

**Reasons for poor-adherence to  
Antiretroviral Therapy (ART) by young  
female (15 – 24 years) HIV/AIDS patients  
in Oshakati District**

by  
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## **ABBREVIATIONS AND ACRONYMS**

AIDS	Acquired immune deficiency syndrome
STD	Sexually Transmitted disease
GRN	Government Republic of Namibia
ART	Antiretroviral Therapy
ARV	Antiretroviral
ANC	Antenatal care
HIVDR	Human Immunodeficiency Virus Drug Resistance
HIV	Human immunodeficiency virus.
MEMS	Monitoring Events Monitoring System
MoHSS	Ministry of Health and Social Services
PLHIV	People Living with HIV
PMTCT	Prevention of Mother to Child Transmission
UNAIDS	Joint United Nations Program on HIV/AIDS
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

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## **Abstract**

Namibia has a small population of about 2 million people and its HIV/AIDS situation is not different from that of the global trend. Approximately 20% of the sexually active adult population lives with the virus (MoHSS, 2008). Studies carried out in Namibia in 2008 shows that 60% of the female were infected with HIV meaning the other 40% accounted for the rest of the population involving men and children (MoHSS,2008). This became a cause for concern to stimulate a research in this category of subjects. In Namibia, the national sentinel prevalence was 18.8% among HIV pregnant women between ages 15- 49years. And Oshakati was the third highest HIV/AIDS prevalence district in the country with 25.1% and this is higher than the national average.(MoHSS, 2010:12).This stimulated interest for this study in Oshakati district in Namibia.

**Study objective of the Research:** The objective was to establish the reason for poor adherence amongst female-HIV/AIDS patients, 15-24 years of age, currently taking their medications from Oshakati Hospital's ARV Clinic in order to recommend good guidelines that will help to improve adherence practices.

**Methods:** A quantitative cross-sectional survey method was used to collect data from the subjects. The tool used was questionnaires with predetermined set of questions having a set of answer options on socio-demographic, socio-economic information/level of education, religious belief /alcohol history, food and nutrition security, knowledge on antiretroviral therapy (ARV) drugs, practice of health care providers and patients on ART, treatment regimen/co-management and social-cultural factors, to assess adherence practices. The researcher worked with a community counselor at the Oshakati ART clinic. She was responsible for pre and post adherence counseling of the patients before the data collection exercise.

**Results:** A total of 60 patients were used for the survey. The quantitative data analysis using patient self report adherence methods gave the following: Two-weeks recall 98%, oneweek78.33% and four days 68.33%. The mean adherence rates was estimated to be 88%.Reasons cited for missing medication were unemployment 23%, long waiting time 52%, forgetfulness 52%,felt better 20%,too ill/felt worse 15%, side effects and too many pills 3% for

TB patients on ART, problem with hospital staff 8%, stock-out 7%, avoiding friends /relatives because of their illness 27%. Alcohol abuse was not reported in this survey as adherence problem and was no report of ARV stocks out from Central Medical Stores during the study(MoHSS, 2014).

**Recommendations:**A functional ART committee currently lacking at this unit is recommended. Home base care services, follow up print out,community-based approaches, which involves training community health workers to supervise ART in patient's homes is highly recommended. The use of practical reminders should be communicated to the patients during adherence counseling. Furthermore, means of transportation should be provided for them, like providing bus to convey the patients from a central location close to their homes to bring them to the hospital and take them back home.

**Conclusions :**A lot of efforts is required to improve adherence. The constraints of adherence found in this study should be addressed and more efforts to improve on the strength of the key facilitators of adherence. The governments, non government organizations, the commercial sector, needs to work together in a multi-sectoral dimension, involving the patient, the community, health care workers and policymakers in collaboration with the hospital management committees to address this adherence issues to make a big difference.



## Opsomming

Namibië is 'n klein landjie met 'n bevolking van ongeveer 2 miljoen mense. Die gevolge van die MIV/Vigs-pandemie is egter vir hierdie land dieselfde as vir enige ander land. Studies wat in Namibië gedoen is dui daarop dat die voorkoms van MIV/Vigs in Namibië baie hoog is, met Oshakati die distrik met die hoogste voorkoms in die hele Namibië.

Die doel van die studie was om te probeer vasstel waarom vroulike MIV-pasiënte nie getrou hulle medikasie gebruik nie. 'n Verdere doelwit was om riglyne vir die antiretrovirale eenheid van die Oshakati hospitaal te ontwikkel ten einde te verseker dat pasiënte hou by die voorgeskrewe gebruik van die medikasie wat hulle ontvang.

Ten einde die navorsing uit te voer is 'n vraelys gebruik by 'n steekproef van 60 pasiënte in die Oshakati hospitaal in Namibië. Redes wat vir die ongereelde gebruik van medikasie aangevoer is was onder andere werkloosheid, lang waglyste by die hospitaal, blote vergeet om medikasie te gebruik, pasiënte voel beter en los dan die medikasie, nuwe-effekte en alkohol misbruik.

Voorstelle word aan die einde van die studie gemaak vir die verbetering van die bogenoemde situasie. Die daarstelling van 'n funksionele antiretrovirale komitee word voorgestel en ander praktiese oorwegings (soos om byvoorbeeld boodskappe aan pasiënte te stuur) word aan die hand gedoen. Daar word ook 'n sterk motivering uitgemaak vir die beter opleiding vir gemeenskapswerkers wat direk met MIV/Vigs pasiënte werk.

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## CHAPTER 1: BACKGROUND AND RESEARCH PROBLEM OVERVIEW

### 1.1 Background

Namibia has a small population of about 2 million people and its HIV/AIDS situation is not different from that of the global trend. Approximately 20% (about 400,000) of the sexually active adult population lives with the virus (MoHSS, 2008). Studies carried out in Namibia in 2008 shows that 60% of the female were infected with HIV meaning the other 40% accounted for the rest of the population involving men and children (MoHSS, 2008). This became a cause for concern to stimulate a research in this category of subjects. In Namibia, the national sentinel prevalence was 18.8% among HIV pregnant women between ages 15-49 years. And Oshakati was the third highest HIV/AIDS prevalence district in the country with 25.1% and this is higher than the national average (MoHSS, 2010:12). This stimulated interest for this study in Oshakati district in Namibia. A non-adherent patient is more likely to ignore caution and thereby more likely to contribute to the spread of the disease to the uninfected population. An understanding of the reason(s) for non-adherence could lead to measures that would address the issues causing it (non-adherence), thereby improving mortality of HIV patients and developing better response to counseling, which could in turn, result in the discipline that is needed to curtail the spread of the disease in the country. Currently, the reasons for non-adherence are undetermined. Oshakati being the largest town in Namibia qualifies it as a reasonable base from which to obtain the sample for any research on the national population, including adherence to ART.

If the spread of HIV is to be successfully stemmed, educational campaigns should be focused on the most sexually active section of any population. Of the numerous ways that have been reported for contacting HIV, heterosexual sex seems to top the list. According to Weinstock *et al.* (2004), approximately 18.9 million new cases of STD occurred in 2000 in the United States, of which 9.1 million (48%) were among persons aged 15-24. Three STDs (human papillomavirus, trichomoniasis and chlamydia) accounted for 88% of all new cases of STD among 15-24-year-olds. A female is needed as a participant in any heterosexual intercourse and it is perhaps common knowledge that sexual activity is highest among youths 15-24 years of age (sexual desirability being an asset that goes with youthfulness). All these were taken into consideration in the choice of the research interest for this study.

## **1.2 The Namibian situation**

Namibia consists of 13 administrative regions (MoHSS, 2006:8). It has one of the highest HIV prevalence rates in the world. By 2000 approximately 160,000 people aged between 15 and 49 were infected (MoHSS, 2004). At independence in 1990, life expectancy stood at 60 years. According to the 2001 population and Housing Census, the number of death due to HIV/AIDS had increased by 80% in the three preceding years. The MoHSS has also estimated that in some parts of the country, between 50-70% of hospital admissions were HIV/AIDS-related (MoHSS, 2004). But in 2006, only 12 years after independency, life expectancy dropped to 42 years due to the spread of HIV/AIDS which was exacerbated by high unemployment rates, poverty and violence against women and children (GRN/MoHSS, 2010:12 ).The sentinel surveillance system is an initiative that was commenced in 1991 by the World Health Organization (WHO) for monitoring influenza diseases. The 2010 Sentinel Survey among pregnant women revealed that Namibia has a high HIV prevalence rate among adult 15-49 years old, standing at 18.8% and that the highest prevalence was observed among women age 30-39 years old – with 29.6% in the age group of 30-34 years, 29.7% in the age group of 35-39 years, followed by 26.4% for the age group 40-44 years and the lowest being at 6.6% in the age group of 15-19 years (MoHSS, 2010). The national HIV prevalence (derived from a Sentinel Study among pregnant women) for 2010 was estimated at 18.8% (MoHSS, 2010:12). However, the latest overall national HIV prevalence of 2012 dropped to 18.2% (MoHSS, 2012).

## **1.3 The Oshakati District situation**

Oshakati district is situated in the northwestern part of Namibia in Oshana region. Oshana has a population of about 190,000. The Oshakati Intermediate Hospital (also simply referred to as the Oshakati Hospital) caters for patients referred from hospitals in the surrounding regions in the north (regions like Omusati, Oshikoto and Ohangwena). From the data in the 2001 preliminary census, the population of Oshakati was 42,649 individuals – making it the second largest town in Namibia after Windhoek (Oshakati is sometimes referred to as a town rather than a district). According to the Sentinel Survey in 2006, HIV/AIDS prevalence in Oshakati was found to be at 27.1% (higher than the national average of 19.9%). In the Sentinel Survey of 2008, the HIV/AIDS prevalence (in Oshakati) dropped to 22.4% (still higher than the national average of

17.8%)(MoHSS, 2008).The Sentinel Survey of 2010 rose up to 25.1% and it was still higher than the national average of 18.8%. Oshakati has the third highest HIV/AIDS prevalence rate in the country (MoHSS, 2010:12).The most recent Sentinel Survey of 2012 gave the figure to be at 22.0% and it was still higher than the national average of 18.2%. Oshakati became the 7<sup>th</sup> highest HIV/AIDS prevalence rate in the country (MoHSS, 2012).

#### **1.4 Research problem**

At the Oshakati Hospital's antiretroviral (ARV) Clinic, the electronic dispensing tool (EDT) is being used for dispensing ARV (drugs) to HIV patients. It is a standard practice that before dispensing to the patients already on medications that their pills are counted. During this procedure it is regularly observed that a notable number of patients on antiretroviral therapy (ART) do not adhere to their treatment regimen. During the pill counts when the patients (including females age between 15-24years) come for follow up, it is often noticed that their medications usually do not balance or add up to what its expected. Some of the patients themselves report that they forget to take their ARV medications thereby missing some doses on some days, leading to non adherence to their medications. Some of the patients often do not volunteer specific reasons why they do not adhere to their medications. The resulting effect is that these patients have less than 95% adherence which is less than WHO recommendation of greater than 95% adherence in order to achieve maximum therapeutic success (MoHSS, 2010). In addition to the above, at the end of April 2011 the electronic dispensing tool (EDT) recorded a number of patients on ARV to be over 16, 000 (including females age between 15-24years). This EDT tool stated that, of this figure, over 15,000 patients had less than 95% adherence which is less than WHO recommendation of greater than 95% adherence in order to achieve maximum therapeutic success (MoHSS, 2010). This is exactly 93.75% of patients on ARV. These figures recorded by this tool could have been as a result or errors during data capturing or due to some other unexplained reasons but this certainly suggests there is a problem with adherence in Oshakati district. It is therefore of research importance and interest to determine the cause of this poor adherence.

#### **1.5 Significance of the Research Study**

This study is of vital importance to determine the level of adherence to ART, and factors influencing adherence to highly active antiretroviral therapy (HAART). The findings were to

enable the development of interventions to address the issues of non-adherence among patients on ART Oshakati district. The research helps to provide results to serve as a launching pad for further work on adherence and make recommendations to the management of Oshakati hospital, policy makers represented in this branch of MoHSS and all other stakeholders for policy change(s) if necessary. This research is to assist in the education and dissemination of information to HIV/AIDS patients in order to help them, adapt their social behavior towards improved adherence to ART. And to develop measures that should prevent psychological and emotional apathy to the limited available ARV medication that are currently available in Namibia towards decrease burden of health care expenses associated with failed ART regimen. Finally, this study is to give an indication to serve as an index, of the level of adherence of the patients in Oshakati district in Oshana region (as well as other districts of neighboring regions).

## **1.6 Research Question**

The research problem set for this study was to identify the possible factors which could be responsible for poor adherence to ART by young females between the ages of 15-24 years in Oshakati district.

## **1.7 Aim and Objectives of the Research Study**

### **1.7.1 Aim**

The aim of the study was to establish the reason for poor adherence amongst female HIV/AIDS patients, 15-24 years of age, that are currently taking their medications from Oshakati hospital's ARV Clinic in order to recommend good guidelines that will help to improve adherence practices.

### **1.7.2 Objectives**

The objectives of the study were the following

- To analyze the current adherence practices being implemented at the Oshakati hospital's ART Clinic.
- To identify the reason(s) for the current poor adherence amongst these female-HIV/AIDS positive patients (15-24years of age) in Oshakati district.
- To identify the implementation gaps in the current adherence programs at the Oshakati Hospital which are contributing to the current poor level of adherence amongst this group of patients.



- To make recommendations to the Oshakati Hospital's authority to come up with guidelines to improve adherence.

