antiretroviral therapy will have viral suppression (NACA, 2015; O-SACA, 2015).

Following HIV diagnosis, some partners may not disclose their serostatus (Simbayi et. al., 2007) or take steps to protect the uninfected partner (Shikwane et. al., 2014). In addition, continuation of unprotected sex during pregnancy increases the risk of HIV-1 transmission (Mugo et. al., 2011). Reasons for non-disclosure of HIV status have been found to include; fear of the consequence of disclosure such as stigma, divorce and sexual coercion (Emily, 2008). Research supports the fact that women who were confident and felt safe in their relationships were more likely to disclose their HIV serostatus (Medley et. al., 2004). Also social support for women has been found to be extremely important for HIV disclosure to their primary partners.

Clients who tested HIV positive during antenatal clinic were immediately counseled on how to disclose their HIV status to their partners and to others, non-disclosure of HIV status by pregnant women to their primary male partners has been identified as a major barrier to participation in PMTCT programs (Emily, 2008; NASCP-FMOH, 2014). Disclosure of HIV status to partners however, has it's merit and demerits. Merits, includes: decreased anxiety, to which some described as getting the weight off their shoulders; increased social support; increased access to PMTCT and to care, treatment and support programs; the ability to plan for the future; the chance for partners to be tested; and the opportunity to decrease risky behaviors (Emily, 2008; Medley et. al., 2004). However, a study done on gender dimension of HIV disclosure, found that between 3 and 15% of women reported experiencing violence at the time of disclosure. Stigmatization and discrimination following disclosure has been a limiting factor to HIV status disclosure and eventual increase in new HIV cases (World Health Organisation; UNSAID, 2013)

1.2 Problem statement

Globally, an estimated 1.4 million women living with HIV become pregnant yearly. If left untreated, they have a 15-45% chance of transmitting the virus to their children during pregnancy, labor, delivery or breastfeeding (WHO, 2015). In sub-Saharan Africa, women comprise more than half the number of people living with HIV and the majority of these HIV positive women were infected by their stable partners (Byamugisha et. al., 2010). Although HIV/AIDS affects all age groups in Nigeria, it occurs mostly among the sexually active population aged 20 to 29 years (Adekanle et. al., 2015)

HIV/AIDS and mother-to-child transmission of HIV (MTCT) are still major public health problems in sub-Saharan Africa (Kiula et. al., 2013). Nigeria has an estimated 3.4 million people living with HIV, second only to South Africa and approximately 54% of these individuals are within the 15-64 years age range (NASCP-FMOH, 2014). Disclosure of HIV status with ones sexual partner is encouraged and is an integral practice both in VCT and PMTCT programs (Kiula et. al., 2013; UNAIDS, 2014), though it is complex and challenging (Kiula et. al., 2013; Medley et al., 2004). The Policy in PMTCT programs advocates that all pregnant women (both negative and positive) should be empowered to disclose their HIV status to their sexual partners through counselling (Kiula et. al., 2013; NASCP-FMOH, 2014; UNAIDS, 2014). Among HIV-positive pregnant women, studies has shown that disclosure of HIV status to partners led to increased - acceptance, use and adherence to maternal and infant ARVs, improved adherence to infant feeding method selected, increased use of cotrimoxazole prophylaxis, decreased mortality and increased survival and follow up among HIV exposed infants (Kiula et. al., 2013) .

HIV positve status disclosure is complex task to accomplish due to the attached stigma in society, but cosidered a critical factor for the use of prevention of mother-to-child transmission and maternal health services including antenatal care, ARV drugs for PMTCT and skilled birth attendance (Spangler et. al., 2014). Worldwide, most HIV positive women experience stigma and discrimination from their family members (Adekanle et. al., 2015), this may make them not to disclose their status for fear of stigmatization, thereby limiting the services they can have access to.

1.3 Justification

Women and girls account for more than half of people living with HIV globally (UNAIDS, 2012), and each minute one young woman acquires HIV, accounting for 22% of all new HIV infections (UNAIDS, 2011). Increased incidence of HIV among women, further increases both infants and adults prevalence due to non-disclosure of HIV seropositive status. In Sub Saharan Africa, mother-to-child-transmission, contributes substantially to rising child mortality and shortages of human resources, making the quality of care substandard in the worst affected countries (Godana & Atta, 2013).

Towards achieving Universal Access (UA) to prevention, treatment, care and support HIV services were scaled-up in the three service areas of HCT, PMTCT and ART in the country of which Osun State was involved (NASCP-FMOH, 2014). As at 2014 there were 56 HCT sites, 56 PMTCT sites and 13 ART sites which were scaled up to 156 HCT, 106 PMTCT and 14 ART sites in 2015 (O-SACA, 2015). There is need therefore to determine the effect of service scale-up on status disclosure, which is an important integral component of HCT and PMTCT among the women.

An assessment of the factors influencing disclosure of HIV seropositive status among women accessing care across the selected health facilities from the three senatorial districts (Osun west, Osun East and Osun Central) is necessary to enhance status disclosure among partners. Disclosure brings about awareness and reduction in risky sexual behavior, prevention of mother to child transmission of the virus and also enhanced social support, leading to increase level of adherence to ARV drugs, reduction in new cases and ultimately achieving zero new case. Studies has been carried out on factors influencing disclosure among individual groups of interest, however there is paucity of information among women (pregnant and non-pregnant) as a comparism in Osun state.

The study results will provide information about the effect of the scaled-up services in providing the needful information on status disclosure, reduce experiences of stigma and discrimination among HIV positive women and assist stake holders; clients, clinicians and policy makers in instituting effective strategies to prevent and manage HIV infection in the Osun state.

1.4 Research Questions

The questions this study aimed to answer were the following:

1. What is the prevalence of disclosure among HIV positive pregnant and non- pregnant women attending ART clinics in Osogbo, Osun-State

2. What are the factors responsible for disclosure among pregnant and non-pregnant women HIV positive woment in Osogbo, Osun-State

3. What is the relationship between between disclosure and treatment adherence among HIV positive pregnant and non-pregnant women in Osogbo, Osun-State

1.5 Aims and Objectives

1.5.1 Aim

To determine and compare Human Immunodeficiency Virus seropositive status disclosure and the factors influencing disclosure among pregnant and non-pregnant women in Osun State.

1.5.2 Specific objectives:

a). To assess and compare prevalence of disclosure among HIV positive pregnant and non- pregnant women attending ART clinics in Osun-State, Nigeria.

b). To identify factors influencing disclosure among pregnant and non-pregnant women HIV positive woment in Osun-State, Nigeria.

c). To determine association between disclosure and treatment adherence among HIV positive pregnant and non-pregnant women in Osun-State, Nigeria.

1.6. Research Hypotheses

1a. Null hypothesis$_1$ (Ho_1): There is no difference between HIV status disclosure among pregnant and non-pregnant women attending ARV clinics in Osun state

1b. Alternate hypothesis$_1$ (Ha_1): There is a significant difference between HIV status disclosure among pregnancy and non-pregnant women.

2a. Null Hypothesis$_3$ (Ho_2): There is no difference between factors influencing disclosure among pregnant and non-pregnant women in Osun state

2b. Alternate Hypothesis$_2$ (Ha_2): There is a significant difference between factors influencing disclosure among pregnant and non-pregnant women in Osun state

3a. Null Hypothesis$_2$ (Ho$_3$): There is no difference between status disclosure and treatment adherence among HIV positive pregnant and non-pregnant women in Osun-State, Nigeria.

3b. Alternate Hypothesis$_2$ (Ha$_3$): There is a significant difference between status disclosure and treatment adherence among HIV positive pregnant and non-pregnant women in Osun-State, Nigeria.

CHAPTER TWO

LITERATURE REVIEW

2.1 HIV/AIDS Epidemics

Globally, in 2015 an estimated 17.8 million women were living with HIV, which constituted 51 per cent of all adults living with HIV and accounting for half of all adults living with the human immunodeficiency (WHO; UNSAID, 2013). In sub-Saharan Africa, women comprised 56 per cent of new infections among adults (15 and older); and the proportion was higher among young women aged 15-24, who made up 66 per cent of new infections among young people. This was twice as likely as their male counterparts living with HIV, with sexual transmission being the dominant mode of infection (WHO; UNSAID, 2013)

In Nigeria, the first case of AIDS was reported in 1986 when a thirteen year old sexually active girl with features suggestive of HIV and AIDS tested sero-positive to HIV antibodies. Since then, HIV prevalence increased exponentially until it peaked at 5.8% in 2001 and has progressively declined over the years down to 4.1% in 2010 (NASCP-FMOH, 2014). As of 2013, the HIV prevalence in the general population declined to an estimated 3.4% (FMOH; NACA, 2013), leaving 3.2 million people in the general population, living with HIV and about 220,393 new HIV infections. A higher proportion found among the female population (54.5%). The high numbers of new infections especially among the female signifies the important role of women in reducing HIV/AIDS cases and eventual achievement of zero case. Prioriting prevention of HIV among women and and their children is a key strategy in halting and reversing the HIV epidemic in Nigeria (NACA, 2015). HIV incidence during late pregnancy in a study by

Moodley et.al, was found to be four times greater than in the non-pregnant population (Moodley et al., 2009).

Osun State has always ranked low in the national sero-prevalence sentinel surveys conducted from 1991- 2010. The prevalence rate has however increased from 3.7% in 1999 to 4.3% in 2001, and then declined to 1.2% in 2003. There was a slight increase to 2.0% in 2005 and again a decline to 1.2% in 2008, as at 2010 it rose to 2.7%. Urban prevalence of HIV among women in the state was higher (3.4%) than 1.0% rural (FMOH-NARHS Plus, 2012) .

2.2. Mode of HIV transimission

Three (3) main mode of transmission of HIV virus has being identified; Sexual contact, parenteral and perinatal mode. Infection with the human immunodeficiency virus (HIV) is a global pandemic and the commonest route of infection in the developing world is heterosexual intercourse (Amoran, 2012)

2.2.1. Transmission through Sexual contact

Worldwide sexual transmission is the predominant mode of HIV transmission it involves; heterosexual (male-to-female, female-to-male), homosexual (male-to-male, and female-to-female) and orogenital sex. Heterosexual transimission of HIV, like other STDs, spreads bi-directionally with greater efficiency (up to three-fold) from male to female, leaving women at the receiving end. Although the majority of sexually transmitted cases reported in the United States occur via male homosexual activity, heterosexual transmission is one of the fastest growing modes of transmission reported in the United States and the primary mode of disease acquisition in many African countries. In Nigeria, heterosexual transmission accounts for 80-95% of HIV infection (UNAIDS, 2010; NACA, 2015) . The likelihood of heterosexual acquired disease increases with a higher number of sexual partners, contact with intravenous drug users

(IVDUs), prostitution, sexual practices that damage vaginal or rectal mucosa, and a previous history of other STDs. Female-to-female transmission has been reported via orogenital contact (Health. am, 2006).

2.2.2. Parenteral transmission

This includes; Blood transfusion, Intravenous Drug Users (IDU) through needle sharing, contact with infected sharps; for example razor blades, needles and artificial insemination. Before the advent of widespread blood screening with the conventional ELISA screening, whole blood transfusion, constituted about 10% of the total HIV transmission in the developing countries, including Nigeria. HIV transmission through unsafe blood accounts for the second largest source of HIV infection in Nigeria (Aleruchi et., al, 2014; Egesie & Egesie, 2009; FMOH; NACA, 2013). Seroprevalence of 3.1% was found by Fiekumo *et al.* in Osogbo, South-west Nigeria, among blood donors (Fiekumo *et al. 2009)*. Transmission through transfusion is common among women who receive multiple transfusions consequent on complication of child birth.

2.2.3. Perinatal/ Vertical transmission/ Mother-to-child transmission

Mother-to-child transmission is the situation where the child is infected by HIV/AIDS during pregnancy (in utero), labour or delivery and postpartum through breastfeeding. It is an important contributor to transmission of HIV. It is believed that about two thirds are infected during pregnancy and around the time of delivery, and about one third are infected through breastfeeding (UNAIDS, 2012). Factors such as advanced maternal HIV infection, low CD4 cell count, high viral load, high P^{24} antigenaemia, women in seroconversion phase of the disease, prolong labour and prolong rupture of membrane, affects the risk of vertical transmission of infection (FMOH; NACA, 2013).

2.3. Driving factors of the HIV epidemic

The key drivers of the HIV epidemic in Nigeria include the following:

2.3.1. Socio-economic factors

The world is a global economy and studies have shown that HIV/AIDS follows the routes of commerce, thus facilitating transmission and women has been found to be the main victims. Lack of economic empowerment also makes women more vulnerable to sexual transmission of HIV and difficulty in accessing treatment and care. Studies in low- and middle-income countries show that financially autonomous women find it easier to negotiate condom use with their husbands (UNAIDS, 2012). Economic empowerment which includes increasing women's access to employment or jobs, financial services, property and other productive assets (such as safeguarding women's property and inheritance rights), supporting them in development of livelihood and other skills (such as vocational, literacy training), has all been found to improve women's social and economic status, reducing their dependence on male partner and enhancing their ability to make informed choices (WHO; UNSAID, 2013)

2.3.2. Population displacement

Women and children share a disproportionate burden during conflicts, war and natural disasters like flood earthquakes and in many settings they experience high rates of new HIV infection and HIV related illness and death. Ninety per cent of children acquire the infection through mother-to-child transmission.

2.3.3. Cultural factors.

Cultural expectations of masculinity encourage men to assume the patriarchal attitude that women are the possessions of men, and most husbands expect or demand their conjugal 'rights'. Surveys show that in 12 of 19 countries where data was available, less than 75% of women believe that a woman is justified to refuse to have sex with her husband when she knows he has sex with other women (UNAIDS, 2012). Traditional beliefs and practices can create barries to acceptance of orthodox medical treatment for health and diseases. This may prevent women from taking precautions from acquisting HIV. Spousal inheritance also predisposes women to HIV infection, in addition pressure to bear children can also inhibit condom promotion aimed at preventing sexually transmitted diseases and infections.

2.3.4. Poverty

Poverty is a driver of HIV transmission, many women and girls turn to transactional sex as a means of obtaining their livelihoods. Also young girls are often coerced into sexual activities by older men. Poverty, reduces access to health care services and to information needed to prevent HIV, poor nutritional status which predisposses to other oppurtunistic infections (OIs).

2.4. Prevention of Human Immunodeficiency Virus

Women living with HIV play an important role which is key to creating a safe environment and effective strategy to reduce HIV/AIDS. The prevention and control of human immunodeficiency virus (HIV) infection depends on the success of strategies to prevent new infections and to treat currently infected individuals, which is the goal of voluntary HIV testing and counselling. Other programmes aimed at achieving prevention and control of HIV are; Prevention of Mother-to-

chold transmission of HIV- (PMTCT), Antiretroviral therapy (ART) also of importance is the Care and Support Services provided to those who are infected and affected by the virus.

2.4.1. HIV Counselling and Testing

HIV Counselling and Testing (HCT) is the entry point to prevention, treatment, care and support services of the HIV/AIDS control programme. It is aimed at identifying new HIV cases, and reducing the spread of the HIV virus through adequate counselling services. The goal of HIV counselling and testing is "to make HCT services available, accessible, and affordable to all Nigerians to know their HIV status and have prompt access to appropriate treatment, care and support services" (FMOH, 2014).

HIV testing and counselling provide essential knowledge and support to individuals at risk for contracting HIV, enabling uninfected individuals to remain uninfected and those infected to plan for the future and prevent HIV transmission to others (Medley et. al., 2004). The awareness of individuals HIV status may also enable HIV-infected individuals to access early and appropriate treatment, care and support programmes which subsequently improves the prognosis of the infection. Furthermore, HIV-infected women who know their serostatus are in a better position to make informed choices about their reproductive lives. For those pregnant, they can access specific interventions, such as antiretroviral prophylaxis and infant feeding counselling and support, which can significantly reduce the risk of mother-to-child transmission of HIV (Kassaye et.,al, 2005; Medley et al., 2004) .

During HIV counselling and testing programmes emphasis is placed on the importance of HIV status disclosure among HIV-infected clients, particularly to their sexual partners, Disclosure of HIV status to sexual partners is an important prevention goal emphasized by the WHO and the

Centers for Disease Control and Prevention (CDC), (WHO, 2000). Disclosure offers a number of important benefits to the infected individual and to the general public, studies have show that disclosure of HIV test results to sexual partners is associated with less anxiety and increased social support among many women (Adebayo et. al., 2014; Medley et al., 2004).

The proportion of women who received counselling varies across area of residence, education, and wealth status; according to the NDHS 2013, it is higher in urban (44.6%) than in rural areas (19.4%), which also increases with increasing education and wealth. Overall, 20 percent of women were offered and accepted HIV test during antenatal care and received the test results and post-test counselling, 8 percent were tested and received the results but did not receive post-test counselling, five percent did not receive the result (NDHS, 2013).

2.4.2. Antenatal Care for HIV Positive Women

Pregnant women should have access to ante natal care (ANC) in order to participate in PMTCT programs as most women get to discover their HIV serostatus for the first time through their antenatal clinic during routine examination. Prevention of Mother-to-child-transmission was integrated into the already existing antenatal program for the pregnant women. When a woman is known to be HIV positive or is diagnosed as HIV positive during pregnancy, her obstetric and medical care will need to be strengthened and modified. HIV conselling and testing is also incooporated to the ANC programme giving room for post-test counselling for HIV positive pregnant women, which includes: disclosure, partner notification and testing ,benefits of PMTCT intervention, ART, nutrition, delivery, infant feeding and infant testing, Importance of testing other children and benefits of paediatric ART and the need for follow-up and adherence. Antenatal clinic is the preparatory stage for seropositive client to get necessary information for treatment and adherence (NASCP-FMOH, 2014). HIV counseling and testing for pregnant

women is therefore considered as a key factor for the success of PMTCT. Detection of maternal infection early in pregnancy through voluntary counseling and HIV testing (VCT) is critical for PMTCT (Derebe et al., 2014).

2.4.4. Prevention of Mother-To-Child Transmission of HIV

Human immune deficiency virus (HIV) infection in women of reproductive age fuels the peri-natal HIV epidemic. Every year an estimated 1.5 million of women living with HIV become pregnant, but only 57% have access to medication that reduces the chance of the babies being born HIV positive . Positive Pregnant women are placed on Option B+, a triple antiretroviral therapy from diagnosis and for life, regardless of CD4 cell count for their own health needs (UNAIDS, 2012). Mother-to-child transmission (MTCT) of HIV accounts for 14% of all new HIV infections worldwide, and may occur during pregnancy, labor and delivery or breastfeeding, without the introduction of preventive measures, the risk of a baby acquiring HIV infection in developing countries is 25 - 45 % (Derebe et al., 2014).

PMTCT is an effective and sustainable intervention with a focus on ensuring an HIV-free generation by the strategy of getting to zero and closing the gaps. PMTCT services commenced in Nigeria in 2001 in six tertiary health facilities. At the end of 2014, about 6546 facilities comprising of tertiary, secondary and primary health care centres are providing PMTCT services (FMOH, 2014). A comprehensive strategic approach that involves scaling up quality and effective PMTCT services promoted by WHO which includes four components: Primary prevention of HIV infection among women of childbearing age; Preventing unintended pregnancies among women living with HIV; Preventing HIV transmission from a woman living with HIV to her infant; and Providing appropriate treatment, care and support to mothers living with HIV and their children and families (WHO, 2010) . In response to the growing problem of

MTCT of HIV infection in the country, the Federal Government of Nigeria commenced the National PMTCT of HIV infection Programme in 2002 with the overall goal of reducing transmission of HIV infection from positive mothers to their infants by 50% by the year 2010 and to eliminate the mother- to-child transmission of HIV (NASCP-FMOH, 2014).

