FACTORS ASSOCIATED WITH ADHERENCE TO ANTI-RETROVIRAL TREATMENT (ART) AMONG ADOLESCENT CLIENTS AT KATUTURA INTERMEDIATE HOSPITAL, KHOMAS REGION

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ABSTRACT

The study was conducted at Katutura Intermediate Hospital in Windhoek, Khomas region, in Namibia. It focused on adolescent clients receiving ART who attended their monthly teen club meetings during the time of the data collection. The main purpose of the study was to determine levels of adherence amongst adolescents as well as the factors associated with adherence amongst adolescents receiving ART at Katutura Intermediate Hospital. The data was collected from 58 study respondents, using structured questionnaires.

The research findings revealed that most adolescents (70.7%) were school-going, and at Secondary School level. Most adolescents receiving ART at Katutura Intermediate hospital have been on treatment for 10-15 years with 60.3% living with their biological parents. The respondents' most used mode of transport to the clinic is a taxi (78.9%) and there are those that walk to the clinic (17.5%). It is worth noting that there were no homeless/street children adolescents recorded receiving ART at Katutura Intermediate Hospital in this study. At least (63.8%) adhered to their dose in the past seven (7) days, while (36.2%) of the study respondents reported missing ART medication in the past (7) days. The most common reasons for missing HIV medications among adolescent clients in the past six (6) months were forgetfulness (34.1%), lack of transportation to ART clinic (23.3%), shortage or/no food (17.1%), and peers laughing at them (stigma) (9.1%).

This study recommends strengthening on-going counselling and psychosocial support of adolescents, developing a written plan to address adolescent needs, including medical, psychosocial, and financial aspects of antiretroviral treatment. The study recommends that the Ministry of health strengthens provider communication between paediatric/adolescent clinics by identifying adult care providers who have expertise in providing care to adolescents and young adults. It is further recommended that future research should explore addressing patient or family barriers caused by lack of information, stigma or disclosure concerns.

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LIST OF ABBREVIATIONS/ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
ART	Antiretroviral Treatment/Therapy
ARV	Antiretroviral
AYLHIV	Adolescent Youth Living with HIV
DOT	Directly Observed Treatment
GRN	Government of the Republic of Namibia
HAART	Highly Active Antiretroviral Therapy
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HIVDR	Human Immunodeficiency Virus Drug Resistance
I-TECH	International Training and Educated Centre for Health
KIH	Katutura Intermediate Hospital
MEMS	Medication-Event Monitoring Systems
MoHSS	Ministry of Health and Social Services
NGO	Non-Governmental Organization
NSA	Namibia Statistics Agency
PLWHA	People Living With HIV and AIDS
SAHCS	South African HIV Clinicians Society
SMS	Short Messaging Sytem
STD	Sexually Transmitted Diseases
TB	Tuberculosis

UNAIDS United Nations Agency for International Development

UNAM University of Namibia

USAID United States Agency for International Development

VCT Voluntary Counselling and Testing

WHO World Health Organization

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I wholeheartedly appreciate the emotional and financial support from my loving family, my supportive parents Rev and Mrs Shivute, my dear husband Samuel, my friends as well as helpful colleagues who continuously motivated and encouraged me to finalise this study.

DEDICATION

I dedicate this study to my late paternal grandfather, **Tatekulu Josef 'Opu' Shivute**.

May his rich, incredible legacy of good principles, hard work, perseverance and determination continue to be immortal, spreading from one generation to the next.

DECLARATION

I, Emmi N N Shivute, hereby declare that this study about FACTORS ASSOCIATED WITH ADHERENCE TO ANTI-RETROVIRAL TREATMENT (ART) AMONG ADOLESCENT CLIENTS AT KATUTURA INTERMEDIATE HOSPITAL, KHOMAS REGION is my own work and is a true reflection of my research, and that this work, or any part thereof has not been submitted for a degree at any other institution.

01 February 2020

STUDENT SIGNATURE **DATE**

(MS. EMMI N. N. SHIVUTE)

CHAPTER 1

1. ORIENTATION OF THE STUDY

1.1. Introduction

This chapter offers an overview of the research study, and will focus on the research problem, research purpose and objectives, significance of the study, the demarcation of the field of study as well as the research design, methods, tools and scope. The chapter will also highlight the study's ethical consideration in place.

According to Carter (2015), achieving success of anti-retroviral treatment (ART) requires a near-perfect adherence to a combination of antiretroviral (ARV) regimens. Adherence to an ARV treatment regimen involves taking all prescribed pills in the correctly prescribed doses, at the right time, and in the right way. With a successful rate of ART treatment services in the country, statistics of adolescents defaulting on their ART treatment as well as factors associated with non-adherence will be non-existent in reports; and there would therefore be no need to identify barriers associated with the non-adherence of ART amongst adolescents.

1.2. Background of the Study

The Namibian government through the Ministry of Health and Social Services (MoHSS) has vowed to progressively provide access, on a sustained and equal basis, to affordable, quality antiretroviral treatment and prophylaxis to prevent opportunistic infections, to all persons who need it as stipulated in the National Strategic Framework of 2017/18 – 21/22.

The Ministry of Health has further adopted the Voluntary Counselling and Testing (VCT) as well as ART programs to improve access to HIV testing as well as ARV treatment of people leaving with HIV/AIDS (PLWHA).

Furthermore UNICEF 2012 reported that four hundred young people living with HIV are being reached through Teen Club for Adolescents Living with HIV in the paediatric clinic of one of Namibia's major hospitals, Katutura Intermediate Hospital. The innovative programme initiated by the hospital's paediatric unit in partnership with the Ministry of Health and Social Services, UNICEF Namibia and local NGO Positive Vibes addresses the unique needs of adolescents living with HIV, primarily those who were infected by their mothers during birth.

The paediatric clinic opened its doors in 2010 in recognition of the specific need for care, support and treatment of younger children transitioning to adolescence, with the purpose of delivering integrated services for adolescents living with HIV. The clinic later extended its services to create a safe space for these adolescents. A dedicated adolescence clinic operates on Wednesdays as part of the integrated package, which is a unique example of such care. Today, about 800 paediatric patients receive care at the clinic, with approximately 360 patients seen monthly, many of whom will soon transition to adolescence. Thereafter they will receive their ART at the adult ARV clinic.

Antiretroviral drugs are medications that treat HIV. The drugs do not kill or cure the virus however, when taken in combination they can prevent the growth of the virus. When the virus is slowed down, so is HIV progression to a disease. Antiretroviral Therapy (ART) consists of the combination of ARV drugs to maximally suppress the HIV virus and stop the progression of HIV disease. The Antiretroviral Therapy also prevents onward transmission of HIV. Huge

reductions have been seen in rates of death and infections when use is made of a potent ARV regimen, particularly in early stages of the disease.

1.2. Problem Statement

The Ministry of Health and Social Services' HIV Sentinel Survey of 2012, improved access to paediatric ART and provision of HIV care has meant greater proportions of HIV infected infants surviving to reach adolescence. Despite the growing number of HIV infection, there has been little focus in providing adolescents with specialized care (Kayiwa 2012). Furthermore, there are no dedicated services for adolescents living with HIV in hospitals, clinics and health centres and children generally move from paediatric to adult care services at 8-12 years of age. Other observational evidence suggests that there is currently no data on child and adolescents living with HIV disaggregated by age 5-14 or 10–19 years.

In Namibia, data from the Katutura Intermediate Hospital shows that HIV/AIDS related illnesses are now the most common reasons for hospitalization in adolescents due to non-adherence of their medical therapy, with mother-to-child transmission of HIV, the most likely mode of transmission. Information from the Ministry further revealed that there has been considerable emphasis on the prevention of HIV infection but not much emphasis on the care of those already infected which makes it difficult to control the spread (MoHSS, 2012).

Despite the successful rollout of the HIV Voluntary Testing and Counselling (VTC) program as well as ART programs by MoHSS in Namibia, improving access to HIV testing as well as

treatment to PLWHA, there is an information gap in data and statistics on the factors associated with non-adherence to ART among adolescent clients in Namibia.

The effects, reasons and impact of non-adherence to ART on the lives of people living with HIV/AIDS have been well-studied in Namibia by various authors (I-TECH Namibia, 2009), Ehiemua, 2014 and Bauleth, 2013). Unfortunately, non-adherence to ART among adolescents between the ages of 10-19 years living with HIV has received little or no attention in the country and this prompted the researcher's interest to carry out this study with the intention of contributing to the knowledge, statistics and literature.

1.3. Purpose of the Study

The purpose of the study is to identify and describe the factors associated with adherence to ART among adolescent clients at Katutura Intermediate Hospital.

1.3.1 Objectives of the Study

The study has three main objectives;

- To determine the level of adherence amongst adolescents receiving ART at Katutura Intermediate Hospital.
- To determine the factors associated with adherence amongst adolescents receiving ART at Katutura Intermediate Hospital.

1.3.2. Hypothesis of the Study

Alternative: The level of adherence and factors associated with adherence among adolescent clients receiving ART is different from the general public adult clients receiving ART.

Null: The level of adherence and factors associated with adherence among adolescent clients receiving ART is not different from the general public adult clients receiving ART.

1.4. Significance of the Study

The Anti-retroviral treatment (ART) is an important part of the access to treatment, care and support program of the Ministry of Health and Social Services (MoHSS, 2012). This study is very significant to the public health sector and the findings might be useful for stakeholders and policy-makers in understanding the challenges that are experienced by the adolescents.

This study finding might further allow Public Health stakeholders to develop better mechanisms that would improve the living conditions of the population under study.

1.5. Limitation of the Study

The researcher identified potential weaknesses that could hinder the progress of the study. The research was conducted on a small size of a population who are receiving treatment at the Katutura ART clinic with the primary focus on boys and girls between the ages of 10-19. Therefore, to generalise the results to a larger population, the study could not involve more respondents from different institutions because time will not allow. The other limitation was the lack of prior research studies on the topic. Based on the literature review conducted, little research has been conducted on this specific group.

1.6. Delimitation of the Study

The study focused on adolescent clients receiving ART at Katutura Intermediate Hospital, between the ages of 10 - 19, excluding adult clients (20+ years old). This was because adult clients have been researched many times before by other researchers and therefore the researcher realized a gap in literature on the factors associated with adherence among adolescent clients in Namibia. The Katutura intermediate hospital ART clinic was selected for the study because it is the largest referral hospital in the country, located in the capital city Windhoek, Khomas region.

1.7. Summary

This chapter covered study orientation, problem statement, purpose of the study as well as objectives and hypotheses. The significant of the study was explained as well as its scope limitation and delimitation. The next chapter will present the literature review.

CHAPTER 2

2. LITERATURE REVIEW

2.1. Introduction

This chapter presents information relating to the adherence to Antiretroviral Treatment in adolescents who contracted HIV through vertical transmission. A literature review is defined by Polit and Beck (2006) as a basic synopsis of research on a subject of interest, in this case the variables impacting adherence to ART among adolescent patients at Katutura Intermediate Hospital, Khomas Region. The aim of the literature review was to empower the researcher to

gain a deeper understanding into the issue under investigation, assess the essence of the issue, put the research problem in context and to decide the most appropriate methodology, including the research instrument (Burns and Grove 2007).

The Joint United Nations Programme on HIV/AIDS (UNAIDS; 2015) documented that the first case of AIDS in Namibia was reported in 1986. Namibia's epidemic has since matured with a changing age profile of children in need of HIV management and care. The Ante-natal Care (ANC) prevalence peaked at 22% in 2002 and has now decreased to 18%. Given that HIV infection progresses slowly in 25% to 30% of those infants infected through mother-to-child transmission, the median life span of these infants is 14–16 years, without ART (MoHSS, 2012). These adolescents living with HIV then become part of the relatively large youthful future of the Namibian population.

Although the factors documented between adolescents and adults are significantly different, the review shows that there is a need for further research in terms of factors associated with adherence among adolescents living with HIV/AIDS in Namibia. The researcher aimed to fill the gap in literature by identifying current needs, socio-economic factors as well as challenges faced by this large youthful and future population, in order to contribute to future policy formulations as well as programme designs and implementation.

2.2 PURPOSE OF THE LITERATURE REVIEW

The reason for the literature review is to pass on to the health field, current developments regarding the subject at hand (Burns and Grove 2007). A literature review is designed to:

- "Distinguish a research issue and refine research questions;
- Establish what is already known about the research topic;

- Identify literature gaps in the current literature;
- Help distinguish proper research outlines and information accumulation techniques for the investigation, and
- Get insights for elucidation of study discoveries and ramifications of the investigation" (Polit and Beck 2006).

For this study, the literature review was done to determine the factors that influence adherence to ART among adolescents living with HIV through different modes of transmission.

2.3 SCOPE OF THE LITERATURE REVIEW

This study's literature review was focused on HIV and ART adherence. The current literature on adherence to ART among HIV positive young people were investigated. The researcher surveyed diverse research reports, insights and studies conducted internationally including the country of the study, Namibia. The key ideas utilized for the literature review were antiretroviral treatment, adherence to ART, factors affecting adherence to ART and difficulties confronting young people living with HIV with regards to ART and adherence among adolescents.

2.3.1. Antiretroviral treatment (ART)

Antiretroviral treatment (ART) alludes to the utilization of pharmacological operators that have inhibitory consequences for HIV replication. The Antiretroviral treatment comprises of a mix of at least three ARV medications to maximally stifle the HIV infection and stop the progression of HIV infection. On the off-chance that ART is taken dependably and accurately, the medications can decrease the infection to a level in the blood where it can never again be estimated

(imperceptible), re-establish the immune system, avoid HIV transmission, decrease HIV-related grimness and mortality and enhance the quality of life in general.

The Antiretroviral treatment is long-lasting and requires that the correct measurements of the correct medications be taken at the ideal time. It is not a cure, yet it diverts HIV and AIDS from being a deadly condition to a constant one that is reasonable with prescription. The treatment enhances the quality of life of individuals living with HIV and AIDS (PLWHA), as they prevent the start of astute diseases. Extended access to ART can decrease HIV transmission at population level, stabilise orphan hood and safeguard families (WHO 2010). This is confirmed in a meta-analysis of the relationship between adherence to treatment and mortality (Simpson et al 2006:15; Judd et al 2007:918).

As per WHO (2016) progress report on global HIV/AIDS response, Namibia is one of the nations of the locale with summed up scourges that has accomplished general access to ART, providing it to no less than 80% of patients in need of ART. Because of access to ART in Namibia, HIV related mortality demonstrates a surprising decline and prolongation of the length and nature of survival in HIV positive individuals. A youngster who gets HIV from birth should begin their ART treatment when the HIV finding is set up which is often at only a couple of months old. On the off-chance that they are upheld to hold fast to solution, more HIV positive kids grow into youth on treatment (WHO; 2016)

2.3.2. Importance of adherence to ART in HIV Management

Adherence is basic in any treatment and it alludes to the degree to which a client's conduct, as far as taking medications harmonizes with the endorsed treatment regimen and the guidance given by medicinal services suppliers (Osterberg and Blaschke 2015). Full advantage of

pharmaceuticals must be acknowledged if patients take after recommended treatment regimens and this is more essential with HIV treatment where there is a danger of improvement of protection with poor adherence. Practices related to ART adherence, for example, taking dosages consistently, following sustenance limitations and not skipping measurements because of inconsistencies in schedules remain a test particularly for youngsters living with HIV (Reisner et al 2009). Abnormal amounts of adherence to ART (no less than 95%) are expected to guarantee ideal advantages of ART. Despite the fact that viable adherence levels have not been completely characterized for ART, levels of adherence underneath 95% have been related to poor reaction to treatment (Paterson et. al 2010).

Maintaining adherence remains a basic component of present-day HIV management techniques. Non-adherence to ART may come about in lessened treatment viability as well as in the advancement of viral protection and expanded movement to AIDS (Protopopescu et. al 2012). Adherence to ART can be estimated in an assortment of ways. Miler and Hays (2010) distinguished the accompanying ways to deal with measuring adherence in patients on ART; quiet self-revealed adherence, clinician-evaluated adherence, pill checks, persistent journals, centre participation, drug store records, plasma levels, surrogate or roundabout research facility markers and electronic screens. Self-revealed adherence is a straightforward technique for evaluating adherence and includes asking patients how they took their 15 prescriptions in a meeting or sometimes by methods of a study. Quiet self-reported adherence overestimates adherence by as much as 20% yet a self-report of non-adherence is a solid marker and ought to along these lines be considered important (Arnsten et al 2011).