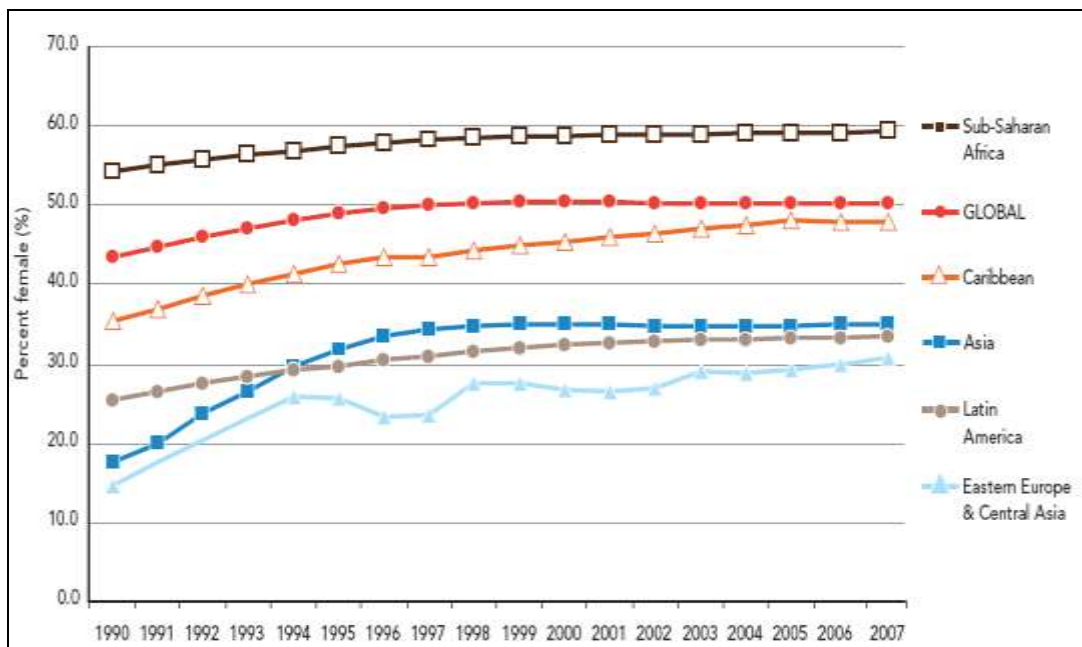
## CHAPTER 2: LITERATURE REVIEW

### 2.1 Introduction

This chapter describes literature review on adherence research work, starting with the global trend of female HIV/AIDS worldwide distribution by the Joint United Nations Program on AIDS (UNAIDS) which was then followed by the current recommendations, practices and monitoring of ART adherence in Namibia. There after a report on ART adherence research works done in Tanzania 2005, Botswana 2006, Mozambique (2004-2007) and in some other countries of the world.

### 2.2 Global trend of HIV/AIDS

Since the HIV/AIDS epidemic began, over 60 million people have been infected with HIV and more than 20 million have died of AIDS. Despite wide-ranging interventions to curtail its further spread and to mitigate the impact of its effects, there are around 16,000 new infections each day and at the crux of the epidemic are young people, accounting for over 50 % of this daily toll (Haxthausen and Maluwa 2001: 3).



**Figure 2.1: Percent of adults (15+) living with HIV who are female 1990- 2007**

Young people are at the centre of action on HIV/AIDS because silence, taboos and myths often surround HIV/AIDS because it is associated with private and intimate behaviors. In this context,

many young people are particularly exposed to HIV infection, or vulnerable to needless suffering, if they are infected (Haxthausen and Maluwa 2001: 3).

In the world today, HIV/AIDS epidemic has become a serious health problem, by the end of 2006 the Joint United Nations Program on AIDS (UNAIDS) estimated the number of HIV infection to be about 40million, about 24.7million infected people (62% of the total) were in Sub-Saharan Africa in 2006 alone, about 4.3million became newly infected with HIV (600,000 children new infections nearly all of whom were infants born to HIV positive mothers).about 22million people have died from the disease and most of these came from Africa and nine out of 10 newly infected infants were in Sub-Saharan Africa (UNAIDS 2006).

The world estimates of HIV infections was reviewed in 2007 and estimated to be 33.2million out of which 15.4million happened to be women. In many regions of the world more women than men are at risk of HIV infection, with 50% of all new daily infections in sub-Saharan Africa being in women. Children account for more than 12% of all new infections, and globally 2.5million children less than 15 years of age were living with HIV in 2007. About 1200 children under the age of 15 years become infected with HIV daily (UNAIDS/WHO, 2007). Without appropriate care and treatment, more than 50% of newly infected children will die before their second birthday.

In 2007, advances in the methodology of estimations of HIV epidemics applied to an expanded range of country data that resulted in substantial changes in estimates of numbers of persons living with HIV worldwide. However the qualitative interpretation of the severity and implications of the pandemic has altered little. The estimated number of persons living with HIV worldwide in 2007 was 33.2 million (30.6-36.1 million), compared with 39.5 million (34.7-47.1 million) published in 2006 with a 16% reduction (UNAIDS/WHO, 2006). The single biggest reason for this reduction was the intensive exercise to assess India's HIV epidemic, which resulted in a major revision of that country's estimates. Important revisions of estimates elsewhere, particularly in sub-Saharan Africa which also contributed to the total difference in the estimates published in 2006 and 2007, seventy percent were due to changes in six countries namely : Angola, India, Kenya, Mozambique, Nigeria, and Zimbabwe. In both Kenya and

Zimbabwe, there is increasing evidence that a proportion of the declines is due to a reduction of the number of new infections which is in part due to a reduction in risky behaviors.

It is emphasized that these differences between estimates published in 2006 and those published in 2007 resulted largely from refinements in methodology, rather than trends in the pandemic itself. In the following year 2008 global estimates of HIV infections showed slight difference in estimates from about 33.2 million (2007) to about 33.4 million (2008) and to about 33.5 million (2010) people living with HIV (of which about 2 million are children) about 2.7 million people with new infections (430,000 where children newly infected) and 2 million people died of AIDS in that same year and about 14 million children lost one or both parents in 2008.

The 2010 report UNAIDS report on the global AIDS epidemic has got a bold vision of zero new infections, zero discrimination and zero AIDS-related deaths by 2015. Let's hope that this adherence survey and the interventions recommended would have contributed its quota towards achieving this goal. (UNAIDS 2010:7)

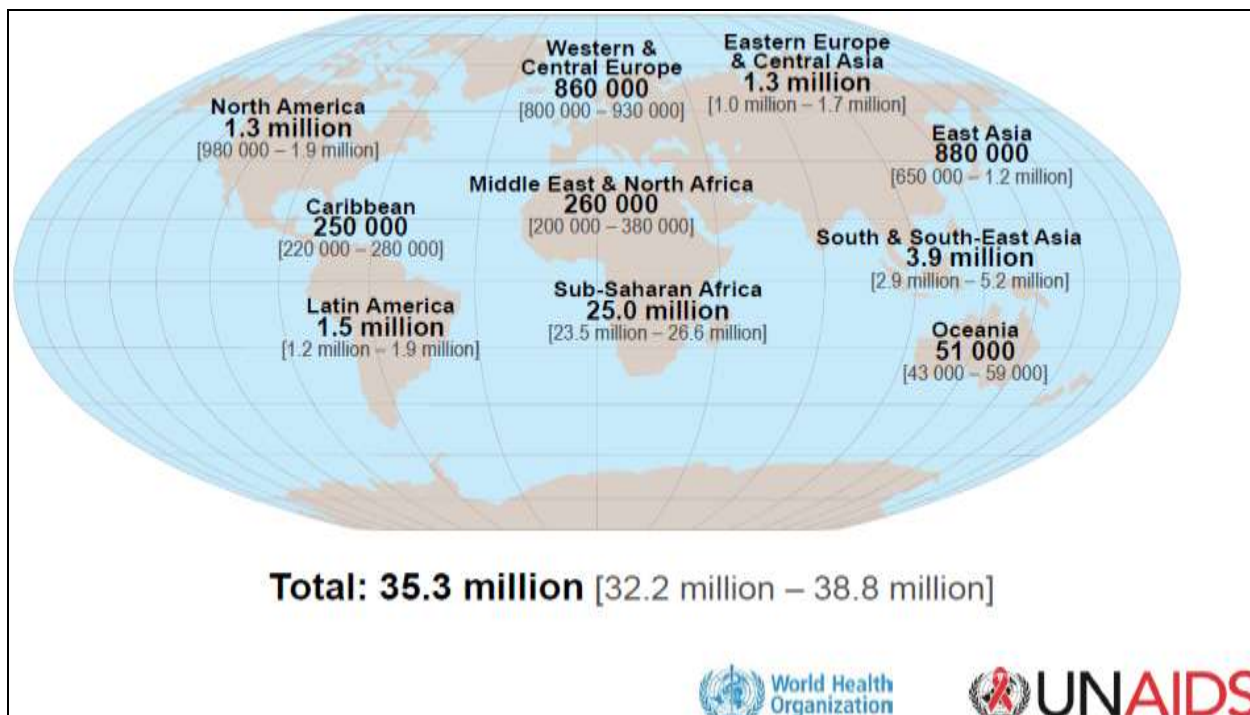


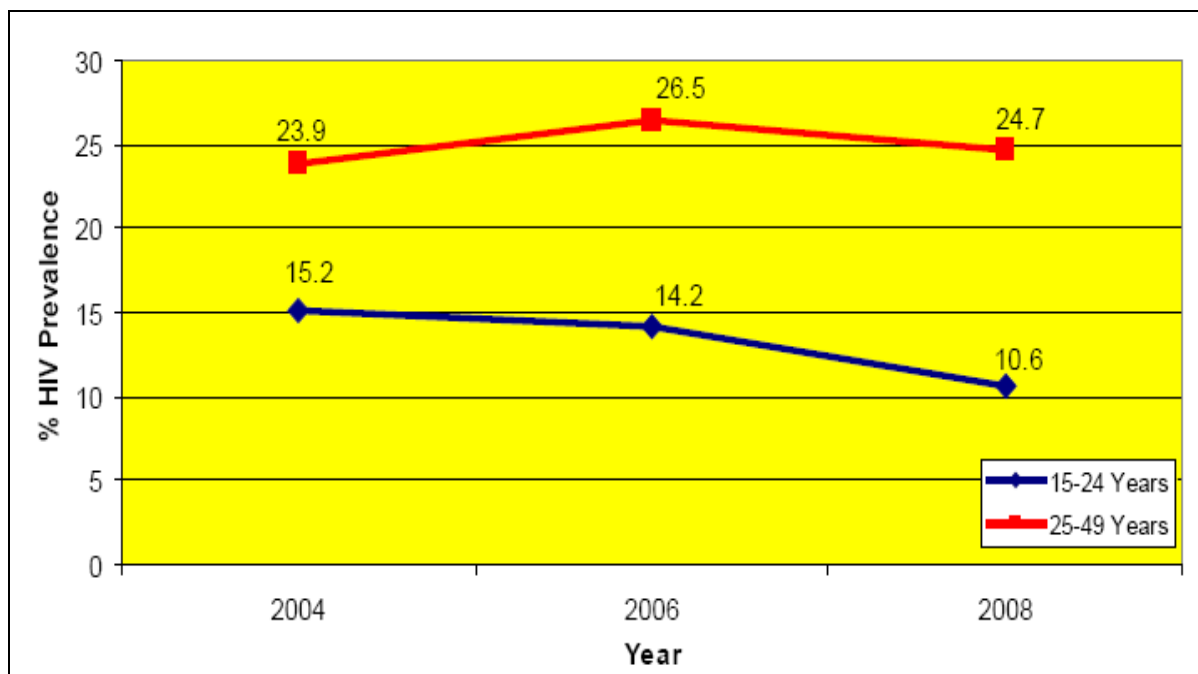
Figure 2.2: Adults and children estimated to be living with HIV globally in 2012

**2.3 Namibia trend of HIV and AIDS with regards to young people and justification for choosing the age group 15-24 years females.**

In many regions of the world more women than men are at risk of HIV infection (UNAIDS 2007:7). Namibia situation is not different from that of the global trend. And from studies that have been carried out in terms of gender more women than men are infected with HIV in Namibia this is a cause for concern to stimulate a research in this category of subjects. In Namibia, according to the national sentinel survey prevalence of HIV among pregnant women, two sets of age groups were used, age group between 15-24 years and between 25-49 years. But for the purpose of this study, the researcher looked into the first group, the reasons why females between 15-24 years of age in Oshakati district are not adhering to their ART treatment. The studies that have been carried out in Namibia shows that 60% accounts for female who have been infected with HIV meaning the other 40% accounts for the rest of the population which obviously would involve men and children (MoHSS, 2008). The voluntarily counseling and testing method used to triangulate the existing ANC HIV prevalence to estimate the general population HIV prevalence in Namibia in 2008, 34 232 people were registered as first time testers, females were 61% of this total (MoHSS, 2008). And in 2009 the theme was given “Couple HIV Counseling and Testing” of the 85 635 people which were registered as first time testers, 60% were female accounting for nearly 60% of HIV infections in Namibia (MoHSS, 2010). In 2011, Katuta stated that in young people that the overall HIV prevalence rate among those of high school age 15 to 24 years was 10.3% (Chinsembu, *et al.* 2011:308).

The situation of the epidemic in the young people of Namibia follows the global trend. It is currently estimated that 14% of the general population is infected with HIV according to Spectrum estimates of 2009, resulting in about 8,200 AIDS-related deaths every year and 29% of all deaths in Namibia. Every day, approximately 32 Namibians are infected with HIV. This steady stream of new infections over a long period of time has resulted in an estimated 174,400 adults and children living with HIV and AIDS in Namibia in 2008. Approximately 248,000 children 18 years or younger are orphans and vulnerable children (OVC): about 28% of these OVC (69,000) have been orphaned by AIDS according to data from the 2009 Spectrum estimates, and Namibia population projections 2001 to 2031 ( Ngartjizeko and Dan, 2010:9-10). Namibia with a generalized HIV/AIDS epidemic, with a national HIV prevalence rate of 18.8% in 2010, this is still a very high prevalence when compared to the rest of the world. The apparent decrease since 2002 represents the first decrease since the start of ANC surveillance. Since the

HIV prevalence is still very high, it means the national response requires continued high levels of prevention, care and support services (GRN/MoHSS, 2010). But in 2008 it was 17.8% among those aged 15 to 49 years (GRN/MoHSS, 2008). In 2011, Katuta stated that in young people that the overall HIV prevalence rate among those of high school age 15 to 24 years was 10.3%. And that HIV prevalence rates were 5.1% in 15 to 19 year olds, 14.0% in 20 to 24 years old and 23.8% in 25 to 29 year olds (Chinsembu et al. 2011:308-309). Females in Namibia were infected quite young, with approximately 10.0% of pregnant adolescents aged 15 to 19 years already infected with HIV/AIDS (GRN, 2008). Geographically, HIV prevalence rates are higher in the north-eastern part of the country than in the south (GRN, 2008).