The Elimination of Mother to Child Transmission of HIV (eMTCT) Operational Plan (2015-2016) was developed in 2014 to contribute to the elimination of new HIV infections among children and keep their mothers alive by 2020. The National eMTCT target for 2015-2016 are targeted towards 50% of adolescents and young people have access to prevention interventions by 2016; that 20% of all HIV positive women have access to contraceptive by 2016; 70% of all pregnant women receive quality HIV testing and counselling and receive their result by 2016 and finally for 70% of all HIV positive pregnant women and breastfeeding mothers receive ARVs by 2016 (FMOH, 2014). The focus is not just having a seronegative child, but also to have healthy mothers.

2.4.5. Anti-retroviral therapy

Six classes of ARV drugs are currently available for treatment based on the site and mechanism of drug action. Pharmaceutical research has enabled the development of various Fixed Dose Combinations (FDCs) of ARV drugs for adult and dispersible FDCs for paediatrics. The fixed drug combination are generally more convenient to use and have significantly enhanced the adherence to ART which serves as a relieve from having to take multiple dose of medications daily, with long-term side-effects and complications from taking antiretroviral medications, allowing for poor adherence (UNAIDS, 2012; NASCP-FMOH, 2014)

Globally, 57% of pregnant women living with HIV received prophylaxis to prevent HIV transmission to their child. In 2011, this prevented approximately 180 000 new infections, averting the potential challenges of caring for a child who has been infected with HIV. Women eligible for ART has been found to access treatment services than the male counterparts (68% coverage compared with 47% coverage for men) This may be partly because there are specific entry points for women, such as maternal and child health-care settings, to access HIV testing and treatment. However, this pattern is not universal for all women across all epidemics, key populations and age groups (UNAIDS, 2012).

As at 2014, the National ART program covered 747,382 (44%) out of the estimated 1,670,016 persons (adults and children) estimated to be needing ART by December, 2014. Though this shows that there has been a progressive increase in the number of adults receiving antiretroviral therapy from 359,181 to 747,382 in 2010 and 2014 respectively, the present achievement is still low when compared with the

national target (FMOH, 2014). Thus requiring more efforts and resources, to ensure ownership and sustainable scale-up of the ART coverage.

2.5. HIV serostatus disclosure and implication on zero new cases

Disclosure of sensitive personal matters is a difficult and complex task because reactions following disclosure may not be predictable; bringing about the fear of the unknown (Pride et al., 2011). HIV is a sensitive matter because of the initial knowledge on the mode of transmission, which is believed to be as a result of illicit sexual activities and also the case fatality rate of HIV. However, disclosure of HIV positive status is important in reducing the incidence of transmission to the unborn child through PMTCT, by the use of ART prophylaxis, practice safe

infant feeding and family planning practices. Disclosure is also important for psychosocial support, treatment adherence, stigma reduction and risk reduction behaviour (Mugo et al., 2011).

Following HIV diagnosis, as part of as an important prevention strategy in PMTCT, it is expected that patient disclose their positive status to the partners, however, some may not disclose their serostatus or take steps to protect the uninfected part (Simbayi et al., 2007). The continuation of unprotected sex during pregnancy increases the risk of HIV-1 transmission (Shikwane et al., 2014).

2.5.1. Benefits HIV seropositive status disclosure

Several studies done in developed countries on HIV status disclosure rate, among antenatal care (ANC) women ranges from 42-100% compared to 16.7-32% for developing countries (Pride et al., 2011). Disclosure of HIV test results to a sexual partner is an important prevention goal for a number of reasons; it helps to expand and share the burden of helping People Living with HIV/AIDS (PLWHA) beyond professional care providers. Disclosure provides access for care and support programmes, planning for future care, and enhancing the quality of life of PLWHAs and their partners. In relation to PMTCT, shared confidentiality is considered beneficial in order to prevent unwanted pregnancies and arrest the spread of HIV infection to uninfected partners (Kassaye et al., 2005).

Therefore, while respecting women's rights to autonomy and confidentiality, health workers should promote the participation of supportive male partners in services to prevent transmission from mother to child. Of particularly important, is during pregnancy, where there is increased risk of acquiring HIV due to physiological changes in the woman. Also, studies have shown that

gender-sensitive interventions aimed at couples have encouraged uptake of antiretroviral treatment and HIV testing (UNAIDS, 2012).

2.5.2. Barriers to HIV seropositive status disclosure

In any epidemic situation, women and children have been found to bear most of its effects; the same applies to HIV epidemics. Women living with HIV continue to experience stigma, discrimination and other human rights violations on a daily basis within families and communities, in health-care settings, and in the context of legal and social services and the world of work.

Stigma and discrimination negatively impact on women's health-seeking behaviour and their ability to access services and support. Human rights violations against women living with HIV are common in health-care settings, including refusal to provide information or providing misinformation on sexual and reproductive health, family planning and HIV prevention and treatment (UNAIDS, 2012). Women living with HIV experienced denial of services, harsh and judgemental treatment, lack of confidentiality and lack of informed consent *(1)*.

Studies has shown also that disclosure of HIV status is influenced by the followings; whether partnership is regular, close, main compared to casual and unfamiliar relationship, person being disclosed to has a known positive status, number of lifetime sex partners social support, fears of abandonment, discrimination, violence and accusations of infidelity, individual self efficacy, education, gender, marital status, illness severity and length of time since diagnosis (Pride et al., 2011).

2.6. Adherence to antiretroviral therapy

Adherence to highly active antiretroviral therapy (HAART) is pivotal in reducing viral transmission, preventing viral drug resistance and improving life expectancy of patients (Pennapet., al, 2013) Adherence is the term used to describe the patients' behaviour of taking drugs correctly based on mutual agreement between the patient and health care provider; it involves: taking the right drugs, the right dose the right frequency at the right time. It also implies attending scheduled clinic visits. Before therapy is initiated, it is important to explain the importance of adherence to the client, seeking the full participation in the therapy (NASCP-FMOH, 2014).

2.6.1. Measurement of Adherence

Adherence can be measured using various means, depending on what is adapted for the study. In many studies it's measured by expressing the number of doses taken as a percentage of the number of doses prescribed.

$$\text{Adherence; Using pill count} = \frac{Total\ number\ of\ doses\ taken\ over\ the\ past\ 15\ days}{Total\ number\ of\ prescibed\ doses\ over\ the\ past\ 15\ day} \times 100\%$$

Although there is no gold standard for measuring adherence, the commonly used methods include: patient self report, pill counts, pharmacy refill records, electronic drug monitoring (for example, the MEMS cap), biochemical markers, therapeutic drug monitoring and physician assessment. However, the most common method used in resource-limited settings is patient self report or pharmacy refill record. (NASCP-FMOH, 2014; Pennap et al., 2013).

An adherence level of ≥ 95% to this therapy is critical in obtaining its full benefits, that is the maximum and durable suppression of viral replication, reduced destruction of CD4 cells,

prevention of drug resistance, promotion of immune reconstitution, slow progression of disease and reducing transmission rates.

2.6.2. Factors known to improve Adherence

Continuous and effective adherence counselling, involves the knowledge and understanding of HIV infection, its course of treatment, and expected adverse reactions and what to do if happens, as an important factor that will improve patients adherence. It is also important for women living with HIV, as for all women, to have clear, accurate information on reproductive health and the links with HIV.

As a follow up to making HIV services universally accessible through service scale-up in the number of service centres, Increase access to free ART is an important factor in making drugs free and readily available for client use as at when due, which will ensure that clients willing to adhere will have the medications. Drug regimen simplicity, for example Fixed Drug Combination (FDC), lowers the pill burden and increases adherence, also drugs with less adverse effects will be acceptable by patients

Engagement in adherence education by individual patient, family, peers and friends, community members and treatment supporters, has a positive effect on patient's adherence to medication and in a way also provide psychological support. In situation where by there is more than one family member infected with HIV, a family based care has been found to increase adherence due to family support.

2.6.3. Factors associated with poor Adherence

Adherence to HAART and barriers to adherence have been reported to vary from one country to another and even from one setting to another within the same country (Pennap et al., 2013).

Several factors has been identified to be responsible for poor adherence which includes; Poor patient-caregiver relationship, high pill burden, forgetfulness, AIDS Dementia Complex, depression, lack of patient education, inability of patients to identify their medication, drug toxicity, Severe illness, pregnancy related conditions, Incarceration, Long duration of treatment, complexity of the treatment, perceived benefits versus barriers, for example discrimination and stigmatisation, Lack of social support, substance abuse.

Systematic reviews done in developing countries have noted factors like, stigma, alcohol abuse, pharmacy stock-out and distance from dispensing centers as militating against adherence (Monjok et. al., 2010), various levels of adherence was observed for different years at different locations, from sub- Saharan Africa Chabilkuli et. al,. in 2010 got a prevalence of 77%, in Uganda, Byakika-Tusiime et al., 2005, got an adherence of 68%, however in Cote D' Ivoire, Eholie et al., 2007 recorded a low level of adherence at 22% whereas adherence from a study in Nigeria got an adherence level of 85% in Sagamu by Idigbe et al., 2005though higher compared to others but has not reached, the 95% and above target. (Pennap et al., 2013)

2.6.4. Strategies for Improving Adherence

Adherence and sustainability are major issues when it comes to ART, Women should be able to have options and choose the treatment combinations that work for them and to make informed choices about how they deliver and feed their babies. For there to be improvements in adherence, Treatment education must be given on a regular basis to the partners and the treatment-supporter involvement.

Routine assessment and reinforcement of adherence during follow up must be ensured and where need be Directly Observed Therapy (DOT) can be carried out where Fixed dose combination is

in use. A reminders and patient engagement tools (for example a cell phone, SMS text messages, and alarm clock) can also be used to maintain adherence. Convenient monthly packs (using pill storage boxes), Follow up on medication before supplies are exhausted, and improving social support which will promote adherence among the seropositive patients.

2.7. Care and support of people infected and affected by HIV/AIDS

Social support has been categorized into four broad forms of supportive behaviors; emotional support that entails: empathy, love, trust, and caring. Instrumental support (tangible aid and service), informational support (advice, suggestions, and facts), and appraisal support which involves: information to aid self-evaluation (Emily, 2008). Care and Support, in the context of HIV, implies catering to the needs of people living with HIV and providing appropriate support for persons affected by it. HIV/AIDS Care and Support is the holistic and comprehensive client-focused, community centred care of the PLHIV and their families, a multidisciplinary team at all stages of the HIV infection (NASCP-FMOH, 2014).

Several studies have shown that many HIV infected individuals delay disclosure until their disease has progressed due to the need for emotional or material assistance from family, or it may simply reflect the fact that it becomes difficult to conceal their illness from their partners at a late disease stage (Amoran, 2012). With increasing number of people on antiretroviral therapy, there is the growing need for lifelong support to fight opportunistic infections and provide palliative and home-based care for patients (UNAIDS, 2015).

Enhanced support services for HIV-positive women and individualized approaches to post test counseling help women to disclose their results safely. Following clients disclosure there may be need for legal and/or social services for counselling on how to prevent or deal with

discrimination in employment, housing and public accommodation which is part of the fuction of care and support groups. Additional client needs may be addressed through other HIV prevention and support services such as education materials, support with housing, food, employment, transportation, child care, domestic violence and legal services. Peer support and voluntary services are essential in this regard (NASCP-FMOH, 2014).

2.8. Conceptual theoretical framework

Conceptual framework was defined by Burns and Grove as an abstract, logical structure of meaning that guides the development of the study and enables linkage between findings to the body of knowledge (Hancock, 1985). For the study on HIV status disclosue, the conceptual framework relates to the bio-psycho-socio-environment model of health, the Mandala of Health (figure 1). The individual's health is illustrated as been influenced by four significant aspects which are; human biology, personal behaviour, psychosocial environment and the physical environment.

The individual client is the central focus, whom the family protects, from the community and culture. The human biology relates to the physical condition of wellbeing or illness, and for this study it is the HIV positive individual who has either disclosed their status or not due to various influencing factors. The community and society is a holistic ecosystem which conceptualizes the contemporary approach to wellbeing.

The personal behaviour relates to the adoption of safe behavioural practice or is risk taking behaviour by the client, like having unprotected sexual contact. However the lifestyle of an individual, is the influence and imposed by the society and cultural practices and believe the individual lives. Also the medical system and the community has a major influence on clients health. The psychosocial environment relates to the social status of the individual and more

importantly for the HIV positive individual, to the social support systems which would need to be accessed to ensure quality care and treatment. The physical environment also affects the individual and family and includes aspects such as adequate housing, satisfactory living conditions and the work environment (Klopper, 2011)

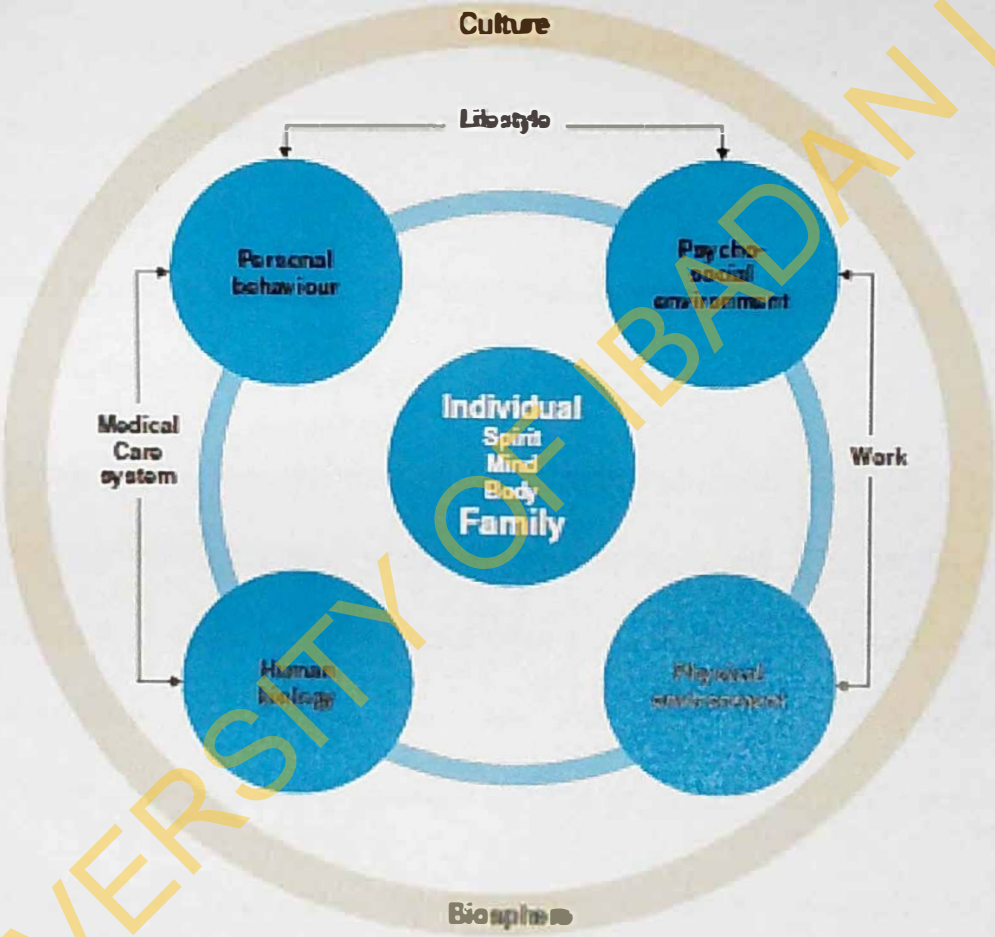


Figure 1: The Mandala of Health – a model of Human Ecosystem

CHAPTER THREE

METHODS

3.1 Description of the study area

The study was condcted in Osun State, Nigeria. Osun state in the Southwestern region of Nigeria It covers an area of approximately 14,875 square kilometers, and is bounded by Ogun, Kwara, Oyo and Ondo States in the South, North, West and East respectively. The official population figure for the State according to the 2006 national population commision is 3,416,959 with women of child bearing age group (15-49 years) estimated to be 902,807 which is 54% of the total female population (NPC, 2010). The state has Osogbo town as the state capital. Osun state is divided into three senatorial districts; Osun Central, Osun East and Osun West, each consisting of ten Local Government Areas.

Osun State lies within the tropical rain forest belt with thick, deciduous vegetation in the southern part which becomes grassland towards the North. The people residing in the area are predominantly Yoruba but tribes from other parts of the country such as the Hausas, Ibos, Edos and other nationalities such as Ghanaians' and Togolese have also settled there. The religions generally practiced in the State include Christianity, Islam and Traditional religion.

In the rural areas, majority of the inhabitants are farmers while in the urban areas, they are mostly traders, artisans, and civil servants. About 55% of the population lives in the rural areas while the remaining 45% reside in the urban areas (NDHS, 2013).

In 2014 the total number of facilities offering HCT, PMTCT and ART services were; 56, 56 and 13 respectively across the 3 senitorial districts. However in 2015, towards achieving Universal Access (UA) to prevention, treatment, care and support HIV services were scaled-up giving 156

HCT service sites, 106 PMTCT sites and 14 ART sites. facilities. The ART sites serves as referral centers for HIV positive clients, requiring ART treatment, it also a comprehensive site, that renders all three services (HCT, PMTCT and ART). Each site offers HCT services everyday of the week and different days in the week for PMTCT and ART services; Mondays and Wednesday; Tuesday and Thursday or Thursday and Friday.

3.2 Study Design

The study design used was a comparative cross sectional survey. The survey was hospital based, among HIV positive pregnant women attending PMTCT clinic and non-pregnant women attending ART clinics in Osun State.

3.3 Study Population

The study population comprised pregnant and non-pregnant women of reproductive age, that were confirmed to be HIV positive, attending clinic at the ART sites which also provides both HCT and PMTCT services in the study LGAs.

3.3.1 Inclusion criteria

Inclusion criteria were pregnant and non-pregnant womem aged between 15- 49 years, with confirmed HIV positive status enrolled in the PMTCT and ART program

3.3.2 Exclusion criteria

Exclusion criteria were pregnant and non-pregnant women aged between 15- 49 years who were too ill to respond to the questions.

Women that are positive but not permanent resident in the State.

3.4 Sample size determination

The minimum sample size required for the study was calculated using the formula for comparison of two proportions, n was calculated as follows:

$$n \text{ (each group)} = \frac{(Z_\alpha + Z_{1-\beta})^2 (p_1 (1- p_1) + p_2 (1- p_2)}{(p_1 - p_2)^2}$$

(Lwanga & Lemeshow 1991)

Where n = Minimum sample size for the target population

Z_α = Standard normal distribution corresponding to significant level of alpha i.e 95% confidence limit set at 1.96 for a two sided test at the 0.05 level.

$Z_{1-\beta}$ = Standard normal distribution corresponding to the desired level of power, which is 1.28 for a power of 90%.

p_1 = Proportion of HIV positive women who disclose Status = 50.6% (Amoran, 2012) .

p_2 = Proportion of pregnant women who disclose HIV positive status

$= p_1 + 15\%$

$= 65.6\%$

$(p_1 - p_2)$ = set at 15% , the smallest difference between the two groups which the study would not want to miss was taken.

$$n = \frac{(1.96 + 1.28)^2 0.506(1-0.506) + 0.656 (1- 0.656)}{(0.15)^2}$$

$$n = \frac{(3.24)^2 (0.250976 + 0.226976)}{(0.15)^2}$$

$$n = \frac{10.4976 * 0.477952}{0.0225}$$

$n = 222.99$

$n \sim 223$

Factoring 5% non-response rate (NR) = n * 1/ (1 – NR)

Sample size (factoring the 5% non-response rate)

= 223 * 1/ (1 – 0.05)

= 235

A total sample size of 470 comprising of 235 pregnant and 235 non-pregnant women was determined.

