ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG CLIENTS WITH HIV/AIDS ATTENDING ART

CLINIC AT CHIKANKATA HOSPITAL

By

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DECLARATION

I R. Katongo hereby certify that this Dissertation represents my own work and the sources I have quoted have been indicated and acknowledged by means of complete referencing. I further declare that this Dissertation has not been previously submitted for a Degree, Diploma or other qualification of this University or another University. It has been prepared in accordance with the guidelines for Master of Science in Nursing Dissertation of the University of Zambia.

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The University of Zambia approves this Dissertation on "Adherence to Antiretroviral Therapy among clients with HIV/AIDS attending ART clinic at Chikankata Hospital" in partial fulfillment of the requirement for the award of the Master of Science in Nursing Degree by the University of Zambia.

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Abstract.

The study was undertaken in order to asses the level of adherence to antiretroviral treatment among clients attending Antiretroviral Therapy (ART) clinic at Chikankata Hospital. Since its introduction in the mid-1990s, the benefits of Antiretroviral Therapy in the management of HIV disease have been well established. However, the universal access to antiretroviral drugs has created an enormous debate and controversy in developing countries because of the problem of adherence. To promote access to antiretroviral therapy, the prices of antiretroviral drugs have been removed in public health institutions.

The objective of the study was to identify the factors influencing adherence to antiretroviral therapy among clients attending ART clinic at Chikankata Hospital.

Literature review was based on issues such as socio-economic factors, disease and service related factors. A Descriptive Cross Section Study was conducted. The sample size consisted of 322 respondents on antiretroviral treatment. The sample was selected by systematic sampling method. A sampling frame was obtained from the ART register. Data was collected using an interview schedule. The Self- Reported Method was used to measure adherence. The data was analyzed using Epi-info statistical software. A p value of 0.05 or less was considered significant. The study revealed an adherence rate of 82 %. The results also revealed that the reasons for missing doses by respondents included: being busy with other activities (31%) , running out of drugs due to missing review dates (14 %) , change in daily routine (14%) and stigma(12%).

In addition, the number of times one has received Information, Education and Communication

(IEC) on antiretroviral adherence had positive influence on adherence (p value 0.006). The more information is given in form of education, the more adherent the client becomes. The number of tablets prescribed (p value 0.016) had positive influence on adherence to antiretroviral treatment. On the other hand, socio-economic factors such as employment, income and level of education did not affect adherence.

There is need therefore, for the Zambian Government through the Ministry of Health to continue expanding access to ARVs despite the socio- economic status of clients with HIV/AIDS. Health education should emphasize the importance of adherence and should focus on fighting stigma and alcohol use.

Key words: Adherence, Antiretroviral Therapy, ART clinic, AIDS client

I dedicate this study with the deepest love to my dear wife Florence and my daughter who have been my source of inspiration.

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AIDS	-	Acquired Immune Deficiency Syndrome
ART	-	Antiretro viral therapy
ARV	-	Antiretroviral
CSO	-	Central Statistics Office
DOTS	-	Direct Observed Therapy
HAART	-	Highly Active Antiretroviral Therapy
HIV	-	Human Immune deficiency virus
UNAIDS	-	Joint United Nation Programme on AIDS
WHO	-	World Health Organization
ZDHS	-	Zambia Demographic Health Survey
MoH	-	Ministry of Health

CHAPTER ONE: INTRODUCTION

1.1 BACKGROUND

The HIV/AIDS crisis is the worst the world has ever experienced and Sub-Saharan Africa remains by far the most affected. According to the Joint United Nations Programme on HIV/AIDS(UNAIDS) report of 2007, every day, over 6800 persons become infected with HIV and over 5700 persons die from AIDS mostly because of inadequate access to HIV prevention and treatment services. As a result of this, the HIV pandemic remains the most serious infectious disease challenge to public health.