In Namibia, the ART and care program was set up in 2003 by MoHSS in relationship with its partners and formative accomplices (Kayiwa, 2012). Recently, the expanded accessibility of ART has drastically enhanced survival rates and brought down the occurrence of astute contaminations in individuals with AIDS (UNAIDS, 2015). In spite of the fact that ARVs are not a cure for HIV, they are extremely compelling in controlling the infection, and can even decrease the level of the infection to a point where it is not any more conceivable to identify the infection in the blood. These medications keep HIV from duplicating quickly and in the meantime, support the body's invulnerable framework. Along these lines, they can build the length/life traverse and personal satisfaction and empower individuals to lead full and meaningful lives. There are numerous sorts of ARVs, which assault the infection in various ways. Hence, today fruitful treatment constantly includes a mix of ARVs and legitimate adherence (UNAIDS; 2015).

2.3.3. Factors influencing adherence to ART

There are numerous factors that are related to adherence in HI-positive youths according to the current literature. Those factors are detailed below.

2.3.3.1. Demographic factors

There are different components that are associated with treatment adherence in HIV-positive youths. In a paper presented at the AIDS Impact meeting in 2009, specialists investigated factors that block and moreover those that upgrade sensible adherence to ART among youngsters living with HIV and AIDS (Phalade et. al 2009). These analysts utilized a subjective approach with centre get-togethers and in-depth social events and found that adherence to ART is a key issue for youths fundamentally by goodness of disrespect, confinement, HIV divulgence and also impedance with school works. This study was conducted in Botswana.

2.3.3.2. Psychosocial factors

Several studies identified a number of psychosocial factors associated with poor adherence and non-adherence to ART including HIV stigma, discrimination by friends and family members, depression, nondisclosure of HIV status, low levels of literacy, impact of long-term treatment on lifestyle as well as interference with school activities (Ayres et al 2016; Biadgilign et al 2008; Do et al & Wester, 2010). In-depth interviews with HIV positive adolescents and their caregivers at various AIDS treatment centres in Sao Paulo, Brazil identified stigma and discrimination as the most important challenges for adolescents living with HIV. The stigma was characterized by subjective feelings of embarrassment associated with social discrimination which affected the young people's identities.

In Botswana, Phalade et. al (2009) investigated challenges faced by adolescents living with HIV in Botswana and found that stigma, discrimination, HIV disclosure are associated with adherence. The HIV disclosure is expected to eventually improve adherence; and this was found to be true in a study conducted in Botswana on adolescents' adherence to ART. Nondisclosure of HIV status was associated with poor adherence to ART (Phalade et. al 2009).

In a literature review of HIV antiretroviral adherence and intervention studies among HIV-infected youth aged between 13 and 24 years, psychosocial factors especially depression and anxiety were consistently associated with poor adherence across studies (Reisner et al 2009). In a study on psychosocial factors affecting medication adherence among HIV-1 infected adults receiving combination antiretroviral therapy in Botswana, the researchers found that alcohol use, depression and nondisclosure of status to partner were associated with poor adherence rates (Do et. al 2010). Even though this study was not focused on adolescents, these factors may also be found in adolescents. It would be assumed that a social support system for an adolescent would

promote adherence to ART. Surprisingly, in a review of literature on HIV antiretroviral adherence and intervention studies among HIV-positive youth conducted by Reisner et. al (2009), there was no association found between social support and adherence to ART. Stigma and discrimination by friends and family members were strongly associated with non-adherence to ART. However, lack of family and social support was listed as one of the adherence concerns in adolescents.

One interesting finding from a past study is the association of adherence with the presence of a biological parent as opposed to any type of caregiver (Williams et. al, 2006). The researcher found that having an adult other than the biological parent as the primary caregiver (e.g. relative or other adult) and higher caregiver education level improves the levels of adolescent adherence to treatment.

The presence of just another adult caregiver who is not the biological parent seems to be protective for non-adherence (Williams et. al 2006). Social support, stigma and discrimination are important factors to be assessed during adherence counselling because of the implications they have on ART adherence. This is particularly important in adolescents especially where HIV disclosure has not occurred, or disclosure has occurred but only within family members, yet the adolescent still has to interact with friends at school or in the general community.

2.3.3.3. Medication-related factors

Arrangement-related elements, for instance, seriously orchestrated dosing repeats, complex regimens, inconvenience taking medications, dietary confinements, pill stacks, and nonappearance of confidence in the ampleness of pharmaceuticals and responses of ART impact adherence (Chesney 2010). A low pill stack was connected with upgraded adherence while both

physical and mental pharmaceutical related opposing effects were related to poor adherence (Murphy et al 2013). These examinations also exhibited that the more expanded the length of taking ART, the poorer the adherence. Long traverse effects of treatment were connected with pill exhaustion especially in the prenatally sullied young people who may have started treatment from the get-go in life (Ayres et. al 2014; Chesney 2010, Ding et. al 2009).

2.3.3.4 Adherence tools

The use of reminder tools such as alarm clocks and pill boxes have been identified as some of the important factors that promote adherence to ART. In a study on pill boxes as adherence tools, Peterson et. al (2010) estimated that pill boxes improved adherence by 4.1% to 4.5% and they were associated with a viral load decrease of 0.34-0.37 log10 copies/ml and a probability of viral suppression. The use of pill boxes is fairly inexpensive and Peterson et. al (2010) recommended the pill boxes to be a standard intervention to improving adherence to antiretroviral therapy. The use of alarm clocks has always been known to be important as adherence tools that aid adherence to ART. A study done during the early stages of the HIV epidemic reported the use of alarm clocks to be effective.

Mannheimer, Hirsh and El-Sadr (1998) conducted a study on the impact of an alarm device on ART adherence among patients in Harlem, USA. In the same study, Mannheimer et. al found that patients were enthusiastic about the alarm device and after three months of using the device, 98% of the patients had 100% adherence levels. Wise and Operario (2008) noted that there was patient satisfaction across studies that examined the use of electronic reminder devices to improve adherence to ART but there was conflicting evidence of improved virological and immunological outcomes in some studies.

The conclusion from this review was that there was lack of definitive data resulting in insufficient evidence about the effectiveness of electronic reminder devices as strategies for improving adherence to ART. In another qualitative study on understanding the facilitators and barriers of antiretroviral adherence, researchers found facilitators of adherence to include positive beliefs about medication as well as use of reminder tools which was reported in 58% of the respondents (Curioso et. al 2010:4).

In this study one participant reported having a "brain alarm" which would buzz at the right time while others used alarm clocks. On the other hand, the use of pill boxes is fairly inexpensive and Peterson et. al were recommending the pill boxes to be a standard intervention to improving adherence to antiretroviral therapy.

2.3.3.5. Health care providers and the clinical setting

There was one interesting study done by Radcliffe, Tanney and Rudy (2006:111) on post-traumatic stress and adherence to medical treatment among youth with HIV which showed that maintaining regular follow-up care and treatment with a specific provider was associated with increased adherence. Having a consistent medical provider emerged as an adherence promoting strategy. In a qualitative study on understanding the facilitators and barriers of antiretroviral adherence in Peru, a relationship with a specific medical provider seemed to promote adherence (Curioso, Kepka, Cabello, Seguras & Kurth 2010:6). Although existing data is limited, some aspects of the clinical setting may be associated with improved adherence. A friendly, supportive and non-judgmental attitude of health care providers, convenient appointment scheduling and confidentiality contribute to better adherence.

2.3.3.6. Other factors

Factors such as the patient's way of life (vagrancy, substance use) absence of instruction and psychological maladjustment influence adherence to ART (Chesney 2010:173). School participation was related to better adherence in an investigation on ART adherence in young people living with HIV while flimsy lodging was related with poor adherence (Murphy et. al 2013:35; Martinez, Bell, Camacho, Henry-Reid, Watson and Rodriguez 2010:57).

2.4. HIV AND ADOLESCENTS

2.4.1. Definition of an Adolescent

Differentiating children from adolescents

Adolescence is defined as a time of both physiological and social transition to adulthood, during which individuals develop secondary sexual characteristics and take on increasing levels of independence and responsibility. The guidelines acknowledge that adolescence is a critical transition period characterised by tremendous and unique physical, biological, intellectual, behavioural, and emotional growth and changes. For this reason, it is especially important that the adolescent stage of development, and its potential impact on treatment adherence, is distinguished from treatment support for adults and children. Adolescents are not children, nor are they adults.

Most national and international guidelines define adolescents as individuals aged 10 - 19 years, or 10 - 24 years; and this period may be divided into early (10 - 14 years), middle (15 - 16 years) and late (17 - 19 years) adolescence. Aligned with the WHO definition, these guidelines are intended to also be applicable to AYLHIV aged 10 - 24 years. (WHO; 2016)

2.4.2. Adolescents living with HIV/AIDS

More experienced young people make up the biggest level of HIV positive kids watched over at HIV centres all around. Most young people obtain HIV through high-chance practices, for example, unprotected sex or through tainted infusion needles. A constrained, however expanding number of HIV-contaminated young people are long haul survivors of HIV disease obtained through vertical transmission. Such teenagers have been on long haul ART encounter and may have a remarkable clinical course that varies from that of youths tainted sometime down the road. It is vital to perceive the formative phases of teenagers with regards to adherence to ART. Piaget's psychological hypothesis portrays the advancement of level-headed point of view in kids. As per Piaget's hypothesis, the solid stage keeps going in the vicinity of 7 and 12 years of age and the formal activity organize after the age of 12 years old. The wonder of solid reasoning may have suggestions for attempting to keep up the youths' adherence to ART particularly on the off-chance that they are asymptomatic (Ding et al 2009; MacDonell, Baar-King, Murphy, Parsons and Huszti 2011).

Certain formative qualities of teenagers, for example, their feeling of resistance and trouble in conceding satisfaction may introduce impediments to acknowledgment of HIV adherence to treatment, and utilization of HIV counteractive action measures (Botwinick, Bell, Johnson, Sell, Friedman, Dodds, Shaw, Martinez, Sicilliano, Walker and Sotheran 2003). Juvenile stage is portrayed by inclusion in conduct experimentation, hazard taking, standing up to an assortment of choices with respect to sentimental connections; sexual conduct, liquor and medication manhandle (Ding et. al 2009).

Young people need to act like their companions and adherence to ART may be difficult for them. Adherence difficulties may likewise be confounded by advancement of unfavourable occasions of ART (Ding et. al 2009).

In a meta-examination by Reisner et al (2009) it was exhibited that solid instead of conceptual thinking aptitudes was decidedly connected to adherence measures. Williams et. al (2006) found a converse connection amongst adherence and age. They found that teenagers matured between 15 to 18 years and had the most exceedingly awful adherence (76%) generally speaking, when contrasted with 83-89% in the more youthful youngsters. The connection amongst adherence and age detailed in that review might be essential when planning intercessions to enhance adherence in teenagers on ART.

2.5. INTERVENTIONS

There are different methods for helping youths adapt to issues around adherence to ART. A rundown of methodologies that can be utilized for improving adherence to ART incorporate the following:

• Directly Observed Treatment (DOT)

• Clarify guidelines utilizing an individual treatment design

• Tailor sedate regimen to suit patients' ways of life

• Show patients how to keep treatment/medication journal

• Encourage pill arranging and helpful arrangement of pills

• Encourage preparing for changes in every day routine (ends of the week and occasions)

• Make facility arrangements advantageous and wonderful and give instructive materials (Hart et al 2010 and Berg; 2011).

The utilization of the most recent advances, for example, Short Message Service (SMS) updates on adherence to ART among patients have been investigated in the examination done in asset-constrained settings, for example, a rustic centre in Kenya through a randomized controlled trial. The investigations uncovered that 53% of the members getting weekly SMS updates accomplished adherence of no less than 90% amid the 48 weeks of the examination contrasted with 40% in the control gathering (Popeleches et al 2011). This innovation may in the end advantage young people battling with adherence even in asset-restricted settings where there is access to phone systems.

2.6. Challenges facing Adolescents infected with HIV

Adolescents infected with HIV face a challenge of adherence to ART regimens as shown in the writings sought above. The different variables related to teenagers' adherence to ART in past investigations included socio-economics, psychosocial factors, HIV ailment process, medicine and also supplier factors. The writings surveyed demonstrated lack of research from Namibia, particularly on the adherence to ART in young adolescent clients and additionally the lived encounters of teenagers in regards to long haul ART. A couple of factors were recognized as being connected with adherence in PLWHA (Chandia; 2017).

2.6.1. Patient and Family-Related Challenges

Concerning children, if the mother (or other parental figure) is HIV positive, at that point she is battling with her own particular sickness, psychosocial factors, solution regimens, and regularly budgetary weight because of costs caused by treatment and or child's treatment.

Furthermore, factors such as age (particularly early stages and youth) have a negative impact, refusal of treatment, learning of HIV status, clinical stage, and depressive indications, sex, and changes in wellbeing status (change and in addition disintegration) have additionally been recognized as critical elements which influence adherence to HAART (exceedingly dynamic antiretroviral treatment) in paediatric patients (Chandia; 2017).

2.6.2. Stigma- and Discrimination-Related Challenges

Stigma, on top of the general knowledge of the population about HIV/AIDS and ART treatment, is a vital determinant of adherence in the settings of sub-Saharan countries.

Social or family slander and dread of the outcomes of uncovering HIV disease status to sexual accomplices are firmly identified with poor adherence. The family assumes a vital part in any sort of treatment in youngsters or grown-ups. Significant issues identified with family or guardians that impact adherence incorporate nearness of nervousness; wretchedness; dynamic substance manhandle; the nearness of HIV contamination in another relative; dread of exposure of HIV energy to the family; family disturbances; having a place with racial minorities or other defenceless gatherings of the populace (Chandia; 2017).

Family and group individuals can both play a positive and negative role in ART treatment and adherence. For example, the shame related with HIV/AIDS might be more serious than that of different sicknesses, making obstructions to treatment start and support for adherence somehow be accessible. On the positive side, relatives and companions can assume the part of treatment accomplices and give genuinely necessary help (Chandia; 2017).

Patients should be energized by social insurance labourers to uncover their status. Notwithstanding, investigations of intercessions to encourage revelation are inadequate. Social establishments like church congregations, Nongovernmental Organisations (NGOs), and sustenance help administrations assume a pivotal part in issues extending from making mindfulness about the ailment, activating help, encouraging treatment, and advancing adherence. For example, in an assessment program about the effect of family dietary help amid the primary year of antiretroviral treatment in the west Africa locale, family healthful help for people living with HIV starting antiretroviral treatment demonstrated a constructive effect following a half year (SAHCS; 2017).

2.6.3. Substance Abuse Related Challenges

Drug abuse and alcohol consumption are factors that further undermine legitimate adherence to ART. Studies have reliably demonstrated that dynamic liquor use and substance mishandle make it more troublesome for patients to hold fast to treatment. For example, in Botswana about 40% of the patients studied conceded missing a dosage on account of liquor utilization. Comparative investigations likewise show that liquor is exceedingly identified with decreased adherence. An orderly survey in 2009 found that HIV/AIDS patients that utilized liquor are 50%– 60% more inclined to hold fast less to their endorsed medicines (Murphy; 2013).

2.6.4. Socio-economic Challenges

According to the United States Agency for International Development (USAID), the examples of disease have appeared to fluctuate all around relying upon the social and monetary states of the nations influenced, with neediness having a critical part as a social determinant of HIV/AIDS

and the spread of the infection, and in addition access and adherence to ART treatment (Chandia; 2017).