3.5 Sampling Technique

Two stage sampling technique was adopted as follows:

Osun state is administratively divided into three (3) senatorial districts with each comprising ten (10) Local Government Areas.

In stage 1: The state has 14 ART sites, from the private, state and tertiary health facilities in the ratio 4:8:2 respectively. From the private hospital two health facility were selected randomly from the 4 in the senitorial districts. Four facility were selected from the State owned hospitals, and one health facility from tertiary sites. Health facility were selected by simple random sampling method utilizing balloting technique, yielding a total of seven (7) health facilities selected across the ART sites. The list of sampled health facilities is as shown in the summary table below (Table 1), while the list of all Local Governments in Osun state according to senitorial districts and map of Osun State are included in Appendix 3 and 5.

In stage 2: Selection of respondents (HIV positive pregnant and non-pregnant women) from the health facilities. Total sampling was done after eligibility of the participants has been ascertained on each clinic days (Monday to Friday) different for the health facilities.

3.6. Study instruments

The instruments for data collection were a semi structured questionnaire (Appendices 2). The questionnaire had the following sections: Socio-demographic characteristics of respondents, Obstetric History for the pregnant women, Knowledge of HIV and ART, HIV counselling and testing, status disclosure and partner's characteristics, related stigma (enacted and perceived). Questions on social support and self reported adherence.

3.6.1 Pre-testing of research instrument

The questionnaire was pre-tested outside the health facilities selected for the study. Twenty respondents (10 pregnant and 10 non-pregnant women) attending the ART clinic in General hospital Ijebu-jesa, Oriade Local Government Area, Osun East senatorial district of the state. This helped to improve the validity and reliability of the questionnaire. This was done by the research assistants to identify areas for improvement before the actual collection of data.

Table 1: ART sites in Osun state distributed by senitorial districts and hospital types

Hospital type	Senitorial districts		
	Osun West	Osun East	Osun Cental
Private	**Victory hospital Iwo**	Seventh Day Adventist hospital, Ile-ife	**Our Lady of Fatimo hospital Jaleyemi**
	Baptist hospital Ejigbo		
State	General hospital Iwo	General hospital Ijebu-jesa	**State Specialist hospital Asubiaro, Osobgo**
	General hospital Ede	**General hospital Ilesha**	General hospital ila
	General hospital Ikire	**General hospital Oke Ogbo, Ile-ife**	
Tertiary		Obafemi Awolowo University THC	**LAUTHEC, Osogbo**

3.7. Data collection methods

This is a health facility based survey, carried out using the Quantitative data collection method.

3.7.1. Quantitative data collection

Quantitative data collection from first week of July to first week of September 2016 was with the use of a pre-tested, semi-structured interviewer-administered questionnaire. The questionnaire was designed on the results which were established in an extensive review of the literature on similar study (Amoran, 2012; Klopper, 2011) and was discussed with the academic supervisors. This was also reviewed by the statistician, to make certain that the data obtained would be suitable for analysis. Ten research assistants were recruited and trained to help in the administration of the questionnaires. The research assistants were three doctors, one in the Department of Community Medicine, Ladoke Akintola University of Technology (LAUTECH) Teaching Hospital, Ogbomoso and two from the state specialist hospital Asubiaro. Five Nurses from the facilities involved in the ART clinic and two community health extension workers (CHEW). The research assistants had two days training. They were taken through the questionnaire and the training lasted an average of three hours daily.

3.8. Data management

Completed questionnaires were reviewed on the field prior to electronic data entry. Consistency checks were performed to exclude incomplete, inaccurate and inconsistent data; electronic data backup was created after data entry.

3.8.1 Measurement of Variables

The variables used in the study include:

Dependent variables: These are dichotomized variables based on HIV seropositive status disclosure "Yes" or "No", Treatment adherence "High adherence" or Low adherence". There are four question asked on self reported adherence, with a "Yes" or "No" response that was score-1 for correct response and- 0 for wrong response. Four correct responses were graded high adherence; three correct response- moderate adherence and 2 or less correct response is low adherence.

Independent/explanatory variables: Socio-demographic characteristics, good and poor knowledge on HIV/ART, perception of stigma "high stigmataization" or "low stigmatization, Obsteric history for the pregnant respondents, social supports.

3.8.2. Recoding of Variables:

Some variables were re-coded into new variables as described below;

1. Age in years of respondents regrouped to age group: 20-34; 35-49. Spouse age in years regrouped as: 20-34; 35-49; 50 and above.
2. Marital status recoded as: Presently Married for those married and Not presently married for:- Singles, divorced, widowed and cohabiting respondents.
3. Number of children: None/ Primigravida, 1-2 children , 3 and above.
4. Religion: Christianity, Islam and Others (Traditional worshippers and those without religious interest)
5. Educational status of respondent:

   Low educational level= None and primary school

   High educational level= Secondary education and above

6. For the purpose of Bivariate analysis, average monthly income of respondents were also recoded into ≤N18, 000 and >N18, 000. This is based on the minimum wage obtainable in the study area (Osun state) as at time of study.
7. Length of relationship: < 2 years and ≥ 2 years.
8. Gestational age recoded as: 1-3 months; 4-6 months and 7-9 months
9. Stigma (Enacted and Perceieved): recoded as High and Low stigma
10. Social support : High and Low social support.

3.8.3. Statistical analyses

Data was entered into Microsoft excel and analyzed using Statistical Package for Social Sciences (SPSS) version 22.0. To ensure quality of the data, questionnaires were checked for completness before data entry, supervision of data entry and errors and consistency checking procedures for the data were controlled during analysis.

Data were primarily analysed using descriptive statistics. Variables in each section of the questionnaire were described using percentage, frequence of occurrence for responses across variables. A Bivariate analysis was employed to describe associations between two variables e.g. Odds ratio was used to compare proportions for categorical variables (e.g. religion, occupation, education and age groups). Binary logistic regression was done to identify good predictors of HIV seropositive status disclosure and associating factors amongst the pregnant and non women. Level of statistical significance was set at $p < 0.05$.

Knowledge on HIV/ART was categorized into 2: good and poor. Correct responses of questions were scored 1 point, while incorrect response were scored zero. The maximum and minimum scores possible for knowledge on HIV were 15 and 0, while the mean score was 12.9±2.0.

Respondents who scored below 13 were regarded as having poor knowledge while those who scored up to or above 13 were regarded as having good knowledge.

Enacted stigma towards HIV positive women were categorized into 2: High and low, bases on the response to questions asked, 'Yes'- was scored 2 andd 'No' scored one. The maximum and minimum scores possible for Enacted stigma towards HIV positive women were 20 and 10, while the mean score was 10.0±0.9. Respondents who scored below 10 were regarded as having low Enacted stigma while those who scored up to or above 10 were regarded as having high Enacted stigma.

Perceived stigma by HIV women about their positive status was on a 5 point Likert scale of strongly disagree, disagree, undecided, agree and strongly agree respectively. For the questions about perceived stigma that had strongly disagree, disagree, undecided, agree and strongly agree, the responses were scored 1,2,3,4 and 5 in that order for low perceived stigma and 1,2 ,3,4 and 5 for a high perceived stigma. The maximum and minimum scores possible for perceived stigma about HIV positive status were 40 and 8, while the mean score was 26.3±3.6.

Respondents who score below the mean were regarded as having low perceived stigma while those who score up to or above the mean were regarded as having high perceived stigma.

Availability of social support was computed using the social support survey instrument (RAND medical outcome study). It consists of four separate social support subscale and and overall funtional social support index. The questions are scored from 1,2,3,4 and 5 for responses; none of the time, a little of the time , some of the time, most of the time and all of the time respectively. A higher score indicates good support and and lower score indicates poor support.

3.8. Ethical considerations

Ethical Approval: Approval for the study was obtained from Osun State Ministry of Health Ethical review committee.

Consent: Written informed consent was taken from individual respondent before administering questionnaire (Appendix 1)

Confidentiality: Questionnaires were numbered with codes to maintain confidentiality. Responsents were assured that their responses will be kept confidential. Information on the system was password-protected and accessible to the researcher only.

Right to withdrawal: Participants had the right to withdraw from the study at any point in time she chooses.

Results of the study: Study will be disseminated to the State Ministry of Health, and Key Stakeholders on HIV/AIDs programme in the State, NFELTP and Published in Journals.

3.9 Study Limitations

The main limitation of this study was that the study targeted a specific population (women of childbearing age) in comprehensive HIV treatment and care setting, so the findings may not be generalized to other populations and settings.

CHAPTER FOUR

RESULTS

A total of 470 questionnaires were analyzed and this included 235 pregnant and non-pregnant women HIV positive each, giving a response rate 100%.

4.1. Socio-demographic status of HIV positive women (pregnant and non-pregnant)

Table 2 shows the socio-demographic data of respondents; The age of respondents ranged from 23-49years, with a mean ± SD of 34.2 ± 4.8 years and 34.6 ± 7.4years among the pregnant and non-pregnant respondents respectively. The higher proportion of both groups were within the age range of 35- 49 years (53.6%; 54.6%).

The distribution of respondents by marital status shows that a larger percentage of pregnant respondents 226 (96.2%) and non-pregnant respondents 153 (65.1%) were presently married while others were either single, divorced, widowed or separated. Married respondents who were monogamous were the largest representatives of this group i.e. Two hundred (86.2%) and 158 (73.5%) for pregnant and non-pregnant respondents respectively. Respondents with relationship surpassing 2 years were also representative for both groups i.e. pregnant 177 (76.6%) and non-pregnant 197 (91.2%).

Pregnant respondents 151 (64.3%) had between 1-2 children, while non-pregnant respondents 137 (45.5%) had between 3-5 children. Ethnic grouping showed equal number of pregnant and non-pregnant respondents 115 (48.9%) were largely of Yoruba ethnicity, while Igbo respondents surpassed Hausa/Fulani respondents in this study. None major ethnic groups constituted about 15% of respondents in both pregnant and non-pregnant respondents. Higher percentage were Christian 163 (72.1%) and 159 (70.7%) amongst the pregnant and non-pregnant respondents.

Table 2: Socio-demographic characteristics of HIV positive pregnant and non-pregnant respondents.

Variables	Pregnant women N=235 (%)	Non -pregnant women N=235 (%)	P- Value
Age (in years)			
20-34	109 (46.4)	107 (45.5)	0.900
35-49	126 (53.6)	128 (54.5)	
Marital status			
Presently married	226 (96.2)	153 (65.1)	<0.001***
Not presently married	9(3.8)	82 (34.9)	
Type of marriage			
Monogamy	200 (86.2)	158 (73.5)	0.001***
Polygamy	32 (13.8)	57 (26.5)	
Length of relationship			
<=2 years	54 (23.4)	19 (8.8)	<0.001***
> 2 years	177 (76.6)	197 (91.2)	
No of children			
Primigravida	59 (25.1)	30 (12.8)	<0.001***
1-2 children	151 (64.3)	68 (28.9)	
3 and above hildren	25 (10.6)	137 (58.3)	
Ethnic group			
Yoruba	115 (48.9)	115 (48.9)	0.992
Igbo	48 (20.4)	46 (19.6)	
hausa/fulani	38 (16.2)	38 (16.2)	
Others*	34 (14.5)	36 (15.3)	
Religion			
Christianity	163 (69.4)	159 (67.7)	0.732
Islam	63 (26.8)	66 (28.1)	
Others**	9 (3.8)	10 (4.3)	

Key: *Non major ethic groups ; **Traditional, and those with no interest in religion or religious activities; ***Significant

4.1.1. Socio-economic characteristics of pregnant and non-pregnant women

Table 3 shows the educational level of respondents in both groups does not differ significantly with 125 (53.3%) and 121 (51.5%) of HIV-positive pregnant and non-pregnant repondent respectively, been secondary school leavers while 68 (28.9%) had tertiary education as the highest level of education among pregnant women when compared with 71(30.2%) for the non-pregnant women. One hundred and thirty-seven (59.1%) of pregnant and non-pregnant 144 (61.7%) were employed while a lower proportion 98 (40.9%) and 91 (38.3%) respectively are unemployed. Employed respondents were either traders or civil servants; pregnant 59 (25.1%), 54 (23%) respectively and 60 (25.5%), 53 (22.6%) respectively amongst non-pregnant. The estimated monthly income differed significantly in both groups, 45 (60.4%) of the pregnant respondents earned less than or ₦18,000 monthly compared with 107 (74.3%) of the non-pregnant respondents. Ninety two (67.3%) of the pregnant respondents earned above ₦18,000 monthly, while 37 (25.7%) earned above ₦18,000.

Table 3: Socio-economic characteristics of HIV positive pregnant and non-pregnant respondents

Variables	Pregnant women N=235 (%)	Non -pregnant women N=235 (%)	P-Value
Educational level			
Primary and below	42 (17.9)	43 (18.3)	0.932
Secondary	125 (53.2)	121 (51.5)	
Tertiary	68 (28.9)	71 (30.2)	
Employment status			
Yes	137 (58.3)	144 (61.3)	0.510
No	98 (41.7)	91 (38.7)	
Occupation			
Student/Unemployed	98 (41.7)	91 (38.7)	0.843
Artisan	17 (7.2)	20 (8.5)	
Trading	59 (25.1)	60 (25.5)	
Farming	7 (3)	11 (4.7)	
Civil servant	54 (23)	53 (22.6)	
Monthly income			
#18,000 and below	45 (32.8)	107 (74.3)	<0.001*
Above #18,000	92 (67.2)	37 (25.7)	

Key: *Significant

4.1.2. Socio-economic status of respondents' spouses

Table 4 shows the respondents' spouse age ranged from 26-80 years, with a mean ± SD of 38.0 ± 7.6 years and 32.0 ± 21.5 among the pregnant and non-pregnant respondents respectivel. The higher proportion of both groups were within the age range of 35- 49 years 162(69.8) and 86 (49.7%). Educational level of respondents' spouse revealed that husbands of pregnant respondents had Secondary school 112 (48.3%) or tertiary 105 (45.3%) education as the highest level of education. Spouses of non-pregnant women showed a spread of education levels i.e. primary (21.3%), secondary (26.8%) and tertiary (21.3%). Most spouses of pregnant respondents were civil servant (53.2%) while spouses of non-pregnant women were either artisans (25.5%) or traders (25.5%).

4.1.2. Socio-economic status of respondents' spouses

Table 4 shows the respondents' spouse age ranged from 26-80 years, with a mean ± SD of 38.0 ± 7.6 years and 32.0 ± 21.5 among the pregnant and non-pregnant respondents respectivel. The higher proportion of both groups were within the age range of 35- 49 years 162(69.8) and 86 (49.7%). Educational level of respondents' spouse revealed that husbands of pregnant respondents had Secondary school 112 (48.3%) or tertiary 105 (45.3%) education as the highest level of education. Spouses of non-pregnant women showed a spread of education levels i.e. primary (21.3%), secondary (26.8%) and tertiary (21.3%). Most spouses of pregnant respondents were civil servant (53.2%) while spouses of non-pregnant women were either artisans (25.5%) or traders (25.5%).

Table 4: Respondent's Spouse Socioeconomic Characteristics

Variables	Pregnant women N=235 (%)	Non-pregnant women N=235 (%)	P-value
Spouse age (years)			
20-34	56 (24.1)	34 (19.7)	<0.001*
35-49	162 (69.8)	86 (49.7)	
50 and above	14 (6)	53 (30.6)	
Spouse education			
Primary/no formal education	15 (6.5)	64 (37.0)	
Secondary education	112 (48.3)	61 (35.3)	
Tertiary education	105 (45.3)	48 (27.7)	<0.001*
Spouse occupation			
Unemployed/student	5 (2.2)	5 (2.9)	
Artisan	47 (20.3)	54 (31-2)	
Trading	30 (12.9)	57 (32.9)	<0.001*
Farming	23 (9.9)	21 (12.1)	
Civil servant	127 (54.7)	36 (20.8)	

Key: *Significant

4.2. Obstetric history of pregnant respondents

Table 5 shows the Obstetric history of pregnant women 93 (39.6%) of the respondents had pregnancies within the third trimester (7-9 months), while a marginally lower percentage 72 (30.6%) had pregnancies within the second trimester (4-6 months).

The distribution of respondents by gravidity shows that 84 (35.7%) of the pregnant respondents have only ever been pregnant twice, while respondents who has been ever pregnant once or thrice were 62 (26.4%) and 59 (25.1%) respectively and 30 (12.8) had four or more pregnancies. Number of clinic visits did not vary significantly, where respondents who had first clinic visit, second, third visit and four or more visits were 56 (23.8%), 64 (27.2), 62 (26.8%), and 53 (22.6%) respectively. Majority of the respondents 166 (70.6%) that were pregnant were not accompanied by their partners while 69 (70.6%) were accompanied by partners.

Table 5: Obstetric history of pregnant respondents

Variables	Pregnant women N=235	Percentage (%)
Current gestation age (months)		
1-3	70	29.8
4-6	72	30.6
7-9	93	39.6
Number of times ever pregnant		
Once	62	26.4
Twice	84	35.7
Thrice	59	25.1
Four or more	30	12.8
Number of ANC visits		
First	56	23.8
Two	64	27.2
Three	62	26.4
Four or more	53	22.6
Accompaned by partner		
Yes	69	29.4
No	166	70.6

4.3. Comparism of HIV Counselling Testing profile between pregnant and non-pregnant respondents.

Table 6 shows no significant difference among respondent who informed there spouses before testing and those who do not, however a significant percentage of pregnant 226 (96.2%) and non-pregnant women 219 (93.2%) undertook pretest counselling prior to HIV testing. Furthermore, a considerable percentage of pregnant respondents 174 (74%) went for HIV diagnostic tests before conception of current pregnancy. Two hundred and twenty-nine (97.4%) pregnant and 220 (93.6%) non-pregnant received post-test counselling after the diagnosis.

There is a statistical difference pregnant women 35 (14.9%) and non-pregnant 134(57.3%) who admitted to testing more than once. Reasons for repeated test was attributed to wanting to confirm status and to check CD4+ level among non-pregnant 132(98.5) compared to pregnant (4.3%, 10.6% respectively) were not statistical different. One hundred and ninety- eight (84.3%) pregnant respondents have disclosed their HIV positive status to their spouses, which is significantly higher compared to the non-pregnant respondents 141 (60%).