Globally, about 33.2 million people were living with HIV/AIDS by December 2007, and the overwhelming majorities were in Developing Countries. The vast majority of about 30.8 million HIV – infected persons were adults between 15 and 49 years (UNAIDS, 2007). By the end of 2007, women consisted about 15.4million whereas children under 15 years consisted 2.5 million. According to earlier estimates, more than half of the newly infected were under 25 years – particularly in Sub-Saharan African, a significantly higher proportion of these were women in the age group of 15 to 49 years (UNAIDS, 2006). This was reflected in the age and sex profile of new AIDS cases, which, in Malawi for example, peaks in 20-24 age groups for women and ten years later for men (Barnett and Whiteside, 2004).

Apart from the continued increase in the total number of infected people, the global HIV/AIDS situation in 2005 only showed small overall changes compared with the two preview years. According to WHO (2007) over the past three years, the number of newly infected persons seems to have decreased slightly, and the total number of AIDS deaths has stabilized at 2.1 million per year. But, even if we assume that these changes are real, it is unlikely that they mark the start of a new trend. A permanent downward trend in the annual number of AIDS deaths is even more unlikely. The global HIV positive population is still expanding and sustainable improvement in access to antiretroviral therapy (ART) in poor countries, means that the number of annual AIDS deaths will decrease for the years to come (UNAIDS,2007).

The growth, spread and aging of AIDS has made expanding access to treatment a necessity if we are to defend the most fundamental human rights of millions of people world wide. Currently, 2.1 million people die of AIDS related illness every year in the world. The UNAIDS projects a similar catastrophic epidemic in Asia and parts of the former Soviet Union. The AIDS pandemic is widening the gap between the First and the Third Worlds, when it comes to accessing medical facilities. The contrast in HIV/AIDS situation between Africa and the Developed World is even greatest when differences in treatment are considered (Sylwander, 2005). In the Industrialized World, there is the capacity to offer adequate treatment to all patients, whereas in Africa most patients are offered no treatment and often die without knowing that they are infected with HIV/AIDS. At the same time as we watch the pandemic worsening, we also observe global commitment that has considered AIDS as a major developmental crisis. This has been demonstrated by the commitment made by world leaders at the United Nations Special Session of General Assembly in June, 2001, and by the fact that the United National Millennium Development Goals specify combating the pandemic as a priority. The recently introduced Global Funds of AIDS, Tuberculosis and Malaria also illustrate a commitment in the fight against AIDS.

Regionally, in Sub-Saharan Africa, HIV transmission is estimated to have started around 1980. The Region is by far the worst affected by the pandemic, and accounts for an overwhelming majority of the estimated 25 million who have died from AIDS. In 1998, AIDS was responsible for one in five deaths in Africa as a whole and, since then, has been the leading single cause of deaths on the continent (WHO, 1999, 2001). In 2001, some 2.3 million died from AIDS in Sub-Saharan Africa and another 3.4 million were infected with HIV (UNAIDS, 2007). This brings the total number of people living with HIV/AIDS in the Region to 22.5 million, about 68 percent of the global total. Sub-Saharan Africa also stands out as the Region where more women than men are infected; an estimated 61 percent of all HIV adults at the end of 2007 were women (UNAIDS, 2007). More than 68 percent of all people living with HIV/AIDS in Sub-Saharan Africa are to be found in the belt stretching through the Eastern and Southern parts of the Region – from Ethiopia to South Africa and Namibia (UNAIDS 2007). Seven countries in Southern Africa had adult prevalence rates of 20 percent or more, three had rates over 25 percent and, in one case 36 percent of the adult population were infected with HIV (UNAIDS, 2000).With the exception of Uganda, and possibly Zambia and South Africa, there is no indication that adult prevalence rates have fallen during the last years in any of the belt countries.

Locally, Zambia has a population of approximately 12 million people and the prevalence rate of HIV/AIDS among 15 to 49 year-old at 14.3 percent (CSO, 2007). At the end of 2001, it was estimated that 1.2 million Zambians were living with HIV/AIDS, with over one-half of these infections in women and approximately 150,000 infections in children. An estimated 120,000 Zambians died of AIDS in 2001. There are approximately 70,000 children under the age of 15 in

Zambia who have been orphaned by the death of one or both parents due to AIDS (CSO, 2002, 2007).