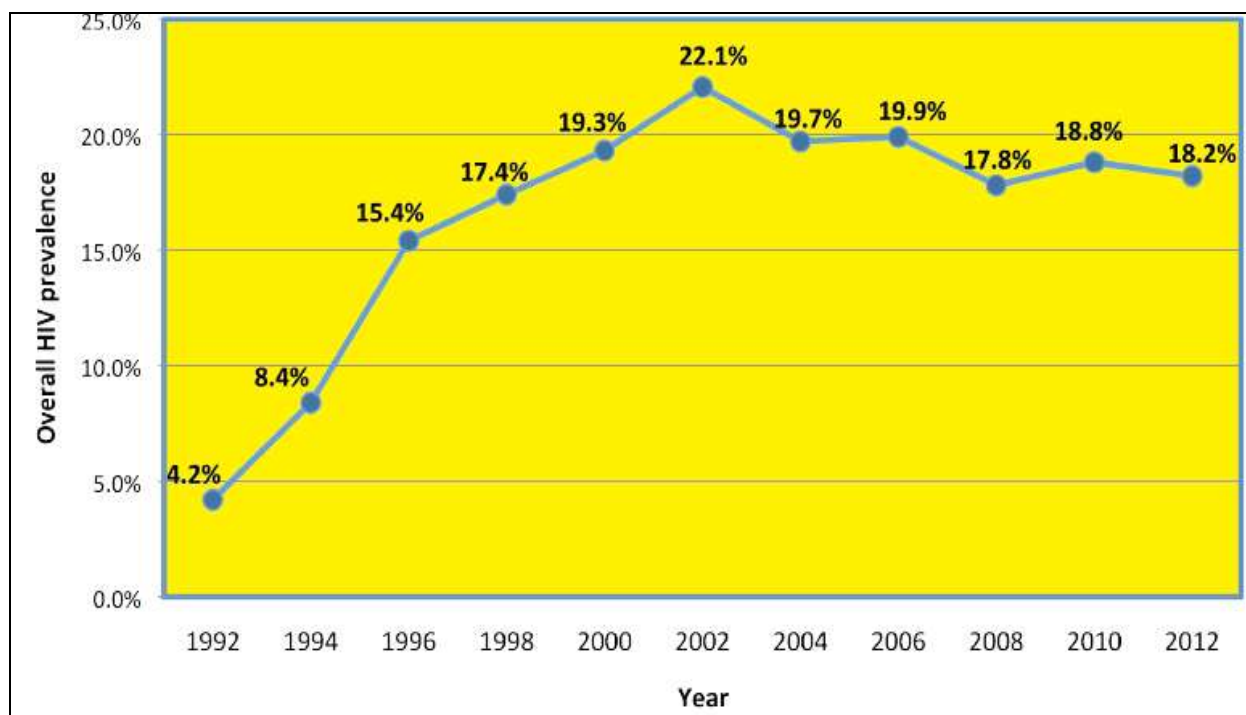


**Figure 2.3: HIV Prevalence rate by age Groups and year**

In Namibia, the HIV/AIDS epidemic is predominantly due to heterosexual transmission (De la Torre et al., 2009). Using secondary data from the Global School Health Survey (GSHS) of 2004, Chinsembu et al. (2008) reported on the prevalence and social correlates of sexual activity among Namibian adolescents in-school. Although there is co-occurrence of health risk behaviors among adolescents, the distribution of specific drivers of the HIV/AIDS epidemic was important for designing targeted preventive measures. (Chinsembu et al., 2011:308-309).

### 2.3.1 The trends in the epidemiology of HIV/AIDS in Namibia in terms of age, gender, geography & regional distributions.

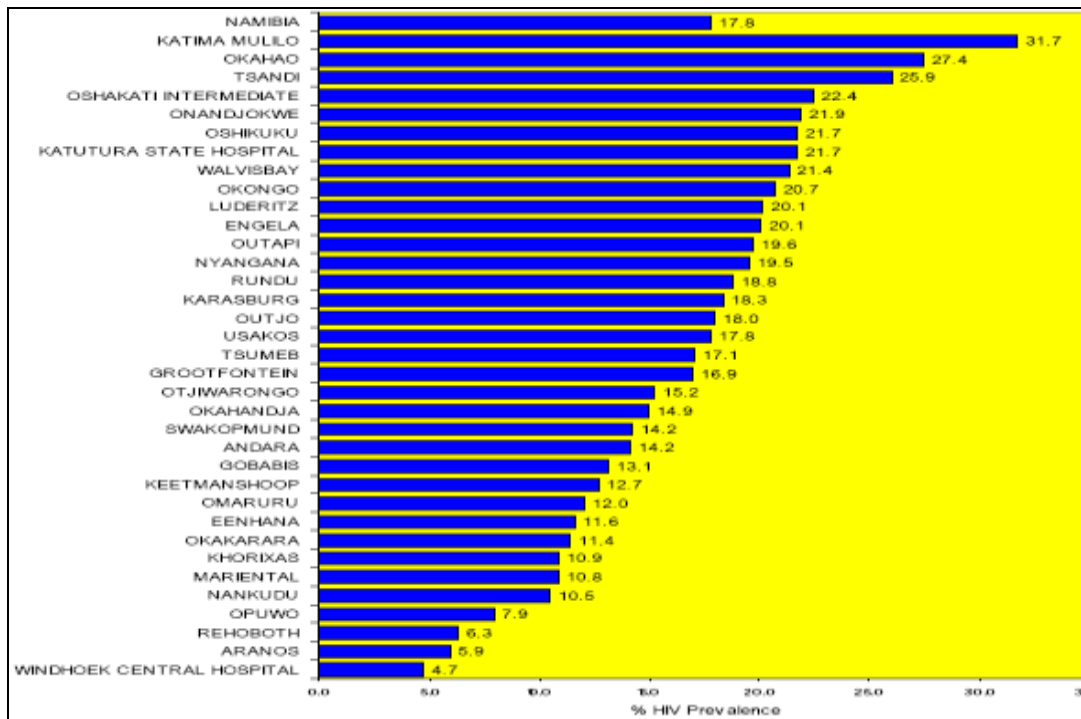
The transmission of HIV continues to pose major challenges to Namibia's prevention effort. Following the first reported AIDS cases in 1986, data compiled by the ministry of health and social services show that AIDS became the leading cause of death in Namibia in 1996. In 1999, the reported number of 2,823 AIDS-related deaths accounted for 26% of all deaths and 47% of deaths in the age group 15-49 years. The number of reported HIV/AIDS-related hospitalization increased more than 20-fold from 355 in 1993 to 7,746 in 2001.



**Figure 2.4: HIV prevalence rate of pregnant women, biannual surveys 1992-2012 in Namibia.**

The Figure 2.4 above indicates the average HIV prevalence rate overtime. The HIV prevalence curve had a precipitous positive gradient from 1992 to 1996 with a moderate increase to 22% in 2002. This was followed by a moderate decline in 2004 to 19.7% and apparent stabilization to 19.9% in 2006. The 2008 National HIV Sentinel Survey measured an overall national HIV prevalence among pregnant women of 17.8% which represents a clear decrease in 2008 and a

slight increase again to 18.8% in 2010 and a slight decrease of 0.6 to 18.2% in 2012 (MoHSS, 2012).



**Figure 2.5: Represents the sites with the highest to lowest prevalence in Namibia**

Figure 2.5 above represents regional HIV prevalence distribution in Namibia. Kaitima Mulilo has highest prevalence while lowest prevalence seen in Aranos 9%, Rehoboth 6.3% and Windhoek Central hospital with 4.7%.

More than a quarter of pregnant women attending ANC in Katima Mulilo, Okahao and Tsandi during the survey period were HIV positive. The lowest HIV prevalence rate is observed among pregnant women attending ANC at Windhoek Central Hospital. The reasons are unclear (MoHSS, 2008).

**2.4 Provision of highly active antiretroviral therapy (HAART) in Namibia:**

Namibia started offering ART in 2003 as part of its commitment to the global targets set by UNAIDS and WHO “3 by 5” initiative to provide 3 million people living with HIV/AIDS in low and middle income countries with life prolonging Anti Retroviral Treatment (ART) by the end of 2005. The implementation of ARV therapy is accompanied by a number of challenges. One of these challenges is the issue of adherence. The first seven ART sites were launched between July



and October 2003 of the same year. Currently there are 44 health facilities offering ART i.e. all 34 district hospitals and an additional 10 sub-district facilities (large health centre's and clinics). As at March 2007, over 41,000 people had even been started on ART, of which 33,591 were registered as still being on treatment. 66percent of patients on ART are women and 16 percent are children. The national target of reaching 30,000 people on ART by 2008, as originally set by Medium Term Plan III, has already been exceeded. Of note is that in 2005 the UNAIDS and MoHSS revised the national target to 79,942 (2007/08), 92,466 (2008/09)<sup>29</sup>. Quality of HAART services overall is high.

Reported outcomes for patients on ART in Namibia indicate that 72 percent of PLWHA is still alive since starting ART, 5 percent has died, 2 percent has defaulted and outcomes are unknown in 21 percent of cases. Katutura and Oshakati are the two centre that have the highest rate of patients in the category unknown. It is likely that back migration of Angolans in Oshakati and temporary laborers in Windhoek contributed to a large number of drop outs. Some of these might have reregistered in their home area. The new registration system where patients receive a unique number for life should make follow up of such cases easier. Still, real drop out or defaulting cannot be ruled out especially in the light of a recent adherence study by IBIS in which an important number of patients indicated having difficulties in adhering to treatment mainly due to lack of food. Prevalence of drug resistance is not known. During the last ANC sentinel surveillance, samples were taken for HIV drug resistance threshold. To date it is estimated that two to three percent of the patients receive a second line regimen. There is no information on whether switching regimens is due to treatment failure or side effects. Some patients are being started on second line treatment to prevent second line medicines from expiring (MoHSS, 2010:69).

## **2.5 Namibia antiretroviral therapy recommendations, practices and adherence monitoring.**

Medication adherence may be defined as the extent to which a patient takes a medication in the way intended by a healthcare provider or the extent to which a patient's behavior (taking medication, following a diet, and/or executing lifestyle changes) corresponds with agreed recommendations from a healthcare provider (WHO, 2003).

### **2.5.1 Namibia antiretroviral therapy current recommendations(MoHSS, 2010)**

The antiretroviral therapy (ART) guideline was recently revised to accommodate new evidence based WHO standards on HIV/AIDS management, it has been adopted and implemented in Namibia to specify the clinical and social criteria that patients should meet before being commenced on ART, as well as specifying the operational conditions that centers/health facilities should meet before starting the program (MoHSS, 2010:12).

#### **Namibian criteria and psychosocial adherence Factors**

In order to meet these criteria specified in the Namibian guideline adherence counseling and the role of counselors cannot be overemphasized.

**Definition of Counselling:** Counselling involves developing an interpersonal relationship between counsellor and clients/patients by helping them to cope better with situations they are facing and any emotional problems they might be faced with. Counsellors give the client/patients correct information that will help them to make informed decisions (MoHSS, 2008). To maximize adherence a team approach is usually used in Oshakati hospital which involve physicians, nurses, pharmacists, counselors, social workers, other health care providers, and family/friends of the patient where possible according to the guidelines requirement. Pre-ART and on-going adherence counseling sessions are done during treatment usually to monitor adherence regularly. During counseling the patients are told the social and clinical criteria they must meet before starting HAART. Namibian guideline recommends that the social eligibility criteria for every patient commencing HAART is that such patient should have lived in a fixed address for more than 3months and must have access to a designated treatment centre for follow up, not abusing alcohol and without unstable psychiatric disorders, amongst others (MoHSS, 2010:12). A treatment supporter is also recommended to help patient adhere to treatment. Though absence of one should not be a reason to deny patients treatment and that adherence assessment should be done at each visit (MoHSS, 2010:13). Also, issues related to commitment to lifelong treatment, the importance of having a treatment supporter is particularly necessary especially in the introduction of directly observed ARV (DART) with caregivers or family members' assistance may be considered. Adherence is measured through self-report, pill count, coming regularly for appointments, viral load, CD4 count just to mention a few (MoHSS, 2010:13).

**The clinical criteria specify that adolescents and adults should start ART when they have:**

WHO Clinical stage 1 or 2: Initiate ART if CD4  $\leq$  500 cells/mm<sup>3</sup>

WHO stage IV HIV disease: Initiate ART irrespective of CD4 cell-count.

WHO stage III or IV HIV and Active TB Disease, Pregnant and breastfeeding women and

Hepatitis B virus Co-infection: Initiate ART in all individuals regardless of CD4 cell count (MoHSS, 2014:14).

HIV-serodiscordant couples : Provide ART to all HIV-positive individuals in a sero-discordant sexual partnership regardless of CD4 cell count or WHO Clinical Stage (to reduce the risk of HIV transmission to the negative partner).

**HIV-positive concordant couples currently intending to conceive a child:** Provide ART to both partners irrespective of CD4 cell count or WHO clinical stage (MoHSS, 2014:14).

### **First Line HAART Regimens in Adults in Namibia**

The preferred 1<sup>st</sup> line regimen has Tenofovir (TDF) rather than Zidovudine (AZT) due to evidence of some limitation of future treatment options with AZT as 1<sup>st</sup> line and to avoid AZT-induced anemia. However, for patients on TB treatment, Nevirapine (NVP) cannot be used with rifampicin and should be replaced with Efavirenz

(EFV). The guidelines also recommend that Lamivudine (3TC) should be included and Stavudine (D4T) avoided (MoHSS, 2014: 17).

- TDF + FTC (or 3TC) + EFV (once daily FDC)
- TDF + 3TC + EFV
- Alternative first line: AZT + 3TC + [NVP or EFV]
- TDF + FTC (or 3TC) + NVP
- ABC + 3TC + EFV (or NVP)
- Avoid D4T

The recommended first line regimen for HAART in the Namibian public sector is as shown above. For adults (including adolescents  $\geq$  10 years old and weigh at least 35 kg), pregnant and breastfeeding women, adults with TB disease and adults with HBV co-infection (MoHSS, 2014:14).

Fischl et al., (2000) suggest that 100% adherence levels achieve even greater benefits than 95% which may often be complex in terms of the pill burden, dietary restrictions and dosing frequency. Where adherence is sub-optimal ( Hardon et al., 2006:86).

Patients' adherence to treatment can be said to be the most important determinant for the therapeutic success of ART. The level to which the virus is suppressed in the blood (and consequently, improved immunologic response) depends on the degree of adherence of the patient to the therapy. Paterson *et al.*, 2000 determined the correlation between adherence and virologic response to ART (MoHSS, 2007:3).

**Table 2.1: The correlation between adherence and virologic response**

<b>Adherence To HAART</b>	<b>Viral Load (&lt;400 C/MI)</b>
> 95%	78%
90-95%	45%
80-90%	33%
70-80%	29%
<70%	18%

WHO recommends an adherence level of >95% for anti-retroviral therapy effectiveness in order to reach the desired therapeutic goal (MoHSS, 2008).

### **2.5.2 Non-adherence to prescribed HAART Regimens has Implications**

At the beginning of therapy, the viral load is very high. And Carrieri et al., 2003 states that high adherence to ARVs is required at this stage because if an individual misses a few doses at this stage, the danger of the development of drug-resistant organisms is far higher than it would be after six months of regular treatment, by which time the person is likely to have a low viral load. Paterson et al., 2000 states that to prevent the development of drug-resistance, an adherence level of at least 95% is required for the duration of therapy and especially in the first six month ( Richard L and.Catherine :2006:26).

Adherence is closely associated with improved viral suppression, prevention of resistance, delay in disease progression and decreased mortality (Torpey *et al.*, 2008), while non-adherence could result in emergence and transmission of drug resistant virus strains in the community. In addition, there are serious public-health cost implications as patients are shifted from less costly

first line to expensive second line regimens (Torpey *et al.*, 2008: 2). In addition ARVs will no longer work and the individual will start to suffer from multiple opportunistic infections.