Table 6 : HIV Counselling and testing characteristics and Disclosure among respondents (N=470)

Variables	Pregnant women N=235 (%)	Non-pregnant women N=235 (%)	P-value
Spouse informed before testing			
Yes	112 (47.7)	116(49.4)	0.712
No	123 (52.3)	119(50.6)	
Pretest counselling before HIV testing			
Yes	226 (96.2)	219(93.2)	0.150
No	9 (3.8)	16(6.8)	
Tested before/during pregnancy			
Before	174 (74)	N/A**	
During	61 (26)	N/A**	
Had Post test counseling			
Yes	229 (97.4)	220 (93.6)	0.044*
No	6 (2.6)	15 (6.4)	
Received result after testing			
Yes	233 (99.1)	221 (94)	0.002*
No	2 (0.9)	14 (6)	
Tested for more than once			
Yes	35 (14.9)	134 (57)	<0.001*
No	200 (85.1)	101 (43)	
Reasons for repeated test			
To confirm and check for level of CD4	132 (98.5)	132 (98.5)	0.467
I don't believe it is true	2 (1.5)	2 (1.5)	
Awareness of partner's status			
Yes	156 (66.4)	127 (54.0)	0.006*
No	79 (33.6)	108 (46.0)	

Key: *Significant

**** Not applicable**

4.4. Disclosure status profiles of pregnant and non-pregnant HIV positive respondents

Table 7 shows 107 (54%) of the pregnant women and 82 (58.2) of non-pregnant women from the 339 (72.1) that disclosed the HIV positive status to their partner, disclosed by self-effort while others disclosed by the help of a healthcare provider 91(46.0%)and among the pregnant and non-pregnant respondent respectively. Duration from the time of diagnosis to disclosure to partner was majorly immediately after test confirmation, 81 (40.9%) of those pregnant and 74 (52.5%) of the non-pregnant, other disclosed between a week and one year. Majority of respondents who had not disclosed their status were undecided about disclosing to their spouse on a later date i.e. pregnant (86.8%) and non-pregnant (84.7%). Concerns for partner's health was the major reason for diclosure among non-pregnant women 96 (68.1), while encouragments from councellors and concerns for partner's heath were the major reason for disclosure amongst the pregnant women. Other reasons for disclosure been ethical reason and positive social support.

Assessment of partner's reaction over time to disclosure of HIV status revealed an increasing level of support among the respondents; 134 (67.7%) to 172 (86.9%) and 98 (69.5%) to 117 (83%) among pregnant and non-pregnant respectively. On the other hand, indifference and quarrelsome or abusive responses decreased over time among the two groups, except for a significant difference in violent responses among non-pregnant respondents 3 (2.1%) to 6 (4.3), as to a decrease among the pregnant women 5 (2.5%) to 1 (0.5%).

4.4. Disclosure status profiles of pregnant and non-pregnant HIV positive respondents

Table 7 shows 107 (54%) of the pregnant women and 82 (58.2) of non-pregnant women from the 339 (72.1) that disclosed the HIV positive status to their partner, disclosed by self-effort while others disclosed by the help of a healthcare provider 91(46.0%)and among the pregnant and non-pregnant respondent respectively. Duration from the time of diagnosis to disclosure to partner was majorly immediately after test confirmation, 81 (40.9%) of those pregnant and 74 (52.5%) of the non-pregnant, other disclosed between a week and one year. Majority of respondents who had not disclosed their status were undecided about disclosing to their spouse on a later date i.e. pregnant (86.8%) and non-pregnant (84.7%). Concerns for partner's health was the major reason for diclosure among non-pregnant women 96 (68.1), while encouragments from councellors and concerns for partner's heath were the major reason for disclosure amongst the pregnant women. Other reasons for disclosure been ethical reason and positive social support.

Assessment of partner's reaction over time to disclosure of HIV status revealed an increasing level of support among the respondents; 134 (67.7%) to 172 (86.9%) and 98 (69.5%) to 117 (83%) among pregnant and non-pregnant respectively. On the other hand, indifference and quarrelsome or abusive responses decreased over time among the two groups, except for a significant difference in violent responses among non-pregnant respondents 3 (2.1%) to 6 (4.3), as to a decrease among the pregnant women 5 (2.5%) to 1 (0.5%).

Table 7: Disclosure to partner, mode and duration of disclosure and Partner response among respondents

Variables	Pregnant	Non-pregnant	P-value
Disclosure to partner	**N=235 (%)**	**N=235 (%)**	
Yes	198 (84.3)	141 (60)	<0.001*
No	37 (15.7)	94 (40)	
Mode of disclosure to partner	**N=198 (%)**	**N=141(%)**	
Self	107 (54)	82 (58.2)	0.450
Health provider	91 (46)	59 (41.8)	
Duration of diagnoss before disclosure			
Immediately after test	81 (40.9)	74 (52.5)	<0.001*
A week after	33 (16.7)	37 (26.2)	
2 weeks after	4 (2)	5 (3.5)	
Months after	43 (21.7)	22 (15.6)	
A year after	37 (18.7	3 (2.1)	
Reasons for disclosure			
Ethical reasons	17 (8.6)	5 (3.5)	<0.001*
Concerns for partner's health	97 (49)	96 (68.1)	
Encouragements from councelors	67 (33.8)	18 (12.8)	
Positive social support	17 (8.6)	22 (15.6)	
Partners initial reaction after disclosure			
Supportive	134 (67.7)	98 (69.5)	0.358
Indifferent	50 (25.3)	28 (19.9)	
Quarrelsome/Abusive	9 (4.5)	12 (8.5)	
Violent	5 (2.5)	3 (2.1)	
Partner's subsequent reaction			
Supportive	172 (86.9)	117(83)	0.058
Indifferent	22 (11.1)	13 (9.2)	
Quarrelsome/Abusive	3 (1.5)	5 (3.5)	
Violent	1 (0.5)	6 (4.3)	
Disclosure to someone else apart from partners			
Yes	77 (32.8)	156 (66.4)	<0.001*
No	158 (67.2)	79 (33.6)	

4.4.1.Disclosure status of Pregnant and non-pregnant women

Figure 2 shows the comparism of disclosure status among pregnant and non-pregnant respondents. Pregnant women has higher disclosure 198 (84.3%)compared to non-pregnant women 141 (60%).

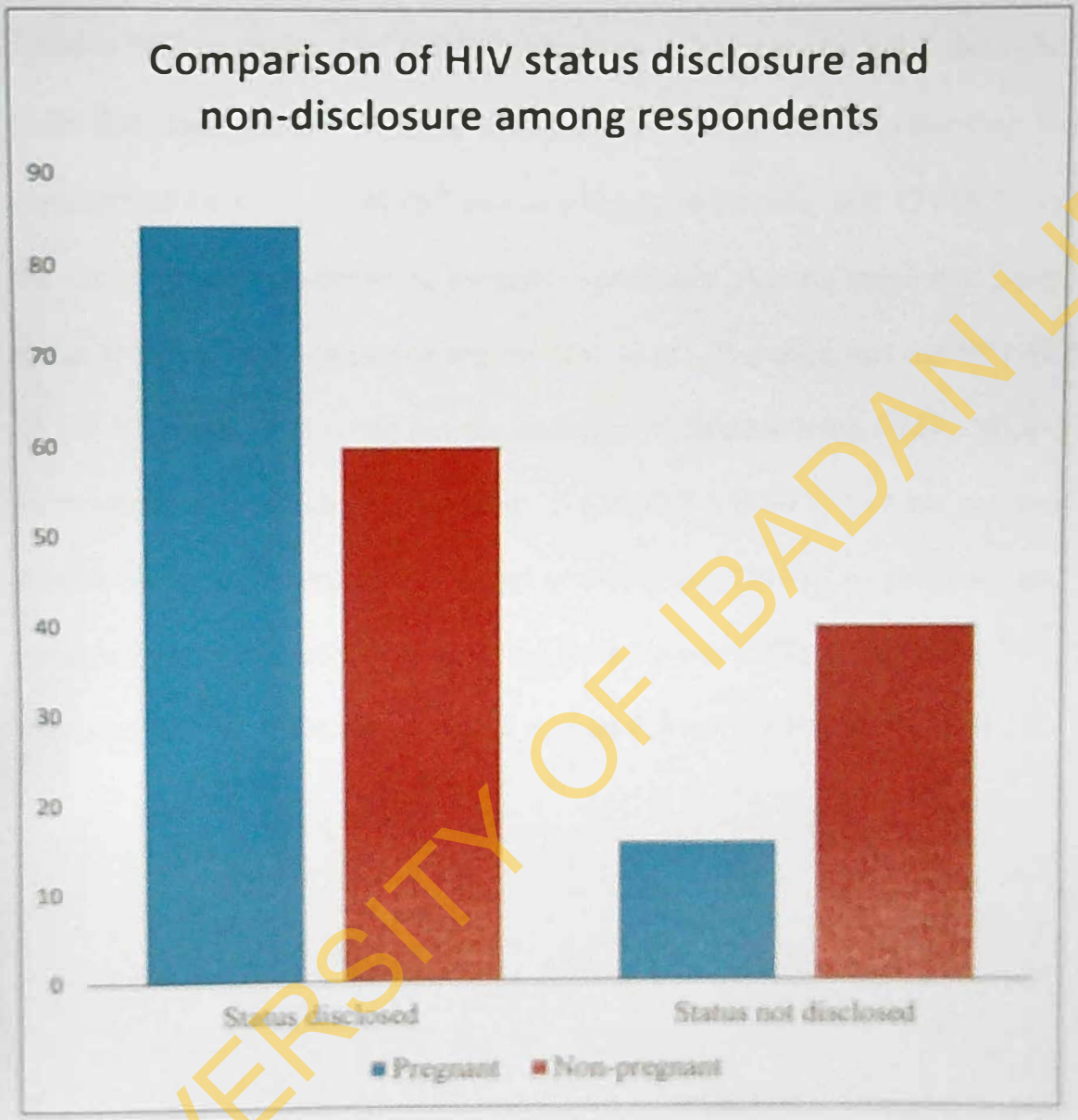


Figure 2: Disclosure status of Pregnant and non-pregnant women

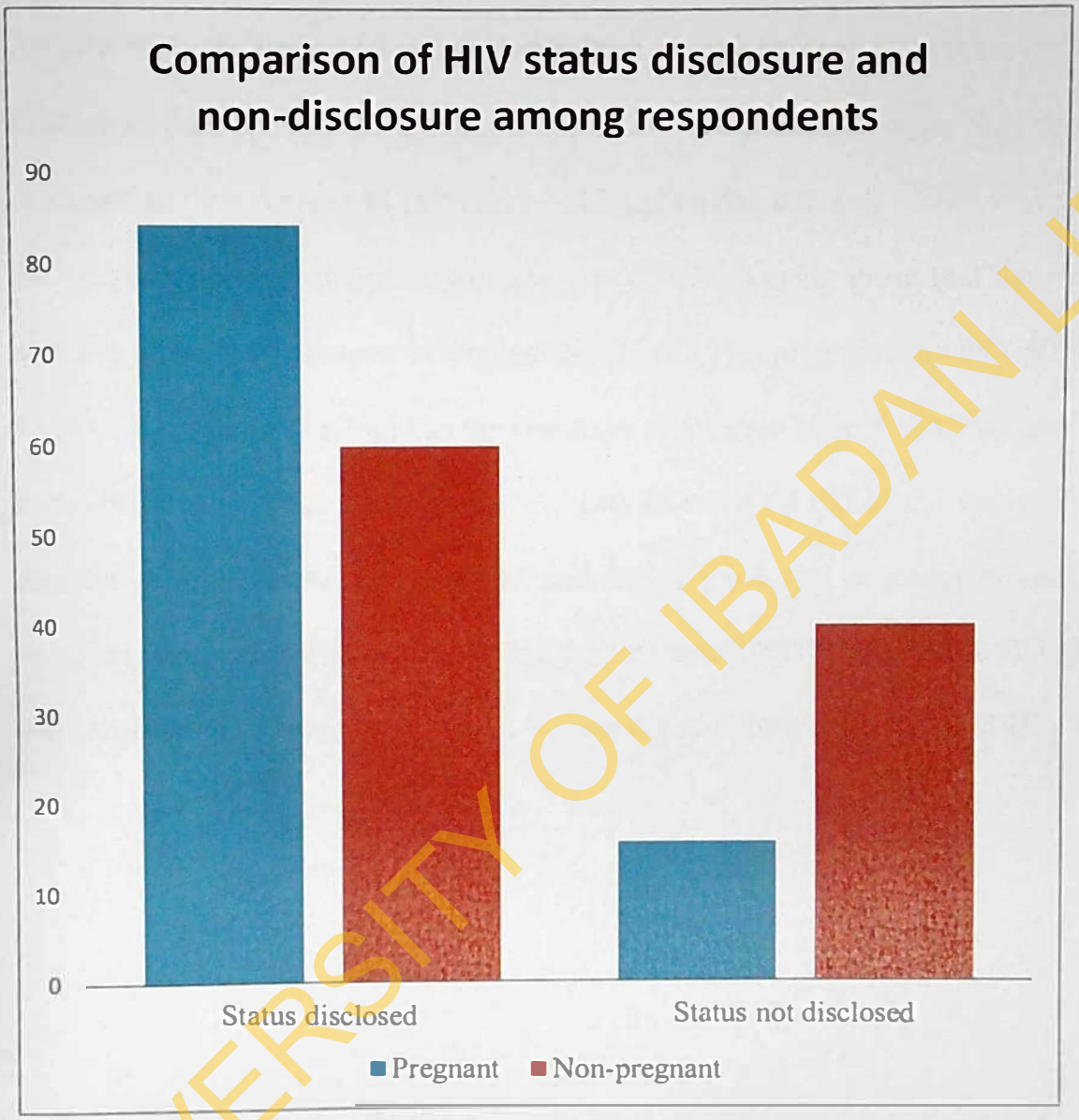


Figure 2: Disclosure status of Pregnant and non-pregnant women

4.4.2 Disclosure to someone else other than sexual partner

Table 8 shows a higher percentage of pregnant respondent 158 (67.2%) did not disclose their status to anyone else besides their spouse while the contrary was recorded in non-pregnant females with majority 156 (66.4%) admitted to having disclosed their status to someone else order than their spouse. Of those that disclosed to someonelse other than their spouse, majority disclosed to their parents 44 (57.1%) or siblings 16 (20.8%) and 73 (46.7%) ; 39 (25.0%) among the pregnant and non-pregnant women respectively. Among those that have never disclosed the status to either their spouses or anyone else 37 (15.7%) pregnant and 94 (40.0%) non-pregnant; 13 (35.1%) and 11 (11.7%) has the intention to disclose later, 9 (24.3%) and 14 (14.9%) do not have intention of disclosing whereas 15 (40.5%) and 69 (73.4) are not sure whether they will disclose at a later date. One hundred and fifty-six (66.4%) of pregnant and 127 (54.0%) non-pregnant respondent affirm to knowing their partner's HIV status while 79 (33.6%) of pregnant and 108 (46.0%) of the non-pregnant women did not know their spouses' HIV status.

Table 8: Disclosure to someone else apart from partner among HIV positive respondents

Variables	Pregnant N= 77 (%)	Non-pregnant N= 156 (%)	P-value
Disclosure to other apart from partner			
Friends	4 (5.2)	3 (1.9)	<0.001*
Religious leader	10 (13)	3 (1.9)	
Parents	44 (57.1)	73 (46.8)	
Siblings	16 (20.8)	39 (25)	
Colleagues	2 (2.6)	2 (1.3)	
Children	1 (1.3)	36 (23.1)	

Key: *Significant

4.4.3. Intention to disclose HIV status among respondents

Figure 3 shows the distribution of future intention to disclosure among pregnant and non-pregnant respondents that are yet to disclose their sero-positive status to their partners.Majority of the non-pregnant women are unsure of weither they will subsequently disclose, while other decline subsequent disclosure but a minority agreed to later disclosure, reverse case is observed among the pregnant women.

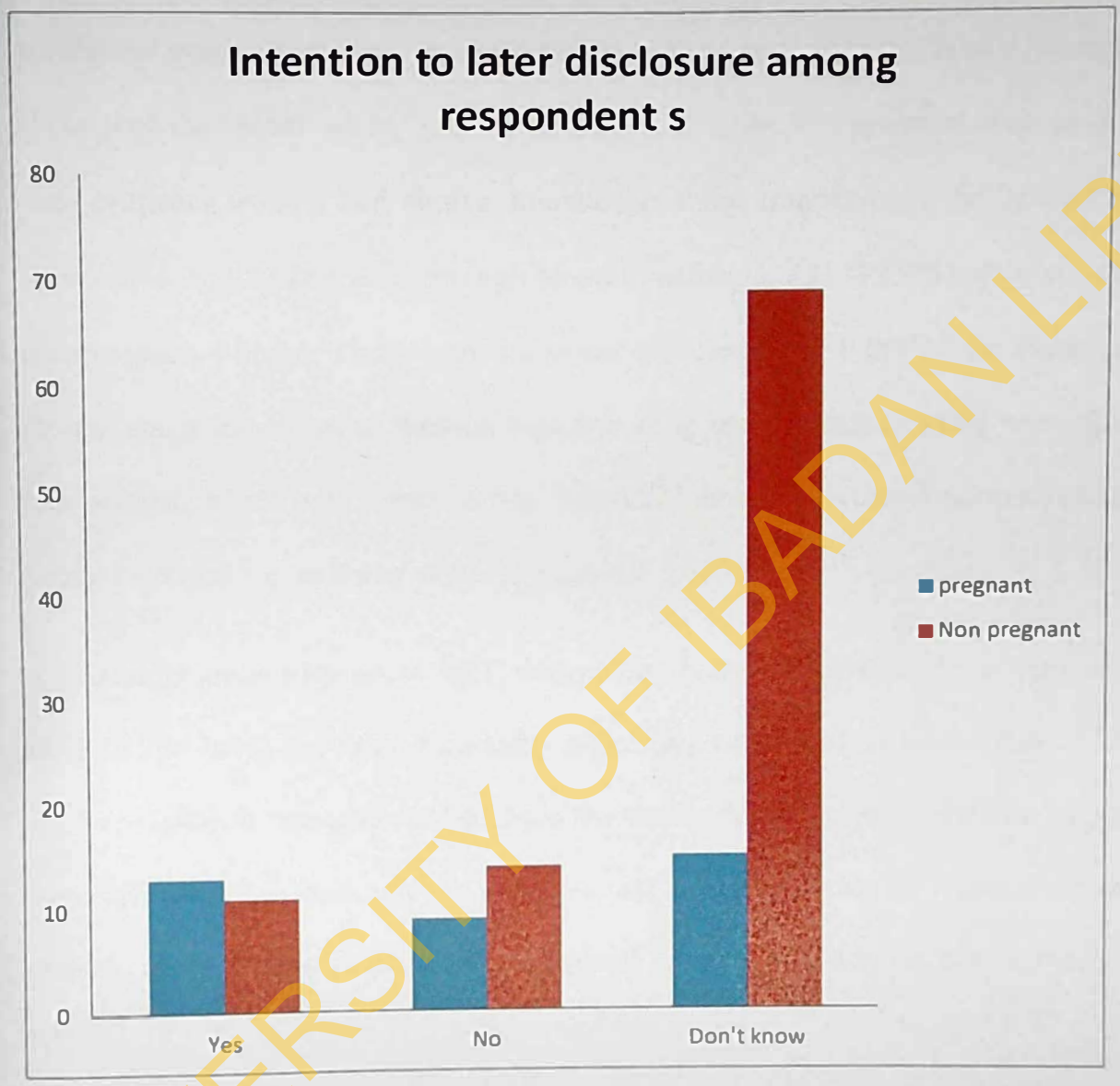


Figure 3: Intention to disclose status among respondent that are yet to disclose

4.5. Knowledge of pregnant and non-pregnant respondents on HIV/ART

Table 9 and 9.1 shows the knowledge of respondents about HIV and ART services. Correct definition on HIV differs statitically among the respondents, 219 (93.2%) defined HIV correctly among the pregnant women, as to 174 (74%) of the non-pregnant women. As regards knowledge about how individual can be infected with HIV, 231 (98.3%) pregnant compared to 223 (94.9%) non- pregnant women had similar knowledge about transmission through unprotected sexual intercourse, and transmission through blood transfusion, 231 (98.3%) pregnant and 227 (96.6%) non-pregnant women. There were statistical difference ($p < 0.05$) in the knowledge of the two groups about transmission through injection drug use, mother to child transmission, mosquito bite, shaking hands with someone who has AIDS, sharing clothes, multiple sexual partners, and eating balanced diet as being protective against AIDS.