Regular reasons revealed for missed measurements incorporate budgetary inconvenience that avert guardians of kids or grown-up patients from collecting medication on time, remove boundary or absence of transportation offices to the ART centre, retching of medicine without re-dosing, off-base dosing by a parental figure, missed facility arrangements and drug store accumulations, perplexity between numerous parental figures, and self-end or refusal by youngsters. Moreover, patients' convictions that drugs should be taken with nourishment drive them to abstain from taking them at whatever point sustenance is inaccessible, meddling with adherence. At times patients are compelled to pick between paying for transportation to the ART office and utilizing the cash for nourishment. Concentrates in Uganda and Tanzania revealed that transportation costs are viewed as genuine hindrances to taking ART. This has suggestions for everyday adherence as well as misfortunes to development. Determinants of ART adherence for people living with HIV in sub-Saharan Africa were inspected with ethnographic research techniques at HIV treatment destinations in Jos, Nigeria, Dar es Salaam, Tanzania, and Mbarara, Uganda. The discoveries showed that people taking ART routinely beat monetary hindrances to ART adherence through various means: getting and "asking" transport money, making "inconceivable decisions" to dispense assets for treatment, and "managing without" (USAID; 2012).

2.6.5. Medication Related Challenges

According to Chesney 2010, great adherence (i.e., over 95%) was related with convictions with regards to the positive effect of the solutions on study respondents’ personal satisfaction.

Qualities of the financially accessible medication details, for example, taste, agreeability, size of pills, accessibility of fluid definitions, and antagonistic impacts (e.g., metabolic entanglements, lip dystrophy) can essentially influence adherence. Besides, the confused regimen to be taken after, for example, the requirement for every day organization, dietary confinement, medicate collaborations, recurrence of dosing, measurements, and along these lines pill weight or measure of fluid, additionally impact young people's adherence to treatment. The previously mentioned medicine related variables are significant in deciding youngsters' adherence to ART (Chesney; 2010).

Chesney announced that components related to non-adherence included lodging insecurity and length of treatment with antiretroviral treatment. As indicated by a report by Van Dyke et. al., the fundamental reasons mentioned by patients for non-adherence were taste (16%) refusal for ritonavir (16%), taste (9%) and obstruction of drug plan with way of life (10%).

2.6.6. Health Care and Systems Related Challenges

Structural factors not straightforwardly identified with patient or pharmaceuticals can likewise impact adherence. A few analysts have even battling that these could be the most essential hindrances to ART adherence in asset-constrained settings. Restricted accessibility and openness of antiretroviral medicines and human services offices for conclusion and treatment of HIV/AIDS affect Adherance. Other challenges that impact adherence are such as; out-of-take instalments, high cost of ART and other wellbeing administrations, nearness of social insurance suppliers experienced in ART arrangement, persistent attendant and other supplier connections, health awareness suppliers' convictions, holding up time and opening hours.

In addition, accessibility of guiding administrations, social, financial, or mental help for individuals living with HIV can impact adherence. (Chesney; 2010).

2.6.7. Interventions to Improve Adherence

Continuous monitoring of adherence and connecting it with clinical results will make an intuitive criticism component that could prompt ideal clinical states and enhanced personal satisfaction for patients. There are requirements for additionally innovative work in the territory of ART adherence, adherence support, and patient conduct.

Diagnosing and regarding medical issues, for example, misery, diminishing substance mishandle, enhancing patient and supplier relationship, guiding and upgrading family, and group bolster components appeared to enhance adherence, and also interceding on modifiable obstructions to adherence before beginning ART. A meta-investigation by Amico and Associates demonstrated that adherence intercessions might be viable when focused at people who are distinguished or expected to have poor adherence (Amico and Associates; 2011)

The couple of examinations of intercessions show that electronic updates, pill organizers, medication-event monitoring systems (MEMS) to record dosing conduct, utilization of web, instructions administrations, utilization of telephones, et cetera, can likewise upgrade adherence. Notwithstanding, the greater part of these advances have not had intensive logical assessment and their viability and cost adequacy may not be as high as desires. Mobile phone message updates and online intercessions require quiet assets and proficiency which could make hindrances to their pertinence in sub-Saharan Africa (Chesney; 2010).

2.7. Summary

This chapter focused on the study's literature review. The researcher analysed current literature specifically on HIV and ART adherence. Various challenges related to adherence to anti-retroviral treatment were illustrated and described in this chapter, as well as the possible interventions to improve levels of adherence.

CHAPTER 3

3. RESEARCH METHODOLOGY

This chapter covers the techniques that the researcher used to structure the study and to gather and analyse information relevant to the research question (Polit & Beck 2012:12). The researcher systematically describes the research methods that were applied during the study. These methods included defining the study population and selecting a sample, determining the sample size, data collection process as well as data analysis.

3.1. Research Design

There are a number of research designs that are appropriate for different types of research project but the choice of which design to follow highly depends on the nature of the problem statement of the research study as well as the aims and objectives of the study. Furthermore, the type of research study design often presents methods that are usually utilized to collect and analyze the type of data that will be generated by the researchers (Walliman, 2011:9).

The researcher determined the level of adherence (prevalence) and risk factors affecting adherence to anti-retroviral treatment amongst adolescent clients at the same time. The study design provided information about the presence and strength of associations between dependent and independent variables, permitting the testing of hypothesis about such associations.

The dependent variable assessed in the study was adherence to ARV treatment, which was assessed based on the triangulation of self-report adherence of adolescent respondents for the last thirty days as well as subjective self-pill count of the clients.

The independent variables which were investigated in this study were:

i. Socio-demographic characteristics such as age, sex, level of education, parents/guardians' occupation, average household monthly income and number of pills taken per month as well as socio-cultural factors such as social support, disclosure and perceptions.

ii. Level of adherence related factors among adolescents which included knowledge of ART as well as adherence to the treatment

iii. Factors associated with adherence which included factors of poor adherence, side-effects as well as reminder remedies and modes of transport to the hospital.

3.2. Study Population

The population under study was the adolescent clients aged 10-19, registered receiving ART at the ART clinic of the Katutura Intermediate Hospital paediatric section, which were 582 at the time of the study. The same adolescents belong to a Teens' club and they meet on a monthly basis. During the study period, the meetings were well attended.

The study was carried out at Katutura Intermediate Hospital at the ART clinic in the Paediatric section. The Katutura Intermediate Hospital is in Windhoek, the capital city of Namibia, in Khomas region, . It is a referral hospital for many clinics and surrounding regions. This makes it one of the busiest hospitals in the region.

3.3. Sample and Sampling method

According to De Vos (2011) a sample comprises elements or a subset of the population considered for actual inclusion in the study. It is stated that the larger the population, the smaller the percentage of that population the sample needs to be. If the population itself is relatively small, the sample should comprise a reasonably large percentage of that population. Larger samples enable researchers to draw more accurate predictions than in smaller samples, although this is more costly.

For this study the researcher sampled according to the Stoker sampling guideline as illustrated in the fourth edition of De Vos et al 2011, to calculate the population sample for the study.

The simple random sampling method was applied. The adolescents between 10-19 years old registered at Katutura Intermediate hospital at the time of the study were 582; therefore the researcher used a sample size of 10% which is 58 respondents/adolescents. There was an attendance register from which the researcher sampled respondents using simple random sampling method.

The sample size was therefore calculated as per Stoker guidelines for sampling in AS de Vos et al 2011:225. The respondents were selected during their monthly teens' club meetings attendance. The researcher used a simple random sampling technique to identify study respondents. In simple random sampling, each individual case in the population has an equal chance of being selected for the sample. This was done by assigning a unique number to each present respondent at the teen's club meeting.

3.4. Research Instruments

The researcher used a structured self-administered questionnaire as a study instrument. The study questionnaire was structured in three (3) sections namely;

- Socio-demographic characteristics and information; which included age, sex, education level, religion of respondents among others.
- Section two included Adherence to ART; which included knowledge of ART, treatment side-effects, as well as identified factors related to poor adherence.
- Section three included the factors associated with adherence amongst adolescents, looking at side-effects, social support and poor adherence.

3.5. Validity and reliability

To ensure validity and reliability the researcher pilot tested the data collection instrument before the major study. The pilot study assessed the practicability of the research instrument selected for the study. The pilot study was carried out at the Katutura Intermediate Hospital ART clinic with random adolescents but that information will not be included in the study or study sample. Information shared by the adolescent respondents was recorded in the structured questionnaires. The researcher made use of the computer program Epi-info as a data analysis tool to help track and visualize data for greater insight. The questionnaire was then adjusted accordingly before it was used for the main study's data collection.

3.5. Data Collection

After securing ethical clearance as well as research proposal approval, and after the pilot study, the researcher started with data collection. The adolescents between the ages of 10-19 who came

for the Teens' Club meeting and receiving ART at Katutura Intermediate Hospital were informed about the research. Sampling frames were generated from the computer database used by the Ministry of Health and Social Services ART clinic. The respondents were then randomly selected using simple sampling method. Thereafter the purpose of the study was explained in detail, the informed consent and voluntary participation were explained as well. Thereafter 58 adolescents, who were selected, have been given questionnaires. The ones who are 18 and 19 years old completed their questionnaire the same day. The younger ones (below 18) were told to take their questionnaires home to their parents or guardians to give informed consent to the researcher. Nonetheless the assent from the younger ones was also explained and adhered to. They were informed to bring their questionnaire and consent forms along when they come for their follow up at the ART clinic at Katutura Intermediate Hospital after one month. A staff member at the clinic helped to collect the completed questionnaires and consent forms from the younger respondents' parents. The researcher went back to the clinic every week to collect the completed questionnaires. Some children were assisted by their parents to complete the questionnaires. However there were some children (10-12) who had consent from their parents/guardians but were unable to complete the questionnaire. Therefore that group was assisted by the researcher who interviewed them and wrote down their answers when they came for follow up at the ART clinic.

3.6. Data Analysis

The data generated from the questionnaires were entered into the latest version of a statistical software package called Statistical Package for the Social Sciences (SPSS Version 10.0) and

analysed for frequencies, cross-tabulations and Chi-squared test. The statistical significance was set at $p<0.05$.

3.8. Ethical Consideration

The study proposal was successfully submitted to the Ministry of Health and Social Services as well as to the University of Namibia (UNAM) for ethical consideration and approval.

The following principles were adhered to in the study as per University of Namibia (UNAM) Ethical Guidelines:

- The Principle of Non-maleficence (the duty to avoid, prevent or minimise harm to others) is directly related to balancing harms and benefits.
- The Principle of Beneficence, a duty to benefit others and, in research ethics, a duty to maximise net benefits.
- The Principle of Autonomy recognises the sovereignty, liberty or freedom of an individual to have control of what happens to them.
- The Principle of Justice, an ethical obligation to treat each person in accordance with what is considered to be fair, and morally right.

3.8.1. Respect of vulnerable persons

The category of vulnerable persons is very broad and includes children, people who are not legally competent to consent, the mentally incompetent, as well as “captive” groups. This study included children under the age of 18, and they were respected and protected from any harm during the study.

3.8.2. Informed Consent

Informed consent was obtained from the respondents (18-19years old) or guardians/parents of respondents under the age of 18 years old and they were all informed that the participation in the study is strictly voluntary and respondents can withdraw at any stage of the study. The children who are between 10 and 17 years old were requested to give an assent for participation. They were also interviewed in sight of an adult/parent/guardian, but out of earshot. While those who are 18 and above gave written informed consent themselves.

3.8.3. Confidentiality

To ensure confidentiality, anonymous structured questionnaires were used; no names were written or recorded on the questionnaires. Completed questionnaires were stored in a lockable cabinet where only the researcher had access to.

3.9. Summary

This chapter presented the study methodology. The chapter further systematically described the research instruments and methods that were applied during the study. These methods included defining the study population and selecting a sample, determining the sample size, data collection process as well as data analysis.

CHAPTER 4

4. RESULTS AND DISCUSSIONS

4.1. Introduction

This chapter provides the results of the data collected from the respondents as well as a discussion of these results. The results are presented in tables, figures, graphs, bar charts as well as line graphs for easier illustration. The purpose of this study was to identify and describe the determinant factors affecting adherence to antiretroviral therapy among adolescents receiving ART at Katutura Intermediate hospital. The study results are discussed based on the study objectives, which were:

- To determine the level of adherence amongst adolescents receiving ART at Katutura Intermediate Hospital.
- To determine the factors associated with adherence amongst adolescents receiving ART at Katutura Intermediate Hospital.

This chapter is further subdivided into three main sections as per research objectives indicated in chapter one.

Section 4.2.1 provides information on the Socio-demographic characteristics of the respondents, Section 4.2.2 provides information regarding the level of adherence amongst adolescents receiving ART at Katutura Intermediate Hospital, while Section 4.2.3 provides information on the factors associated with adherence amongst adolescents receiving ART at Katutura Intermediate Hospital.

4.2. Discussion of Results

From the total population of adolescent clients registered receiving ART at Katutura Intermediate Hospital, 58 of them received questionnaires and participated in this study.

The data collection for this study was carried out in July 2018 at the Katutura Intermediate Hospital ART Clinic paramedics section, during the teen club monthly meeting. A proportionate number of samples in relation to the number of adolescent clients receiving antiretroviral therapy were allocated at the beginning of the data collection; thus, from the 582 registered adolescents 58 study respondents were selected to take part in the study. The data was gathered by the researcher using a structured questionnaire.

The respondents were informed about the purpose of the study during an information session. The data was anonymously kept in a secure place which no one other than the researcher had access to. The questionnaire consisted of the following three sections:

Section A: Socio-demographic characteristics of respondents.

Section B: Information on the level of adherence amongst adolescents receiving ART.

Section C: Information on the factors associated with adherence amongst adolescents.

An investigation of the collected data was run and completed with a computer program called Statistical Package for Social Sciences (SPSS) version 20.0 with the assistance of a qualified statistician. The data was cleaned, coded and entered into the SPSS database. In the data analysis, descriptive statistics such as percentages, frequency distributions, mean, median and standard deviation were computed.

4.2.1. SOCIO-DEMOGRAPHIC CHARACTERISTICS

This section of the study presented the research findings on the socio-demographic characteristics of the respondents including their age, sex, religion, parents' occupation, family income, means of transport to the ART clinic, how long the respondents have been on ART treatment as well as their mode of HIV transmission.

4.2.1.1. Age distribution of study respondents

The study focused on adolescents aged between 10 and 19 years of age. The age distribution of the study respondents is illustrated in the following bar chart:

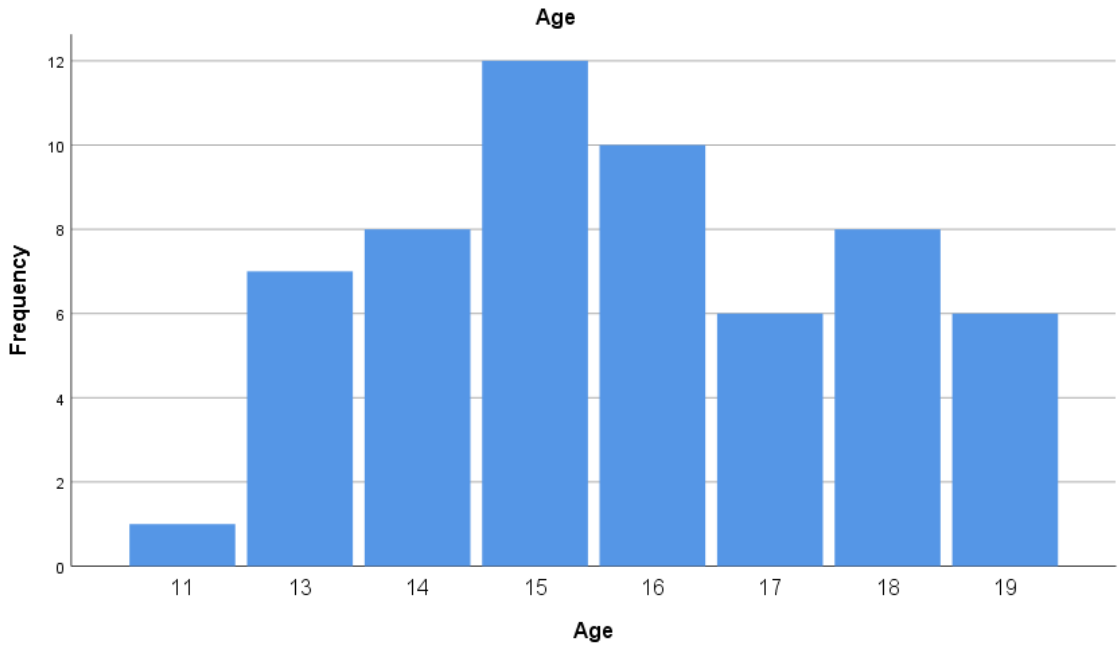

Figure 4.1. Age distribution of study respondents

The age distribution of the respondents is illustrated in Figure 4.1 above indicates that 20.7% (n=12), of the respondents were 15 years of age (followed by 16 year olds who made up 17.2% (n=10) and 13.8% (n=8) were 14 years olds. The 18 year olds were 12.1% while 13 years olds

were 10.3%. The 17 year olds and 19 year olds, (1.7%) were 11 year olds while there were no 10 year old adolescents recorded in this study.