The proportion of the population infected in urban areas ranges from 25 to 32 percent between the ages of 15 and 44 years and in rural areas, infection rates range from 8 to 16 percent (CSO,2002). In Lusaka and Ndola, HIV prevalence among some women attending ante natal care clinic increased from 5 percent in 1985 to 27 percent in 1994. According to the 2001 – 2002 Demographic Health Survey (DHS), HIV prevalence is almost twice as high in urban areas as in rural areas.

The socio-economic impact of HIV/AIDS in Zambia is enormous because the most affected are individuals at the peak of productive and reproductive periods. HIV/AIDS has resulted in reduced productivity because of the Opportunistic Infections seen in Zambia that include Tuberculosis, Fungal Meningitis, Bacterial Pneumonia and Oral Thrush. In addition, the high prevalence of HIV related illness in Zambia has seriously over burdened the health care system at all levels. In major hospitals, more than half of the beds are occupied by patients with HIV/AIDS related illnesses (MoH, 2005). As a result of this, the Zambian Government has declared HIV/AIDS as a national disaster that has negatively affected all sectors of the country. To this effect, the Government of the Republic of Zambia has put in place measures to mitigate the impact of HIV/AIDS through the introduction of Antiretroviral Therapy (ART). It had the vision to commence 100 000 clients on ART by the end of 2005.To achieve this vision, the Government had embarked on the expansion of ART in public health institutions and by December 2008, it was reported that 200,000 HIV/AIDS clients had been commenced on antiretroviral treatment (M o H, 2008).

Before the discovery of antiretroviral treatment, patients who were infected with HIV/AIDS depended only on health education from Doctors and Nurses. This intervention was not adequate to meet the challenge. In order to alleviate the burden of AIDS, scientists came up with antiretroviral drugs. These are drugs which inhibit the growth and multiplication of HIV; nevertheless, they do not eradicate the virus completely.

Understanding the role of antiretroviral drugs in the treatment of AIDS should be given priority. Since AIDS was originally described in New York and Los Angeles more than 20 years ago, a large amount of scientific data has led to improvements in understanding of the disease caused by HIV (Hymes at al, 1981). Intensive research activity was started soon after the discovery of the AIDS. In many Developed Countries the nature of the epidemic was met with large campaigns of health education on prevention by health authorities. These campaigns often led to stabilization or even a decrease in the number of annual new infections (UNAID, 2002). However, for the clients who were infected, health education alone was not adequate. As a result, scientists initiated and promoted the treatment of AIDS with antiretroviral drugs.

Currently, we have more than Twenty different antiretroviral drugs approved for HIV treatment (Schulz, 2008). The drugs belong to three different classes: Nucleoside/-tide, Analogue Reverse Transcriptase Inhibitors (NRTI'/NTRTI'S), Protease inhibitors (PI's) and Non-Nucleoside Reverse Transcriptase Inhibitors (NNRTIS). In the late 1980's and early 1990's, only NRTIS were available but, in 1994 and 1995, several independent factors caused dramatic change in the understanding and treatment of the infection (Barford and Ullum, 2002). It was discovered that dual treatment with two NRTIS was far more effective than using only one drug at a time (CAESAR Coordinating Committee, 1997; Delta Coordinating Group, 1996). The Protease Inhibitors (PIS) were introduced as a new class of anti-HIV drugs which were more potent than previously known drugs (Ho et al, 1995). With the new commercially available viral load measures, it could be shown that PIS could block viral replication, at least temporally (Wei, et al 1995). Soon after this, it was discovered that Viral load measures could be used to predict the outcome of infection (Mellors et al., 1996), Protease inhibitors and NRTIS as treatment, and viral load measures as a monitoring tool were soon coupled with the principle of combining several drugs in what was then termed Highly Active Antiretroviral Therapy (HAART). The success of HAART is dependant on high levels of adherence. If it is not achieved there is the danger of drug resistance which could lead to accelerated viral replication resulting in treatment failure. However, the scaling up of antiretroviral drugs is threatened by poor adherence. Past experience on Adherence suggests that compliance with prescribed drug treatment in Africa may be problematic: this represents one of the major concerns for extensive scaling up of ARV therapy, given that its success depends on long term taking of drugs. It has been proposed that administering ARV therapy through the Directly Observed Treatment Short course (DOTS) strategy would ensure the necessary adherence because HIV/AIDS has some similarities with Tuberculosis and the two diseases share many management requirements.