( Richard L and Catherine :2006:26).

Secondly, the individual may transmit the drug-resistant virus to their contacts and when those individuals go for treatment they will discover that their virus does not respond to the first-line therapy. Once a person develops resistance to first-line medicines they will need to be changed to a more expensive second-line ARVs. However, at present these products are substantially more expensive than the first-line ARVs and have a different range of side-effects. (Laing and Hodgkin, 2006:26).

### **2.5.3 Correlates of adherence**

For the treatment with HAART to be successful, the patient has to consistently adhere to the prescribed regimen on a long-term basis. It is therefore required to firstly guarantee a patient's willingness to comply by assessing the patient's readiness to start and adhere to HAART.

Secondly, monitor the adherence continuously (Stones, 2002).

Furthermore, Stones ( 2002) states that in order to assist the patient arrive at a well-informed decision, the risks and benefits of treatment should always be discussed with he or she before therapy is embarked upon. Evaluation of the patient should be based on the patient's stated commitment to taking medication. As potential evidence of such a commitment, also examine the possibility of adherence to appointments and opportunistic infection (OI) prophylaxis. Studies have shown that a significant number of patients still do not keep their follow-up appointment at various stages of their treatment despite time spent on counseling new patients, physical examination and the emphasis placed on the importance of adherence (Bartholomew, 2004:15). It is appropriate to advise patients that they must aim for greater than 95 % adherence. HIV/AIDS is a chronic disease that requires life-long treatment. According to (Sabate, 2001), adherence to long-term therapy is poor, averaging 50% and Chen *et al.*, (2001) has suggested that only two-thirds of ARV-naïve patients remain on original treatment one year after being started on HAART. Some commentators have argued for caution in delivering ART in resource-poor setting, citing adherence as an issue. Barriers to ARTs adherence varies from setting to setting and some researchers consider adherence as a biosocial and dynamic phenomenon

(Castro, 2005:338). This is a major global concern about the treatment of HIV/AIDS and the worldwide success of intervention programs to contain the spread of the disease. Interruption of HAART entails important risks, including viral rebound, decrease in number of CD4 + T-lymphocytes (Deeks, 2001:344).

Adherence can also be assessed, according to Stones (2002), based on a patient's self-report when the patient is interviewed or responds to a questionnaire or clinical discussion. Pills can also be counted but it was found that many patients occasionally remove more than one dose at a time from the medication container, thus leading to undercounting of these ingested doses.

## **2.6 A report on the ARV adherence situation in Tanzania (2005)**

In 2005 an estimated HIV prevalence of 7% among the adults was found by the (Tanzania Commission for AIDS, 2005) in Tanzania. And not until 2005 there was no attempt to document the level of adherence to ARV treatment or to identify possible factors contributing to sub-optimal adherence. This study was designed to help fill that gap. The aim was to measure adherence and to identify possible factors and operational barriers facilitating or constraining adherence to ART among AIDS patients and to suggest possible ways of improving adherence. A cross-sectional study on ARV adherence was conducted in Arusha and Dar es Salaam in June and July 2005, involving a total of seven health care facilities in the two regions. A multi-disciplinary team of researchers collected the data from ARV users through exit interviews, semi-structured interviews, adherence measurement, focus group discussion (FGD) and key informant interviews. In seeking information from health care staff, the tools used were semi-structured interviews, observation of staff while conducting consultations, and pharmacy stock controls (Irunde, *et al.* 2005:173).

A total of 207 ARV users were involved in the study, 26 observations were made, 28 staff members were interviewed, eight FGDs and 10 key informant interviews were conducted, and six pharmacy stock checks were carried out in health care facilities. The mean age of ARV users studied was 43 for males and 37 for females and most of the ARV users studied were females (64%). Most male ARV users were either employed in the private sector or self-employed in a small-scale business, while female ARV users were either not employed or involved in minor trade. Of the staff interviewed, most were nurses.

In this study, adherence was considered from the perspective of both the ARV user and the health worker. From the ARV users' perspective (based on two-day recall, visual analogue and the pill count method) the mean level of adherence was 95%, while from the health workers' perspective it was found to be 88% (range 60%-100%). The composite measure of adherence using 28-day visual analogue and pill count method was 90%. However, only 21% of ARV users interviewed reported achieving the optimal level of adherence (over 95%) as measured by the composite adherence rate.

The remaining 79% self-reported to achieve only moderate adherence (85%-95% adherence rate) and are therefore at risk of treatment failure and the development of drug-resistant forms of the virus. While most patients seemed to be knowledgeable about ART, a few patients were not well-informed about treatment and the consequences of sub-optimal adherence to ARVs. The main ways of providing this information at the health facilities involved in the study included leaflets, seminars, adherence counseling, verbal counseling, television and video.

The standard of counseling was considered to be good in Dar es Salaam but there was less satisfaction with the counseling services provided in Arusha. Despite widespread information about HIV and AIDS, the idea of bewitchment as the source of HIV was still reflected in the perception of some patients. And although most of the 30 ARV users interviewed during semi-structured interviews (93.5%) had disclosed their HIV status, social stigma was said to be widespread. Respondents said that PLWHIV were often stigmatized both at home and in the workplace (especially in the private sector). The cost of once-monthly travel to the clinic for ARV users was significant, ranging from 200-30 000 (approximately 20 US cents to US\$ 30.00), while the distance patients had to travel ranged from 1 km to 246 km. Both ARV users and key informants said that lack of food was a problem for most ARV users. This was exacerbated by a treatment-related increase in appetite and by the additional demands of needing to take some medicines together with food. However, this did not appear to affect treatment adherence among the ARV users involved in the study. Of the ARV users who cited lack of food as a problem, all maintained that they had persisted in taking their ARVs. Other interviewees remained concerned at the potential impact of hunger on adherence to ART.

For example, it was reported that some patients take their medication only once a day, in the evening, because that is the time when they have food and that some patients were selling ARVs in order to buy food. This implies that food scarcity can be a drawback to adherence.

The study identified a number of structural problems in the health facilities involved. For example, it was found that consultations carried out in some of the public facilities in Arusha were not as conducive to confidentiality as consultations in the public facilities in Dar es Salaam. Elsewhere, at the private facilities in both Dar es Salaam and Arusha, confidentiality was said to be satisfactory. In addition, ARV users reported that they could spend up to 10 hours in the health care facility waiting to be attended to during their monthly visits. Despite these obstacles to ARV adherence, the overall mean composite adherence rate of 90% in the two areas surveyed which was quite an encouraging result. However, more efforts are needed to ensure optimal adherence among the large group (79%) of ARV users who are currently taking less than the critical 95% of their dosage. The large variation in the results between pill counts and visual analogue demands an explanation. Therefore the two measures needed to be validated against viral load, as was done by Carrieri et al. in Malawi. ( Irunde .H et al 2005:215)Unfortunately, this validation could not be done against the viral loads and CD4 cell responses since this was not in the original plan of the adherence study, due to financial and logistical barriers to frequent laboratory monitoring in this setting. However, the combination of different approaches and respondents permitted extensive triangulation that gave a comprehensive set of results of the overall mean composite adherence rate of 90% in the two areas surveyed.

## **2.7 A report on the ARV adherence situation in Botswana (2006)**

Antiretroviral therapy has been available through the public sector in Botswana since 2002. But there was continuing concern at the level of adherence. Therefore, studies were conducted in Botswana by ( Nwokike J, in 2004) and reported adherence levels of 83% in the public sector and 54% (Weiser, *et al.*, 2003) in the private sector – rates below the minimum level of 95% required for treatment success and to help delay the emergence of drug-resistant strains of HIV (Kgatlwane, *et al.*, 86).

Clinical criteria measurements like CD4 count and viral load were not used in this study like the adherence study in Mozambique which was more detailed. In this Botswana study only three



tools were used to measure adherence: pill counts over one month; one-month patient self-report with a visual analogue; and two-day recall using a 24-hour 'sun and moon chart'. The mean adherence rates were 95% for the pill count, 92% for the one month self-report and 98% for the two-day recall. Using the pill count method it was found that 75% of the ART users achieved the optimal adherence levels of over 95%. Sixty per cent of participants reported optimal adherence using the visual line one month recall and 96% reported optimal adherence using the two-day recall ( Kgatlwane, *et al.*, 2006:123).

The ART program was launched initially in four sites in Botswana, two referral hospitals and two district hospitals. The program expanded to such an extent that by end-2004, all 32 district and primary hospitals throughout the country were providing ART. By end-2005, an estimated 85% of those in need of treatment were reported to be on ART (WHO, 2006). Overall, approximately 63% of the ART patients were females and most are aged 30-40 years. (Kgatlwane *et al.*, 2006:86).

In 2006 the adherence study was carried out with financial support from the World Health Organization (WHO) and technical support was provided throughout by the University of Amsterdam (Netherlands) supported by the Botswana Ministry of Health in facilitating the study. This was a cross-sectional study which used both quantitative and qualitative methods to investigate the facilitators of and constraints to adherence to ART among adult patients in four public health facilities in Botswana. The research questions necessitated the triangulation of methods and this procedure was adopted in the study. (Kgatlwane, Joyce, *et al.*, 2006:91)

The study was conducted in four district hospitals across Botswana which were providing ART. 514 participants were used from the four study sites which comprised of the following: 122 (24.7%) were from Maun, 128 (24.9%) from Mahalapye, 115 (22.4%) from Molepolole and 149(29%) from Serowe. P91All adult patients (aged 18 years or above) on ART at the four participating facilities who were willing to take part in the study were eligible for inclusion with a mean age of 38.3 years (95% confidence interval 37.4 – 39.2). Most of the patients are in the age range 20-40 (60.2%) and 15% were aged over 50years. The sample included more women (67.6%) than men (32.4%) consistent with the current pattern of the Botswana statistics on ARV enrolment. Almost 35% had secondary school education level and 42% reported not being in any

form of employment. Most of the participants (90%) had been on treatment for less than 24 months, with an average and median of 11 and 9 months respectively. This reflects the nature of the expansion of the program (Kgatlwane J *et al.*, 2006:103). The optimal adherence rates (indicative of being adherent at least 95% of the time) using the pharmacy pill count, self-report (visual line) and self-report (two-day recall method) were 75%, 60%, and 96% respectively. The composite mean adherence was estimated at 77%. (Kgatlwane J *et al.*, 2006:103)

The study population consisted of policy-makers, patients on ART (18years and above) at the study sites, health workers and members of the local community. Those who had just been referred or transferred from another site to the study site were excluded. Qualitative data were obtained using observations, semi-structured interviews, exit interviews and FGDs.(Kgatlwane, *et al.*, 2006:98).

At the end of the study some recommendations were made which included the development of practical guidelines for implementing adherence management strategies. These included guidelines for: continuous adherence counseling; bringing treatment closer to home; adoption of a family care model approach to ART; use of practical reminders; adherence case management; and the use of medication organizers (pill boxes partitioned to display the daily or weekly sequence of pills to be taken). In addition, the establishment of a transport voucher scheme was to be considered for people who genuinely could not afford the cost of transport to collect their medication. It was also recommended that such interventions should be evaluated to assess their effects on adherence (Kgatlwane J. *et al.*, 2006:130).

## **2.8 A report on the ARV adherence situation in Mozambique (2004-2007)**

The Ministry of Health in Mozambique conducted a study on “Treatment outcomes of HIV-infected Adults Enrolled in the National Antiretroviral Therapy Program –Mozambique, 2004-2007. It was reported that from 2004-2007 in Mozambique, of the about 290,000 HIV-infected adults (>14 years old) needing ART, 85,000 were enrolled in national ART program. Nationally representative data on ART program’s effectiveness has not yet been reported by 2008. Retention (the percentage of patients alive and on ART) at 6 and 12 months of follow-up is an important measure of ART program effectiveness. The mean retention in African ART programs has been estimated as 79% at 6 months and 75% at 12 months. (Yansaneh, *et al.*, 2009: 164).

The study carried out in Mozambique was a retrospective cohort to assess retention and other treatment outcomes among a nationally representative sample of adult patients that were initiating ART during the period 2004-2007. Of the 94 ART sites with >50 adults receiving therapy, 30 were selected by probability-proportionate-to-size sampling; 2,596 medical records at these sites were randomly selected for data abstraction. After controlling for the survey design, baseline characteristics, retention, factors affecting retention and improvements in patient health status were determined.

The results of the study indicate that at ART initiation, the median age was 34 years, 62% of patients were female and many patients had advanced stage of the disease. 66% had a CD4 cell-count <200/uL and 33% had a viral load (VL) >100,000. Initial ART regimens included Stavudine, lamivudine, and Nevirapine or Efavirenz for 88% of patients. Of patients eligible for Cotrimxazole (CTX), 33% were documented with CTX prescription at baseline. After 6 and 12 months of follow-up, retention were 86% and 79% respectively; lost to follow-up (LTFU) were 10% and 15% respectively, those who died as a result were 4% and 5% respectively, and those that stopped ART were 0% and 1% respectively (Yansaneh, *et al*, 2009: 164). Table 2.2 below gives the retrospective cohort study result in Mozambique to assess retention and other treatment outcomes after 6 and 12 months.

**Table 2.2: Retrospective cohort study\* to assess retention and other treatment outcomes**

Patients	Months of follow-up	
	6 months	12 months
Retention (%)	86	79
Lost to follow-up (LTFU, %)	10	15
Died as a result (%)	4	5
Stopped ART (%)	0	1

\*Retrospective cohort study result in Mozambique to assess retention and other treatment outcomes after 6 and 12 months.

For patients with follow-up data, median CD4 cell-counts increased by 147/uL at 6 months and 174uL at 12 months while median weight gains were 2.2kg at 6 months and 3.4kg at 12 months. Viral Load (VL) suppression (VL <1,000 copies/mL) was achieved in 76% and 71% at 6 and 12

months respectively (Yansaneh, *et al.*, 2009: 164) as illustrated in the Table 2.3 below from a study in conducted in Mozambique.

**Table 2.3: Study\* showing CD4 cell-counts, weight gain, and viral load (VL) suppression**

Patients with follow-up data	Months of follow-up	
	6 months	12 months
Increase in CD4 cell-counts	147/uL	174uL
Median weight gain	2.2kg	3.4kg
Viral Load (VL) suppression (VL <1,000 copies/mL)	76%	71%

\*Retrospective cohort study in Mozambique showing CD4 cell-counts, weight gain, and viral load (VL) suppression after 6 and 12 months.

However, there was a higher loss to follow up and low on-time appointments and ARV drug pick-up, and 50% of sites reported stock-outs. To minimize risks, procedures should be put in place to increase patient adherence to appointments and ARV pick-up schedules and to prevent drug supply stock-outs (Yansaneh, *et al.*, 2009: 109).