With the first case of AIDS in Namibia reported in 1986, Namibia's epidemic has since matured with a changing age profile of children in need of HIV care (MoHSS; 2012). Looking at the age of respondents it is evident that some of these children are born with the virus. However as the ANC prevalence decreased from 22% to 18% in 2008, so the number of children born with the virus also decreased. Hence none of the respondents was 10 years old.

4.2.1.2. Gender of Respondents

The gender of respondents is illustrated in figure 4.2 below.

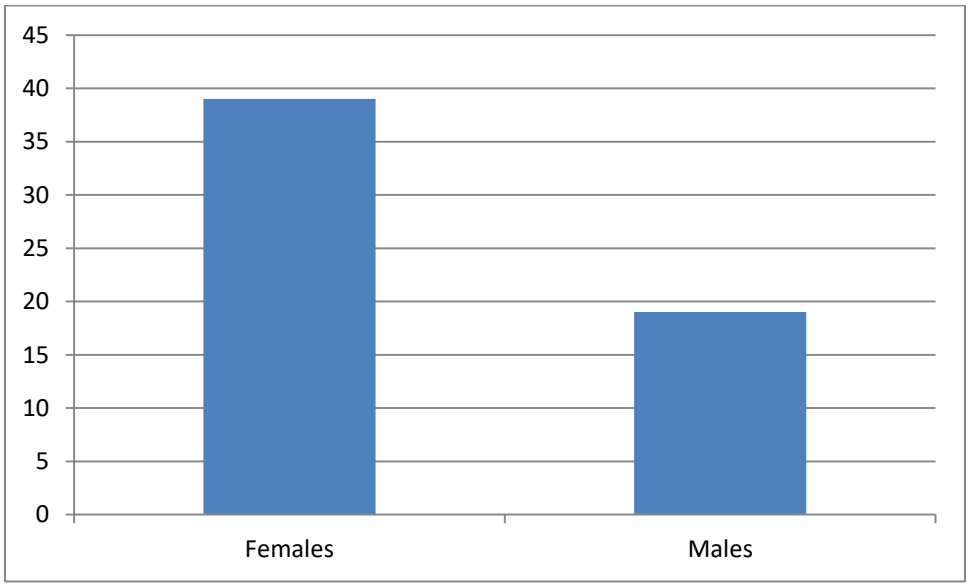

Figure 4. 2. Gender of respondents

The gender of the respondents who took part in this study as illustrated in figure 4.2. above indicates that 32.8% (n=19) of the respondents were males and 67.2% (n=39) were female respondents.

According to the Namibia Statistics Agency and the National Planning Commission Census, the Namibian female population is higher than that of their male counterparts. This figure does not therefore represent any significant output between male and female adolescent population.

4.2.1.3. Educational Levels of respondents

The educational level of respondents is indicated according to primary school, secondary school or school dropout and is shown in table 4.1.

Table 4.1. Educational levels of participant

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Primary School	16	27.6	27.6	27.6
	Secondary School	41	70.7	70.7	98.3
	School dropout	1	1.7	1.7	100.0
	Total	58	100.0	100.0	

Table 4.1. Educational Levels of Respondents

Table 4.1 reveals that the majority of the adolescents receiving ART at Katutura Intermediate hospital 70.7% (n=41) are in secondary school while 27.6% (n=16) are still in primary school. The table further indicated that only one participant dropped out of school.

Despite their HIV status, majority of respondents go to school. This can be attributed to the support and care these children get from their families or health care providers. Going to school will help them to have a better understanding, guidance and better access to critical services to

make healthy lifestyle choices, stop the transmission of HIV and have a say in the design and implementation of programmes that affect them.

Additional programs provided by UNICEF and its partners focus on improving access to health services for adolescents and creating platforms for participation through sports for development, child parliament and various life skill-based initiatives in Namibia. These platforms are more available to those adolescents who go to school.

4.2.1.4. Duration on ART

The respondents were asked for how long have they been on the antiretroviral treatment and they gave different answers respectively as shown in the figure 4.3 below.

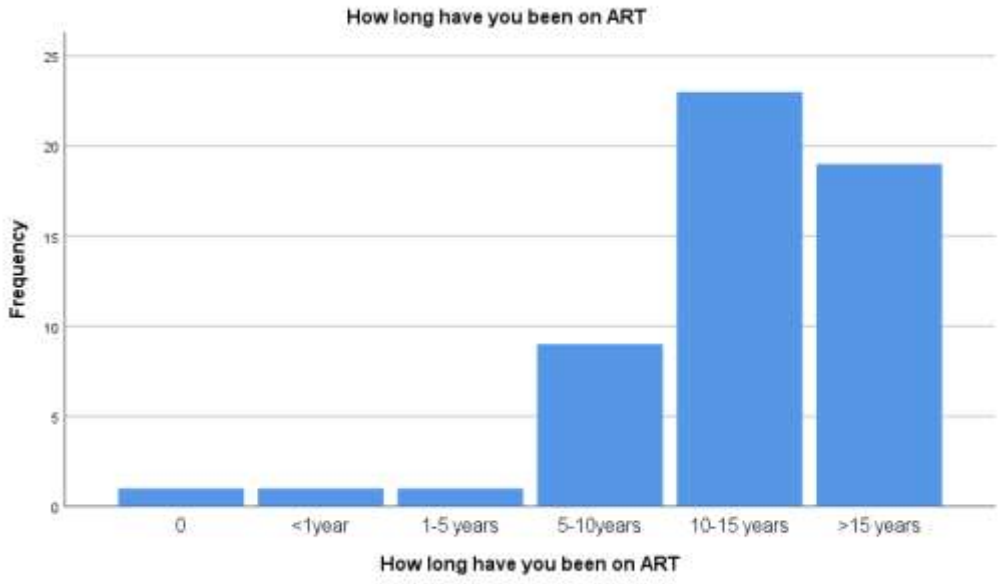

Figure 4.3. Duration on ART

The results in Figure 4.3. indicate that most of the respondents 39.7% (n=23) have been on treatment for 10-15 years. These are the children who were born with the HIV, or they were infected as infants and have survived into their teens due to ART availability. It is well

documented that HIV testing among the youth is low and many adolescents do not know their status. Teens are also the least likely to have all the correct facts about HIV and AIDS.

However without this critical knowledge of their health, as well as low access to HIV services, they become part of a large pool of young people who start having sex early, often unprotected, and risk passing on HIV to others (MoHSS; 2012).

4.2.1.5. Religion of Respondents

Respondents were also asked to indicate their religion and is shown in the table 4.2 below.

Table 4.2. Religion of respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Christian	55	94.8	96.5	96.5
	Muslim	1	1.7	1.8	98.2
	Hindu	0	0	0	98.2
	Other	1	1.7	1.8	100.0
	Total	57	98.3	100.0	
Missing		1	1.7		
Total		58	100.0		

Table 4.2. Religion of Respondents

Table 4.2. sheds light on the religion of the respondents. The majority of respondents are Christians at 96.5% (n=55) followed by 1.8% (n=1) Muslims, other religions is 1.8% (n=1) and missing information on religion was 1.7% (n=1). This finding is further endorsed by the

literature; a study conducted by the dean of the faculty of Law at the University of Namibia in 2008 indicated that Christianity is the most widespread religion in Namibia; however, the largest Christian division is the Lutheran church. About 80 or 90 percent of the population in Namibia are Christians. The Lutheran Church was established in Namibia by the Finnish Evangelical Lutheran Mission which was earlier known as the Finnish Missionary society. The Lutheran Church has about half of the population as its followers while Roman Catholics are about a fifth of the population (Horn; 2008). The Christianity in the Namibian context plays a crucial role in supporting and caring people who are living with HIV and AIDS, particularly the children.

4.2.1.6. Who does the participant stay/live with?

Regarding the question about who does the participant stays with, the respondents responded as shown in the figure 4.4.

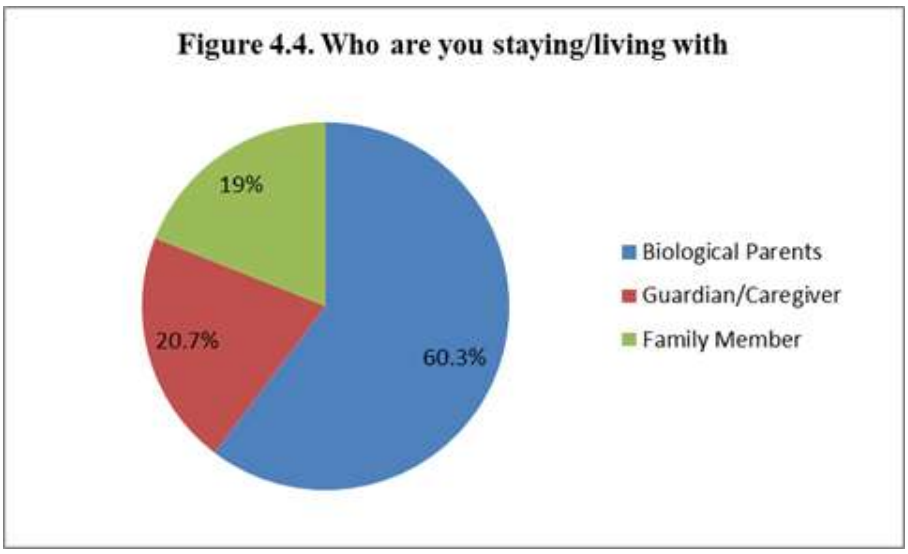

Figure 4.4. Who are you staying/living with

The findings in figure 4.4 revealed that most respondents 60.3 % (n= 35) live with their biological parents, and 20.7% (n=12) live with their guardian or caregiver, while 19% (n=11) live with family members.

What is noticeable from this information and data collected by this study is that; there was no information on homeless adolescents recorded. This information needs further investigation to study the health and wellbeing of homeless adolescents and street children.

4.2.1.7. Parents/Guardians Occupation

It was imperative to find out the employment status for the parents/guardians and is shown in table 4.3.

Table 4.3. Parent/guardian/caregiver occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Unemployed	22	37.9	40.0	40.0
	Employed	8	13.8	14.5	54.5
	Business	14	24.1	25.5	80.0
	Old age	4	6.9	7.3	87.3
	Other	7	12.1	12.7	100.0
	Total	55	94.8	100.0	
Missing		3	5.2		
Total		58	100.0		

Table 4.3. Parent/guardian/caregiver occupation

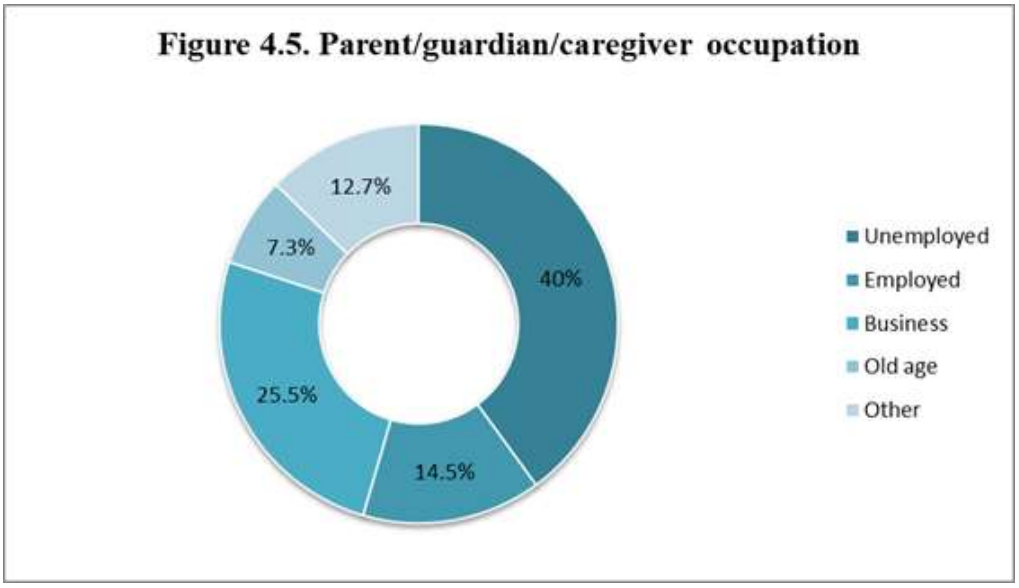

Figure 4.5. Parent/guardian/caregiver occupation

The information contained in Table 4.3. illustrate that most 40% (n=22) adolescents receiving ART at Katutura Intermediate Hospital are taken care of by unemployed parents/guardians and/or caregivers, while 25.5% (n=14) parents/guardians/caregivers are those doing business of some sort, 14.5% (n=8) parents/guardians/caregivers are employed, 7.3% (n=4) are old aged/ pensioners, 12.1% (n=7) are involved in other occupations while 5.2% (n=3) have indicated missing/unknown occupations.

The high rate of unemployment among the parents/guardians/caregivers can affect the adherence to ARV in the sense that the adolescents need transport to go for follow up to ART clinic. The same adolescents do need food as they cannot take ARV on empty stomachs. These might affect the adherence to ART.

The literature states that low-household income leads to poverty. Kagee et. al 2011 explains that poverty is likely to affect adherence to ART care, as financial resources may need to be directed

elsewhere, funds for travel to a medical clinic that provides ART may not be available, and child-care may not be readily accessible for parents who attend clinic appointments.

4.2.1.8. Parents/Guardian Education level

The level of education for parents/guardians/caregivers of respondents are shown in the figure below.

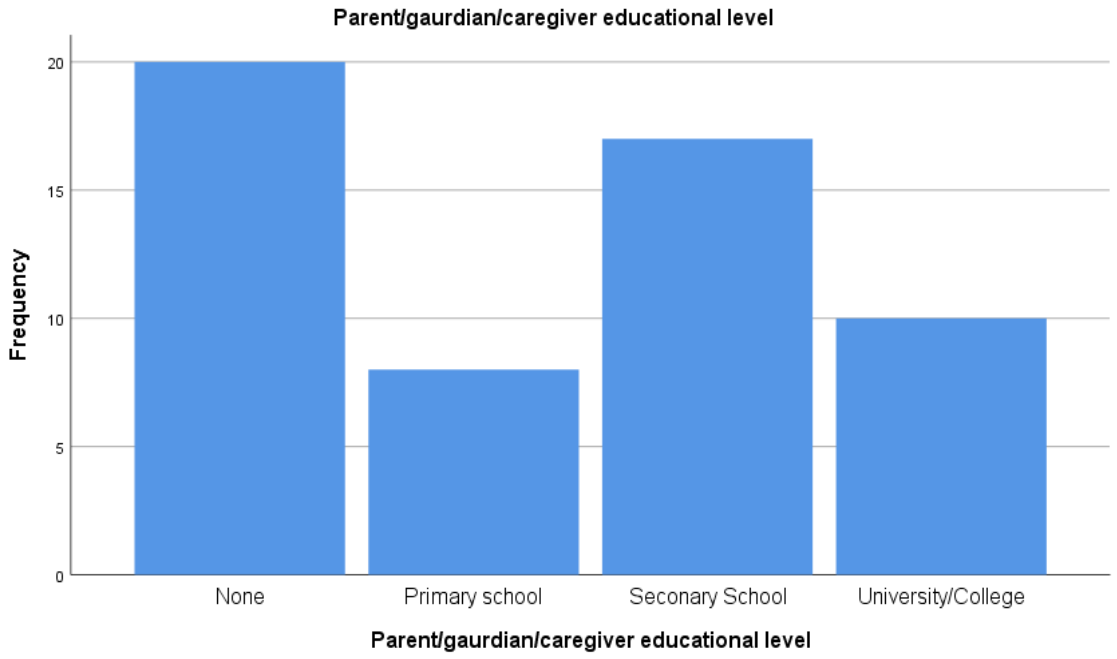

Figure 4.6. Parent/guardian/caregiver education level

Figure 4.6. indicates the parents/guardians/caregivers' educational levels. As can be seen in the results, 36.4% (n=20) of the parents/guardians and caregivers have no formal education, 30.9% (n=17) have got Secondary education level, 18.2% (n=10) have gone until University or college level, while 14.5% (n=8) have received primary school education. Although the NSA reported that in 2015, adult literacy rate for Namibia was 90.8 % this figure shows that most adults do not

have any formal education level, which may explain the high unemployment rate recorded in Table 4.3.