The Zambian Government has embarked on the campaign to provide antiretroviral treatment to AIDS client. The first pilot study was conducted at Ndola Central Hospital. The results were encouraging. As a result other hospitals such as Kitwe and the University Teaching Hospital were included. Currently, almost all District Hospitals have clinics offering free antiretroviral treatment. At Chikankata Mission Hospital the Antiretroviral Clinic started providing free ARV Treatment in 2004.The Clinic caters for a population of 60 000 people. Since its inception the clinic has experienced an overwhelming response from clients.

In order to solve the problem of poor adherence at Chikankata Hospital, some health workers have been trained to be following up clients on antiretroviral therapy so that they could be monitoring clients in the community. Further more, the Zambian Government has also started providing free Antiretroviral drugs so that all clients could have easy access to them, therefore promoting adherence.

1.2 STATEMENT OF THE PROBLEM

In many ways the HIV pandemic resembles a symbol of inequality in the world. In most Developed Countries the epidemic is now under control to such an extent that it does not constitute a major threat to the economy or the stability of social situation and the health system. However, globally the HIV pandemic is completely out of control. The situation is mainly worse in the Sub-Saharan Africa where, in terms of numbers, it has been just as "aggressive as the most pessimistic predictor made at its beginning" (Barford, et al., 2002). Sub-Saharan Africa accounts for the overwhelming majority of the estimated 25 million who have died from AIDS (UNAIDS / WHO, 2001). In order to curb the high mortality rate of HIV/AIDS, scientists have come up with Anti Retro Viral (ARV) drugs known as Highly Active Anti Retro viral Therapy (HAART). This is a combination of antiretroviral drugs that allows an inhibition of viral replication and resistance. When HAART was first introduced, it was hoped that HIV could be eradicated from the immune system (Perelson et al, 1996). However, even after several years of successful therapy, a treatment interruption will cause an immediate flare of viral replication (Garcia, et al., 1991). From the practical point of view, it means that anti-HIV therapy, as we known it today, will be life long, therefore adherence is essential.

Adherence means compliance with antiretroviral regimen and is achieved by taking correct number of drugs at correct times without missing the doses. If all doses of HAART are taken, almost 100 *percent of patient on treatment will achieve an undetectable viral load (Fisch et al., 2001).* In order to achieve sustained undetectable viral loads, it is necessary to take 90 – 95 percent of doses (Department of Health and Human Services, 2002). All over the world, this level of adherence is difficult to achieve, and HAART treatment often fails (Bardford and Ullum, 2003). It was calculated that between 30 and 50 percent of all patients on HAART fail to adhere to treatment (Monstashari et al, 1998). Furthermore, at the 14th International AIDS Conference in Barcelona, several abstracts were presented on adherence to HAART in Africa and adherence rates in the range of 80 to 90 percent were reported (Orrell , et el,. 2002). In one study of adherence in Uganda, less than half of patients returned for follow up, and of those, only 66 percent were classified as adherent (Rabkin et al. ,2002). This is true especially for people that are challenged psychologically and socially, and where the clinical systems are not perfect more especially in Africa (Stone, 2001). The therapeutic success of ARV therapy is dependent on consistent adherence to the prescribed drugs.