## **2.8 A report on ART adherence situations in some other countries of the world (2006)**

Percentage of adherence to ART in resource-limited settings in some countries of the world by the year 2006 are given below.

Uganda: 88%, Cote d'Ivoire: 75%, Haiti: 88%, Senegal: 78%-88%, South Africa: 89%, Brazil: range: 57%-87%, Botswana: ~55%, Nigeria: 58%, Kenya: 59% while adherence in some resource richer areas are given as follows: Percentage of patients with treatment failure in clinical practice reflect a combination of non adherence and resistance as seen in USA: 50%, Amsterdam: 40%. (Harvey, M., 2006:12).

Adherence is as problematic in resource-limited settings as it is in resource-rich settings. No evidence to show which is more problematic (Harvey, M. 2006:12). It is good to note that there is no documentation of overall national adherence for Namibia till date because no national adherence survey has been carried out by the Ministry of Health and Social Services.

## CHAPTER 3: RESEARCH DESIGN AND METHODS

### 3.1 The research design

A descriptive research technique involving questionnaires was used to gather data on a given state of affairs in a representative sample of the population (Christensen, 1995:27). In this case, the researcher used quantitative method to find out the reason(s) for non-adherence to ART by female patients within the age group of 15-24 years from Oshakati District. Questionnaires was administered to 60 participants, that entailed the collection of patients' answers to a predetermined set of indicative questions. To make the implementation easy for the patients, a set of answer options were provided for most of the questions and in some other cases, the questions require short and direct answers that require the sampled patients to provide written information about their drugs, habits or issues that affect their adherence practices. The researcher worked with a community counselor based at the Oshakati ART clinic who was responsible for pre and post adherence counseling which was done each day with the patients for the survey before the data collection begins to help put the patients at easy.



**Figure 3.1: Showing the study site.**

### **3.2 The study site and population**

The study site was the ART Clinic at the Oshakati State Hospital, situated within the Oshakati District. The study population consisted of 60 female patients who were 15-24 years old and have been enrolled on the ART program in Oshakati ART Clinic within the hospital. Two other criteria were used to further streamline the sample group for the research and they are considered as follows.

### **3.3 The inclusion criteria**

HIV/AIDS patients females between 15-24 years old that are enrolled in the ART program and on treatment from at least six months prior to the data collection period were included in the study. Patients in this category who gave their informed consents and their parents consent for those less than 18 years and attending the Oshakati Hospital ART Clinic were also included in the survey.

### **3.4 The Exclusion criteria**

The patients who were below or above the age group of 15-24 years, not on ART, and were unable/unwilling to give informed consent were excluded. Those patients who were unconscious or mentally unstable (the patients that have been declared by the medical doctors treating them to be mentally unstable and it has been written on the patient prescription and on their files, such patients were not used) or those that have enrolled in the ART program for less than 6 months and the patients who could not speak or understand English consent were also excluded from this study.

### **3.5 Data collection methods**

In this study a cross-sectional survey using quantitative method was used to collect data. A systematic random sampling was done which involved sampling of every third patient that attended the facility on the day of the field work. Patients who did not want to participate, the next patient inline was selected. The data for the study were collected by means of structured questionnaires consisting of closed-ended and some open-ended questions. The themes covered were on Socio-demographic, socio-economic information/level of education, religious belief /alcohol history, food and nutrition security, knowledge on antiretroviral therapy (ARV) drugs, practice of health care providers from patients view, treatment regimen and co-management related themes.

### **3.6 Population and sampling**

The sample sizes was calculated to allow detection of a 10% difference in adherence assuming adherence is 80% at baseline and 90% at follow-up. The calculation used was based on a 95% level of significance ( $\alpha_{error} = 0.05$ ) and a power of 80% ( $\beta_{error} = 0.80$ ). 3-5 female patients (15-24 years of age) were interviewed from Monday to Friday on daily basis from April 2012 to Mid-May 2012 until the researcher got 60 patients.

### **3.7 Ethical considerations**

All data collected and the survey tools were handled with strict confidentiality. Access to the documents including the information in the computer was restricted researcher. Informed consent was obtained from all the study participants and parents of the participants less than 18 years. All study participants were treated in a humane and dignified manner. Their right to refuse to participate in the study was highly respected and had no effect on their continued treatment, care and support in the ART program. Participants were requested to answer a questionnaire without names and information provided in the questionnaire was handled confidentially. Approval for the research to take place with the patients from the Oshakati hospital and the use of hospital equipment was sought and obtained from the Research Unit of the Ministry of Health and Social Services. And permission to conduct the study was also obtained from the management of the Hospitals to which Oshakati hospital belongs. Finally approval/ ethics clearance was obtained from the research committee of the University of Stellenbosch before the research was conducted.

### **3.8 Data analysis**

The data from the administered questionnaires were initially stored in an Access database (Microsoft Access, 2007), utilizing the coding approach. The statistics were generated using Epi Info 7.1.2 which was transcribed into statistics-ready forms for analysis. The outputs of the analysis will include percentages, figures, graph, bio-graphs and chart which will then be subjected to statistical interpretation (Brink, 1999: 61). The analysis will also include tests of various statistical hypotheses.

### **Statistical Hypotheses**

Include the following below.

- (i) Non-adherence to ART amongst members of the study sample is correlated to a patient's inability to provide food for themselves
- (ii) Adherence to ART treatment is higher with disease progression
- (iii) Age is not significant in non-adherence to ART treatment
- (iv) Religion is not a significant factor to non-adherence with ARV treatment, and etc.



## CHAPTER 4: RESULTS :QUANTITATIVE METHOD PRESENTATION AND DISCUSSION OF FINDINGS

To consider the results and outcome of the tests and analysis that was carried out on the data. The emic perspective will be used because “it assumes that ‘there is no one correct view’. This is a helpful premise when considering the thoughts and opinions of ARV users, health care workers and the community, first differently and then collectively. This approach permits a nuanced interpretation of what has been reported by a wide variety of respondents.” (Kgatlwane J. *et al.*, 2006:101).

### 4.1 Socio Demographic Characteristics Of Respondents (Includes Age, Religion And Education)

#### Socio-Demographic Information’s

**Age:** The least age was 15years and the oldest was 24years. The mean age was 18.4years as shown below.

**Table 4.1: Showing Age range for the study**

Obs	Variance	Minimun	25%	Median	75%	Maximun	Mode	Mean	Std,Dev
60	9.6599	15	16	17	21.5	24	16	18.3667	3.108

**Marital Status:** They were all singles unmarried females

**Educational status:** They all had a level of education, majority of them were students. There were no complete illiterates.

**Table 4.2: Showing Educational status**

Educational Status	No Of ARV Users Reporting This Reason	Percentage
Some primary education Std 1- 8	26	43
Completed primary education	26	43
Completed secondary education	2	3.3
Post-secondary education	1	1.67
Others	5	0

## 4.2 Socio-Economic Information Socio Economical Status: Includes Employment Status, Food Security Or Poverty Levels

### 4.2.1 Religious belief /Alcohol history

Alcohol consumption is a major problem for most youth in Namibia. However amongst the females for this survey, none of them were consuming alcohol and all claimed to be christians and they all said that their church did not stop them from taking their medication. So religion is not a significant factor to non-adherence to ARV treatment in this study group.

**Occupation** :43 of them were students, 14 of them unemployed, one farmer and one shop attendant.

**Table 4.3: Showing Occupations**

Occupations	No Of Arv Users Reporting This Reason	Percentage
Student	43	72
Unemployed	14	23
Shop attendant	1	1.67
Farmer	1	1.67
Others	1	0

**4.2.2 Food and Nutrition Security:** The participants main sources of food for their household were mainly from two sources: namely 55% from household farm/garden, 38.33% from Purchase (market/grocery) and only 6.6% from Relatives/friends and none from Welfare/NGO support. The participants took meals 48.33% two or three times a day only 3.33% took meal once a day.

44.33% of the participants did not know how much Namibian dollars they usually spent on buying food others spent NS10 to NS400 per month.

### 4.3 Knowledge On Antiretroviral Therapy (Arv) Drugs.

**Antiretroviral therapy (ARV) use:** It is worthy of note that 80% of the participants said ARV drugs are used for reducing progression of HIV. The other 20% claimed they did not know the use. But 5% of these said for curing HIV, 13.33 % said for pain reduction and only one patient said she did not know its use. 98% claimed one use or the other as the knowledge, which in itself would help to motivate these people them to take their medicines. I want to believe that these set

of participants because of their educational background understood easily during their counseling sections on ARV use.

**Duration on treatment:** It is worthy of note that 8.33% (5) of the participants said they have been on treatment for 6-12 months and 8.33% (5) also said they have been on treatment for 13 – 24 months. But majority of the participants 83.33% (50) said they have been on treatment for more than 24 months. This shows the nature of the expansion of the ART program in Oshakatic hospital.

**Table 4.4: Showing Duration on Treatment**

<b>Participants Number</b>	0	5	5	50
<b>Months</b>	0-6	6 – 12	13 – 24	more than 24
<b>Percentage</b>	0	8.33%	8.33%	83.33%

**Antiretroviral therapy information source:** Majority of the participants 45%(27) said they knew about antiretroviral therapy from listening to the radio. Follow by family members 28.33%(17) , only one (1.67%) person said from television, two (3.33%) people said from news papers, three( 5%) said from community awareness meetings. The other ten (16.67%) could not specifically say their source of information. In other words 83% of the participants has information's on ART.

#### **4.4 Practice Of Health Care Providers From The Patients On Art Point Of View.**

**Treatment venue:** All the participants interviewed started receiving their treatment and were still on treatment from Oshakati hospital at the time this survey was conducted.

#### **4.5 Counseling**

Most of the participants received counseling before they started their treatment, privacy was maintained and different cadre of health personnel's attended to them which we could say that this a factor to facilitate adherence. Issues relating to side effects, and the importance of having treatment supporter and completing the full course of their treatment were emphasized.

**Counseling sections:** It is good to know that 95% (57) said they received counseling before they started their treatment. Only 5% (3) said they did not receive counseling.

**Counseling times:** The analysis results shows 71.67% (43) said they received counseling three times before they started their treatment. 11.67% (7) received counseling two times. Apart from the 5% (3) that said they did not receive counseling others said they received counseling more than three times.

**Counselors :** The analysis results shows 38.33% (23) said community counselors attended to them at the counseling sessions, 33.33% (20) said pharmacists, 15% (9) said doctors attended to them, 5% (3) said nurses attended to them at the counseling sessions. The remaining 8.33% (5) were not sure who attended to them.

**Table 4.5: Showing category of health workers that counseled the patients for the study**

Cadre of staff	No of participants who consulted with this category of health workers	Percentage
Community counselors	23	38.33
Pharmacists	20	33.33
Doctors	9	15
Nurses	3	5
Others	5	8.33
Total	60	100

**Counseling useful:** The analysis results shows 98.33% (59) reported that counseling is useful for HIV patients on treatment only one 1.67% (1) participant was indifferent.

**Privacy during counseling:** The analysis results shows 96.67% (58) said privacy was maintained during consultation, one 1.67% (1) participant said no privacy and only one 1.67% (1) participant was indifferent.

**Side effects during counseling:** The analysis results shows 98.33% (59) said they were told about the side effects and interactions of these drug(s) during counseling sessions, only one 1.67% (1) participant was indifferent.

**General adherence from a yes or no point of view:** The analysis results shows 98.33% (59) said they were able to follow their ARV therapy treatment regimen, only one 1.67% (1) participant was honest enough to say she could not follow her prescribed treatment regimen.

**Importance of completing the full course:** The analysis results shows 100% (60) which is the whole participants reported they were all told about the importance of completing the full course of treatment during their different counseling sessions.

**Treatment supporter:** The analysis results shows 91.67% (55) reported they have treatment supporter, out of these 50% (30) have their parents, 10% (6) grandparents, 5% (3) each have friends, sisters, caregivers as treatment supporter, 16.67% (10) could not specify who their treatment supporter was. The remaining 8.33% (5) said they did not have.

**Table 4.6: Showing Treatment supporter as stated by the participants for the study**

Treatment Supporter	No Of Arv Users Reporting This Reason	% Of Arv Users Reporting This Reason	Total Number Of Participants
Have A Treatment Supporter (Yes)	55	91.67	60
Said No Treatment Supporter (No)	5	8.33	60
Friend	3	5	60
Sister	3	5	60
Caregiver	3	5	60
Grandparent	6	10	60
Brother	1	1.67	60
Colleague	2	3.33	60
Other	10	16.67	60
None	2	3.33	60
Parents	30	50	60

**Transportation:** The analysis results shows 76.67% (46) travel by Public transport, 15% (9) by walking, 5% (3) by family member's vehicle, one said by free hike and the other one said by own vehicle that they usually get down to the Oshakati hospital for treatment. Therefore 55 of them all had means of transportation, apart from 5 that were living close to the hospital.

**Distance/ time** The analysis results shows: 48.33% (29) of the participants takes 1 – 2 hours, 35% (21) takes less than one hour, and 16.67% (10) takes 2 – 4 hours, you to reach the Oshakati hospital.

**Hospital visit frequency:** The analysis results shows 43.33% (26) of the participants visited two monthly, 38.33% (23) of the participants visited monthly, and 18.33% (11) of the participants visited the hospital three monthly. None of the participants visited weekly or fortnightly.

**Waiting time :** The analysis results shows 51.67% (31) claimed they spent a whole day, 21.67% (13) usually spend half day, 18.33% (11) usually spend 2 – 4 hours, 3.33% (2) claimed to have spent greater than one day, 3.33% two (2) claimed to have spent 1 – 2 hours, while only one claimed to have spent less than one hour in the ART clinic, before given their medications to take home. Worthy of note is the fact that more than half of the participants claimed they spend their day in the hospital.