Even though the Namibian adult literacy rate has fluctuated substantially in recent years, it tended to increase through 1991 - 2015 period ending at 90.8% in 2015 (NSA; 2015).

4.2.1.9. Family monthly income

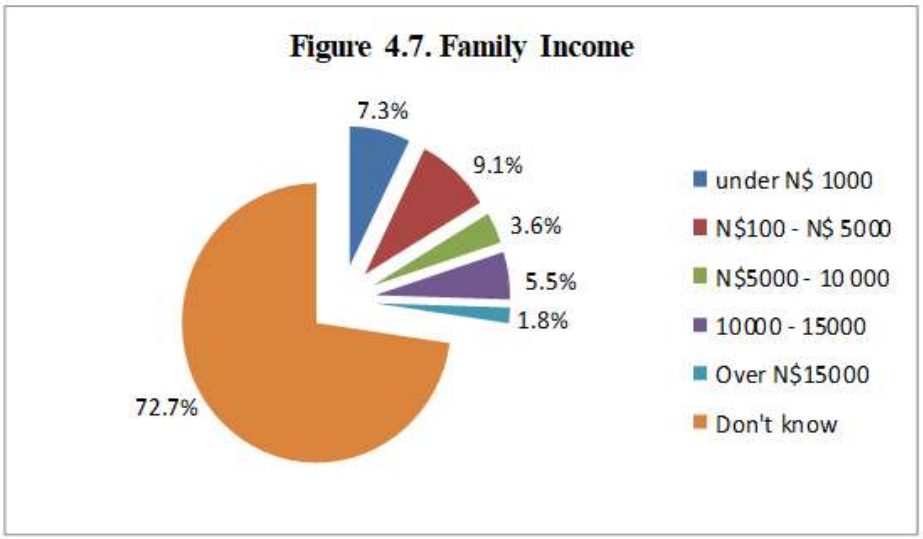

Figure 4.7. Family monthly income

Figure 4.7. above indicates that most respondents 72.7% (n=40) are not aware of their family income. This could be because the adolescents are of a younger age of 10-19 years old to have knowledge of their family income.

At least 7.3% (n=4) of the respondents said their family income was under N$1000.00 per month, 9.1% (n=5) families earn between NS1000.00- N$5000.00 per month, 3.6% (n=2) families earn N$5000.00 –N$10000.00, 5.5% (n=3) families earn N$10000.00 –N$15000.00 per month while 1.8% (n=1) families earn an average family income of anything above N$15000.00.

According to the Namibian household Income and Expenditure Survey 2015/16 conducted by the Namibia Statistics Agency in October 2014, the average wage in Namibia was N$ 6626.00 per month. This is gross income which means it is income before any other deductions such as VAT. Namibia is known to be one of the most unequal societies in the world hence some average wages are very high while some others are very low.

4.2.1.10. Mode of transport to ART Clinic

Table 4.4. Mode of transportation to ART Clinic

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Taxi	45	77.6	78.9	78.9
	Foot	10	17.2	17.5	96.5
	Other	2	3.4	3.5	100.0
	Total	57	98.3	100.0	
Missing		1	1.7		
Total		58	100.0		

Table 4.4. Mode of transport to ART Clinic

Table 4.4. indicates that a majority of the respondents 78.9% (n=45) use taxi as their mode of transport to the ART Clinic to pick up their medications. However there are 17.5% (n=10) who walk to the hospital while 3.5% (n=2) use other means to get to the hospital. Those who walk to the hospital are attributed to lack of transport money. These could contribute to the nonadherence to ART as people might find it difficult to reach the hospital on foot.

These findings are in agreement with various studies which have estimated adherence levels in resource-constrained settings. A study conducted on low- and middle-income countries indicated that most of these countries are characterised by several deficits in environmental infrastructure, notably inadequate transport. As most patients who attend public health clinics do not have private transport they rely chiefly on public means, which are in many cases expensive and unsafe and in some areas unavailable (WHO; 2017).

4.2.1.11. Mode of HIV Transmission

The respondents were asked how they get the HIV. There were four options where they have to choose from and their responses are presented in figure 4.8..

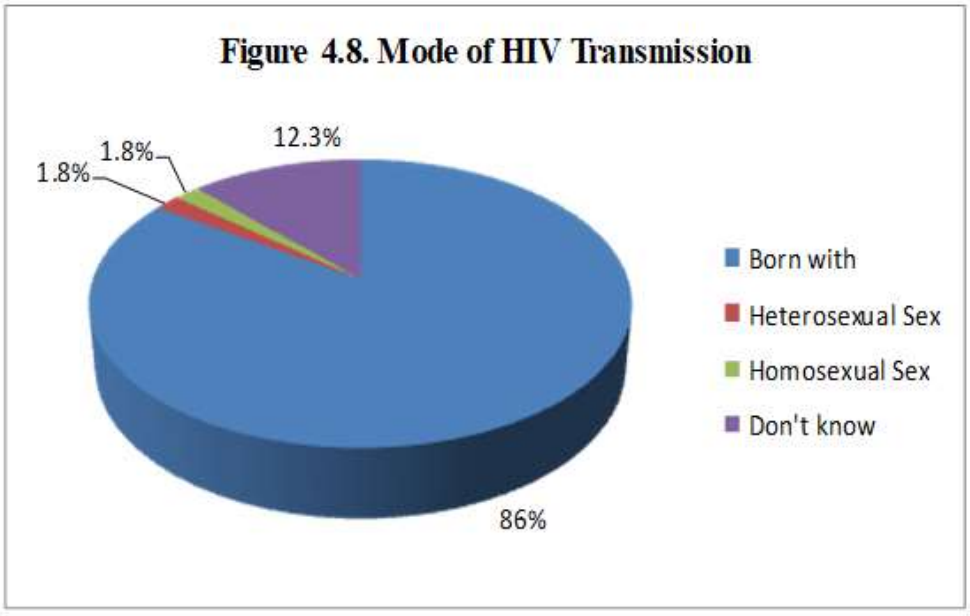

Figure 4.8. Mode of HIV Transmission

Figure 4.8 shows that most of the adolescents receiving ART at Katutura Intermediate Hospital 86% were born with the Human Immunodeficiency Virus (HIV). A small percentage of them

(1.8%) have acquired it through sexual contact (heterosexual and homosexual), while 12.3% were unaware of the modes of acquiring HIV.

While adherence to ART care has traditionally been conceptualized as an individual undertaking, adherence behavior is seldom purely optional and is often governed by larger structural issues that may be resistant to change. Most adolescent HIV infected clients found themselves in this condition from birth and thus their adherence behavior is significantly different from adult HIV infected clients.

Structural factors are particularly salient in low-income countries such as Namibia's neighbor South Africa, where economic, social and political realities are often more constraining on individual behavior than in wealthy industrially developed nations (Kagee et. al 2011).

4.2.2. LEVEL OF ADHERENCE AMONGST ADOLESCENTS RECEIVING ART

Section B seeks to answer objective one of the study and therefore includes information regarding the level of adherence among adolescent clients receiving ART at Katutura Intermediate Hospital.

4.2.2.1. Knowledge of the role of ART

Respondents were asked whether they know the role of ART and their responses are indicated in figure 4.9 below.

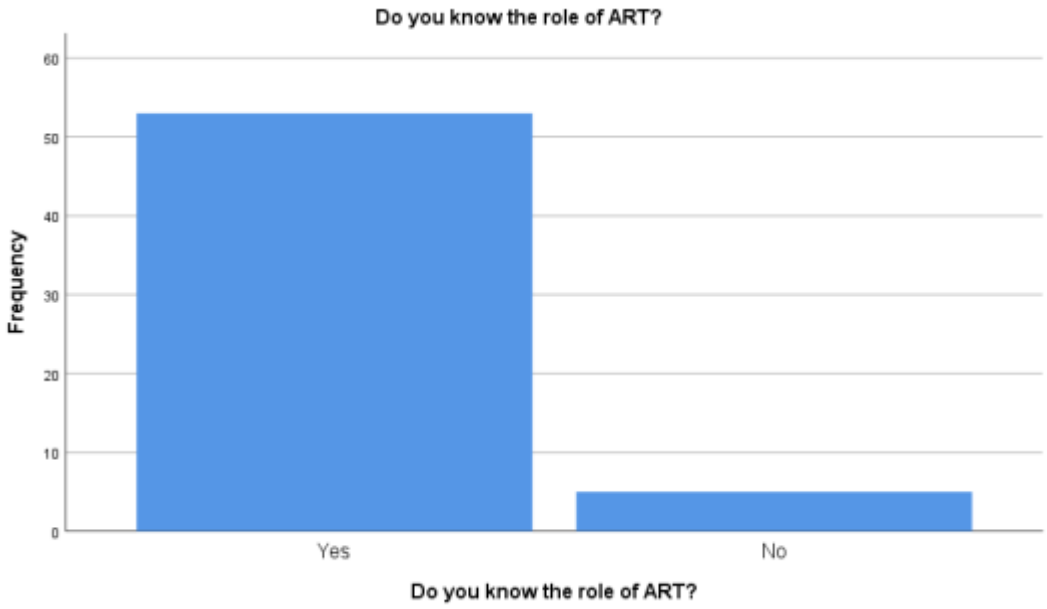

Figure 4.9. Knowledge of the role of ART

The findings in Figure 4.9 indicate the level of knowledge of respondents when it comes to Antiretroviral Treatment (ART). A majority of the respondents 91.4% (n=53) are aware of ART, and know why they take the medications. At least 8.6% (n=5) of the respondents were unaware of what ART is or why they take the medications. The ones who were unaware are the young ones whom their status was not disclosed to them by their parents/guardians/caregivers.

Various studies have analyzed the levels of knowledge of the role of ART among HIV infected clients as it is seen as a positive factor to adherence. Adolescents living in low- and middle-income countries (LMICs) are disproportionately burdened by the global HIV/AIDS pandemic.

Maintaining medication adherence is vital to ensuring that adolescents living with HIV/AIDS receive the benefits of antiretroviral therapy (ART), although this group faces unique challenges to adherence. Knowledge of the factors influencing adherence among people during this unique developmental period is needed to develop more targeted and effective adherence-promoting strategies (Hudelson C and Cluver L; 2015).

4.2.2.2. Combination treatment

The respondents were asked whether they receive combination treatment or not and their responses are shown in figure 4.10.

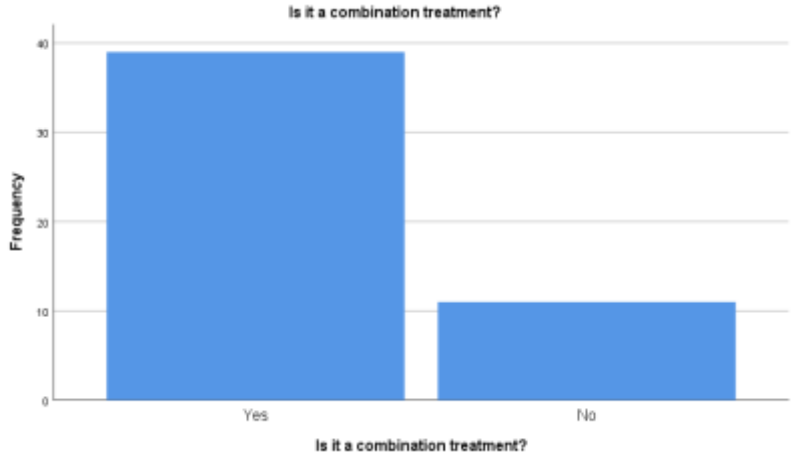

Figure 4.10 Combination Treatment

Figure 4.10 is representing the percentage of adolescents who receive a combination treatment of ART (78%), while those who do not receive a combination treatment make up 22% of the respondents.

These study results give hope to treatment adherence because literature confirms that adherence to combination antiretroviral therapy is a key predictor of antiretroviral treatment success and survival.

A systematic review study on The Effect on Treatment Adherence of Administering Drugs as Fixed-Dose Combinations versus as Separate Pills by Van Galen K, 2014 concluded that administering drugs as Fixed-Dose Combinations versus the same active drugs administered as separate pills is assumed to enhance treatment adherence.

4.2.2.3. Method to remember taking ART Medication

Regarding the question of method to remember taking ART medication, majority responded positively and the results are shown in figure 4.11.

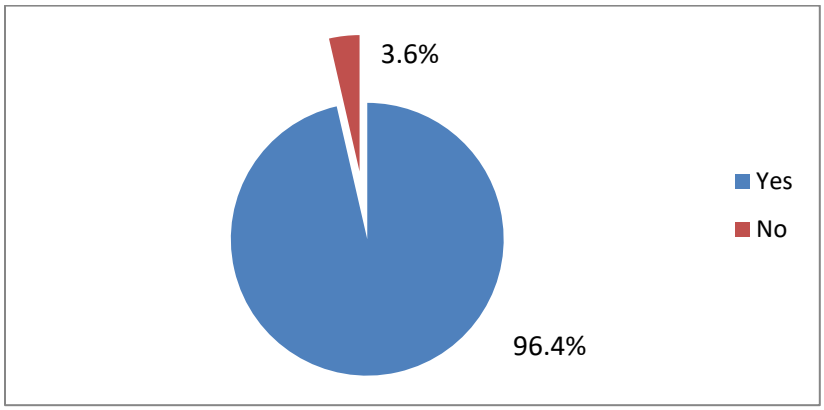

Figure 4.11. Method to remember taking ART Medication

An essential part of following the HIV treatment is medication adherence. Figure 4.11 indicates that some respondents (3.6%) do not make use of reminder methods but most respondents (96.4%) make use of the methods to remember taking their ART medication.

According to the US Department of Health and Human Services, Medication adherence means sticking firmly to an HIV regimen; taking ART medicines every day and exactly as prescribed. Medication adherence reduces the risk of drug resistance and treatment failure. Treatment adherence also reduces the risk of HIV transmission (USDHHS; 2018)

The next figure 4.12 will shed more light on what kind of methods are used by the adolescents to remember taking their ART medications.

4.2.2.4. Type of methods used to remember taking ART Medication

The types of methods used by adolescents to help them remembering to take their ART medication vary from person to person. They are summarized in the figure 4.12 below.