Concerning knowledge about ART, respondents both share similar knowledge of drug treatment for HIV ($p > 0.05$) but have statistically significant difference on knowledge of life treatment of ART ($p<0.05$). It was also evident from the results that a higher percentage of respondents who were affirmative of questions or variables that correctly depict HIV risk were among pregnant women while non-pregnant women affirmed to questions that do not correctly depict risk to HIV.

Table 9: Knowledge of respondents on HIV prevention and treatment

Variables	Pregnant women N=235 (%)	Non-pregnant women N=235 (%)	P-value
HIV/AIDS definition			
Wrong response	16 (6.8)	61 (26)	<0.001*
Correct response	219 (93.2)	174 (74)	
Unprotected sexual intercourse			
Wrong response	4 (1.7)	12 (5.1)	0.042*
Correct response	231 (98.3)	223 (94.9)	
Blood transfusion			
Wrong response	4 (1.7)	8 (3.4)	0.242
Correct response	231 (98.3)	227 (96.6)	
MTCT			
Wrong response	9 (3.8)	43 (18.3)	<0.001*
Correct response	226 (96.2)	192 (81.7)	
IDU			
Wrong response	19 (8.1)	64 (27.2)	<0.001*
Correct response	216 (91.9)	171 (72.8)	
Condom use			
Wrong response	11 (4.7)	27 (11.5)	0.007*
Correct response	224 (95.3)	208 (88.5)	
Multiple sexual partner			
Wrong response	4 (1.7)	18 (7.7)	0.002*
Correct response	231 (98.3)	217 (92.3)	
Understand HIV drug treatment			
Wrong response	25 (10.6)	36 (15.3)	0.131
Correct response	210 (89.4)	199 (84.7)	
ART lifetime			
Wrong response	22 (9.4)	93 (39.6)	<0.001*
Correct response	213 (90.6)	142 (60.4)	
ART reduce transmission			
Wrong response	34 (14.5)	72 (30.6)	<0.001*
Correct response	201 (85.5)	163 (69.4)	
Mosquitoe bite			
Wrong response	16 (6.8)	74 (31.5)	<0.001*
Correct response	219 (93.2)	161 (68.5)	
Handskake			
Wrong response	4 (1.7)	29 (12.3)	<0.001*
Correct response	231 (98.3)	206 (87.7)	

Table 9.1 : Knowledge of respondents on HIV prevention and treatment

Variables	Pregnant women N=235 (%)	Non-pregnant women N=235 (%)	P-value
Eating balanced diet			
Wrong response	43 (18.3)	84 (35.7)	<0.001*
Correct response	192 (81.7)	151(64.3)	
ART cures AIDS			
Wrong response	24 (10.2)	112 (47.7)	<0.001*
Correct response	211 (89.8)	123 (52.3)	
Wearing others clothes			
Wrong response	3 (1.3)	34 (14.5)	<0.001*
Correct response	232 (98.7)	201 (85.5)	
Wrong response	24 (10.2)	112 (47.7)	<0.001*

Key: ***Significant**

4.5.1 Knowledge categorization amongst the respondent.

Table 10 shows knowledge categorization amongst the respondent. Pregnant women show statistical significant difference on adequate knowledge of HIV and ART 198(84.3%) when compared to the Non-pregnant women 89 (37.9%). One hundred and forty-six non-pregnant women had good knowledge compared to 37 (15.7%) among pregnant respondents. In essence, there was a significantly higher HIV awareness index among pregnant women compared to non-pregnant respondent ($p < 0.05$).

Table 10: Categorized Knowledge of Respondents on HIV prevention and treatment

Variables	Pregnant	Non-pregnant	Odds ratio	Confidence interval		P-value
				LCI**	UCI***	
Level of knowledge						
Good knowledge	198(84.3)	89 (37.9)	8.77	5.66	13.62	<0.001*
Poor knowledge	37(15.7)	146 (62.1)				

Key: *Significant; **LCI- Lower Confidence Interva; ***UCI Upper Confidence Interval

4.6. HIV related stigma among the pregnant and non-pregnant respondents

Table 11 and 12 shows HIV related stigma. Table 11 reveals no statistical significance among the two groups on HIV related enacted stigma like: being mistreated by a hospital worker because of their HIV status, being looked at differently because of HIV positive status. Also, being told not to share food or utensils with family, asked not to touch or care for children because they have HIV, being refused medical care, being forced out of home by family members, hospital worker declaring their HIV status publicly known to others, and being refused housing because people suspected they have HIV. The experience of healthcare worker avoiding to touch the respondents because of their HIV status was statistically different between the two study group, more reported among the pregnant women ($p<0.05$).

Table 11: HIV related Stigma (enacted) among pregnant and non-pregnant respondents (N= 470).

Variables	Pregnant N (%)	Non-pregnant N (%)	Odds ratio	Confidence interval		P-value
Mistreated by hospital worker due to status				Lower	Upper	
Yes	7(3)	8(3.4)	0.87	0.31	2.40	0.793
No	228(97)	227(96.6)				
Looked at differently because of status						
Yes	13(5.5)	6(2.6)	2.17	0.84	5.98	0.101
No	222(94.5)	229(97.4)				
Health workers avoid touching you						
Yes	10(4.3)	2(0.9)	5.18	1.12	23.89	0.019*
No	225(95.7)	233(99.1)				
Instructed not to share food or utensils with family						
Yes	11(4.7)	8(3.4)	1.39	0.55	3.53	0.482
No	224(95.3)	227(96.6)				
Not allowed to touch or care for children						
Yes	5(2.1)	1(0.4)	5.09	0.59	43.88	0.100
No	230(97.9)	234(99.6)				
Denied medical care because of IIIV status						
Yes	3(1.3)	3(1.3)	1.00	0.2	0.50	1.000
No	232(98.7)	232(98.7)				
Forced out of home by family members because of HIV status						
Yes	5(2.1)	2(0.9)	2.53	0.49	13.19	0.253
No	230(97.9)	233(99.1)				
Healthworker made status public						
Yes	5(2.1)	2(0.9)	2.53	0.49	13.19	0.253
No	230(97.9)	233(99.1)				
Someone threatened to hurt physically because of status						
Yes	3(1.3)	9(3.8)	0.33	0.09	1.22	0.079
No	232(98.7)	226(96.2)				
Refused housing status						
Yes	2(0.9)	2(0.9)	1.00	0.14	7.16	1.000
No	233(99.1)	233(99.1)				

4.6.1. Perceived stigma responses by pregnant and non-pregnant respondents

From Table 12, shows statistical significance in the percepted stigma of respondents between the two groups.The perception of been isolated from the society, feel of life in the society is lonely, woorry about treatment of children in school and how family members were treated in the society were all found to be significant ($p<0.05$). However, being accused of spreading AIDS in the community, feeling of being gossiped about, looked down upon, discriminated by health worker because of their HIV status, were not statistically significant.

Table 12 : Perceived stigma responses by pregnant and non-pregnant respondents (N=470).

Variable	Scale of Response: Disagree N (%)	Undecided N (%)	Agree N (%)	P-value
Accused of spreading AIDS in the comunity				
Pregnant	220 (93.6)	10 (4.3)	5 (2.1)	0.41
non-pregnant	214 (91.1)	11 (4.7)	10(4.3)	
Feel people gossip about your status				
Pregnant	193 (82.1)	18 (7.7)	24 (10.2)	0.147
non-pregnant	208 (88.5)	12 (5.1)	15 (6.4)	
Feel looked down on				
Pregnant	200 (85.1)	25 (10.6)	10 (4.3)	0.161
non-pregnant	208 (88.5)	14 (6.0)	13(5.5)	
Feel isolated by the society				
Pregnant	187(79.6)	16 (6.8)	32 (13.6)	<0.01*
non-pregnant	211 (89.8)	12 (5.1)	12 (5.1)	
Feel discriminated by healthworkers				
Pregnant	210 (89.4)	14 (6)	11 (4.7)	.164
non-pregnant	221 (94.0)	9 (3.8)	5 (2.1)	
Feel life in the society is lonely				
Pregnant	188 (80.0)	16 (6.8)	31 (13.2	0.01*
non-pregnant	210 (89.4)	11 (4.7)	14 (6.0)	
Worry about other kids treatment of your children in school				
Pregnant	176 (74.9)	10 (4.3)	49 (20.9)	<0.01*
non-pregnant	192 (81.7)	29 (12.3)	14 (6.0)	
Worry about others treatment of family member				
Pregnant	182 (77.4)	24 (10.2)	29 (12.3)	0.026*
non-pregnant	186 (79.1)	35 (14.9)	14 (6.0)	

Key: *Significant

4.6.2. Categorized stigma among respondents on HIV positive status

Table 13 shows the categorization of respondent based on the stigma score of responses on both enacted and perceived stigma by the respondents, stigma was categorized has either high or less stigmatized, based on the mean score differences.There was no statistical significant difference between enacted stigma, as both group had equal responses, majority indicating less stigmatization considering enacted stigma, 28 (11.8%) highly stigmatized and 207 (88.1%) less stigmatized. However, there was statistical significant difference between both groups as pregnant women 147 (62.6%) feel highly stigmatized and 88 (37.4%) less stigmatize, as against 91 (38.7%) non-pregnant women, feeling highly stigmatized and 144 (61.3%) less stigmatized.

Table 13: Categorized stigma among respondents on HIV positive status

Variables	Pregnant N (%)	Non-pregnant N (%)	Odds ratio	Confidence interval		
			OR	Lower	Upper	P-value
High stigma (enacted)	28 (11.9)	26 (11.1)	1.087	0.617	1.918	0.885
Low stigma (enacted)	207 (88.1)	209 (88.9)				
High stigma (perceived)	147 (62.6)	91 (38.7)	2.643	1.821	3.836	<0.001*
Low stigma (perceived)	88 (37.4)	144 (61.3)				

Key: *Significant

4.7. Social support factors availability to pregnant and non-pregnant respondents

Tables 14 shows the display of the emotional/ informational support available for the respondent. There were significant differences in all like: someone to count on to listen to when the need arise to talk, someone to confide in or talk to about personal problems, someone to turn to for suggestions about how to deal with a personal problem and someone that can give useful information ($p<0.05$).

4.7. Social support factors availability to pregnant and non-pregnant respondents

Tables 14 shows the display of the emotional/ informational support available for the respondent. There were significant differences in all like: someone to count on to listen to when the need arise to talk, someone to confide in or talk to about personal problems, someone to turn to for suggestions about how to deal with a personal problem and someone that can give useful information ($p<0.05$).

Table 14: Social Support (Emotional support) available for pregnant and non-pregnant women

	Scale of Response					
Variables	**None of the time N (%)**	**A little of the time N (%)**	**Some of the time N (%)**	**Most of the time N (%)**	**All of the time N (%)**	**P-value**
Emotional /informational support						
Someone that listens when you need to talk						
Pregnant	21 (8.9)	7 (3)	40 (17)	40 (30.6)	95 (40.4)	0.00*
non-pregnant	26(11.1)	39(16.6)	16(6.8)	31 (13.2)	123 (52.3)	
Someone to give useful informations						
Pregnant	12 (5.1)	11 (4.7)	38 (16.2)	73 (31.1)	101 (43)	0.00*
non-pregnant	18 (7.7)	51 (21.7)	11 (4.7)	30 (12.8)	125 (53.2)	
Someone to give good advise about crisis						
Pregnant	10 (4.3)	9 (3.8)	46 (19.6)	46 (28.5)	103 (43.8)	0.00*
non-pregnant	23 (9.8)	35 (14.9)	17 (7.2)	28 (11.9)	132 (56.2)	
Someone to confide in about your problems						
Pregnant	9 (3.8)	20 (8.5)	44 (18.7)	72 (30.6)	90 (38.3)	0.00*
non-pregnant	21 (8.9)	37 (15.7)	18 (7.7)	32 (13.6)	127 (54)	
Someone whose advise is really wanted						
Pregnant	8 (3.4)	19(8.1)	46(19.6)	62(26.4)	100(42.6)	0.00*
non-pregnant	15 (6.4)	47(20)	19(8.1)	30(12.8)	124(52.8)	
Someone to share private worries and fears						
Pregnant	8 (3.4)	29 (12.3)	35 (14.9)	74 (31.5)	89 (37.9)	0.00*
non-pregnant	22 (9.4)	36 (15.3)	23 (9.8)	32 (13.6)	122 (51.9)	
Someone to turn to for suggestion on solving personal problems						
Pregnant	9 (3.8)	20 (8.5)	44 (18.7)	72 (30.6)	90 (38.3)	0.00*
non-pregnant	21 (8.9)	37 (15.7)	18 (7.7)	32 (13.6)	127 (54)	
Someone that understands your problems						
Pregnant	8(3.4)	33 (14)	34 (14.5)	62 (26.4)	98 (41.7)	0.00*
Non-pregnant	21(8.9)	39 (16.6)	22 (9.4)	26 (11.1)	127 (54)	

*Significant

4.7.1. Social Support (Tangible and Affectionate) available for pregnant and non-pregnant women

Table 14.1 shows the display of tangible and affectionate support available for the respondents.

All shows significant differences amongst the two groups ($p<0.05$).

Table 14.1: Social Support (Tangible and Affectionate) available for pregnant and non-pregnant women

	Scale of Response					
Variables	**None of the time N (%)**	**A little of the time N (%)**	**Some of the time N (%)**	**Most of the time N (%)**	**All of the time N (%)**	**P-value**
Tangible support						
Someone to help when confined to bed						
Pregnant	14 (6)	13 (5.5)	51 (21.7)	93 (39.6)	64 (27.2)	0.00*
non-pregnant	19 (8.1)	40 (17)	19 (8.1)	20 (8.5)	137 (58.3)	
Someone to take to a doctor when needed						
Pregnant	11 (4.7)	15 (6.4)	42 (17.9)	73 (31.1)	94 (40)	0.00*
no-pregnant	24 (10.2)	39 (16.6)	15 (6.4)	16 (6.8)	141 (60)	
Someone to prepare meals when unable to do so						
Pregnant	10 (4.3)	12 (5.1)	58 (24.7)	87 (37)	68 (28.9)	0.00*
non-pregnant	21 (8.9)	36 (15.3)	17 (7.2)	19 (8.1)	142 (60.4)	
Someone to help with daily chores if sick						
Pregnant	14 (6)	12 (5.1)	57 (24.3)	82 (34.9)	70 (29.8)	0.00*
non-pregnant	18 (7.7)	34 (14.5)	23 (8.1)	19 (8.1)	141 (60)	
Affectionate support						
Someone who shows you love and affection						
Pregnant	8 (3.4)	33 (14)	34 (14.5)	62 (26.4)	98 (41.7)	0.00*
non-pregnant	21 (8.9)	39 (16.6)	22 (9.4)	26 (11.1)	127 (54)	
Someone to love and make you feel wanted						
Pregnant	14 (6)	13 (5.5)	51 (21.7)	93 (39.6)	64 (27.2)	0.00*
non-pregnant	19 (8.1)	40 (17)	19 (8.1)	20 (8.5)	137 (58.3)	
Someone who hugs you						
Pregnant	11 (4.7)	15 (6.4)	42 (17.9)	73 (31.1)	94 (40)	0.00*
non-pregnant	24 (10.2)	39 (16.6)	15 (6.4)	16 (6.8)	141 (60)	

***Significant**

4.7.2. Social Support (positive social interraction) available for pregnant and non-pregnant women

Tables 14.2 shows the display of positive social interraction as a form of social support available for the respondents. All shows significant differences among the respondents ($p<0.05$).

Table 14.2: Social Support (positive social interraction) available for pregnant and non-pregnant women

	Scale of Response					
Variables	**None of the time N (%)**	**A little of the time N (%)**	**Some of the time N (%)**	**Most of the time N (%)**	**All of the time N (%)**	**P-value**
Positive social interaction						
Someone to have a good time with						
Pregnant	10 (4.3)	12 (5.1)	58 (24.7)	87 (37.0)	68 (28.9)	0.00*
non-pregnant	21 (8.9)	36 (15.3)	17 (7.2)	19 (8.1)	142 (60.4)	
Someone to get together with for relaxation						
Pregnant	14 (6)	12 (5.1)	57 (24.3)	82 (34.9)	70 (29.8)	0.00*
non-pregnant	18 (7.7)	34 (14.5)	23 (8.1)	19 (8.1)	141 (60)	
Someone to do something enjoyable with						
Pregnant	9 (3.8)	24 (10.2)	56 (23.8)	79 (33.6)	67 (28.5)	0.00*
non-pregnant	20 (8.5)	41 (17.4)	22 (9.4)	28 (11.9)	124 (52.8)	
Someone to do things with that helps get mind off things						
Pregnant	9 (3.8)	24 (10.2)	56 (23.8)	79 (33.6)	67 (28.5)	0.00*
non-pregnant	20 (8.5)	41 (17.4)	22 (9.4)	28 (11.9)	124 (52.8)	

***Significant**

Table 14.2: Social Support (positive social interraction) available for pregnant and non-pregnant women

	Scale of Response					
Variables	**None of the time N (%)**	**A little of the time N (%)**	**Some of the time N (%)**	**Most of the time N (%)**	**All of the time N (%)**	**P-value**
Positive social interaction						
Someone to have a good time with						
Pregnant	10 (4.3)	12 (5.1)	58 (24.7)	87 (37.0)	68 (28.9)	0.00*
non-pregnant	21 (8.9)	36 (15.3)	17 (7.2)	19 (8.1)	142 (60.4)	
Someone to get together with for relaxation						
Pregnant	14 (6)	12 (5.1)	57 (24.3)	82 (34.9)	70 (29.8)	0.00*
non-pregnant	18 (7.7)	34 (14.5)	23 (8.1)	19 (8.1)	141 (60)	
Someone to do something enjoyable with						
Pregnant	9 (3.8)	24 (10.2)	56 (23.8)	79 (33.6)	67 (28.5)	0.00*
non-pregnant	20 (8.5)	41 (17.4)	22 (9.4)	28 (11.9)	124 (52.8)	
Someone to do things with that helps get mind off things						
Pregnant	9 (3.8)	24 (10.2)	56 (23.8)	79 (33.6)	67 (28.5)	0.00*
non-pregnant	20 (8.5)	41 (17.4)	22 (9.4)	28 (11.9)	124 (52.8)	

*Significant

4.7.3. Categorized social support available among respondents on HIV positive status

Table 15 shows categorization of social support available to respondent should the need arise. There is no statistical significance observed ($p > 0.05$) among the respondents as both group reported availability of good social supported.

Table 15: Categorized Social Support of respondent on HIV positive status (N=470)

Variables	Pregnant N (%)	Non-pregnant N (%)	Odds ratio	Confidence interval		P-value
				Lower	**Upper**	
Good support	142(60.4)	143 (60.9)	0.982	0.678	1.422	1.00
Poor support	93 (39.6)	92 (39.1)				

4.8. ART initiation and Self reported Adherence among the study respondents

Table 16 show the proportion of respondent already commenced on ART, 223 (94.9%) of the pregnant and 228 (97%) of those not pregnant. there is no statistical significance observed (p> 0.05) as majority has been commenced on ART. Also the table shows the self reported adherence amongst the respondents, those who sometimes forget taking their medications, who stops medication because they feel better, who has missed doses in the past four days and has sometimes stopped medication as a result of feeling poorly all are statistically significant amonst the pregnant and non-pregnant women.