**Table 4.7: Showing waiting time as stated by the participants for the study**

Waiting Time	No Of Arv Users Reporting This Reason	% Of Arv Users Reporting This Reason	Total Number Of Participants
Less Than 1 Hour	1	1.67	60
1 – 2 Hours	2	3.33	60
2 – 4 Hours	11	18.33	60
Half A Day	13	21.67	60
Whole Day	31	51.67	60
Greater Than 1 Day	2	3.33	60

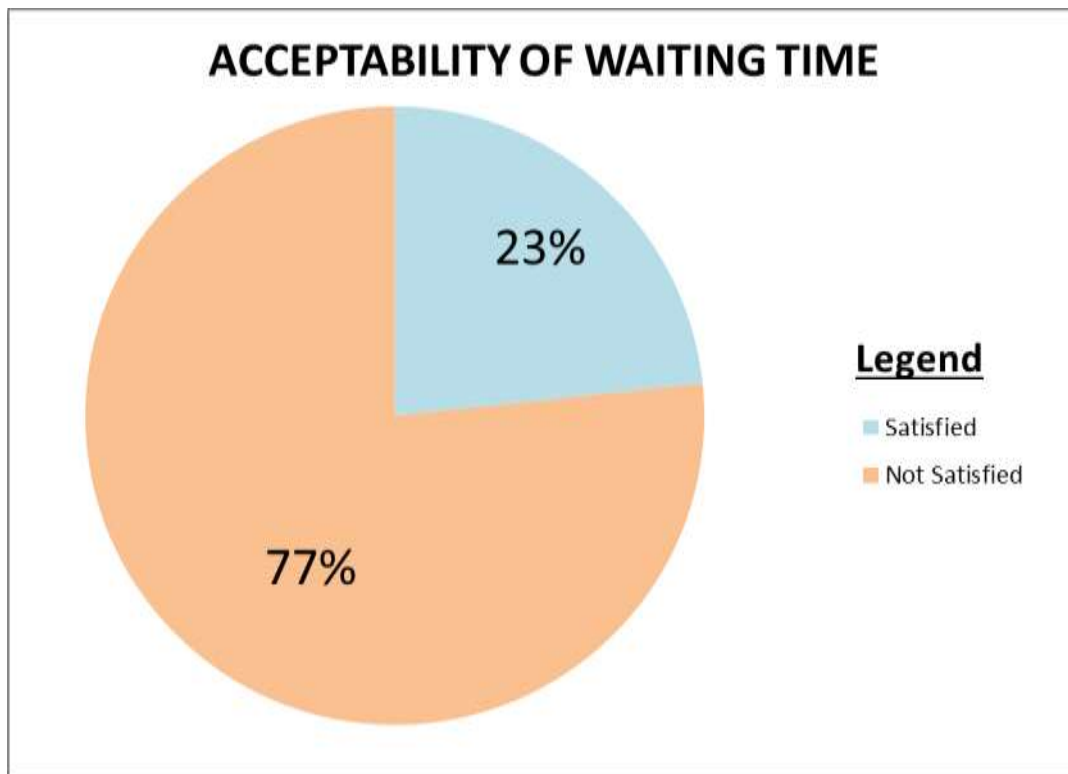


**Figure 4.1: Showing waiting time as stated by the participants for the study**

**Acceptability of Waiting time:** The analysis results shows 76.67% (46) of the participants claimed that this practice was totally unacceptable (not satisfied) to them. The remaining 23.33% (14) claimed that this practice was acceptable (satisfied) to them, probably the category that spent between 1-4 hours and half day.

**Table 4.8: Showing acceptability of waiting time as stated by the participants for the study.**

Acceptability Of Waiting Time	No Of Arv Users Reporting This Reason	% Of Arv Users Reporting This Reason	Total Number Of Participants
Yes	14	23.33	60
No	46	76.67	60



**Figure 4.2: Showing acceptability of waiting time as state by the participants for the study.**

**Reason for unacceptability of waiting time:** The analysis results shows 75%(45) of the participants claimed that this practice keeps them away from school or work. Only one 1.67%(1) participant said discourages her from continuing treatment. The remaining 23.33% (14) participant were indifferent.

#### **4.6 Treatment Regimen and Co-management**

The participants were found to be on nine different regimen: The analysis results shows 38.33% (23) of the participants were on (AZT)/ (3TC) / (NVP) single dose combination which was taken 12 hourly. Three (3) of the participants were on (D4T)/ (3TC) + (NVP). One (1) was on (D4T)/ (3TC) + Efavirenze (EFZ). Eleven(11) of them were found to be on Efavirenze (EFZ) + (AZT/3TC) Zidolam. Three (3) of the participants were on Efavirenze (EFZ) + (TDF/3TC). Two (2) of the participants were on (TDF/3TC) + Lopinavir/Ritonavir. Thirteen (13) people on (NVP) + (TDF/3TC), and four( 4 ) people on 2<sup>nd</sup> line treatment, which are three (3) on ABC+LP/RT+AZT/3TC and one (1) on TDF+LP/RT+AZT/3TC.



Treatment Regimen	No Of Arv Users Reporting This Reason	% Of Arv Users Reporting This Reason	Total Number Of Participants
(AZT)/ (3TC) / (NVP) (FDC)	23	38.33	60
(D4T)/ (3TC) + (NVP).	3	5	60
(D4T)/ (3TC) + (EFZ).	1	1.67	60
(EFZ) + (AZT/3TC)	11	18,33	60
(EFZ) + (TDF/3TC).	3	5	60
TDF/3TC) + LP/RT	2	3.33	60
(NVP) + (TDF/3TC).	13	21.7	60
ABC+LP/RT+AZT/3TC	3	5	60
TDF+LP/RT+AZT/3TC	1	1.67	60

**Figure 4.3: Showing treatment regiment percentage as stated by the participants for the study.**

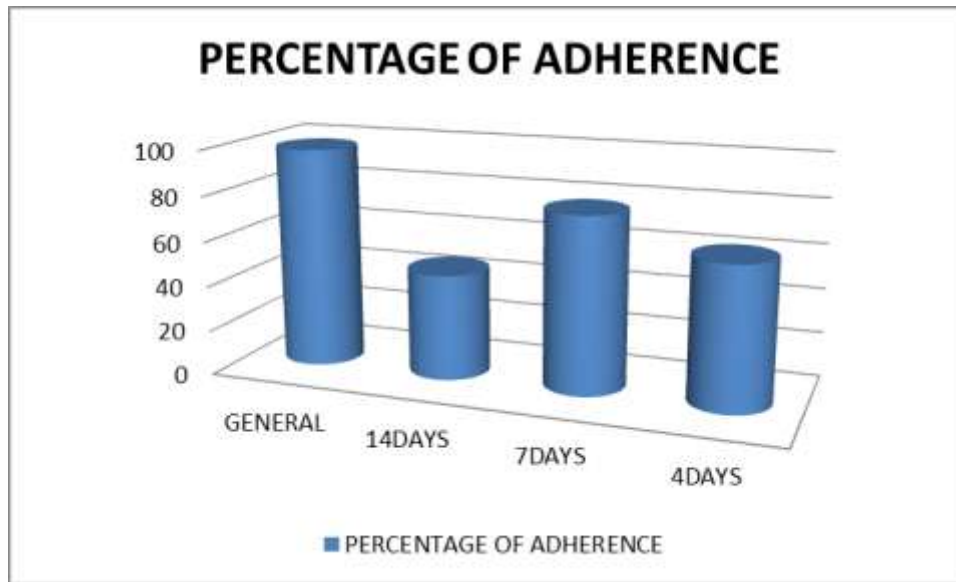
**Medicine description:** The analysis results shows 91.53% (54) of the participants were able to describe their medications. The remaining 8.47% (6) participants were not able to describe their medications.

#### 4.7 Adherence Self-Report

**Table 4.9: Showing adherence self-report( recall method ) as stated bythe participants for the study.**

Reason	No Of Arv Users Reporting This Reason	% Of Arv Users Reporting This Reason	Total Number Of Participants
Generally able to follow ARV therapy regimen	59	98.33	60
Able to follow ARV therapy regimen Two weeks recall(14days)	28	46.67	60
Able to follow ARV therapy regimen One week-recall(7days)	47	78.33	60
Able to follow ARV therapy regimen Four days recall(4days)	41	68.33	60

**Adherence Percentages**



**Figure 4.4:** Showing adherence percentage ( recall method ) as stated by the participants for the study.

**Table 4.10:** Showing missed doses (recall method) as stated by the participants for the study.

Adherence: Missed Dose of ARV Therapy	No Of ARV Users Reporting This Reason	% Of ARV Users Reporting This Reason	Total Number Of Participants
Two weeks recall (14days)	32	53.33	60
One week-recall (7days)	11	18.33	60
Four days recall (4days)	17	28.33	60
Not generally able to follow ARV therapy regimen	1	1.67	60

**Two weeks (14 days) adherence recall:** The analysis results shows 46.67% (28) claimed that they took their ARV medications as they were told to take it. The remaining 53.33% (32) participant were not able to take their medications as prescribed.

**ARV drugs Source:** They all claimed they obtained their ARV medications from Government Health central, hospitals and clinic which in this case was Oshakati ARV Clinic.

**One week (7 days) adherence recall:** The analysis results shows 78.33% (47) claimed that they took their ARV medications as they were told to take it. The remaining 21.66% (13) participant were not able to take their medications as prescribed.

**Difficult to remember:** The analysis results shows 64.41% (38) claimed that they sometimes find it difficult to remember to take their medicines. While the remaining 35.59% (22) participants did not find it difficult to remember to take their medicines.

**Feeling better:** The analysis results shows 80% (48) claimed that even when they felt better. They continued taking their medicines. While the remaining 20% (12) participants said they stopped taking their medicines when they felt better.

**Four 4 days adherence recall:** The analysis results shows 68.33% (41) claimed that they did not miss their ARV medications but instead took it as they were told to take it. The remaining 31.66% (19) participant missed their medication doses and did not adhere to the prescribed regimens.

**Feeling worse:** The analysis results shows 76.67% (46) claimed that they continued taking their ARV medications as they were told to take it even when they felt worse. Nine participant said they did not adhere to their medication regimen when they felt worse. The remaining 8.34% (5) participant were indifferent.

**Medications besides anti-retroviral:** The analysis results shows only two of the participants claimed to be taking TB-medications in addition to the ARVS, others claimed to be on Pain killers. And none were on self medications, but claimed all medicines were prescribed by their doctors.

**Side effects:** The analysis results shows only 3.33% (2) participants said they do experience problems taking these medicines together with their antiretroviral but they continued with their ARVs and one said she went to report in the clinic.

**Additional counseling:** The analysis results shows 86.67% (52) participants said they received additional counseling each time before collecting their medicines. The remaining 13.33% (8) participant

**Non-availability of medicines :** The analysis results shows 93.34% (56) participants said they have not missed any treatment due to non-availability of medicine in the pharmacy. The remaining 6.66% (4) participant said they missed treatment only once as a result of non-availability of medicine.

**Problems with the hospital/clinic staff:** The analysis results shows 91.67% (55) participant said they have not ever encounter problems with the hospital/clinic staff. while the remaining 8.23% (5) participant said they have ever encounter problems with the hospital/clinic staff but they continued with their ARVs.

**Clinic appointment:** The analysis results shows 10% (6) participant said they have missed clinic appointment, 5% (3) participant said it did not affect their appointment. while the remaining 5% (49) Others never encountered any problem with the hospital/clinic staff.

**Home visits from the hospital/clinic staff:** 93.34%(56) participant said they did not receive home visits from the hospital/clinic staff, The remaining 6.66% (4) participant said they did receive home visits from the hospital/clinic staff and out of these four only two responded that they were visited twice.

**Government of Namibia housing scheme :** The analysis results shows 96.67%(58) participant agreed that if government of Namibia or NGOS provides them with a housing that it will encourage them to take their ARV medications and make them adhere better to their treatment regimen. The remaining 3.33% (2) were indifferent.

**Home-based caregiver :**There is no home-based caregiver services by Oshakatic hospital. But some of the participants said they were visited by other community health workers. Ranging from once to greater than three times.

**Cost for ARV treatment:** The facility does not receive payment for ARV treatment, these were confirmed by 58 participants only 2 said they paid for other services in that same clinic. Since the facility does not receive payment for ARV treatment, they all confirmed that this had no effect on them as regarding their treatments.

## 4.8 Social-Cultural Factors

### 4.8.1 Attitude/ perceptions towards ART

They all approved use of ART therapy.

**Stigma:** The analysis results shows 66.67% (40) participants agreed that they do not avoid friends or relatives because of their illness, 26.67% (16) participants agreed that they do avoid friends or relatives because of their illness while the remaining 6.66% (4) participants were indifferent.

**Treatment support:** The analysis results shows 83.33%(50) participants agreed that in the last one month that they had some Immediate member of their family, nurses or community members who supported, reminded or encouraged, them to take their ARV medications. 11.67%(7) participants did not receive any kind of support or encouragement.

**Positive effect:** The analysis results shows 95% (57) participants agreed that ARV have a positive effect on their health. Like gaining more weight/energy gain, no more frequent sickness and now growing normally.

**Table 4.11: Showing summary of the result analysis for the study.**

<b>Reason</b>	<b>No Of Arv Users Reporting This Reason</b>	<b>% Of Arv Users Reporting This Reason</b>	<b>Total Number Of Participants</b>
Alcohol	0	0	60
Forgot to take ART	31	51.67	60
Felt better& stopped ARV	12	20	60
Too ill/Felt worse	9	15	60
Stock was finished	0	0	60
Too many pills/ pill burden	2	3.33	60
Side Effects	2	3.33	60
Stock-out	4	6.66	60
Problem with Hospital staff	5	8.23	60
Received home-based care	0	0	60
Payment for ARV treatment	0	0	60
Avoid friends /relatives because of their illness/stigma	16	26.67	60
Received treatment support in the last one month from(family, nurses or community)	50	83.33	60
ARV have a positive effect on their health(weight gain, no frequent sickness, normal growth)	57	95	60
Want house from government of Namibia or NGOS	58	96.67	60

## **CHAPTER 5: DISCUSSION OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

### **5.1 Discussion of Findings**

Based on the results from the research, the researcher used statistical theories to infer conclusions about question as to the cause for the poor adherence to ART by young females (15-24 years) in the Oshakati district.

Medication adherence was defined as the extent to which a patient takes a medication in the way intended by a healthcare provider. And if a patient did not take its medication in the way intended then that is failure to adhere (poor adherence).

In this study, 60 people actually participated in this survey. WHO recommends an adherence level of >95% for anti-retroviral therapy effectiveness in order to reach the therapeutic goal, (MoHSS, 2008). In the measurement of adherence above four methods were used namely: General method of a simple yes or no which gave a 98% adherence, two weeks recall (14 days) gave a 47% adherence, one week recall (7days) which gave a 78% adherence and, four days recall (4days) which gave a 68% adherence. Average of these methods gave 88% adherence, which is less than 95%. But this adherence is similar to that of other studies found in some other part of the world (Kgatlwane J. et al., 2006:124). Most of them (97%) also claimed that if they got free housing from government of Namibia or NGOs that it will help them to adhere better to their treatment.

**The reasons cited from the study to be responsible of these poor adherence:** Reasons cited were unemployment 23%, long waiting time (52%) forgetfulness 52%, felt better 20%, too ill/felt worse 15%, side effects and too many pills 3%, problem with hospital staff 8%, stock-out 7%, avoiding friends /relatives because of their illness 27%. Then 85% had to travel down by

means of transportation, this is also cited as an adherence problem, because not everyone could afford means of transportation. There is no home-based caregiver services by Oshakati hospital. Adherence is a variable that changes over the time, when a patient takes the ARVS as prescribed the adherence rate increases and when not adherence rate decreases” (Kgatlwane J. *et al.*, 2006:124).