When proper adherence is not achieved, the serious consequence expected is drug resistance just like in Tuberculosis treatment. This is the greatest threat to antiretroviral therapy. Drug resistance would affect the success of the therapy, limiting the number of valid alternatives. From the public perspective, drug resistance virus strains are transmissible and have the potential to undermine the effectiveness of drug regimens in newly infected individuals. In San Francisco, where treatment is available to practically all patients, the percentage of multi-drug resistant strains in newly infected, untreated patients rose from 2% in 1996 to 13% in the year 2000 (Grant et al, 2000). Currently, in the Industrialized Countries up to 23 percent of the infections are with virus strains resistant to one or more drugs (Health policy and development, 2004). If this is not prevented and controlled it could lead to high morbidity and mortality rates, therefore defeating the purpose of scaling up antiretroviral therapy.

The problem concerning low levels of adherence has never been adequately addressed because there are no studies conducted to determine the causes of low adherence in Zambia. In Southern Province of Zambia, a survey which was carried out among three Hospitals conducting antiretroviral clinics showed that only 60 percent Of clients were adhering to review appointments (Birbeck eta al., 2005). At Chikankata hospital, only a small study showed that about 16 percent of the clients on ART reported that they were not taking drugs as prescribed (Ngalande, 2005).

1.3 FACTORS INFLUENCING ADHRENCE TO ART.

1.3.1 Socio-cultural Factors:

1.3.1.1 Educational level: It is believed that those who are able to read and write are in a better position to access the written visual aids on ART. This assists them to acquire knowledge more than their counterparts who cannot read. In addition to this, clients who are well educated are better placed to understand the disease process and the consequences of poor adherence such as drug resistance (Orell, 2002).

1.3.1.2 Low economic status: Clients of low economic status may have limited access to HARRT because they cannot afford to buy food associated with treatment requirements. This is of particular concern because it causes treatment discontinuation or intermittent use of antiretroviral drugs (Wood, 2003). The people in the rural areas of the country are economically disadvantaged more especially that most of them have no informal employment. The implication is that they may have no money for transport to attend medical reviews. In addition, they will also have no resources to regularly buy food, for some drugs are recommended to be taken together with food.

1.3 Drug use and alcohol consumption: History of injectable drug use and excess alcohol consumption is also commonly associated with therapy discontinuation for they may cause the client to forget the treatment requirements. It is believed that when someone is intoxicated it is extremely difficult to remember the treatment requirements. In rural areas of Chikankata many villagers indulge themselves in brewing illicit beer as the main source of income. As a result, alcohol is cheap, accessible and affordable by almost everyone. This may have negative effects on clients on antiretroviral therapy.

1.3.1.4 Distance: Distance between home and clinic can be a barrier to good adherence. This happens when the client is too weak to walk and has no proper transport facilities especially when it comes to drug collection. Many clients in rural areas live very far from the health facilities. The roads are impassable in rainy seasons. Transport in rural areas is scarce and expensive, therefore, making traveling from home to a health facility extremely difficult.

1.3.1.5 Lack of knowledge: Lack of knowledge on the consequences of poor adherence such as viral resistance may lead clients not to abide by strict treatment requirements. Most of the villagers have little or no educational background. This may be a hindrance when it comes to knowing cardinal basics of treatment requirements. They may consider adherence as a minor issue in the antiretroviral therapy which could lead to fatal consequences.

1.3.1.6 Availability of alternative treatment: This may also have negative impact on adherence since it can disrupt the usual treatment frequency. Currently, there are large numbers of traditional herbalists in the communities who are claiming to have a cure for AIDS and clients may choose to seek treatment from them. This may have negative effects on adherence for it could disrupt the antiretroviral regimen.

1.3.1.7 Stigma: Most AIDS clients do not want others to notice that they are on antiretroviral treatment. Stigma is a major challenge to be tackled by anyone who is involved in the management of AIDS. It discourages client from accessing medical services .Stigma becomes a major problem especially if the client was inadequately counseled before the commencement of treatment. Stigma forces the client to be isolated from the community. In addition, clients may not be visiting the clinics freely. This may force them to miss the appointment dates for drug collection, therefore affecting adherence.

1.3.2 Service related factors

1.3.2.1 Irregular supply of drugs: If ARV drug supply is not regular some clients may be discouraged from attending ART clinic therefore, failing to follow strict appointments schedules. This may be the case in developing countries where the financial resources are so inadequate that they can not meet the growing demand of clients on antiretroviral treatment.