Table 16 : ART initiation and Self reported Adherence among the study respondents

Variables	Pregnant N (%)	Non-pregnant N (%)	Odds ratio	Confidence interval		P-value
				Lower	**Upper**	
Placed on ART						
Yes	223(94.9)	228(97.0)	0.571	0.221	1.476	0.24
No	12(5.1)	7(3.0)				
Sometimes forgets taking medications						
Yes	31(13.9)	59(25.9)	0.462	0.286	0.748	0.001*
No	192(86.1)	169(74.1)				
Sometimes stop medication when feeling better						
Yes	8(3.6)	62(27.2)	0.1	0.046	0.214	0.00*
No	215(96.4)	166(72.8)				
Missed dose in the past 4 days						
Yes	6(2.7)	44(19.3)	0.116	0.048	0.277	0.000*
No	217(97.3)	184(80.7)				
Stop medication when feeling poorly						
Yes	11(4.9)	25(11)	0.421	0.202	0.878	0.018*
No	212(95.1)	203(89)				

Key *significant

4.8.1: Level of adherence among pregnant and non-pregnant women

Table 17 shows the adherence categorization among the respondents. Statistical significance was observed among the two groups, as more of the pregnant women reported high level of adherence 185 (83.0%) compared with the non-pregnant women 123 (53.9%). Similarly more of the non-pregnant women reported higher proportion of low adherence 73 (32.0%) as to the pregnant women, 11 (4.9%).

Table 17: Level of adherence among pregnant and non-pregnant women

Level of Adherence	Pregnant women	Non-pregnant women	Odds ratio	LCI**	UCI***	P-value
High adherence	185(83.0)	123(53.9)	Ref			<0.001*
Moderate adherence	27(12.1)	32(14.0)	1.31	0.58	2.59	
Low adherence	11(4.9)	73(32.0)	0.98	0.55	1.77	

Key *significant;

** LCI- Lower Confidence interval;
***UCI- Upper confidence interval.

4.9. Association between disclosure and respondents' characteristics

The association between pregnant respondents' demographic characteristics and their disclosure of positive HIV status is shown in Table 18 below. Respondents who has been in relationship for more than two years, 156 (88.1%) significantly (p=0.046) disclosed their status than those that were in relationship for two years or less, 41 (75.9%). Furthermore respondents with 3 children and above, 23 (92.0%) significantly (p<0.001) had disclosed status than those with 1-2 children, 135 (89.4%) and the primigravida, 40 (67.8%). Also respondents from hausa/fulani ethnicity, 37 (97.4%) significantly (p<0.037) had disclosed status than the yourua ethnicity , 90 (78.3%), igbo ethnicity 41 (85.4%) and those who belong to other minor ethnic groups, 30 (88.2%). There were no significant differences in the association of respondents' age-group, marital status, type of marriage and their religion on disclosure of HIV positive status.

Table 18: Association between the Socio-demographic Characteristics and Disclosure of Respondents towards HIV seropositive status among pregnant women

	Pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI**	UCI**	P-Value
Age group						
20-34	18 (16.5)	91 (83.5)	1.11	0.55	2.25	0.858
35-49	19 (15.1)	107 (84.9)				
Marital status						
Presently married	192 (85)	34 (15)	0.35	0.08	1.49	0.154
Not presently married	6 (66.7)	3 (33.3)				
Type of marriage						
Monogamy	171 (85.5)	29 (14.5)	1.09	0.39	3.07	0.793
Polygamy	27 (84.4)	5 (15.6)				
Length of relationship						
<= 2 years	41 (75.9)	13 (24.1)	0.43	0.20	0.92	.046*
> 2years	156 (88.1)	21 (11.9)				
Number of children						
None	40 (67.8)	19 (32.2)	1.00			<0.001*
1-2 children	135 (89.4)	16 (10.6)	4.01	1.89	8.51	
3 children and above	23 (92)	2 (8)	5.46	1.17	25.60	
Ethnicity						
Yoruba	90 (78.3)	25 (21.7)	0.40	0.19	0.84	.014*
Others****	108 (90.0)	12 (10.0)				
Religion						
christianity	139 (85.3)	24 (14.7)	1.36	0.64	2.93	.424
Islam	51 (81)	12 (19)				

Key *significant; LCI Lower confidence interval; UCI**Upper confidence interval**

****Others- Hausa/Fulani, Igbo

4.9.1. Association between the Socio-demographic Characteristics and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

The association between non-pregnant respondents' demographic characteristics and their disclosure of positive HIV status is shown in table 19 below. Respondents age 20- 34 years, 52 (48.6%) significantly (p=0.016) disclosed their status thanage group 35-49 years, 42 (32.8%). Those presently married, 121 (79.1%) significantly (p<0.001) disclose their status than those not presently married, 20 (24.4%). Furthermore respondents in monogamous marriage ,114 (72.2%) significantly disclose status compared with respondents in polygamus marriage, 26 (45.6%). Also respondents with 1-2 children, 46 (67.6%) significantly (p=0.014) had disclosed status than those with 3 children and above, 84 (61.3%) and the primigravida, 11 (36.7%). Considering ethnicity, those from other minor group, 28 (77.8%) significantly (p=0.003) disclose status than hausa/fulani ethnicity, 29 (76.3%) and Yoruba ethnicity, 57 (49.6%). There were no significant differences in the association of respondents' length of relationship and religion.

Table 19: Association between the Socio-demographic Characteristics and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

	Non-pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI**	UCI***	P-Value
Age group						
20-34	52(48.6)	55(51.4)	1.94	1.14	3.29	0.016*
35-49	42(32.8)	86(67.2)				
Marital status						
Presently married	121(79.1)	32(20.9)	0.09	0.05	.16	.000*
Not presently married	20(24.4)	62(75.6)				
Type of marriage						
Monogamy	114(72.2)	44(27.8)	3.09	1.65	5.78	.001*
Polygamy	26(45.6)	31(54.4)				
Length of relationship						
<= 2 years	14(73.7)	5(26.3)	1.54	.53	4.46	.615
> 2years	127(64.5)	70(35.5)				
Number of children						
None	11(36.7)	19(63.3)	1.00			.014*
1-2 children	46(67.6)	22(32.4)	3.61	1.47	8.88	
3 children and above	84(61.3)	53(38.7)	2.74	1.21	6.21	
Ethnicity						
Yoruba	57(49.6)	58(50.4)	0.42	0.25	0.72	.001*
Others****	84 (70.0)	36 (30.0)				
Religion						
christianity	100(62.9)	59(37.1)	1.249	0.70	2.24	.457
Islam	38(57.6)	28(42.4)				

Key *significant; LCI Lower confidence interval; UCI**Upper confidence interval**

****Others- Hausa/Fulani, Igbo

4.9.2. Association between the Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among pregnant women

Table 20 shows the relationship between selected socio-economic characteristic of pregnant women. The respondents highest educational level show those with tertiary education, 63 (92.6%) significantly (p=0.004) had disclosed status than those with secondary education, 96 (76.8) and those with primary education and below, 39 (92.97%). There was no statistically significant association between respondents' monthly income.

Table 20: Association between the Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among pregnant women

Respondents	Pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI	UCI	P-Value
Educational level						
Primary and below	39(92.9)	3(7.1)	1.00			0.004*
Secondary	96(76.8)	29(23.2)	0.26	0.07	0.89	
Tertiary	63(92.6)	5(7.4)	0.99	0.22	4.28	
Monthly income						
#18,000 and below	38(84.4)	7(15.6)	.97	.36	2.61	1.000
Above #18,000	78(84.8)	14(15.2)				

Key *significant; LCI** Lower confidence interval; UCI**Upper confidence interval

4.9.3. Association between the Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

Table 21 shows the relationship between selected socio-economic characteristic of non pregnant women. There is no association observed among respondents' highest level of education and monthly income when compared with disclosure of their HIV positive status.

Table 21: Association between the Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

	Non-pregnant					
	Disclosed to partner	**Not disclosed to partner**	**OR**	**LCI**	**UCI**	**P-Value**
Educational level						
Primary and below	24(55.8)	19(44.2)	1.00			.291
Secondary	69(57)	52(43)	1.05	0.52	2.12	
Tertiary	48(67.6)	23(32.4)	1.65	0.76	3.61	
Monthly income						
#18,000 and below	63(58.9)	44(41.1)	0.46	0.20	1.07	.077
Above #18,000	28(75.7)	9(24.3)				

Key *significant; LCI** Lower confidence interval; **UCI****Upper confidence interval

4.9.4. Association between spouse Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among pregnant women

The Association between spouse Socio-economic Characteristics and disclosure of respondents towards HIV seropositive status among pregnant women, is shown in Table 22 below. The Respondents spouse's age 35- 49 years, 145 (89.5%) significantly (p=0.011) disclosed their status than age group 20-34 years, 42 (73.2%) and age 50 and above, 11 (78.6%). There was no statistically significant association between spouse level of education.

Table 22: Association between spouse Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among pregnant women

	Pregnant Disclosed to partner	Pregnant Not disclosed to partner	OR	LCI	UCI	P-Value
Spouse age-group						
20-34	41(73.2)	15(26.8)	1.00	-	-	.011*
35-49	145(89.5)	17(10.5)	3.12	1.44	6.78	
50 and above	11(78.6)	3(21.4)	1.34	0.33	5.48	
Spouse level of education						.075
Primary/no formal education	13(86.7)	2(13.3)	1.00	-	-	
Secondary education	89(79.5)	23(20.5)	0.60	0.13	2.83	
Tertiary education	95(90.5)	10(9.5)	1.46	0.29	7.42	

Key *significant ; LCI Lower confidence interval; UCI **Upper confidence interval**

4.9.5. Association between spouse Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among Non-pregnant women

The Association between spouse Socio-economic Characteristics and Disclosure of respondents towards HIV seropositive status among non-pregnant women, is shown in Table 23 below. There were no statistical significance among spouse age and their level of education

4.9.5. Association between spouse Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among Non-pregnant women

The Association between spouse Socio-economic Characteristics and Disclosure of respondents towards HIV seropositive status among non-pregnant women, is shown in Table 23 below. There were no statistical significance among spouse age and their level of education

Table 23: Association between spouse Socio-economic Characteristics and Disclosure of Respondents towards HIV seropositive status among Non-pregnant women

	Disclosed to partner	Not disclosed to partner	OR	LCI	UCI	P-Value
Spouse age-group						
20-34	26(76.5)	8(23.5)	1			0.620
35-49	73(84.9)	13(15.1)	1.73	0.64	4.64	
50 and above	36(67.9)	17(32.1)	0.65	0.25	1.74	
Spouse level of education						0.348
Primary/no formal education	52(81.2)	12(18.8)	1			
Secondary education	44(72.1)	17(27.9)	0.60	0.26	1.39	
Tertiary education	39(81.2)	9(18.8)	1.00	0.38	2.61	

Key: LCI** Lower confidence interval; **UCI****Upper confidence interval

4.9.6. Association between obstetric history and disclosure of respondents towards HIV seropositive status among pregnant women

The association between respondents' gestational age and and disclosure of respondents's HIV status among pregnant women is shown in Table 24 below. Respondents who has been pregnant twice 78 (92.9%) significantly (p=0.001) had disclosed their status than those who had been pregnant once, 43 (69.4%), those pregnant thrice, 50 (84.7%) and those pregnant four or more times, 27 (90.0%).. Also, those accompaned by their partner, 65 (94.2%) significantly (p=0.006) had disclosed to partner, than those not accompanied by their partner, 133 (80.1%). There were no statistical significance among the current gestational age, and number of ANC visits.

Table 24: Association between obstetric history and disclosure of respondents towards HIV seropositive status among pregnant women

	Pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI	UCI	P-Value
Current gestation age						0.491
1-3 months	62(88.6)	8(11.4)	1			
4-6 months	59(81.9)	13(18.1)	0.59	0.23	1.51	
7-9 months	77(82.8)	16(17.2)	0.62	0.25	1.55	
Number of times ever pregnant						0.001*
Once	43(69.4)	19(30.6)	1			
Twice	78(92.9)	6(7.1)	5.74	2.13	15.47	
Thrice	50(84.7)	9(15.3)	2.46	1.01	6.00	
Four or more	27(90)	3(10)	4.00	1.07	14.73	
Number of ANC visits						0.417
First/new visit	44(78.6)	12(21.4)				
Two	56(87.5)	8(12.5)	1.91	0.72	5.08	
Three	51(82.3)	11(17.7)	1.26	0.51	3.15	
Four or more	47(88.7)	6(11.3)	2.14	0.74	6.18	
Accompaned by partner						
Yes	65(94.2)	4(5.8)	4.03	1.37	11.86	0.006*
No	133(80.1)	33(19.9)				

Key *significant; LCI** Lower confidence interval; UCI**Upper confidence interval

4.9.7. Association between HCT profile and Disclosure of Respondents towards HIV seropositive status among pregnant women

The association between HCT profile and disclosure among pregnant respondents is shown in Table 25 below. Respondents who informed their spouses before HIV testing, 109 (97.3%) significantly ($p< 0.001$) had disclosed their status than those who did not inform their spouses, 89 (72.4%). Furthermore, pregnant women who has tested for HIV before been pregnant, 154 (88.5%) significantly ($p= 0.004$) had disclosed to their partner than those who tested positive during the current pregnancy, 44 (72.1%). Also those who are aware of their spouse status, 150 (96.2%) significantly ($P< 0.001$) had disclosed their status than those who are unaware of their partner's status, 48 (60.8%). There were no statistical significance among those who had pre-teest counselling, post-test counseling, tested more than once and those who had disclosed to someone else.

Table 25: Association between HCT profile and Disclosure of Respondents towards HIV seropositive status among pregnant women

	Pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI	UCI	P-Value
Informed spouse before testing						
Yes	109(97.3)	3(2.7)	13.88	4.13	46.70	0.000*
No	89(72.4)	34(27.6)				
pretest counselling						
Yes	190(84.1)	36(15.9)	0.66	0.08	5.44	1.000
No	8(88.9)	1(11.1)				
Test before/during pregnancy						
Before	154(88.5)	20(11.5)	2.98	1.44	6.16	0.004*
During	44(72.1)	17(27.9)				
Received Posttest_counseling						
Yes	193(84.3)	36(15.7)	1.07	0.122	9.45	1.000
No	5(83.3)	1(16.7)				
Tested more than once						
Yes	27(77.1)	8(22.9)	0.57	0.23	1.38	0.214
No	171(85.5)	29(14.5)				
Disclosure to someone else apart from spouse						
Yes	70(90.9)	7(9.1)	2.34	.98	5.61	0.057
No	128(81)	30(19)				
Know partner status						
Yes	150(96.2)	6(3.8)	16.15	6.35	41.03	0.000*
No	48(60.8)	31(39.2)				

Key *significant; LCI** Lower confidence interval; **UCI****Upper confidence interval

4.9.8. Association between HCT profile and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

The association between HCT profile and disclosure among non-pregnant respondents is shown in table 26 below. Respondents who informed their spouses before HIV testing, 104 (89.7%) significantly ($p< 0.001$) had disclosed their status than those who did not inform their spouses, 37 (31.1%). Also non-pregnant women who had pre-tet councelling, 138 (63.0%) significantly ($p= 0.001$) had disclosed their status compares with those who had not been pre-tested, 3 (18.8%). Furthermore, those who are aware of their spouse status, 115 (90.6%) significantly ($P< 0.001$) had disclosed their status than those who are unaware of their partner's status, 26 (24.1%). There were no statistical significance among those who had post-test counseling, tested more than once and those who had disclosed to someone else.

Table 26: Association between HCT profile and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

	Non-pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI	UCI	P-Value
Informed spouse before testing						
Yes	104(89.7)	12(10.3)	19.21	9.42	39.17	0.000*
No	37(31.1)	82(68.9)				
Pre-test counselling						
Yes	138(63)	81(37)	7.38	2.04	26.69	.0001*
No	3(18.8)	13(81.2)				
Receieved Post-test counseling						
Yes	133(60.5)	87(39.5)	1.34	0.46	3.82	0.596
No	8(53.3)	7(46.7)				
Tested more than once						
Yes	83(61.9)	51(38.1)	1.21	0.71	2.04	0.504
No	58(57.4)	43(42.6)				
Disclosure anyonelse						
Yes	96(61.5)	60(38.5)	1.21	0.70	2.10	0.573
No	45(57)	34(43)				
Know partner status						
Yes	115(90.6)	12(9.4)	30.22	14.42	63.37	0.000*
No	26(24.1)	82(75.9)				

Key *significant; LCI Lower confidence interval; UCI**Upper confidence interval**

4.9.9. Association of selected influencing factors to disclosure and Disclosure of Respondents towards HIV seropositive status among pregnant women

The association between level of Knowledge, Stigma and social support compare with disclosure status among pregnant women is shown in Table 27 below. Respondents who had high social support , 130 (9152%) significantly ($p< 0.001$) had disclosed their status to their partner, than those with low social support, 68 (73.1%). There were however no statistical significance among level of knowledge on HIV prevention and treatment, Enacted and Perceived stigma among the pregnant women.

Table 27: Association of selected influencing factors to disclosure and Disclosure of Respondents towards HIV seropositive status among pregnant women

	Pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI	UCI	P-Value
Knowledge category						
Good Knowledge on HIV/ART	168(84.8	30(15.2)	1.31	0.53	3.25	0.623
Poor Knowledge on HIV/ART	30(81.1)	7(18.9)				
Enacted stigma scoring						
High enacted stigma	24(85.7)	4(14.3)	1.14	0.37	3.50	1.000
Low enacted stigma	174(84.1)	33(15.9)				
Perceived Stigma mean score grading						
Low stigma	121(82.3)	26(17.7)	0.67	0.31	1.42	0.356
High stigma	77(87.5)	11(12.5)				
Social Support						
High support	130(91.5)	12(8.5)	3.98	1.89	8.42	0.000*
Low support	68(73.1)	25(26.9)				

Key *significant; LCI Lower confidence interval; UCI**Upper confidence interval**

4.9.10. Association of selected influencing factors to disclosure and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

The association between level of Knowledge, Stigma and social support compare with disclosure status among non-pregnant women is shown in table 28 below. There were no statistical significance among level of knowledge on HIV prevention and treatment, Enacted and Perceived stigma, and social support among the non- pregnant women.

Table 28: Association of selected influencing factors to disclosure and Disclosure of Respondents towards HIV seropositive status among non-pregnant women

	Non-Pregnant					
	Disclosed to partner	Not disclosed to partner	OR	LCI	UCI	P-Value
Knowledge category						
Good Knowledge on HIV/ART	58(65.2)	31(34.8)	1.42	0.82	2.45	0.220
Poor Knowledge on HIV/ART	83(56.8)	63(43.2)				
Enacted stigma scoring						
High enacted stigma	16(61.5)	10(38.5)	1.08	0.47	2.48	1.000
Low enacted stigma	125(59.8)	84(40.2)				
Perceived Stigma mean score grading						
Low stigma	57(62.6)	34(37.4)	1.20	0.70	2.05	0.585
High stigma	84(58.3)	60(41.7)				
Social Support						
High support	89(62.2)	54(37.8)	1.27	0.74	2.16	0.415
Low support	52(56.5)	40(43.5)				

Key *significant; LCI Lower confidence interval; UCI**Upper confidence interval**

4.10. Multivariate analysis

In Table 29 below, logistic regression analysis was done to show the predictor of pregnant respondents to disclosing their HIV positive status. The odds of those who informed their spouse before going for HIV test and disclosure of their HIV positive status was 11.58 times more than those who did not inform their spouses before doing so (AOR 11.58; CI 2.16 – 60.97). Furthermore the odds of those who are aware of their partner's HIV status and disclosure of their HIV positive status was 18.16 times times more than those who are unaware of their partner's status (AOR 18.16; CI 3.82-86.48).