In this study nobody cited alcohol, stock getting finished from the facility, fear of disclosure as a reason for non-adherence. Food and nutrition security was also not a problem in this survey because most of the participants had food to eat at least two times a day. It was only one participant that said that most of the times she did not have food to eat and that was the reason she missed her medication doses 20 times within two weeks.

## **5.2 Facilitators of adherence to ART**

**Knowledge and information on antiretroviral therapy:** knowledge is power 83% of the participants had information’s on ART from listening to the radio, family members, television, news papers, and from community awareness meetings in addition to the hospital. This helped them to improve their attitude/perceptions towards ART which led to facilitation of adherence because they all approved of ART.

**Positive effect:** Participants agreed that ARV have a positive effect on their health which is self-efficacy because they believe in ART that it will help improve their situation. While 80% of the participants said ARV drugs are used for reducing progression of HIV. Others said they gained more weight/energy gain, there were no more frequent sickness and their growth continued normally. The analysis results shows 91.67% (55) had treatment supporter in the persons of their parents, grandparents, friends, sisters, and caregivers. This is a social support which helped to facilitate adherence.

**Counseling:** Most of the participants (98% )received counseling before they started their treatment, and they said it was useful to them. Privacy was maintained and different cadre of health personnel’s attended to them which we could say that this is a factor to facilitate adherence. Issues relating to side effects, and the importance of having treatment supporter and



completing the full course of their treatment were emphasized, I guess that is why most of the participants did not report side effects.

### **5.3 Limitations of the study**

- In this study it was only female participants who understood English that were used, male were not used in this survey, which is subject to selection bias.
- And the adherence measurement tool used was that of self-report, meaning that some of the participants could not have been honest during their reporting, which is also subject to selection bias.
- During the field work, there were some days the researcher could not get participants within the age group of 15-24 years and so had to come back the following day. Some of the patient who did not give informed consent were not used. These set of people could have had useful information on adherence.
- Clinical criteria measurements like CD4 count and viral load were also not used in this study like the adherence study.
- Adherence to ART treatment is higher with disease progression could not be established in this survey.
- Under the problem statement, the Oshakati Hospital's antiretroviral (ARV) Clinic, the electronic dispensing tool (EDT) is being used for dispensing ARV (drugs) to HIV patients recorded, at the end of April 2011 a number of patients on ARV to be over 16,000 (including females age between 15-24 years). The EDT tool states that, of this figure, over 15,000 patients have less than 95% adherence which is less than WHO recommendation of greater than 95% adherence in order to achieve maximum therapeutic success (MoHSS, 2010). 15,000 out of 16,000 is exactly 93.75% of patients on ARV and that only 2.25% has greater or equal to 95% adherence. Unfortunately this study alone is not enough to say whether or not this claim is right because the average adherence rate by this study is 88% which is still less than 95%. I hope this will serve as a launching pad for further studies on adherence in this facility.

## **5.4 Summary of results**

The researcher concludes with the fact that the research objectives and statistical hypotheses were met. Age and religion were found not to be significant factors to non-adherence amongst these ARV treatment users in this facility. Inability of the patients to provide food for themselves was not significant to non-adherence in this study because a lot of them could eat at least two times daily.

### **5.4.1 Analyses of result of current adherence practices at the ART Clinic**

The researcher found out the following:

**Pills count:** It is a standard practice that before dispensing to the patients already on medications that their Pills are counted routinely and entered into appropriate data capturing tool which in this case is the electronic dispensing tool (EDT) at the Oshakati hospital's ART Clinic. and the patient's health passport.

**Counseling:** Medication related counseling and adherence counseling is done pre-HAART and at the time of dispensing treatment.

**Treatment Supporters:** Their role was to remind patient about dosing, obtaining refills, clinic follow-up, encourage patient to attend clinic in case of illness or toxicity and directly observe some or all their doses and they served as point of contact by health care team if patient misses follow-up visits. But under the new guidelines, treatment supporters are no longer "required" before patients can start HAART, although they are still strongly encouraged (MoHSS, 2014).

### **5.4.2 Reasons for current poor adherence**

Reasons cited were unemployment, long waiting time, forgetfulness, felt better, too ill/felt worse, side effects and too many pills for the TB patients who were also on ART, problem with hospital staff, stock-out, avoiding friends/relatives because of their illness and transportation..

### **5.4.3 Identified implementation gaps**

Oshakati hospital's ARV clinic is doing well in program implementation.

A functional ART committee comprising of Senior Medical Officer, ART Doctor, Matron, Pharmacist/Assistant, Social Worker, ART Nurse, Counsellors, Laboratory and Community Based Organizations is currently lacking at this unit (MoHSS, 2014).

Home base care services is also lacking at this hospital.

## **5.5 Recommendations and conclusion**

A comprehensive national adherence study including clinical criteria measurements like CD4 count and viral load and pill count needs to be carried in this Oshakati Hospital's and in Namibia health services as a whole. The researcher would also like to recommend the use of the visual analogue scale for routine adherence monitoring.

**A functional ART committee:** comprising of Senior Medical Officer, ART Doctor, Matron, Pharmacist/Assistant, Social Worker, ART Nurse, Counsellors, Laboratory and Community Based Organizations is currently lacking at this unit (MoHSS, 2014).

**Home base care services:** This program needs to be implemented because it is currently lacking at this hospital.

**Follow up print out:** This should be done on a weekly basis to print out a list of patients who missed their appointments so that they can be contacted.

**Community-based approaches to HIV treatment:** Training community health workers to supervise ART in patient's homes is highly recommended.

**Transportation:** It is highly recommended for means of transportation to be provided for them, like providing them with bus to convey the patients from a central location close to their homes to bring them to the hospital.

**Practical reminders:** The patients should be encouraged to use practical reminders like cell phone alarm And some specific program on radio and television.

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WEB-REF1: Presentation on the role of youth and youth organizations (Presented on 1 July 2003  
at the Second Meeting of the High-Level Panel of the Secretary-General's Youth Employment  
Network):[http://www.unchs.org/downloads/docs/265Presentation\\_on\\_the\\_role\\_of\\_youth\\_and\\_youth\\_organizations\\_-](http://www.unchs.org/downloads/docs/265Presentation_on_the_role_of_youth_and_youth_organizations_-)

WEB-REF2: [http://wiki.answers.com/Q/Importance\\_of\\_youth\\_in\\_the\\_society#ixzz1YGa06nPg](http://wiki.answers.com/Q/Importance_of_youth_in_the_society#ixzz1YGa06nPg)

WEB-REF3: Confidentiality: <http://en.wikipedia.org/wiki/Confidentiality>

WEBREF4: Voluntary Counseling and Testing: [http://en.wikipedia.org/wiki/Voluntary\\_counseling\\_and\\_testing](http://en.wikipedia.org/wiki/Voluntary_counseling_and_testing)

WEB-REF5:

[http://wiki.answers.com/Q/What\\_is\\_the\\_role\\_of\\_youth\\_in\\_society#ixzz1YGKQLCDq](http://wiki.answers.com/Q/What_is_the_role_of_youth_in_society#ixzz1YGKQLCDq)

## ADDENDA

A-Informed consent form

B-Interview protocol guide

C-University of Stellenbosch Ethics Committee approval form

D- The questionnaire used.





REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198  
Windhoek  
Namibia

Ministerial Building  
Harvey Street  
Windhoek

Tel: (061) 2032510  
Fax: (061) 222558  
E-mail: [eshaama89@yahoo.com](mailto:eshaama89@yahoo.com)  
Date: 23 March 2012

Enquiries: Ms. E. Shaama

Ref.: 17/3/3

OFFICE OF THE PERMANENT SECRETARY

Ms. Rosemary U. A. Ehiemua  
Private Bag 5501  
Oshakati

Dear Ms. Ehiemua

*R.: Reasons for poor – adherence to Antiretroviral Therapy (ART) by young females (15-24 years) HIV/AIDS patients in Oshakati District*

1. Reference is made to your application to conduct the above-mentioned study.
2. The proposal has been evaluated and found to have merit.
3. **Kindly be informed that permission to conduct the study has been granted under the following conditions:**
  - 3.1 The data to be collected must only be used for completion of your Master of Philosophy Degree in HIV/AIDS Management;
  - 3.2 No other data should be collected other than the data stated in the proposal;
  - 3.3 A quarterly report to be submitted to the Ministry's Research Unit;
  - 3.4 Preliminary findings to be submitted upon completion of study;
  - 3.5 Final report to be submitted upon completion of the study;
  - 3.6 Separate permission should be sought from the Ministry for the publication of the findings.

Yours sincerely,

  
MR. K. KAHURE  
PERMANENT SECRETARY



"Health for All"



REPUBLIC OF NAMIBIA  
MINISTRY OF HEALTH & SOCIAL SERVICES  
OSHANA REGION DIRECTORATE OF HEALTH

INTERMEDIATE HOSPITAL OSHAKATI

Private Bag X5501  
Oshakati

Phones: +264(65)2233000  
+264(65) 221 380  
Faxes: +264(65) 224564  
+264(65) 221 390  
E-mail: [supt.ihosh@hsew.na](mailto:supt.ihosh@hsew.na)

Enquiries:

Ref: 7/3

Date: 02 April, 2012

Ms Rosemary UA Ehieumua

Private Bag X5501

OSHAKATI

**APPLICATION TO CONDUCT RESEARCH ON POOR ADHERENCE TO ART.**

Your letter on the above issue refers.

Intermediate Hospital Oshakati Management grants you permission to conduct your research, on condition that you must adhere to the rules and regulations of the institution and as per letter of approval from the Permanent Secretary.

During your study period, you will be under the supervision of the Medical Officers and Registered Nurses in charge of the section concern.

Yours Sincerely

  
DR SHANNON KAKUNGULU  
MEDICAL SUPERINTENDENT



Cc: Drs Nakangombe, Dennar, Mwodza and Sister-in-charge



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## Approval Notice Response to Modifications- (New Application)

15-Oct-2012  
Ehiemua, Uyinnwen Rosemary URA  
Stellenbosch, WC

Protocol #: HS716/2011

Title: Reasons for poor-adherence to antiretroviral therapy (ART) by young females (15-24 years) HIV/AIDS patients in oshakati district.

Dear Mrs Uyinnwen Rosemary Ehiemua,

The **Response to Modifications - (New Application)** received on **30-Sep-2012**, was reviewed by members of **Research Ethics Committee: Human Research (Humanities)** via Expedited review procedures on **25-Oct-2012** and was approved.  
Please note the following information about your approved research protocol:

Protocol Approval Period: **05-Oct-2012 -04-Oct-2013**

### Standard provisions

1. The researcher will remain within the procedures and protocols indicated in the proposal, particularly in terms of any undertakings made in terms of the confidentiality of the information gathered.
2. The research will again be submitted for ethical clearance if there is any substantial departure from the existing proposal.
3. The researcher will remain within the parameters of any applicable national legislation, institutional guidelines and scientific standards relevant to the specific field of research.
4. The researcher will consider and implement the foregoing suggestions to lower the ethical risk associated with the research.

You may commence with your research with strict adherence to the abovementioned provisions and stipulations.

Please remember to use your **protocol number (HS716/2011)** on any documents or correspondence with the REC concerning your research protocol.

Please note that the REC has the prerogative and authority to ask further questions, seek additional information, require further modifications, or monitor the conduct of your research and the consent process.

### After Ethical Review:

Please note that a progress report should be submitted to the Committee before the approval period has expired if a continuation is required. The Committee will then consider the continuation of the project for a further year (if necessary). Annually a number of projects may be selected randomly for an external audit.

National Health Research Ethics Committee (NHREC) number REC-050411-032.

This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes 2004 (Department of Health).

### Provincial and City of Cape Town Approval

Please note that for research at a primary or secondary healthcare facility permission must be obtained from the relevant authorities (Western Cape Department of Health and/or City Health) to conduct the research as stated in the protocol. Contact persons are Ms Claudette Abrahams at Western Cape Department of Health ([healthres@pgwc.gov.za](mailto:healthres@pgwc.gov.za) Tel: +27 21 483 9907) and Dr Helene Visser at City Health ([Helene.Visser@capetown.gov.za](mailto:Helene.Visser@capetown.gov.za) Tel: +27 21 400 3981). Research that will be conducted at any tertiary academic institution requires approval from the relevant parties. For approvals from the Western Cape Education Department, contact Dr AT Wyngaard ([awyngaard@pgwc.gov.za](mailto:awyngaard@pgwc.gov.za), Tel: 0214769272, Fax: 0865902282, <http://wced.wcape.gov.za>).

Institutional permission from academic institutions for students, staff & alumni. This institutional permission should be obtained before submitting an application for ethics clearance to the REC.

Please note that informed consent from participants can only be obtained after ethics approval has been granted. It is your responsibility as researcher to keep signed informed consent forms for inspection for the duration of the research.

We wish you the best as you conduct your research.

If you have any questions or need further help, please contact the REC office at 021 8089003.

### Included Documents:

Application Form  
Consent Letter  
Questionnaire  
Research Proposal  
Admin Review

Sincerely,

Winston Buikes  
REC Coordinator  
Research Ethics Committee: Human Research (Humanities)

## Investigator Responsibilities

### Protection of Human Research Participants

Some of the responsibilities investigators have when conducting research involving human participants are listed below:

1. Conducting the Research. You are responsible for making sure that the research is conducted according to the REC approved research protocol. You are also responsible for the actions of all your co-investigators and research staff involved with this research. You must also ensure that the research is conducted within the standards of your field of research.

2. Participant Enrollment. You may not recruit or enroll participants prior to the REC approval date or after the expiration date of REC approval. All recruitment materials for any form of media must be approved by the REC prior to their use. If you need to recruit more participants than was noted in your REC approval letter, you must submit an amendment requesting an increase in the number of participants.

3. Informed Consent. You are responsible for obtaining and documenting effective informed consent using **only** the REC-approved consent documents, and for ensuring that no human participants are involved in research prior to obtaining their informed consent. Please give all participants copies of the signed informed consent documents. Keep the originals in your secured research files for at least five (5) years.

4. Continuing Review. The REC must review and approve all REC-approved research protocols at intervals appropriate to the degree of risk but not less than once per year. There is **no grace period**. Prior to the date on which the REC approval of the research expires, it is **your responsibility to submit the continuing review report in a timely fashion to ensure a lapse in REC approval does not occur**. If REC approval of your research lapses, you must stop new participant enrollment, and contact the REC office immediately.

5. Amendments and Changes. If you wish to amend or change any aspect of your research (such as research design, interventions or procedures, number of participants, participant population, informed consent document, instruments, surveys or recruiting material), you must submit the amendment to the REC for review using the current Amendment Form. You may **not initiate** any amendments or changes to your research without first obtaining written REC review and approval. The **only exception** is when it is necessary to eliminate apparent immediate hazards to participants and the REC should be immediately informed of this necessity.