1.3.2.2 Waiting time: If clients spend a lot of time waiting during clinical reviews, it may discourage them from keeping the regular appointments for drug collection, thus negatively affecting adherence.

Long waiting time is commonly experienced in health institution mainly as a result of staff shortages. If clinics are not well staffed we expect clients to wait for along time during the review appointments. This may discourage the clients from keeping appointment dates therefore, not adhering to treatment.

1.3.2.3 Poor quality of services at the ART clinic: When the ART clinic is not staffed with well trained health personnel such as Nurses and Doctors, the services offered are expected to be poor. This may adversely affect the services offered to the clients attending ART clinic. In addition, if the workers have negative attitude towards works, most of the clients may be discouraged to attend the clinic, therefore, causing interruption in the treatment. According to a study by Carvalho (2004) in Brazil, the quality of health facility had effects on adherence. Poor quality of health care may consequently lead to low adherence to treatment.

1.3.2.4 Lack of confidentiality: Confidentiality is cardinal in the management of the client on ART. Most clients would like to maintain their integrity and human rights by exercising maximum confidentiality. If it is by compromised by health workers during clinic visitation, a client may feel frustrated, thus not adhering to the treatment requirements.

1.3.3 Disease related factors

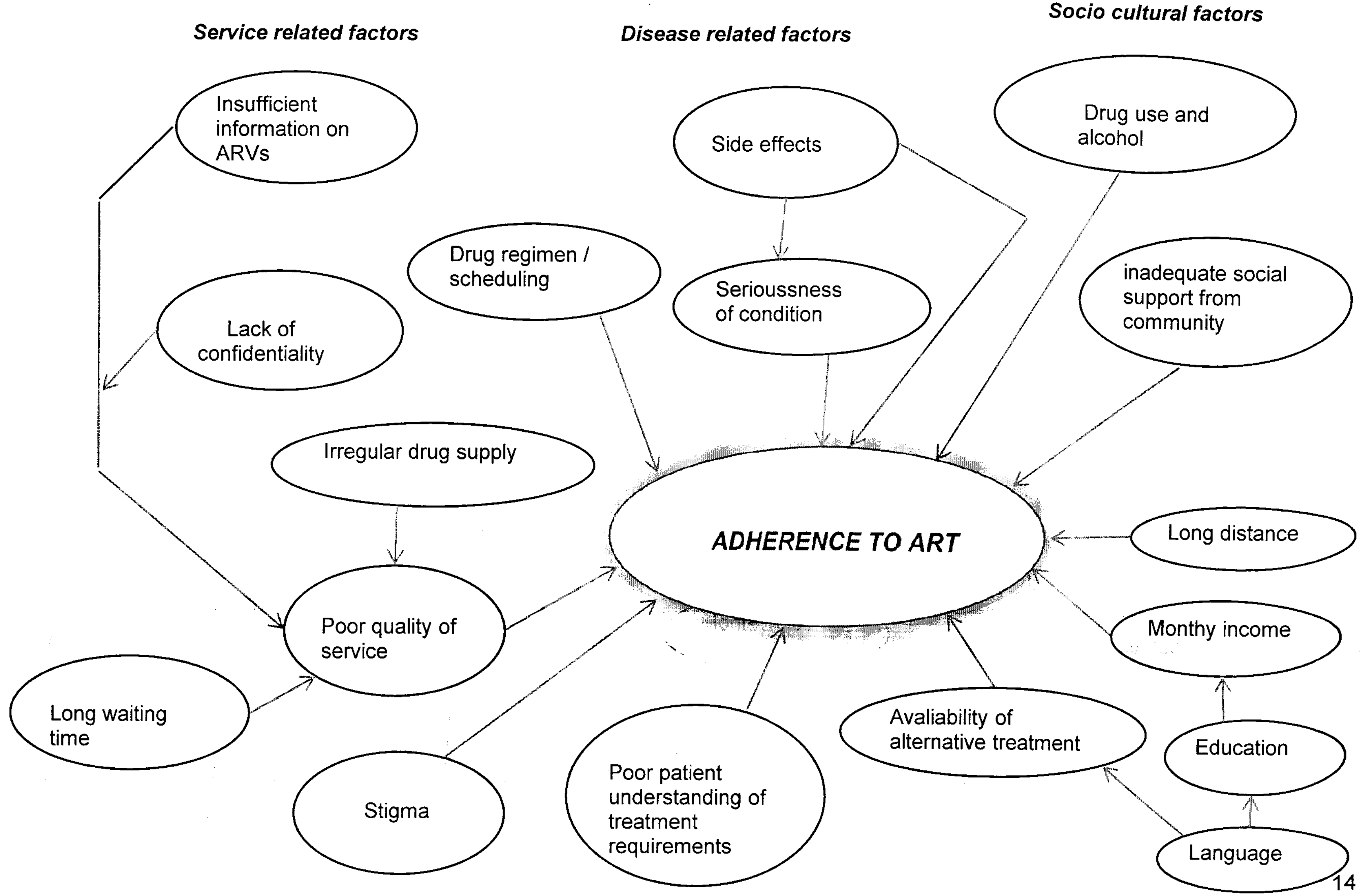
1.3.3.1 Side effects: The inability to tolerate the side effects of HAART leads to sub- optimal adherence to daily antiretroviral therapy, therefore contributing to high levels of ongoing HIV/AIDS from taking drugs mortality (Paterson, 2000). Side effects such as vomiting and taste perversions may discourage clients as prescribed therefore leading to poor adherence.