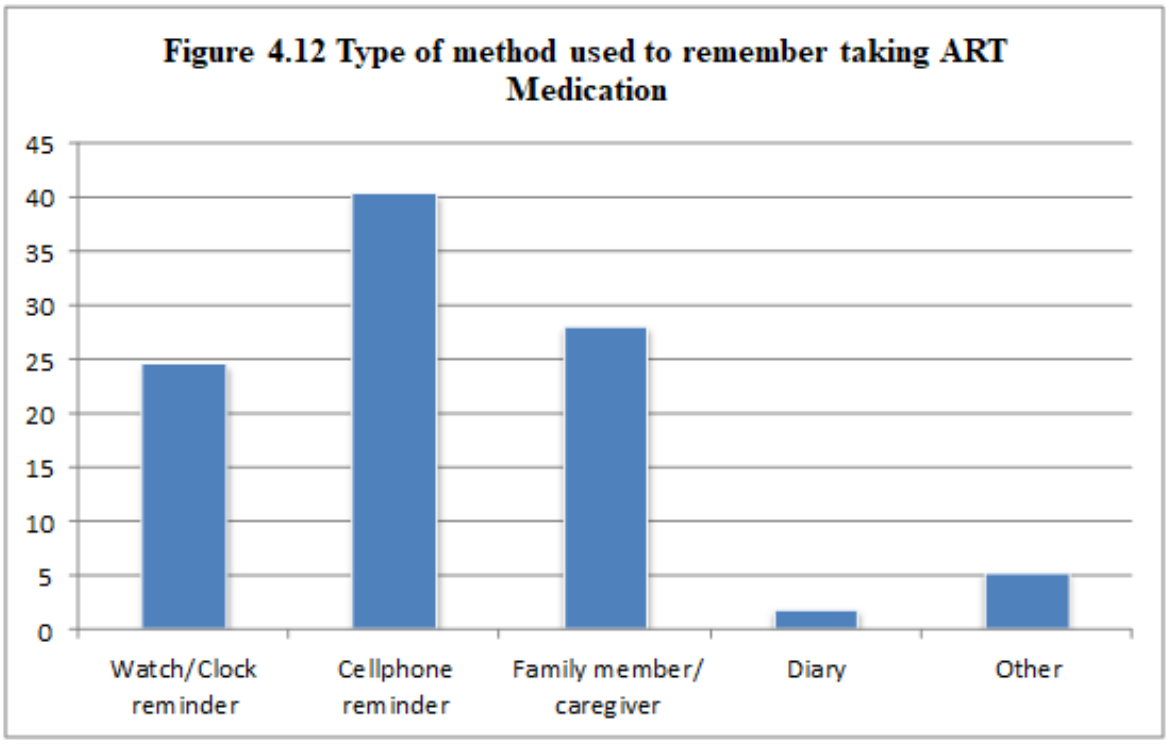

Figure 4.12. Type of methods used to remember taking ART Medication

Figure 4.12 indicates the type of methods that the respondents use to remember the time to take their ART medication. Most respondents 40.4% use cell phone reminders, 28.1% are reminded by their family members or caregivers, 24.6% make use of the watch/clock reminder while 1.8% make use of the diary as a reminder. Those who make use of other means of reminders to take their ART medications made up 5.3% of the respondents.

Medication adherence means sticking firmly to a daily schedule, taking ART medicines every day and exactly as prescribed by the doctor. The ART adherence reduces the risk of drug resistance and treatment failure. After starting ART, medication aids such as pill boxes, pill reminders, and medication diaries can help to maintain long-term medication adherence.

4.2.2.5. Missed ART medications in the past (07) seven days

Respondents were asked to indicate whether they missed medication in the past seven days.

The majority indicated that they did not miss medication in the past seven days. The results are presented in figure 4.13.

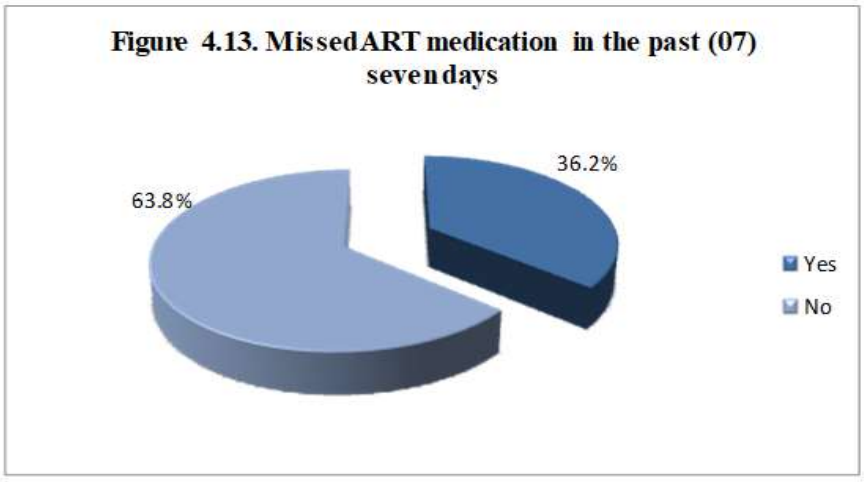

Figure 4.13 Missed ART medications in the past seven days (7)

The results in figure 4.13 indicates that 36.2% (n=21) of the respondents did not adhere to their ART in the past 7 days while 63.8%(n=37) recorded total adherence to their treatment and medication.

According to literature, recent years have seen great improvements in access to antiretroviral therapy (ART) for people living with HIV, as global ART coverage has more than doubled from 2010 to 2015. These efforts, however, are insufficient to ensure positive health outcomes; patients must be highly adherent to ART regimens in order to achieve viral suppression UNAIDS; 2016)

Estimates of ART adherence among adolescents living with HIV (ALHIV) in low and middle-income countries (LMIC) vary substantially. A 2014 systematic review found estimates of adherence ranging from 16% to 99% among adolescent populations globally; a meta-analysis of data for adolescents and young adults (12–24 years) in 53 countries, also from 2014, found adherence based on either self-report or viral load measures was 84% in both Africa and Asia (Ridgeway; 2018).

Together with the bar chart Figure 4.14. below, the study found that majority of the respondents who missed their medications do so once or twice every week due to some factors associated with adherence. A clearer illustration is also represented in the table 4.5 which covered the number of missed ART medications per week.

4.2.2.6. Number of missed ART medications per week

Those who missed ART medication were asked to indicate how many times per week did they miss to take their ART medication. Their responses are presented in figure 4.14.

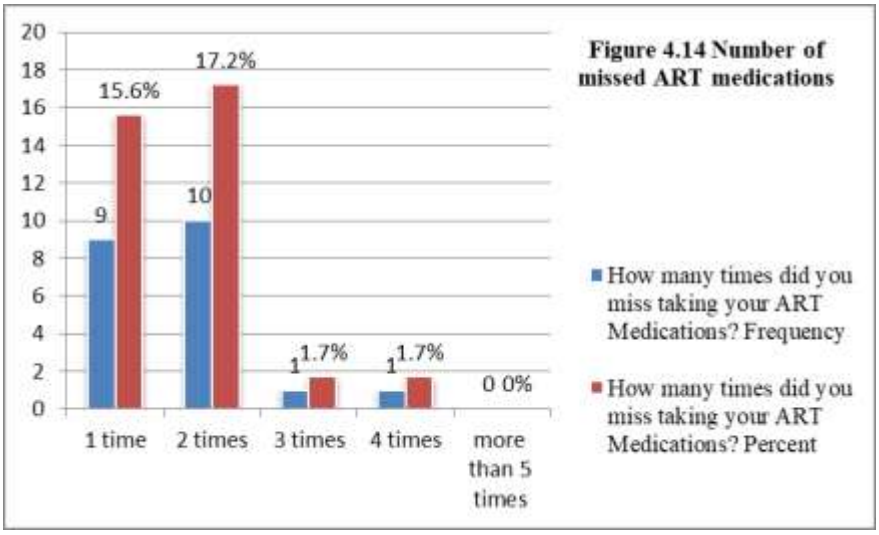

Figure 4.14 Number of missed ART medications

Table 4.5. Number of missed ART Medications per week					
		Frequency	Percent	Valid Percent	Cumulative %
Valid	1 time	9	15.6	15.6	15.6
	2 times	10	17.2	17.2	32.8
	3 times	1	1.7	1.7	34.5
	4 times	1	1.7	1.7	36.2
	>5 times	0	0	0	36.2
	Total	21	36.2	36.2	36.2
	None	37	51.7	63.8	100
Total		58	100.0	100.0	100.0

Table 4.5. Number of missed ART Medications per week

The results on the table 4.5 indicated that majority of respondents (63.8%, n=37) never missed their ART medication, while 36.2%, (n=21) missed to take their ART medication either once, twice or three to four times. This can lead to resistance to ART which could lead to other challenges in managing HIV among adolescents. Literature has shown that great strides have been made in the field of paediatric HIV over the last 15 years and improvements in ART have enabled many adolescents to reach adulthood. However, many challenges with adolescent HIV treatment remain, and often place this age group at risk for failing their treatment. The treatment failure rates for adolescents with HIV are much higher than that of adults. Whereas the failure rate for adults ranges from 10% to 15% depending on location, failure rates for adolescents are reported to be as high as >50% in some studies (Salou M. et al; 2016).

4.2.2.7. Information on ART adherence received

The respondents were asked whether they received information regarding the importance of ART adherence. Although majorities were given that information, there are few who did not receive ART adherence information. The findings are shown in figure 4.15.

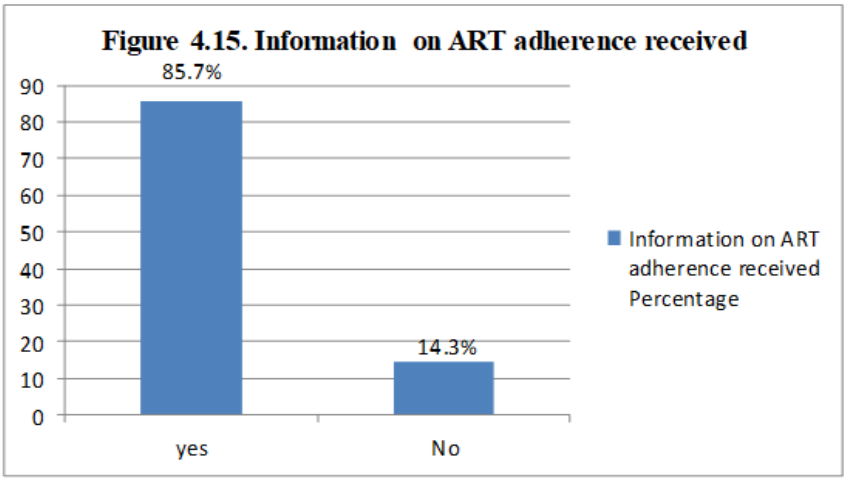

Figure 4.15. Information on ART received

As can be deduced from the figure above, the majority of adolescents receiving ART at Katutura Intermediate Hospital (85.7%, n=49) have received information on treatment adherence at some point during their treatment. A further 14.3% (n=9) are yet to be informed about the importance of ART adherence. This lack of information on the ART adherence can be attributed to disclosure of HIV status to the children. For the younger children who are not aware of their HIV status, it will not be possible to give them information on ART adherence. It is believed that the information is rather given to the parents/guardians/caretakers that are responsible to give ART medication to the children.

4.2.2.8. Sources of information on ART adherence

The respondents were asked to indicate the sources of information on ART adherence and most of them receive information from the doctors and social workers. The findings regarding the sources are shown in table 4.6.

Table 4.6 Sources of information on ART Adherence

		Frequency	Percent	Valid Percent	Cumulative Percent
	Social worker	10	17.2	20.8	20.8
	Doctor	24	41.3	46.2	67.0
	Nurse	5	8.6	6.3	73.3
	Friends	8	13.7	16.6	89.9
	Parents/adults	3	5.17	6.3	96.2
	Total	50		85.7	
	No	8	12.06	100.0	
Total		58	100.0		

Table 4.6 Sources of information on ART Adherence

Most respondents 46.2% (n=24) indicated that they mostly receive ART adherence from Medical Doctors, followed by Social Workers (20.8%), Friends (16.6%) and least from parents, adults and nurses (6.3%).

Information from the Ministry of Health and Social Services in a report by the United Nations Children's Emergency Fund (UNICEF) further indicated that most of the young people at the club were informed about their status by counselors or social workers at the hospital who are involved in the disclosure process.

Once adolescents are aware of their HIV status, they are then eligible to enroll in the monthly Teen Club and the psychosocial support programme. A consent form must be signed by both parents/caregivers and adolescents. Meeting dates are communicated to the teens through SMS and signs posted at the clinic.

The group is led by a professional, and discusses issues that have been identified by club members, for example, anti-retroviral medications, transmission, prevention, positive relationships, self-esteem, mental health and abuse (UNICEF, MoHSS and KIH; 2012)

4.2.3. FACTORS ASSOCIATED WITH ADHERENCE AMONGST ADOLESCENTS RECEIVING ART

Section C seeks to shed more light on objective two of the study and therefore gives information regarding the factors associated with adherence amongst adolescents receiving ART at Katutura Intermediate Hospital. This section focuses on the factors of poor adherence, issues such as side-effects, alcohol and drug usage, treatment satisfaction as well as social support of the adolescents.

4.2.3.1. Reasons for missing ART medications

There are several reasons why respondents missed ART medication. They are presented in figure 4.16 below.

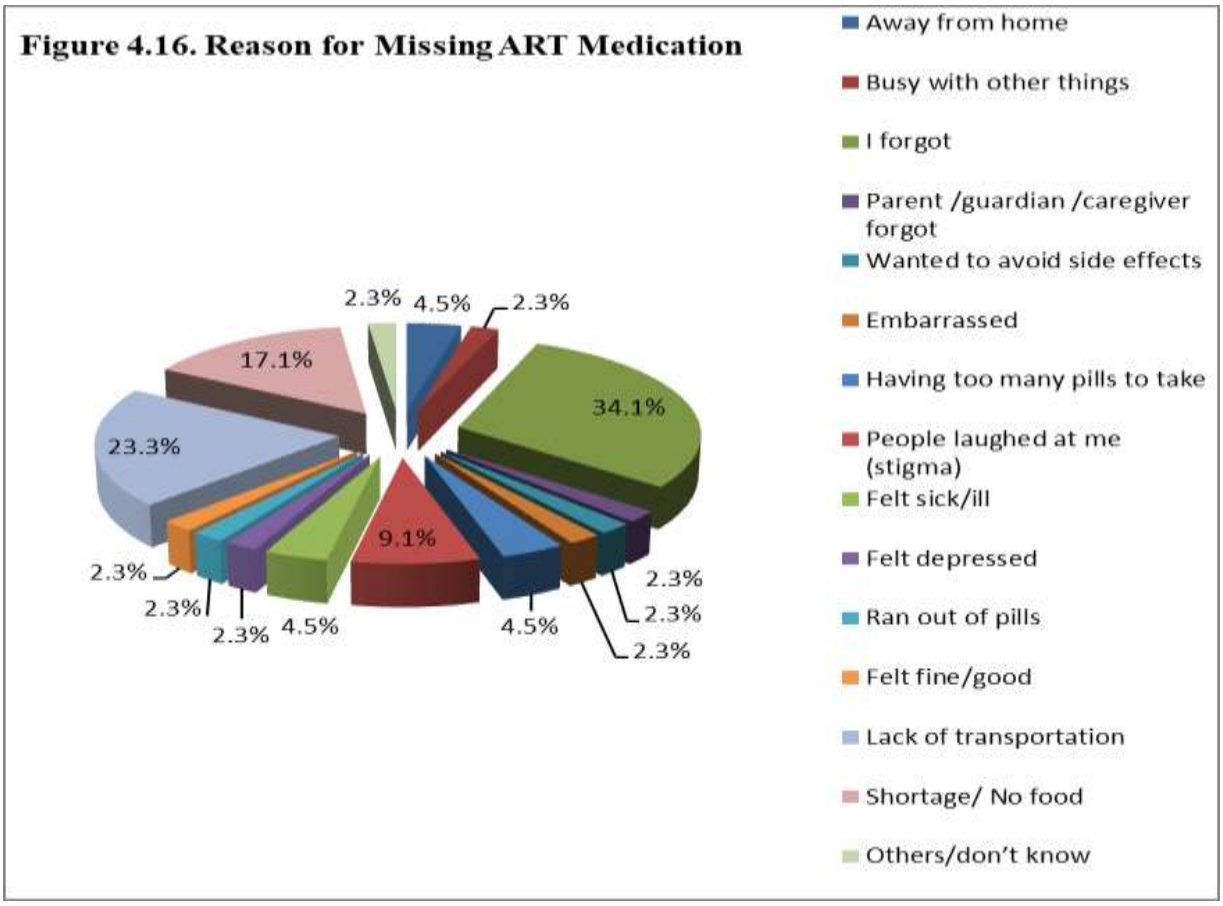

Figure 4.16. Reasons for missing ART medications

Figure 4.16. represents the reasons adolescents miss their HIV medication. People may miss taking their medications for various reasons but this study found that the most common reasons for missing HIV medications among adolescent clients in the past six months were forgetfulness (34.1%), lack of transportation to the ART clinic (23.3%), shortage of/no food (17.1%), and peers laughing at them (Stigma) at 9.1%.