6. Adverse or Unanticipated Events. Any serious adverse events, participant complaints, and all unanticipated problems that involve risks to participants or others, as well as any research related injuries, occurring at this institution or at other performance sites must be reported to Maïene Fouch within **five (5) days** of discovery of the incident. You must also report any instances of serious or continuing problems, or non-compliance with the REC's requirements for protecting human research participants. The only exception to this policy is that the death of a research participant must be reported in accordance with the Stellenbosch University Research Ethics Committee Standard Operating Procedures. All reportable events should be submitted to the REC using the Serious Adverse Event Report Form.

7. Research Record Keeping. You must keep the following research related records, at a minimum, in a secure location for a minimum of five years: the REC approved research protocol and all amendments; all informed consent documents; recruiting materials; continuing review reports; adverse or unanticipated events; and all correspondence from the REC.

8. Reports to Sponsor. When you submit the required reports to your sponsor, you must provide a copy of that report to the REC. You may submit the report at the time of continuing REC review.

9. Provision of Counselling or emergency support. When a dedicated counsellor or psychologist provides support to a participant without prior REC review and approval, to the extent permitted by law, such activities will not be recognised as research nor the data used in support of research. Such cases should be indicated in the progress report or final report.

10. Final reports. When you have completed (no further participant enrollment, interactions, interventions or data analysis) or stopped work on your research, you must submit a Final Report to the REC.

11. On-Site Evaluations, Inspections, or Audits. If you are notified that your research will be reviewed or audited by the sponsor or any other external agency or any internal group, you must inform the REC immediately of the impending audit/evaluation.

**Questionnaire for patients on ART**

**QUANTITATIVE DATA COLLECTION TOOL**  
**(STRUCTURED QUESTIONNAIRE)**

Structured interview guide for the HIV and AIDS patients who are on ART treatment in Oshakati hospital.

NOTE: Only the patients who understand English will be used for this study.

**What are antiretroviral medicines (ARVs)**

“ARVs are medicines which are taken by people living with HIV (PLHIV) to fight the virus in their body. ARVs work to keep the level of HIV low in the body of an HIV positive person, and help keep their ‘immune system’ stronger and better able to fight disease. The ‘immune system’ is the body’s defense against disease, and protects one from getting sick. Taking antiretroviral medicines and combining this with a healthy diet and a positive life style is called being on ‘antiretroviral therapy’ (ART). Once you begin taking ARVs, your immune system will become stronger and be able to fight diseases better.”

. [http://www.westerncape.gov.za/eng/pubs/public\\_info/F/87102/6](http://www.westerncape.gov.za/eng/pubs/public_info/F/87102/6) ASSESSED AT 12:18PM 17/01/2012

**A. Basic Informations**

1. Date of interview (DD/MM/YYYY):
2. Study site or Name of clinic or health facility: \_\_\_\_\_
3. Code of the interview
4. Questionnaire ID:
5. Patients ART clinic Registration Number:

**B. Socio-Demographic Informations**

6. Date of birth (DD/MM/YYYY):
7. Gender: Male  Female
8. Marital Status (Pls tick one)      9. Language group
- Single                       Oshiwambo
- Married                       Damara>Nama
- Divorced                       Otjherero

Widowed  Afrikaans   
 Cohabitation  Silozi   
 English   
 Others(specify): \_\_\_\_\_

10. Number of children if any:

10.1 Age of the last born:

**C. Socio-Economic Information/Level of Education**

11. Occupation (Please tick one)	12. Educational status (Please tick one)
Student <input type="checkbox"/>	None <input type="checkbox"/>
Civil servant <input type="checkbox"/>	Some primary education Std 1- 8 <input type="checkbox"/>
Unemployed <input type="checkbox"/>	Completed primary education <input type="checkbox"/>
Business owner <input type="checkbox"/>	Completed secondary education <input type="checkbox"/>
Shop attendant <input type="checkbox"/>	Post-secondary education <input type="checkbox"/>
Farmer <input type="checkbox"/>	University/college education <input type="checkbox"/>
Defence/ Security services <input type="checkbox"/>	Adult education <input type="checkbox"/>
Other (specify): _____	

**D. Religious belief /Alcohol history**

13. Religious belief (Please tick one)  
 Christianity   
 Islam   
 Other (specify): \_\_\_\_\_

14. Have you ever taken alcohol before or after starting ART? (Please tick one)

Never	<input type="checkbox"/>
Stopped many years ago	<input type="checkbox"/>
Stopped before starting ARV	<input type="checkbox"/>
Drinking before and still on	<input type="checkbox"/>

Started after starting treatment

**E. Food and Nutrition Security**

15. What is the main source of food for your household? (Please tick one)

Purchase (market/grocery)

Household farm/garden

Relatives/friends

Welfare/NGO support

Other (specify) \_\_\_\_\_

16. What percent of food currently consumed is from the source mentioned above?  %

17. About how much money in Namibian dollars do you usually spend on buying food for one day in your household?  Don't know (tick here)

18. How many meals do you afford to take in day?(Please tick one)

One  Two  Three

**F. Knowledge on antiretroviral therapy (ARV) drugs**

19. In your own view what would you say ARV drugs are used for? (Please tick one)

Curing

Reducing pain

Reducing progression of HIV

I don't know

20. How long have you been on this treatment with antiretroviral medicines?

Less than 3 months

3 – 6 months

6 – 12 months

13 – 24 months

More than 24 months



21. How did you know about this medicine (antiretroviral therapy) for treating HIV/AIDS?  
(Tick as many as applicable)

- Radio
- Television
- Newspaper
- Posters
- Friends
- Family members
- Community awareness meetings

Other (specify): \_\_\_\_\_

**G. Practice of Health Care Providers and Patients on ART**

22. In which hospital/clinic did you start receiving the treatment?

\_\_\_\_\_

23. Where are you presently receiving your medicines from?

\_\_\_\_\_

24a. Did you receive counseling before you started this treatment you are getting?(Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

24b. If yes, can you tell how many counseling sessions you attend before you started this treatment?

25. Who attended to you at the counseling sessions? (Please tick any applicable)

- Nurses
- Doctors
- Pharmacists
- Community counselors
- I don't know

Other (specify): \_\_\_\_\_

26. Do you think counseling is useful for HIV patients on treatment?  
(Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

27. Was privacy maintained during consultation? (Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

28. Were you told about the side effects and interactions of these drug(s) given during counseling sessions? (Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

29. Are you able to follow ARV therapy regimen? (Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

30. Were you told the importance of completing the full course of treatment during counseling sessions? (Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

31. Do you have a treatment supporter? (Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

32. If yes, what relationship do you have with your treatment supporter? (Please tick one)

- Spouse
- Friend
- Colleague
- Brother
- Sister
- Parent
- Grandparent
- Caregiver

Other (specify): \_\_\_\_\_

33. How do you usually get down to the hospital/clinic where you get your treatment ? (Please tick one)

- Own vehicle

- Public transport
- Family member's vehicle
- Free hike
- Walking

Other (specify): \_\_\_\_\_

34. How long does it take you to reach the health facility?

- Less than 1 hour
- 1 – 2 hours
- 2 – 4 hours
- Greater than 4 hours

35. How often do you come to the clinic? (Please tick one)

- Weekly
- Fortnightly
- Monthly
- Two-monthly
- 3-monthly

Other (specify): \_\_\_\_\_

36. Can you tell how long you usually spend in the ART clinic before you are given your medicines to take home?

- Less than 1 hour
- 1 – 2 hours
- 2 – 4 hours
- Half a day
- Whole day
- Greater than 1 day

37. Is this acceptable to you? (Please tick one) 

Yes	<input type="checkbox"/>
-----	--------------------------

No	<input type="checkbox"/>
----	--------------------------

38. If no, why? (Please tick any applicable)
- Keeps me away from work/School
- Discourages me from continuing treatment
- Stigmatizes me

Other (specify): \_\_\_\_\_

**H. Treatment Regimen and Co-management**

Level of adherence

Instructions to the study participant: Now I would ask questions on how you have been taking the ARV medications in the past one-month. Please be aware that everyone misses doses in some time. Be assured that this information will neither change the way you receive ARV medications from the treatment center nor your opportunity to participate in this study.

39. Among the ART medication listed below which of them are you currently taking?

(Please tick Yes or No)

Stavudine (d4T)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Lamivudine (3TC)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Efavirenze (EFZ)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Nevirapine (NVP)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Tenofovir (TDF)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Zidovudine (ZDV or AZT)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Abacavir (ABC)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Didanosine (ddI)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
Lopinavir/Ritonavir	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
(TDF)/ (3TC)/ (NVP)	Yes	<input type="checkbox"/>	No	<input type="checkbox"/>

Other (specify): \_\_\_\_\_

40. Can you describe these antiretroviral medicines you are taking? (Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

Self Report

41. Many people find it hard to remember to take every single dose, in the last two weeks, how many doses of your antiretroviral medicines have you missed?

Name of ARV drug	Number of doses missed

42. What things can make it hard for you to remember your tablets?

(Please tick any applicable)

- Developed toxicity/ side effect
- Forgot to take ART
- Felt better
- Too ill
- Fear of stigma/disclosure
- Stock was finished
- Drunk alcohol
- Too many pills/ pill burden

Other (specify): \_\_\_\_\_

43. Where can ARV drugs be obtained? (Please tick any applicable)

- Chemist/ pharmacy
- Friends/ relatives
- Government Health central, hospitals and clinic
- Mission hospitals/clinics
- Don't know

Other (specify): \_\_\_\_\_

44. In the last one week, did you take all the medicines as you were told to take?

(Please tick one) 

Yes	<input type="checkbox"/>
-----	--------------------------

No	<input type="checkbox"/>
----	--------------------------

45. If no, why did you not take it as you were told? (Please tick any appropriate)

Forgot

No food

Medicine exhausted

Tired with the medicine

Reacted to the medicine

Felt well

Other (specify): \_\_\_\_\_

46. Do you sometimes find it difficult to remember to take your medicine?

(Please tick one) 

Yes	<input type="checkbox"/>
-----	--------------------------

No	<input type="checkbox"/>
----	--------------------------

47. When you feel better do you sometimes stop taking your medicine?

(Please tick one) 

Yes	<input type="checkbox"/>
-----	--------------------------

No	<input type="checkbox"/>
----	--------------------------

48. Thinking back over the past 4 days would you say that you have missed any of your doses? (Please tick one)

Yes	<input type="checkbox"/>
-----	--------------------------

No	<input type="checkbox"/>
----	--------------------------

49. Sometimes if you feel worse when you take the medicines, do you stop taking it?

(Please tick one) 

Yes	<input type="checkbox"/>
-----	--------------------------

No	<input type="checkbox"/>
----	--------------------------

50. When was the last time you missed a dose? (Please tick one)

Within the last week

1 – 2 weeks ago

2 – 4 weeks ago

1 – 3 months ago

Never

52. There are some list of medications below, which you are currently on (besides anti-retroviral) (Tick as many as applicable)

	Tick applicable medicine	How many times per day?
Pain killers	<input type="checkbox"/>	
Appetitive stimulants/vitamins	<input type="checkbox"/>	
Sleeping pills	<input type="checkbox"/>	
TB treatment	<input type="checkbox"/>	
Antibiotics (other than for TB)	<input type="checkbox"/>	
Fungal infection treatments	<input type="checkbox"/>	
Other (specify):		

53. If you ticked any of the above, were they prescribed for you in the hospital or clinic?

Yes		No		If yes, go to Q54
-----	--	----	--	-------------------

54. Do you experience any problems taking these medicines together with the antiretroviral medicines?

Yes		No	
-----	--	----	--

55. If yes, how did it affect your taking the antiretroviral medicines (ARVs)?

Stopped the ARVs	<input type="checkbox"/>
Continued the ARVs	<input type="checkbox"/>
Went to report in the clinic	<input type="checkbox"/>

Other (specify): \_\_\_\_\_

56. When you go to the hospital/clinic to get your medicines, do you receive additional Counseling before collecting your medicines? (Please, tick one)

Yes		No	
-----	--	----	--

57. Since you started treatment, how many times did you miss treatment because of non-availability of medicine in the pharmacy/clinic?

None	<input type="checkbox"/>
Once	<input type="checkbox"/>
Twice	<input type="checkbox"/>

Thrice   
 Greater than   
 Three times

58. Since you started treatment, did you ever encounter problems with the hospital / clinic staff? (Please, tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

59. If yes, how did the problem affect your treatment?

Stopped taking treatment   
 Missed clinic appointment   
 Did not affect appointment

Other (specify): \_\_\_\_\_

60. Since you started treatment with antiretroviral medicines, do you receive home visits from the hospital/clinic staff? (Please, tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

61. If yes, how many times have you been visited in the last one month?

Once   
 Twice   
 Thrice   
 Greater than Three   
 times

62. Do you agree that if government of Namibia or NGOS provides you with a house of your home it will encourage you to take your ARV medications and make you adhere better to your treatment regimen? (Please tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

63. Do you receive visits from a home-based caregiver or any other community health worker? (Please, tick one)

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

64. If yes, how many times have you been visited in the last one month?

Once   
 Twice



Thrice   
Greater than  
Three times

65. When you visit the clinic, do you have to pay for receiving your antiretroviral treatment? (Please, tick one)  Yes  No

66. If yes, how does this affect your treatment?

Stopped taking treatment   
Missed clinic appointment   
Did not affect appointment

Other (specify): \_\_\_\_\_

67. Did you need an interpreter in completing this questionnaire? (Please, tick one)

Yes  No

**I. Social-Cultural Factors**

Attitude/ perceptions towards ART

68. What is your opinion regarding ART therapy?

Approve   
Disagree   
Undecided

69. If disapprove what are your reasons?

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

70. Do you avoid friends or relatives because of your illness?  Yes  No

71. In the last one month did you have any family or community member who supported (reminded or encouraged) you to take your ARV medications?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
-----	--------------------------	----	--------------------------

72. If yes, who was the person who supported you? (Check one response only)

Spouse	<input type="checkbox"/>
Immediate member of family (specify)	<input type="text"/>
Nurse	<input type="checkbox"/>
Doctor	<input type="checkbox"/>
Social Worker/Community Health Worker	<input type="checkbox"/>
Friend	<input type="checkbox"/>

Other (specify): \_\_\_\_\_

73. you think that ARV will have a positive effect on your health?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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74. What benefits have you gained from using ARV drugs?

Gained more weight/energy	<input type="checkbox"/>
No more frequent sickness	<input type="checkbox"/>
Child grows normally now	<input type="checkbox"/>

75. (Only for pregnant women) Do you think ARV drugs can prevent the child you are expecting from HIV infection?

Yes	<input type="checkbox"/>	No	<input type="checkbox"/>
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76. Do you have any suggestions/comments?

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Thank you for your time in participating in this interview.

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**Name of Interviewer:** \_\_\_\_\_

**Signature:** \_\_\_\_\_

**Date of interview:** \_\_\_\_\_

**Duration of interview:** \_\_\_\_\_