Table 29: Predictors of HIV Positive status disclosure among pregnant women attending ART clinic

	Pregnant			
	AOR	LCI	UCI	pvalue
Informed spouse before testing				
Yes	11.58	2.16	60.97	0.04
No	Ref	-	-	
Know partners status				
Yes	18.16	3.82	86.48	0.00
No	Ref	-	-	

4.10.1. Predictors of HIV Positive status disclosure among non-pregnant women attending ART clinic.

In Table 30 below, logistic regression analysis was done to show the predictor of non- pregnant respondents to disclosing their HIV positive status. The odds of those who were presently married and disclosure of their HIV positive status was 3.65 times more than those who were not presently married, (AOR 3.65; CI 1.39 – 9.63). Also the odds of non-pregnant women in monogamous type of marriage was 3.58 times more than those in polygamous type of marriage, (AOR 3.58; CI 1.36 – 9.46). Furthermore the odds of those who received pretest counsel was 9.39 times more than those who were not counselled before testing, (AOR 9.39; CI 1.13 – 78.10). Also those who were aware of their partner's HIV status and disclosure of their HIV positive status was 25.95 times times more than those who were unaware of their partner's status (AOR 25.95; CI 9.57 - 70.42).

Table 30: Predictors of HIV Positive status disclosure among non-pregnant women attending ART clinic.

	Non-Preg variables			
	AOR	LCI	UCI	P-value
Marital status				
Presently married	3.654	1.386	9.634	0.009
Not presently married	Ref	-	-	
Type of marriage				
Monogamy	3.58	1.355	9.455	0.01
Polygamy	Ref	-	-	
pretestcounselling				
Yes	9.386	1.128	78.097	0.038
No	Ref	-	-	
Awareness of partner's status				
Yes	25.953	9.566	70.415	<0.001
No	Ref	-	-	

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

The goal of HIV sero status disclosure, is the prevention of further transimission of HIV. Mother to child transmission of HIV is one of the identified risk of HIV transimission in Nigeria, prevention of the virus is considered as the most feasible way in reversing the HIV epidemics (NACA, 2015). Sero- staus disclosure has great implication for PMTCT in that it enhances adherence to key programme interventions, leads to increased utilization of preventive strategies and enables partner counseling and HIV testing, aimed at preventing transimission among sex partners (Pride et al., 2011; Stirratt et al., 2006). The rate of serostatus disclosure varies across countries and also within countries (Antelman et al., 2001; Sagay et al., 2006). Following the observed feminization of the HIV epidemic, where prevalence is higher for females than male based on the gender based assement of the National HIV/AIDS response in 2013; with this background was the assement of disclosure among the study population based.

Seropositive disclosure rate of 84.3% and 60.0% among the pregnant and non-pregnant women respectively was found in this study. Prevalence observed among the pregnant respondents is higher when compared to previous reports among pregnant women in Southwestern part of Nigeria, 50.9% -71.2% (Adebayo et al., 2014; Amoran, 2012). But similar to 89% reported among positive mothers in Northern Nigeria (Sagay et al., 2006), also high prevalence of disclosure was reported in studies done in Enugu, Nigeria and Malawi (Emily Anton Bobrow, 2008; Ezegwui et.al:, 2009). The pattern of disclosure from this study shows that majority of the respondents who had disclosed their status to their partners did by themselves; 54% of the

pregnant respondents and 58.2 % of the non-pregnant women . This is a common trend and is comparable to results of other studies in Nigeria (Igwegbe & Ugboaja, 2010; Makin et. al., 2008; Sagay et al., 2006). Partner disclosure ensures emotional, physical and psychological support from the affected partner and increases the partner's ability to access preventive strategies. Reason for disclosure to partner were due to concerns for partners heath. A significant proportion of the respondents in this study disclosed their HIV status to their parents and close family members. This corroborates a previous study in Nigeria where the majority of those studied confided in close family members (Ezegwui et al., 2009). This has a positive implication because family support is very important in PMTCT programmes for optimal access to preventive strategies such as avoidance of breastfeeding and adherence to therapy. In Nigeria the mothers were more likely to be confided in, than the fathers with respect to HIV status disclosure (Ezegwui et al., 2009; Sagay et al., 2006). A few women in this study disclosed their HIV status to their close friends for social and psychological support also. A large proportion of pregnant, 66.4% and non-pregnant (46.0%) women , alike who participated in this study were aware of their partners' HIV status.

Marital status, been presently married from a monogamous setting were associated with disclosure status among the non-pregnant women, ethnicity and other socio-demographic status do not have effect on disclosure. As regards ethnicity, among the pregnant respondents, those from non-Yoruba ethnic group in this study tends to disclose their status when compared to their yoruba pregnant counterpart. From a study done in Nnewi, South Eastern, Nigeria as regards marital status, being single was associated with more likelihood of non-disclosure of serostatus (Igwegbe & Ugboaja, 2010). This has been observed previously among south African women

(Read, 2003). The married women may feel more confident than the single mothers when it comes to disclosure of status.

Studies show that disclosure of HIV status is influenced by a number of factors, which could be due to; fear of stigmatization, divorce/separation, abandonment and violent reactions from the partners (Antelman et al., 2001). Low level of income (Clum et al., 2013), The study reported low level of overall enacted stigma among both respondents, this could be attributed to the fact that over the years, the response to HIV/AIDs has increased in scope and quality brought in by many sector and stakeholders, and this has address through policies the challenges posed, thereby providing enabling environmmt for people infected. However , concerning perceived stigma, the overall high evel of percieved stigma was observed among those non-pregnant, compared to those pregnant who recorded low perceive, which could be explained through the antenatal clinic periods spent with health workers . Support groups offer services to the members ranging from prevention strategies, positive living, and access to treatment and monitoring. There are many issues confronting people living with HIV/AIDS such as stigma, medication compliance, social interactions and coping with a chronic illness. The support groups address these concerns and offer emotional support that comes from group interactions. Therefore, PMTCT enrollees should be encouraged to belong to the HIV Social Support Groups. ; From the study the predictors of disclosure centres round the spouse- informing the spouse before goin for HIV test, and awareness of partner's HIV status among the pregnant women and among the non-pregnant, been presntly married in a monogamy family setting, having received pre-test counselling and awareness of partner's status.

An adherence rate to Anti-retroviral therapy (ART) of 63.0% had been reported from Nigeria, among the non-pregnant population (Olowookere, Fatiregun, Akinyemi, Bamgboye, &

Osagbemi, 2008) similar to the study's observation among the non-pregnant women, however the pregnant women report a high level of self reported adherence, in association with disclosure status.

Study limitation

The study however has the following limitations:

Main limitation of this study was that the study targeted a specific population (women of childbearing age) in comprehensive HIV treatment and care setting, so the findings may not be generalized to other populations and settings.

Interviews were conducted at the heath facilities, requiring the patients to stay extra minutes than others after their clinic hour, making clients that has not disclosed apprehensive. This could also cause information bias due to fear of disclosed information, reaching the health care providers . This was however minimized by interviewing the women in a private area where information confidentiality was assured.

5.2. CONCLUSION

The findings in this study shows:

Disclosure of sero-positive status among pregnant women is higher compared with the non-pregnan women. This is due to spouse been pre-informed about the testing and respondent's awareness of parttner's sero-status. Fatoctor such as stigma, Knowledge of HIV reported as been responsible for disclosure in similar studies .....were however, not significantly associated with HIV sero-status disclosure among both groups. Being pregnant is also a supporting factor to disclose status due to the responsibility of preventing transmission to the unborn child and increased contact with health care providers which may in turn increase adherence to anteroviral theraphy.

5.3 RECOMMENDATIONS

In view of the findings from this study, the following recommendations are hereby made;

5.3.1. Government: Formulation of effective policies at the Federal, State and Local Governments levels to encourage couple counseling and testing, and community testing.

5.3.2. To the healthcare workers

1. Sensitization and awareness creation women about the need to inform their spouses to company them for testing during antenatal clinic visits, and during routine check-up at the health facility.
2. Making available partner's invitation letters in other to attach the importance of couple counselling and subsequent support
3. Continuous involvement of PLHIV/AIDS in HIV/AIDS mobilization campaigns and as ambassadors in disseminating information within the community and organized peer groups among younger people living with HIV/AIDS can be used in the provision of comprehensive information on HIV/AIDS transmission and prevention.

5.3.3. To pregnant women

Early booking during antenatal care to ensure early diagnosis and prompt treatment of those yet to confirm their status improve utilization of intermittent preventive treatment.

REFERENCES

Adebayo, A. M., Ilesanmi, O. S., Omotoso, B. A., Ayodeji, O. O., Olawumi, A., & Alele, F. O. (2014). Disclosure to sexual partner and condom use among HIV positive clients attending ART clinic at a tertiary health facility in South West Nigeria. *PanAfrican Medical Journal, 8688*, 1–11.

Adekanle, D. A., Olowookere, S. A., Adewole, A. D., Adeleke, N. A., Abioye-kuteyi, E. A., & Ijadunola, M. Y. (2015). Sexual experiences of married HIV positive women in Osogbo , southwest Nigeria : role of inappropriate status disclosure. *BMC Women's Health*, **15** (6), 4–9.

Adesina, O. S. (2014). HIV / AIDS as a Threat to Nigeria's National Security Department of Political Science, *International Journal of Business and Social Science*, *5*(5), 231.

Aleruchi, O., Peterside, N. F., & Ezekoye, C. C. (2014). Seroprevalence of HIV infection among blood donors at the University of Port Harcourt Teaching Hospital , Rivers State , Nigeria. *Global Institute for Research & Education*, *3*(2), 1–7.

Amoran, O. E. (2012). Predictors of disclosure of sero-status to sexual partners among people living with HIV / AIDS in Ogun State , Nigeria. *Nigerian Journal of Clinical Practice*, *15*(4), 385-390.

Antelman, G., Smith Fawzi, M. C., Kaaya, S., Mbwambo, J., Msamanga, G. I., Hunter, D. J., & Fawzi, W. W. (2001). Predictors of HIV-1 serostatus disclosure: a prospective study among HIV-infected pregnant women in Dar es Salaam, Tanzania. *AIDS (London, England)*, *15*(14), 1865–74.

Byamugisha, R., Tumwine, J. K., Semiyaga, N., & Tylleskär, T. (2010). Determinants of male involvement in the prevention of mother-to-child transmission of HIV programme in Eastern Uganda : a cross-sectional survey. *Reproductive Health Journal*, 7 (12), 1–9.

Clum, G. A., Czaplicki, L., Andrinopoulos, K., Muessig, K., Hamvas, L., & Ellen, J. M. (2013). Strategies and outcomes of HIV status disclosure in HIV-positive young women with abuse histories. AIDS Patient Care and STDs, *27*(3), 191–200.

Derebe, G., Biadgilign, S., Trivelli, M., Hundessa, G., Robi, Z. D., Gebre-mariam, M., & Makonnen, M. (2014). Determinant and outcome of early diagnosis of HIV infection among HIV-exposed infants in southwest Ethiopia. *BMC Research Notes*, 7(309), 1–8.

Egesie, J., & Egesie, G. (2011). Seroprevalence of Human Immunodeficiency Virus (HIV) Among Blood Donors in Jos - Nigeria. *HIV-Infection-Impact, Awareness and Social Implication of living with HIV/AIDs, Dr. Eugenia Barros (Ed.)*, ISBN: 978-953-307-343-9, In Tech, 233-240.

Emily Anton Bobrow. (2008). Factors that influence disclosure and program participation among pregnant HIV_positive Women: A mixed methods study in Lilongwe, Malawi.

Ezegwui, H. U., Nwogu-Ikojo, E. E., Enwereji, J. O., & Dim, C. C. (2009). HIV Serostatus Disclosure Pattern Among Pregnant Women in Enugu, Nigeria. Journal of Biosocial Science, *41*(06), 789.

Federal Ministry of Health, 2014. National AIDS & STIs Control Programme 2014 Annual report on HIV / AIDS Health sector response in Nigeria.

Federal Ministry of Health Nigeria, 2013. National HIV & AIDS and Reproductive Health Survey 2012 (NARHS Plus), 527.

FMOH; NACA. (2013). HIV Epidemic Appraisals in Nigeria: Evidence for Prevention Programme Planning and Implementation. *Journal of Chemical Information and Modeling*, *53*(9), 1689–1699.

Godana, W., & Atta, A. (2013). Prevalence of HIV / AIDS and its associated factors among Prevention of Mother-to-Child transmission (PMTCT) Service users in Jinka town Health Institutions , South Omo zone , South Ethiopia. *Science Journal of Public Health, 1*(3), 125–130.

Hancock, T. (1985). The mandala of health: A model of the human ecosystem. *Family & Community Health: The Journal of Health Promotion & Maintenance*, *8*(3), 1–10.

Igwegbe, A. O., & Ugboaja, J. O. (2010). Rate and correlates of HIV serostatus disclosure among HIV positive pregnant women in Nnewi southeastern Nigeria. Journal of Medicine and Medical Science, *1*(7), 296–301.

Joint United Nations Programme on HIV/AIDS (UNAIDS). (2012). *Women out loud: How women living with HIV will help the world end AIDS. ISBN 978-92-9173-995-0.*

Joint United Nations Programme on HIV/AIDS (UNAIDS). (2013). *Global report on the AIDS Epidemic*. ISBN 978-92-9253-032-7.

Kassaye, K. D., Lingerh, W., & Dejene, Y. (2005). Determinants and outcomes of disclosing HIV-sero positive status to sexual partners among women in Mettu and Gore towns , Illubabor Zone southwest Ethiopia. *Ethopian Journal for Health Development,* 19 (2), 126-

131.

Kiula, E. S., Damian, D. J., & Msuya, S. E. (2013). Predictors of HIV serostatus disclosure to partners among HIV-positive pregnant women in Morogoro, Tansania. *BMC Public Health*,**13** (433), 1-9.

Klopper, C. E. (2011). Factors influencing hiv status disclosure. Stellenbosch University.

Makin, J. D., Forsyth, B. W. C., Visser, M. J., Sikkema, K. J., Neufeld, S., & Jeffery, B. (2008). Factors affecting disclosure in South African HIV-positive pregnant women. AIDS Patient Care and STDs, *22*(11), 907–16.

Medley, A., Garcia-moreno, C., Mcgill, S., & Maman, S. (2004). Rates , barriers and outcomes of HIV serostatus disclosure among women in developing countries : implications for prevention of mother-to-child transmission programmes. *World Health Organization*, *82*(04), 299–307.

Moodley, D., Esterhuizen, T. M., Pather, T., Chetty, V., & Ngaleka, L. (2009). High HIV incidence during pregnancy: compelling reason for repeat HIV testing. *AIDS*, *23*(10), 1255–1259.

Mugo, N. R., Heffron, R., Donnell, D., Wald, A., Were, E. O., Rees, H., & Baeten, J. M. (2011). Increased risk of HIV-1 transmission in pregnancy: a prospective study among African HIV-1-serodiscordant couples. *AIDS (London, England)*, *25*(15), 1887–95.

National Agency for the Control of AIDS ; UNAIDS. (2010). *United Nations General Assembly (UNGASS) Country Progress Report*, (2), 1–109.

National AIDS/STIs Control Programme Federal Ministry of Health Abuja-Nigeria. (2014). *Integrated National guidelines for HIV Prevention Treatment and Care.*

National Agency for the Control of AIDS (NACA). (2015). National HIV / AIDS Prevention Plan, 1–84. Retrieved from http://sbccvch.naca.gov.ng/sites/default/files/National HIV PrevPlan 2014-2015(1).

National Population Commission. (2010). Federal Ministry of Health 2006 Population and Housing Census, *IV*.

National Population Commission. (2013). Nigeria Demographic and Health Survey.

Olowookere, S. A., Fatiregun, A. A., Akinyemi, J. O., Bamgboye, A. E., & Osagbemi, G. K. (2008). Prevalence and determinants of nonadherence to highly active antiretroviral therapy among people living with HIV/AIDS in Ibadan, Nigeria. *The Journal of Infection in Developing Countries*, *2*(05), 369–372.

The Osun State Agency for the Control of HIV / AIDS, O-SACA. (2015). *O-SACA News Publication*, 1 (1), 1-39.

Pennap, G. R., Abdullahi, U., & Bako, I. A. (2013). Adherence to highly active antiretroviral therapy and its challenges in people living with human immunodeficiency virus (HIV) infection in Keffi , Nigeria. *Journal of AIDS and HIV Research*, *5*(2), 52–58.

Pride, M., Chadambuka, A., Shambira, G., Tshimanga, M., Gombe, N., & Nyamayaro, W. (2011). Determinants of non-disclosure of HIV status among women attending the prevention of mother to child transmission programme, Makonde district, Zimbabwe, 2009. *PanAfrican Medical Journal*, *8688*, 1–12.

Read, J. S. (2003). Human Milk, Breastfeeding, and Transmission of Human Immunodeficiency Virus Type 1 in the United State. *American Academy of Pediatrics Technical Report, 112*(5).

Sagay, A., Musa, J., Ekwempu, C., Imade, G., Babalola, A., Daniyan, G., Kanki, P. (2006). partner disclosure of hiv status among hiv positive. *African Journal of Medicine and Medical Science*, **35**, 119-23.

Shikwane, M. E., Villar-loubet, O. M., Weiss, S. M., Jones, D. L., Elisa, M., Villar-loubet, O. M., & Weiss, S. M. (2013). HIV / AIDS HIV knowledge , disclosure and sexual risk among pregnant women and their partners in rural South Africa. *SAHARA-J: Journal of Social Aspects of HIV/AIDS*, **10** (2), 105-112.

Simbayi, L. C., Kalichman, S. C., Strebel, A., Cloete, A., Henda, N., & Mqeketo, A. (2007). Disclosure of HIV status to sex partners and sexual risk behaviour among HIV positive Men and Women, Cape -Town, South Africa. *Sexual Transmitted Infection Journal*, **83**, 29–34.

Spangler, S. A., Onono, M., Bukusi, E. A., Cohen, C. R., & Turan, J. M. (2014). HIV-Positive Status Disclosure and Use of Essential PMTCT and Maternal Health Services in Rural Kenya. *Journal of AIDS and HIV research*, **67**, 235–242.

Stirratt, M. J., Remien, R. H., Smith, A., Copeland, O. Q., Dolezal, C., & Krieger, D. (2006). The role of HIV serostatus disclosure in antiretroviral medication adherence. *AIDS and Behavior*, *10*(5), 483--493.

United Nations Programme on HIV/AIDS-UNAIDS. (2011). *World AIDS Day Report 2011*. 1-52. ISBN 978-92-9173-904-2.

UNAIDS. (2014). A focus on women : a key strategy to preventing HIV among children.

UNAIDS. (2015). *Getting to zero 2011-2015 Strategy*.

WHO. (2000). Opening up the HIV / AIDS epidemic, 1--43. Retrieved from http://www.who.int/ethics/topics/opening_up_ethics_and_disclosure_en_2000.

World Health Organisation. (2010). Preventing Mother-to-Child transmission of HIV Strategic Vision 2010-2015. Preventing mother-to-child transmission of HIV to reach the UNGASS and Millennium Development Goals

World Health Organisation; UNSAID. (2013). 16 Ideas for addressing violence against women in the context of the HIV epidemic.