Low and middle-income countries are characterized by several deficits in environmental infrastructure, notably inadequate transport. As most patients who attend public health clinics do not have private transport they rely chiefly on public means of transport, which are in many cases expensive and unsafe and in some areas unavailable (Kagee et. al. 2011). The limited incomes characteristic of patients in low-income countries including Namibia may in some cases prevent using public transport. Thus, if clinics are located far from residential townships, patients often have to walk, which may require considerable effort, particularly if they feel unwell.

4.2.3.2. Side-effects during ART

Regarding the question on whether respondents experienced any ART side-effects, the results are indicated in table 4.7.

Table 4.7. Side-effects during ART					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	23	39.7	39.7	39.7
	No	35	60.3	60.3	100.0
Total		58	100.0		

Table 4.7. Side-effects during ART

4.2.3.3. Types of side effects

Table 4.7 above indicates that 39.7% of the respondents experience side effects during their treatment. Most respondents (60.3%) do not experience undesirable effects to ART.

HIV drugs have improved over the years, and serious side-effects are less likely than they used to be. However, HIV drugs can still cause side-effects. Some are mild, while others are more severe or even life-threatening. Side-effects can also get worse the longer a drug is taken. The

respondents, 39.7% (n=23) adolescents receiving ART at Katutura Intermediate Hospital who indicated in Table 4.7 that they do experience some undesirable side-effects during their treatment, indicated the following side effects:

- Diarrhea, feeling tired and heavy, bad mood, loss of appetite, feeling nauseous and vomiting. These side-effects were also reported in other studies conducted elsewhere.

4.2.3.4. Alcohol and drug usage in the past six (6) months

The respondents were asked about their behavior towards alcohol and drugs in the past six months. The majority never used alcohol and drugs and the results are indicated in figure 4.17.

Figure 4.17. Alcohol usage in the past (6) six months

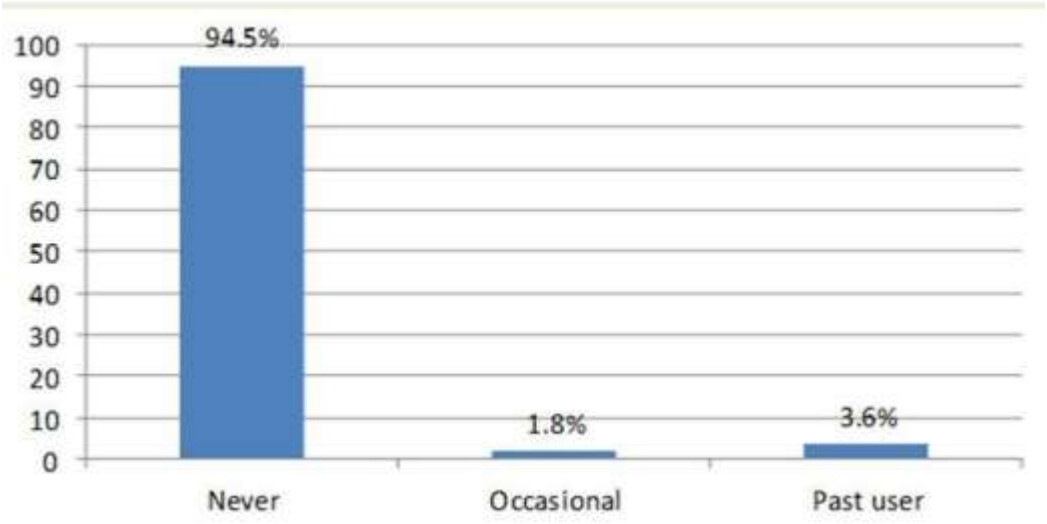

Figure 4.17. Alcohol usage in the past (6) six months

Figure 4.17. illustrates that a majority of the adolescents on ART (94.5%) did not use alcohol in the past 6 months, 3.6% are past users and 1.8% use alcohol occasionally.

A youth survey targeting several schools was conducted in Windhoek on alcohol consumption. The aim of the study was to provide empirical evidence on alcohol use and abuse in relation to risky behavior amongst school-going children in Windhoek.

The study concluded that alcohol consumption is said to constitute an emerging social problem among adolescents and youth in Namibia estimating that 53.5% of youths aged 13-30 use alcohol (Barth and Hubbard, 2009). It is also said to relate to many social problems including HIV risk-taking behavior, fighting, trouble with the police and violence among school-going youth. One of the main findings of the same study is that gender is a significant predictor of engagement in risk behavior, such as sexual intercourse without a condom, fighting, trouble with the police and violence among those that engage in drinking. The study concluded that there is a need to discourage alcohol use among school-going youth as a way of fighting HIV/AIDS and other risk taking behavior.

These statistics are important in helping policy planners and program developers to come up with policies, programs as well as targeted interventions specifically for adolescents on ART.

4.2.3.5. Current use of illegal drugs

Regarding current use of illegal drugs, the study found only one person who indicated using illegal drugs occasionally. The results are shown in figure 4.18.

Figure 4.18. Illegal drugs use in the past (6) six months

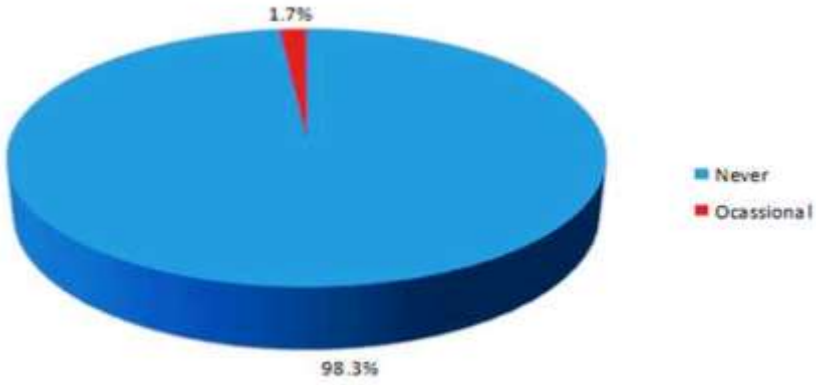

Figure 4.18. Illegal drugs use in the past (6) six months

Although most respondents indicated that they had never consumed or used illegal drugs, the literature indicates that alcohol and illegal drug abuse is seen to be one of the major social problems affecting youth in Namibia (UNICEF; 2006) Ministry of Health and Social Services (MoHSS; 2007). Similarly, (Barth and Hubbard; 2009) state that underage drinking has become a significant problem in Namibia.

The Government of the Republic of Namibia has also been concerned with underage drinking. It has promulgated a Liquor Act aimed at controlling underage drinking. The Liquor Act of 1998 (Government of the Republic of Namibia; 1998) is quite specific on “the need to avoid, as far as possible, the establishment of licensed premises in the vicinity of schools or places of worship” (Government of the Republic of Namibia; 1998).

4.2.3.6. Treatment satisfaction

The respondents were asked about their satisfaction regarding the treatment. The majority responded positively as it is shown in figure 4.19.

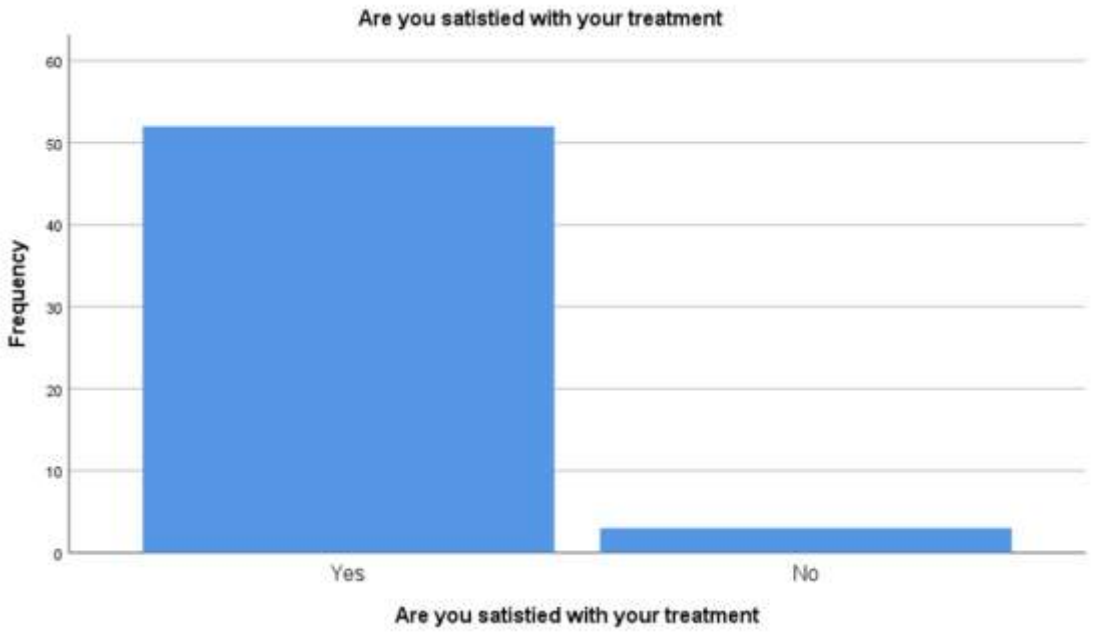

Figure 4.19. Treatment satisfaction

Figure 4.20 represents the study respondents' levels of treatment satisfaction. The majority of respondents 94.8% are satisfied with their treatment regimens and this may positively affect adherence. Only 5.2% are not satisfied with the treatment so far. More in-depth qualitative studies can analyze the reasons for respondents' dissatisfaction with their treatment.

4.2.3.7. HIV status disclosure to friends/family

Regarding HIV status disclosure, results are presented in table 4.8.

Table 4.8. HIV status disclosure					
		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	10	17.2	17.2	17.2
	No	48	82.7	82.8	100.0
Total		58	100.0		

Table 4.8. HIV status disclosure

Table 4.8. is about HIV status disclosure. Most adolescents 82.2% do not disclose their HIV status to third parties. Only about 17.2% (n=10) have managed to disclose their HIV status to a third party. Disclosing one's HIV status is difficulty due to stigma.

Studies realized that mothers tend to conceal HIV disease status from their children and disclosure is frequently deferred until puberty. Reddi and Associates demonstrated that only 7.9% youngsters had been made mindful of their own HIV infection status in their investigation in South Africa. Divulgence of HIV status is a basic advance and has evident ramifications for adherence. Beginning the disclosure procedure on time as early as 8-9 years old and consolidating it with particular help as recommended, may bring about expanded adherence in children and young adults. There are comparable reports that demonstrate absence of divulgence as indicators of poor adherence in grown-ups (SAHCS; 2017).

In Botswana, Phalade et. al (2009) investigated challenges faced by adolescents living with HIV in Botswana and found that stigma, discrimination, HIV disclosure are associated with

adherence. HIV disclosure is expected to eventually improve adherence, and this was found to be true in a study conducted in Botswana on adolescents' adherence to ART. Nondisclosure of HIV status was associated with poor adherence to ART (Phalade et. al 2009).

Literature further indicated that Persons living with HIV are often subject to stigma and discrimination. If patients are seen by members of their social constellation, such as neighbours, family members or friends, to be taking ART or attending an HIV clinic, it may signal that they are HIV-positive. Often HIV-positive individuals choose to attend clinics far from their local communities to avoid being seen and identified as HIV-infected by others, thereby compounding the problems of transportation and lost time from work (Kagee et. al; 2011)

4.2.3.8. Family Social Support

The respondents were asked whether they receive support from their families regarding ART adherence. The results are shown in table 4.9.

Table 4.9. Family Social Support

		Frequency	Percent	Valid Percent	Cumulative Percent
	Yes	43	74.1	74.1	74.1
	No	15	25.8	25.9	100.0
Total		58	100.0	100.0	

Table 4.9. Family Social Support

The study found that most adolescents receiving ART at Katutura Intermediate Hospital (74.1%, n=43) receive support from their family. Still, adolescents who reported not receiving their

families' support is an alarming (25.9% n=15) and this needs to be investigated. The family support is very crucial in any disease management and more so in ART adherence.

4.2.3.9. Family support satisfaction

The respondents were asked to indicate how satisfied they are with the support they get from their friends and/or family. Below are their results.

Table 4.10. Family Support Satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
	Very dissatisfied	4	6.8	6.9	6.9
	Somewhat dissatisfied	6	10.3	10.3	17.2
	Neither dissatisfied nor satisfied	8	13.7	13.8	31.0
	Somewhat satisfied	14	24.1	24.1	55.1
	Very satisfied	26	44.8	44.9	100.0
Total		58	100.0	100.0	

Table 4.10. Family Support Satisfaction

Of the (74.1%, n=43) study respondents that recorded receiving family support during their treatment, a majority of them (44.9%,n=26) are very satisfied with the support they receive. About 24.1% (n=14) are somewhat satisfied, 13.8% (n=8) are neither satisfied nor dissatisfied, 10.3% (n=6) indicated that they are somewhat dissatisfied with the support they receive from their family members and 6.9% (n=4) reported that they are very dissatisfied with the family support they receive. Studies report that positive social and family support have been shown to be associated with good medication adherence (Holstad et. al. 2006). However, difficult living

circumstances in low-income countries, contributed to non-adherence to treatment especially by residence in informal settlements, the absence of basic amenities, high rates of migration, overcrowded living conditions, family violence and substance abuse, often create conditions under which the quality of social support to patients is poor. In addition, the desire for privacy due to HIV stigma can be a barrier to accessing social support from within a patient's social network.

4.2.3.10. Family supports adherence to ART

Study respondents were asked how often their family members help them remember to take ART medication to assist in the process of adherence.

Table 4.11. Family Supports adherence to ART

		Frequency	Percent	Valid Percent	Cumulative Percent
	Always	20	34.4	34.5	34.5
	Most of the time	8	13.7	13.8	48.3
	Sometimes	23	39.6	39.7	88.0
	Not really	6	10.3	10.3	98.3
	Never	1	1.7	1.7	100.0
Total		58	100.0	100.0	

Table 4.11. Family Supports adherence to ART

Table 4.11. illustrates that 39.7% (n=23) of the respondents sometimes receive reminders from their family members; 34.5% (n=20) always receive reminders from their family members; 13.8%(n=8) receive support most of the time; 10.3% (n=6) do not really receive support from their family, and 1.7%(n=1) never received family support to adhere to their treatment.

4.3 Summary

This chapter presented the study findings and discussed those findings in relation to literature.

Although majority of respondents reported that they adhere to ART medication, there are those who do not adhere. That is a concern and more investigations are needed on the reasons for non-adherence and how to address them. The next chapter will present the study conclusion and recommendations.

CHAPTER 5

5. CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter concludes the study with two sections. Section one is the study conclusions and section two includes the study recommendations.

5.2. Conclusions

In conclusion, it is worth noting that adolescents living with HIV are especially vulnerable to adherence problems resulting from their psychosocial and cognitive developmental stages. Comprehensive systems of care are required to serve both the medical and psychosocial needs of adolescents living with HIV, who are frequently inexperienced with personally managing health care systems and may lack medical aid and health insurance.

According to a study conducted in 2015 by the Centre for Disease Control and Prevention. Paediatric HIV Surveillance, compared with adults, adolescents have lower rates of viral suppression and higher rates of virologic rebound and loss to follow up.

Based on the study findings, the researcher therefore concludes with the following:

1. The research findings revealed that most adolescents receiving ART were between the ages of 15-16 years old, 67% were female and 33% were males.

2. A majority of the respondents are Christians (96.5%), 86%, were born with HIV; 71% are school going, and at Secondary school level.

3. There were no homeless/street children adolescents recorded receiving ART at Katutura Intermediate Hospital in this study.

4. Although a majority of the study respondents (91.4%) are aware of ART and why they take the treatment and medications, only 63.8% of the respondents showed optimal adherence to their dose in the past seven days. 36.2% reported missing ART medication in the past seven days.

5. The most common reasons for missing HIV medications among adolescent clients in the past six months were forgetfulness (34.1%), lack of transportation to ART clinic (23.3%), shortage of/no food (17.1%), and peers laughing at them (Stigma) at 9.1%.

5.3. Recommendations

The following recommendations were formulated from the results of the study:

5.3.1. Recommendations to the Ministry of Health and Social Services

- The study recommends a call for a stakeholders' meeting to continuously review the current health policy on HIV and ART thereby adding some information with the aim of addressing the adolescents' problems specifically identified in this study.

- The study revealed that there were no homeless children and street children receiving ART at the Katutura Intermediate Hospital, therefore, targeted interventions should be emphasized to address multi-faceted problems specifically for adolescents as well as for homeless and street children.

- There is need to improve service providers' relationships with adolescent clients as this will help to identify their problems in the course of rendering care to adolescent client who are on ART.

- The study revealed that the main reasons for non-adherence among adolescent clients are forgetfulness, lack of food, lack of transportation and stigma. It is therefore recommended that the parents, guardians and caregivers are encouraged by health care professionals through workshops and trainings to consistently remind young people about the importance of adherence to ART. Furthermore, the researcher recommends that ART service providers should be starting as early as possible to give adherence psychosocial support and counselling, in assisting to minimize forgetfulness among adolescent clients so as to improve adherence to ART.

- Most adolescents indicated that their main sources of ART adherence information are medical doctors, followed by Social Workers, friends; and very little information is received from parents, other adults and nurses. This calls for improved mechanisms and a holistic approach to sharing information regarding the importance of adherence from all health care providers.

- It is recommended that a similar research study be carried out in other intermediate hospitals in the country to find out if similar results will be obtained so as to help guide policy planners and program developers to come up with better targeted nationwide interventions.

5.3.2. Recommendations to the Ministry of Education

- There is a need to review the curriculum for life skills and social studies subjects so as to address the multifaceted problems and questions about HIV/AIDS among primary and secondary school-goers. Adolescents need to be given basic information about HIV/AIDS. This will reduce stigma among peer groups as well as improve the levels of adherence to ART among adolescent clients.

- The Ministry of Education could work together with NGOs and other stakeholders to develop a program of training teachers as well as parents to create a conducive learning environment for HIV positive adolescents. This will help reduce current stigma and non-disclosure which is linked to poor adherence to ART.

5.3.3. Recommendations to the Municipality and Town Council

- The municipality can assist by identifying available resources to assist homeless and vulnerable adolescents/children and street children who were not identified in this study. The community development department of the municipality together with other stakeholders can come up with mechanisms to come to the rescue of this vulnerable population that will make up future adults of our cities and towns.

5.3.4. Recommendations to Institutions of High learning

- This study focused on the factors associated with Antiretroviral Treatment (ART) adherence among adolescent clients. It is therefore recommended that future research should explore addressing patient or family barriers caused by lack of information, stigma or disclosure concerns.

- A further study should be carried out to assess how the challenges identified in this study could be addressed to increase adherence levels among adolescent clients.

If those aforementioned recommendations are put at work, then the level of adherence to ART among adolescents will improve and new HIV infections will be reduced significantly.

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ANNEXURE A. ETHICAL CLEARANCE LETTER FROM THE UNIVERSITY (UNAM)

CENTRE FOR POSTGRADUATE STUDIES

University of Namibia, Private Bag 13301, Windhoek, Namibia
340 Mandume Ndemufayo Avenue, Pioneers Park
☎ +264 61 206 3275/4662; Fax +264 61 206 3290; URL: http://www.unam.edu.na

UNAM

RESEARCH PERMISSION LETTER

Student Name: MS. EMMI NN SHIVUTE

Student number: 200012207

Programme: MASTER OF PUBLIC HEALTH

Approved research title: FACTORS ASSOCIATED WITH ADHERENCE TO ANTI-RETROVIRAL TREATMENT (ART) AMONG ADOLESCENT CLIENTS AT KATUTURA INTERMEDIATE HOSPITAL, KHOMAS REGION

TO WHOM IT MAY CONCERN

I hereby confirm that the above mentioned student is registered at the University of Namibia for the programme indicated. The proposed study met all the requirements as stipulated in the University guidelines and has been approved by the relevant committees.

The proposal adheres to ethical principles as per attached Ethical Clearance Certificate. Permission is hereby granted to carry out the research as described in the approved proposal.

Best Regards

20 July 2018

Prof. Marius Hedimbi

Director: Centre for Postgraduate Studies

Tel: +264 61 2063275

E-mail: directorpgs@unam.na

Centre for Postgraduate Studies
Office of the Director
2018 -07- 20
University of Namibia
UNAM

ANNEXURE B. APPLICATION LETTER FOR PERMISSION TO CONDUCT THE STUDY

P. O. Box 51208
Bachbrecht- Windhoek

04 July 2017

The Permanent Secretary
MINISTRY OF HEALTH & SOCIAL SERVICES
Private Bag 13198
Windhoek- NAMIBIA

Dear Dr. Andreas Mwoombola,

REQUEST FOR ETHICAL APPROVAL TO CONDUCT A RESEARCH

My name is Emmi N. Shivute, a final year student at the University of Namibia (UNAM) finalising a Masters in Public Health. As part of the requirements to complete my studies, I am expected to conduct a research study.

I am writing this letter to your good office to grant me ethical approval to conduct a research study in Khomas region, at Katutura Intermedite Hospital. I am interested in conducting a study on the factors associated with adherence to anti-retroviral treatment among adolescent clients in the Khomas region.

The effects, reasons and impact of non-adherence to ART on the lives of people living with HIV/AIDS have been well studied in Namibia by various authors (I-Tech Namibia, 2009, Ehiemua, 2014 and Bauleth, 2013). Unfortunately, non-adherence to ART among adolescents between the ages of 10-19 years living with HIV has received little or no attention in the country and this prompted my interest to carry out this study with the intention of contributing to the knowledge, statistics and literature. I trust that the results of this study will contribute to the current gap in literature, and help understand the barriers to adherence among adolescent clients, and help to make recommendations to the ART program and development of new improved programs, projects and interventions of improving ART adherence.

Please find attached to this letter, a completed application form for Registration of a research Project and other requirements by the Ministry of Health and Social Services.

I look forward to an opportunity of carrying out this study at the Katutura Intermediate Hospital and sharing the final results with the Ministry at large.

Yours sincerely,

Ms. Emmi N. N. Shivute
Tel: 061 203 28889 (w) 081 2555 111 (c)
Email: e.shivute@hotmail.com

ANNEXURE C. ETHICAL CLEARANCE FROM THE MINISTRY OF HEALH (MOHSS)

REPUBLIC OF NAMIBIA

Ministry of Health and Social Services

Private Bag 13198 | Ministerial Building | Tel: 061 – 2032150
Windhoek | Harvey Street | Fax: 061 – 222558
Namibia | Windhoek | Email: shimenghipangelwa71@gmail.com

OFFICE OF THE PERMANENT SECRETARY

Ref: 17/3/3 **ES**
Enquiries: Mr. J. Nghipangelwa

Date: 04 October 2017

Ms. Emmi N.N. Shivute
University of Namibia
Windhoek
Namibia

Dear Ms. Shivute

Re: Factors associated with Non-Adherence to Anti-Retroviral treatment (ART) among adolescent clients at Katutura Intermediate Hospital, Khomas Region.

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 academic purposes;
3.2 No other data should be collected other than the data stated in the proposal;
3.3 Stipulated ethical considerations in the protocol related to the protection of Human Subjects' should be observed and adhered to, any violation thereof will lead to termination of the study at any stage;
3.4 A quarterly report to be submitted to the Ministry's Research Unit;
3.5 Preliminary findings to be submitted upon completion of the study;

3.6 Final report to be submitted upon completion of the study;

3.7 Separate permission should be sought from the Ministry of Health and Social Services for the publication of the findings.

Yours sincerely,

Andreas Mwoombola (Dr.)
Permanent Secretary

"Your Health our Concerns"

ANNEXURE D. CONFIDENTIALITY/CONSENT FORM

CONSENT FORM TO PARTICIPATE IN A RESEARCH STUDY

TITLE OF STUDY:
FACTORS ASSOCIATED WITH ADHERENCE TO ANTI-RETROVIRAL TREATMENT (ART) AMONG ADOLESCENT CLIENTS AT KATUTURA INTERMEDIATE HOSPITAL, KHOMAS REGION IN NAMIBIA

Introduction

You are being asked to participate in a research study of assessing the factors associated with adherence to Anti-Retroviral Treatment (ART).

You were selected as a possible participant because you are/ (you are a parent/legal guardian of a client) between the ages of 10-19 years of age who is receiving Anti-Retroviral Treatment (ART) at the Katutura Intermediate hospital and not at another health care centre. We ask that you read this form and ask any questions that you may have before agreeing to take part of the study.

Purpose of Study

The purpose of the study is to assess the factors associated with adherence to Anti-Retroviral Treatment (ART) among HIV infected adolescent clients/patients (aged 10-19 years old) at Katutura State Hospital.
The research is for study purposes only and the findings will be presented and submitted in partial fulfilment of the requirements for the degree of Master of Public Health at the University of Namibia.

Description of the Study Procedures

If you agree to be part of this study, you will be asked to do the following things:

- Participate voluntarily,
- Answer correctly and truthfully to the questions in the semi-structured questionnaire
- Spend approximately 5- 10 minutes self-administering or with the help of a researcher
- Alternatively, you may also complete the questionnaire yourself and submit to the researcher.

Risks/Discomforts of being in this Study: There are no reasonable anticipated or foreseeable (or expected) risks.

Confidentiality: This study is anonymous. We will not be collecting or retaining any information about your identity. The records of this study will be kept strictly

confidential. Research records will be kept in a locked cabinet and all electronic information will be coded and secured using a password protected file. We will not include any information in any report we may publish that would make it possible for anyone to personally identify you.

Right to Refuse or Withdraw: The decision to participate in this study is entirely up to you. You may refuse to take part in the study *at any time* without affecting your relationship with the researcher of this study or the Katutura Intermediate Hospital. Your decision will not result in any loss or benefits to which you are otherwise entitled. You have the right not to answer any single question, as well as to withdraw completely from the interview at any point during the process; additionally, you have the right to request that the interviewer not use any of your interview material.

Right to Ask Questions: You have the right to ask questions about this research study and to have those questions answered by the researcher before, during or after the research. If you have any further questions about the study, at any time feel free to contact the researcher;

Ms. Emmi N. N. Shivute at [*email:* ***e.shivute@hotmail.com***] or by telephone at [***081- 2 555 111***]. If you would like a summary of the results of the study, it will be made available and sent to you by email.

Consent: Your signature below indicates that you have decided to (give permission for your dependent to) volunteer as a research participant for this study, and that you have read and understood the information provided above. You will be given a signed and dated copy of this form to keep, along with any other printed materials deemed necessary by the study researcher.

Participant's Name:_____

Participant/Parent/Guardian's Name:_____

Signature:_____ **Date:**_____

Researcher's Name:_____

Signature:_____ **Date**:_____

ANNEXURE E. QUESTIONNAIRE

QUESTIONNAIRE FOR ASSESSING FACTORS ASSOCIATED WITH ADHERENCE TO ANTI-RETROVIRAL TREATMENT (ART) AMONG ADOLESCENT CLIENTS AT KATUTURA INTERMEDIATE HOSPITAL, KHOMAS REGION

NOTE TO PARTICIPANT: Your willingness to participate in the study is highly appreciated. The purpose of the study is to assess adherence to antiretroviral therapy and its determinant factors among HIV infected adolescent patients (10-19 years old). Please do not hesitate to ask any questions regarding information that may be unclear to you.

A. SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Age of the participant	

2. Sex of Participant	
1. male	2. female

3. Education level of Participant				
1. Primary school	2. Secondary school	3. university student	4. school dropout	
4. How long have you been on ART treatment?				
1. <1year	1-5 years	5-10 years	10-15 years	>15years

5. Religion of participant				
1. Christian	2. Muslim	3. Hindu	4. other	
6. Who are you staying with?				
1. Biological parents	2. Guardian/ caregiver	3. Family member	4. Homeless	5. School hostel

7. Parents/guardian/ care giver occupation				
1. Unemployed	2. Employed	3. Business	4. Old age	5. Other
8. Parents/guardian/care giver educational level				
1. None	2. Primary School	3. Secondary School	4. University/ College	

9. Family monthly income				
1. under N$ 1000,	2. N$1000-N$ 5000	3. N$5000-N$ 10 000	4. N$10 000-N$ 15 000	5. over N$ 15 000
				6. Don't know

10. Means of Transportation to ART Clinic			
1. Bus	2. Taxi	3. Foot	4. Other

11. Mode of HIV transmission. How were you infected with HIV?				
1. Born with	2. heterosexual intercourse	3. homosexual intercourse	4. shared needles	5. don't know

B. LEVEL OF ADHERENCE AMONGST ADOLESCENTS RECEIVING ART

KNOWLEDGE OF ART

12. Do you know the role of ART?

1. Yes	2. No

13. Is it a combination treatment?

1. Yes	2. No

14. Do you have own method to remember time and recommendation to take your medicine?

1. Yes	2. No

15. If yes, which one?

1. Watch	2. Phone reminder	3. Family member/caregiver	4. Diary	5. Other

ADHERENCE TO THE TREATMENT

16. During the last seven (07) Days have you missed to take your medication?

1. Yes	2. No

17. How many times?

1. **1** time	2. **2** times	3. **3** times	4. **4** times	5. **5** times & more

18. Have you at least once got some information (advices) about adhering to your treatment?

1. Yes	2. No

19. If yes, from whom?

1. Social worker	2. Doctor	3. Nurse	4. Friends	5. Parents/ adults

C. THE FACTORS ASSOCIATED WITH ADHERENCE AMONGST ADOLESCENTS

FACTORS OF POOR ADHERENCE

20. People may miss taking their medications for various reasons. What were your reasons for missing any of your ART medications within the past 6 months? (It is possible to give more than one response).

1. away from home		9. felt sick or ill	
2. busy with other things		10. felt depressed	
3. I forgot		11. ran out of pills	
4. parent/guardian forgot		12. felt fine/ good	
5. wanted to avoid side effects		13. lack of transportation	
6. did not want others to notice me taking medication (embarrassed)		14. shortage/ no food	
7. having too many pills to take			
8. people laughed at me			

SIDE EFFECTS

21. Have you any undesirable or sides effects during your treatment?

1. Yes	2. No

22. If yes, what are those side effects?……

23. Have you ever stopped or changed your ART medications?

1. Yes	2. No

24. If yes, Why? You can tick more than one answer.

1. Inefficiency treatment	2. Sides effects	3. No food	4. I didn't want to continue treatment	5.Lack of drugs at ART clinic

ALCOHOL & DRUG USAGE

25. Alcohol use in past six (6) month?

1. Never	2. Occasional	3. Past user	3. Once/twice a week	4. Nearly daily

26. Any illegal drugs use in the past six (6) months?

1. Never	2. Occasional	3. Past user	3. Once/twice a week	4. Nearly daily

27. Have you ever injected illegal drugs?

1. Yes	2. No

28. If yes, do you currently inject drugs?

1. Yes	2. No

TREATMENT SATISFACTION

29. Are you satisfied with your treatment?

1. Yes	2. No

SOCIAL SUPPORT

30. Have you disclosed your HIV status to your friends and/or family members?

1. Yes	2. No

31. Do you have a family that supports you taking your medications?

1. Yes	2. No

32. How satisfied are you with the support you get from your friends and/or family

1. Very dissatisfied	2. Somewhat dissatisfied	3. Neither dissatisfied or satisfied	4. Somewhat satisfied	5. very satisfied

33. How often does your family members help you remember to take your medication?

1. Always	2. Most of the time	3. Sometimes	4. Not really	5. Never

THE END

Thank you for taking the time to complete this questionnaire and support this study research

ANNEXURE F. PROOF OF LANGUAGE EDITING

7 December, 2018

Dear Sir/Madam,

I hereby acknowledge that I have edited Mrs. Emmi Shivute's thesis submitted in partial fulfilment of the requirements for the degree of Master of Public Health titled, **"Factors associated with Adherence to Anti-Retroviral Treatment (ART) among Adolescent clients at Katutura Intermediate Hospital: Khomas Region."**

The editing focused on the following areas: grammar; sentence order; clarity of ideas; punctuations; repetition of ideas/findings; and the overall organisation of the paper.

I trust you will find this in order.

Yours Sincerely,

07/12/2018

Saara Mupupa