APPENDIX 1

CONSENT FORM

This study "Factors influencing human immunodeficiency seropositive status disclosure: comparison of pregnant and non-pregnant women attending anteretroviral clinics in osun state, Southwest Nigeria. being conducted by Dr Adeola-musa Oluwatoyin Omolara, a resident of Nigeria Field Epidemiology and Laboratory Training Programme (NFELTP).

Introduction

Disclosure of HIV status to partners has many benefits, including: decreased anxiety, increased social support, increased access to prevention of mother-to-child transmission and to care, treatment and support programs, the ability to plan for the future, the chance for partners to be tested, and the opportunity to decrease risky behaviors and the eventual reduction in the incidence of new cases of HIV.

This survey will entail questions on your socio-demographic characteristics like; age, marital status, status disclosure and influencing factors, I will not ask for your name, address or other personal information that can identify you. You do not have to answer any question you do not want to and you can end the interview at any time. Any information you give us will be confidential.

There is no immediate benefit to your participating in this survey, but the information derived from the survey will help many other people to take an informed decision. The information when collated may be published in a scientific journal, thank you for your cooperation.

Concent to Participate

I understand that I do not have to answer any question I do not want to and that I can end the interview at any time and this will not prejudice or change my future care.

I have read and understood the purpose of this survey, and the confidential nature of the information that will be collected and utilised during the survey

I have had the opportunity to ask questions regarding this survey and my questions have been answered to my satisfaction.

I, the undersigned, agree to participate in survey and authorize the colletion and disclosure of my personal information as outlined in this consent form.

Signature of Respondent (or thumb print.

APPENDIX 2

QUESTIONAIRE

Serial No.....

Introduction

Good day ma, I would like to ask if you have ever told your partner or anyone about your status and what are the factors influencing such. I will not ask for your name, address or other personal information that can identify you. You do not have to answer any question you do not want to and you can end the interview at any time. Any information you give us will be confidential. If you have any question about the survey, do not hesitate to ask. Thank you for your cooperation.

SECTION A: SOCIO-DEMOGRAPHIC DATA

1. Age (as at last birthday in years)
2. Marital Status: a) Single b). Married c). Divorced d). Widowed e). Seperated f). Cohabiting
3. If married, type of marriage: a). Monogamy b). Polygamy
4. Length of relationship a). Less than 6 months b). 7-12 months c).1-2 years d). More than 2 years
5. Number of children: .....
6. Ethnic group : a). Yoruba b). Igbo c). Hausa d). Others (please specify).....
7. Religion: a). Christianity b). Islam c). Traditional d). Others (please specify)
8. Highest level of Education: a). No formal Education b). Primary c). Secondary d) Tertiary education
9. Are you currently employed? a). Yes b). No
   (if 'No' skip to question 12 please)
10. If yes to question 9, what is your occupation (please specify) a). Student b). Artisan c) Trading d). Farming e). civil servant f) Others specify.....
11. Average Monthly income in Naira.....
12. Age of spouse in years (as at last birthday) .....

13. Spouse highest level of education: a). No formal Education b). Primary education c) Secondary education d) Tertiary education

14. Spouse Occupation (please specify) a). Student b). Artisan c) Trading d). Farming e). civil servant f)). Unemployed g).Others specify…..

SECTION B: Obstetrics History (for pregnant women ONLY)

15. What is the gestational age of this current pregnancy .....

16. How many times in your lifetime have you been pregnant? a). once b). twice c). Thrice d). Four times

17. In this current pregnancy, how many ANC visit have you made: a). New visit –first b). Two c). Three d). Four and more

18. Did your partner accompany you for any visit? . a). Yes b). No

SECTION C: Knowledge about HIV and ART Services

19. What do you understand HIV/AIDs to mean? .....

20. How can an individual be infected by the virus? (you can choose more than one option)

20	Questions on mode of transmission of HIV	Yes	No	Don't know
a.	Unprotected sexual intercourse			
b.	Blood transfusion			
c.	Mother to child transmission			
d.	Injection drug use			
e.	Mosquitoe bite			
f.	Shaking hands with someone who has AIDS			
g.	From wearing on people clothes			

21	Questions on prevention of HIV	Yes	No	Don't know
a.	Does condom (rubber) use during sexual intercourse prevent the spread of HIV/AIDS?			
b.	Does having sexual intercourse with many different people increase the chances of getting AIDS?			

c.	Can eating a balanced diet prevent sonmoone fromd getting AIDS ?			
23	Question on ART treatment			
a.	Do you fully understand what the drug treatment for HIV entails?			
b.	Is ART a treatment that goes of for a life time?			
c.	Does ART reduce the risk of HIV transmission?			
d.	Does ART provide cure for HIV?			

SECTION D: HIV Counselling and Testing Characteristics

24. Did you discuss about HIV testing with spouse before test? a). Yes b). No
25. Did you receive pretest counselling? a). Yes b). No
26. When was the date of first HIV testing?.....
27. Was diagnosis before/ during this pregnancy? (for pregnant women)
    a). Before b).During
28. Were you tested (diagnosized) at this site? . a). Yes b). No
29. If 'No' where? (specific site tested).....
30. Did you receive post test councelling a). Yes b). No
31. Did you receive your result after testing? a). Yes b). No
32. After initial diagnosis was confirmed have you tested more than once? a). Yes b). No
33. How many times after, if Yes? .....
34. Where?.....
35. If 'Yes' to question 32, Why?.....

SECTION E: Disclosure and Partners characteristics

36. How long ago were you confirmed positive? ---------- Years ---------- Months
37. Have you disclosed your status to you sexual partner? a). Yes b). No
38. If 'Yes' How did you disclose to your partner? a). Self b). health provider c).
    Others specify please.....

If 'No' for question Question 37, then proceed to question 39,

39. Do you have intentions of disclosing your HIV status later? a). Yes b). No c). Don't know

40. Why did you discloe your HIV status to your sexual partner? a). Ethical reasons b). Concerns for partner's health c). Encouragements from councelors d).Positive social support e) others specify----------

41. How would you describe your partner's initial reaction after learning about your HIV status: a). Supportive b). Indifferent c). Quarrelsome/abusive/denial d). Violent

42. How would you describe your partner's subsequent reaction (after --- months) after learning about your HIV status: a). Supportive b). Indifferent c). Quarrelsome/abusive/denial d). Violent .

43. Have you disclosed your status to anybody else apart from your sexual partner? a). Yes b). No

44. If yes to whom? a). friend b). Religious leader c). Parent d). Sibling e). Colleague f). Others.....

45. What was the duration of time of disclosure to partner? since diagnosis ------Months/ --- --------Years .....

46. Do you know your partners HIV status a). Yes b). No

SECTION F: HIV RELATED STIGMA

S/N	Questions-Enacted stigma	Yes	No
47	Has a hospital worker mistreated you because of your HIV?		
48	Have people looked at you differently because you have HIV?		
49	Has a health care worker avoided touching you because you have HIV?		
50	Have you been told not to share your food or utensils with family because of you have HIV?		
51	Have you been asked not to touch or care for children because you have HIV?		
52	Have you been refused medical care or denied hospital services because you have HIV?		
53	Have family members forced you to move out of your home because you have HIV?		
54	Has a hospital worker made your HIVstatus publicly known to others ?		

55	Has someone threatened to hurt you physically because you have HIV?		
56	Have you been refused housing because people suspected you have HIV?		

Perceived Stigma

"Now I am going to read a list of feelings that people sometimes have about living with HIV. For each statement, please tell me whether you strongly agree, agree, undecided, disagree, or strongly disagree to each statement."

		1 = Strongly disagree	2 = Disagree	3 = Undecided	4 = Agree	5 = Strongly agree
57	Do people accuse you of spreading AIDS in the community?	1	2	3	4	5
58	Do you feel that people gossip about your HIV status?	1	2	3	4	5
59	Do you feel people look down on you?	1	2	3	4	5
60	Do you feel the society isolates you?	1	2	3	4	5
61	Do you feel feel discriminated by health workers?	1	2	3	4	5
62	Do you feel your life in this society is lonely?	1	2	3	4	5
63	Do you worry about how other kids treat your children in school as a result of the HIV	1	2	3	4	5
64	Do you worry about how others will treat your family members as a result the HIV	1	2	3	4	5

SECTION G: SOCIAL SUPPORT SCALE (Medical Outcomes Study)

How often is each of the following kinds of support available to you if you need it?

		None of the time	A little of the time	Some of the time	Most of the time	All of the time
	Emotional/informational support	1	2	3	4	5
65	Someone you can count on to listen to you when you need to talk	1	2	3	4	5
66	Someone to give you information to help you understand a situation	1	2	3	4	5
67	Someone to give you good advice about a crisis	1	2	3	4	5
68	Someone to confide in or talk to about yourself or your problems	1	2	3	4	5
69	Someone whose advice you really want	1	2	3	4	5
70	Someone to share your most private worries and fears with.	1	2	3	4	5
71	Someone to turn to for suggestions about how to deal with a personal problem	1	2	3	4	5
72	Someone who understands your problems	1	2	3	4	5
	Tangible support	1	2	3	4	5
73	Someone to help you if you were confined to bed	1	2	3	4	5
74	Someone to take you to the doctor if needed it	1	2	3	4	5
75	Someone to prepare your meals if you were unable to do it yourself.	1	2	3	4	5
76	Someone to help with daily chores if you were sick	1	2	3	4	5
	Additional item	1	2	3	4	5
78	Someone to do things with to help you get your mind off things	1	2	3	4	5

SECTION H: EVALUATION OF SELF REPORTED ADHERENCE

79. Have you been placed on ART? A). Yes B) No

80. If yes, when was your treatment initiated DD /MM /YY

81. What is the duration of treatment. (Months /Years) .....

S/N	Questions on self reported adherence	Yes	No
82	Do you sometimes forget to take your medicine?		
83	When you feel better, do you sometimes stop your medicine?		
84	Thinking back over the past two weeks, have you missed any of your doses?		
85	Sometimes if you feel poorly when you take the medicine, do you stop taking it?		

SECTION H: EVALUATION OF SELF REPORTED ADHERENCE

79. Have you been placed on ART? A). Yes B) No

80. If yes, when was your treatment initiated DD /MM /YY

81. What is the duration of treatment. (Months /Years) .....

S/N	Questions on self reported adherence	Yes	No
82	Do you sometimes forget to take your medicine?		
83	When you feel better, do you sometimes stop your medicine?		
84	Thinking back over the past two weeks, have you missed any of your doses?		
85	Sometimes if you feel poorly when you take the medicine, do you stop taking it?		

APPENDIX 3

Table 10: Distribution of LGA in Osun State according to senitorial districts

Osun West	Osun East	Osun Cental
Aiyedire	Atakumosa East	Boluwaduro
Ayedaade	Atakumosa West	Boripe
Ede North	Ife Central	Ifedayo
Ede South	Ife East	Ifelodun
Egbedore	Ife North	Ila
Ejigbo	Ife South	Irepodun
Irewole	Ilesha East	Odootin
Isokan	Ilesha West	Olorunda
Iwo	Obokun	Orolu
Olaoluwa	Oriade	Osogbo

APPENDIX 4

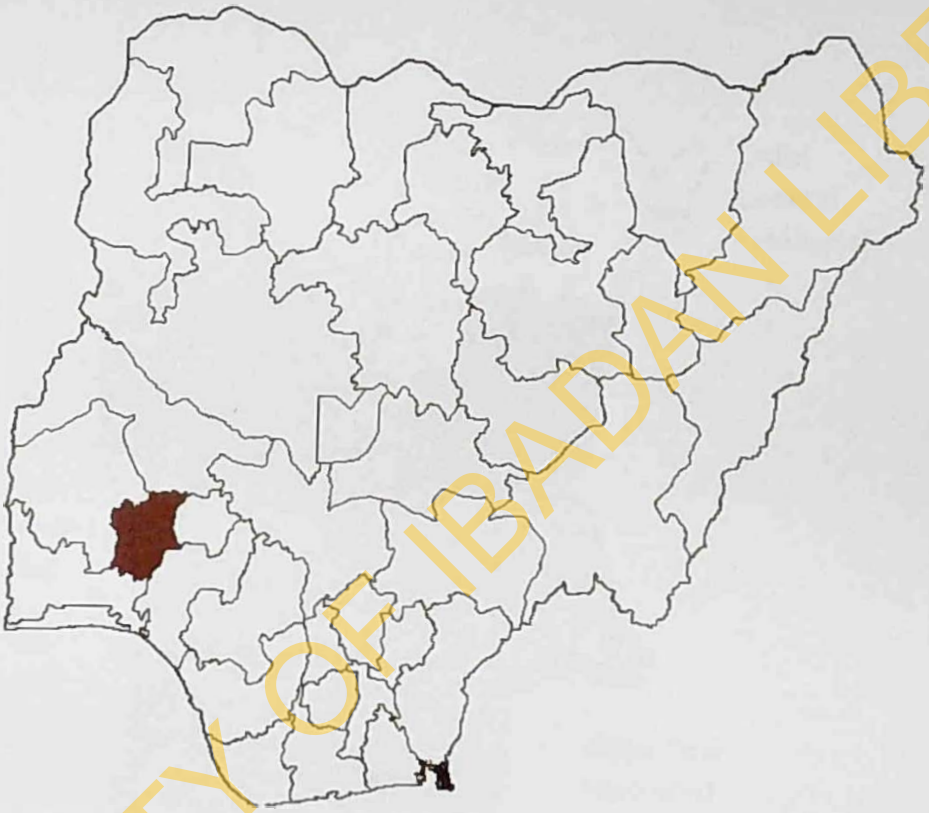


Figure 2: Map of Nigeria, highlighting Osun State in red.

APPENDIX 5

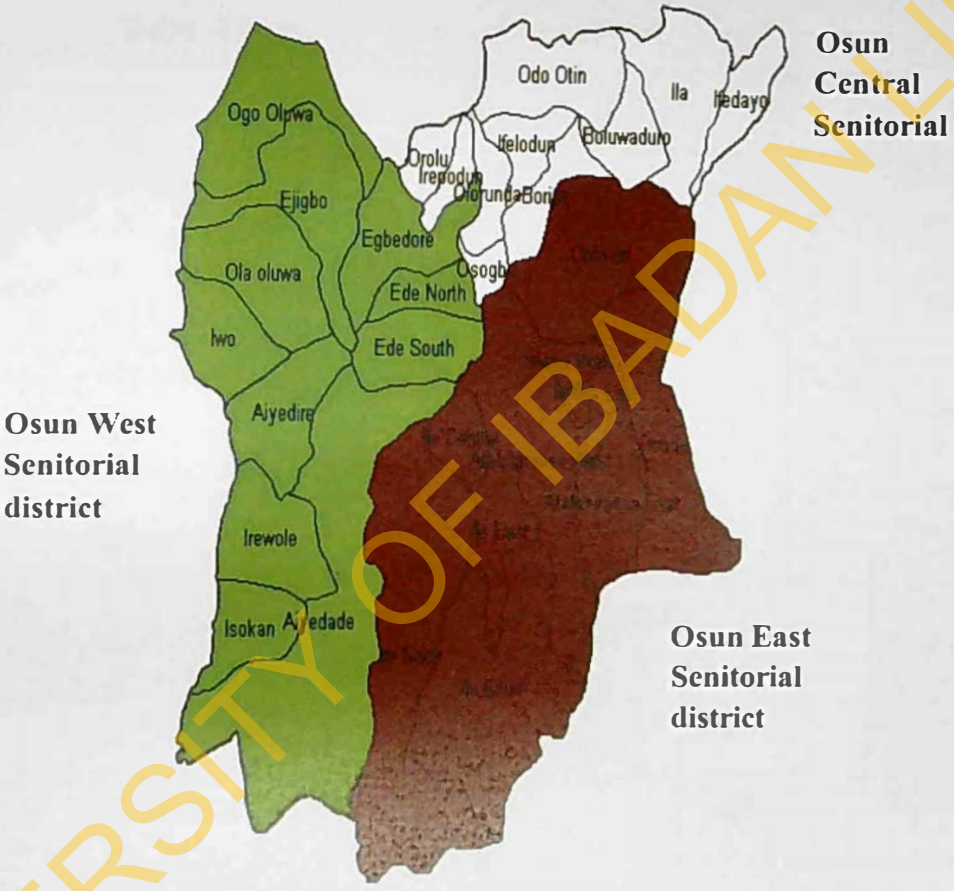


Figure 3: Map of osun state showing the three senitorial districts and Local Government Area

APPENDIX 6

GANTT CHART SHOWING ACTIVITIES CARRIED OUT

	2015	2016							
		May	Jun	Jul	Aug	Sep	Oct	Participant	Project status
Task									
Proposal writing								Researcher	Completed
Proposal Accepted									
Sampling								Researcher	Completed
Recruit research assistant								Researcher	Completed
Obtain Permission from Osun SMOH ERC								Researcher	Completed
Training research assistants								Researcher/ research assistant	Completed
Pretesting of instrument								Researcher	Completed
Questionnaire administration								Researcher/ research assistant	Completed
Data entry/analysis								Researcher/ statistician	Completed
Writing result/Discussion								Researcher	Completed
Dissemination of findings									

Key: In process → **Duration** ▬

MINISTRY OF HEALTH

HEALTH PLANNING, RESEARCH & STATISTICS DEPARTMENT

PRIVATE MAIL BAG NO 4421 OSOGBO. OSUN STATE OF NIGERIA

Your Ref. No .....

All Correspondence should be addressed to
The Permanent Secretary (Admin)

Our Ref. No **OSHREC/PRS/569T/101**

19th July 2016

Dr. O.O. Adeola- Musa
18, Taiwo Oladiran street
Okinni,
Osogbo

Factors influencing Human immune-deficiency sero-positive status disclosure- comparison of pregnant and non-pregnant women attending ante-retroviral clinic in Osun state, south-west Nigeria

I wish to inform you that the Osun State Health Research Ethics Committee (OSHREC) has granted you an approval to proceed on the above exercise.
The approval lasts one year spanning July 19th, 2016 and July 18th, 2017.

You are to inform the Committee the starting date of the exercise and if there is any delay in starting, kindly inform the committee to enable her adjust the date accordingly which will allow for monitoring by designated representative of the committee. A copy of the outcome of the research must be made available to the committee.
Regard this letter as certificate of OSHREC approval

Thank you.

Dr. Akinyinka Esho,
Chairman.
(OSHREC)

MINISTRY OF HEALTH

HEALTH PLANNING, RESEARCH & STATISTICS DEPARTMENT
PRIVATE MAIL BAG NO 4421 OSOGBO, OSUN STATE OF NIGERIA

Your Ref. No .....
All Correspondence should be addressed to
The Permanent Secretary (Admin)
Our Ref. No OSHREC/PRS/569T/101

19th July 2016

Dr. O.O. Adeola- Musa
18, Taiwo Oladiran street
Okinni,
Osogbo

Factors influencing Human immune-deficiency sero-positive status disclosure- comparison of pregnant and non-pregnant women attending ante-retroviral clinic in Osun state, south-west Nigeria

I wish to inform you that the Osun State Health Research Ethics Committee (OSHREC) has granted you an approval to proceed on the above exercise.
The approval lasts one year spanning July 19th, 2016 and July 18th, 2017.

You are to inform the Committee the starting date of the exercise and if there is any delay in starting, kindly inform the committee to enable her adjust the date accordingly which will allow for monitoring by designated representative of the committee. A copy of the outcome of the research must be made available to the committee.
Regard this letter as certificate of OSHREC approval

Thank you.

Dr. Akinyinka Esho,
Chairman.
(OSHREC)