1.3.3.2 Severity of disease: When the patient is severely ill, may be as a result of the opportunistic infections such as Cryptococcus Meningitis he may become so weak and mentally disoriented that he can forget about drug schedule. Not only that, he can also fail to travel to the ART clinic. This can easily happen in rural areas such as Chikankata where transport is not readily available. These may have negative impact on adherence.

1.3.3.2 Drug regimen: The process of complying with drug regime and schedule is very cardinal in the treatment of any disease. A short dosing interval of drugs may be associated with difficulties in taking drugs. However, a simplified two times daily therapy may be more easily taken than a three times daily therapy. In case of ART, it is strongly believed that when a dose frequency is reduced from three to two times daily, adherence to treatment is likely to improve. In terms of the number of tablets to be taken, a dose containing more tablets is more difficult to take than a dose containing one tablet. According to Bangsberg eta al (2002), three times daily dosing was the strongest predictor of poor adherence.

Figure 1

PROBLEM ANALYSIS : FACTORS INFLUENCING ADHERENCE TO ART



1.4 STUDY JUSTIFICATION

The expansion of ARV therapy is being promoted by providing free ARV drugs country wide. The Zambian Government had a vision to put 100 000 AIDS client on ARV treatment by the end of 2005 (MoH, 2004). This could be achieved with the help of collaborating partners as antiretroviral therapy is so expensive that developing countries such as Zambia cannot achieve on its own.

The possible barrier to successful expansion of ARV programme is poor adherence. This is a great concern because adherence to therapy is a strong predictor of viral load suppression, immune recovery, disease progression, and death (Liu, et al, 2001). In Zambia, adherence problems have been inadequately investigated. This has been echoed by Hadded, et al,. (2001) and Fogarlly (2002),who stated that adherence interventions specifically for HAART had been poorly investigated in Africa. Therefore, it is important to conduct this study.

The results obtained from this study will be used to improve on information, education and communication on adherence to ART. Not only that, it will also be used to make recommendations on adherence to ART to both Chikankata Hospital Management and the National AIDS Council of Zambia.

1.5 OBJECTIVES

1.5.1 GENERAL OBJECTIVE

To identify factors influencing adherence to antiretroviral therapy among clients attending ART clinic at Chikankata hospital.

1.5.2 SPECIFIC OBJECTIVES

1.5.2.1 To assess the level of adherence to ART.

1.5.2.2 To establish whether the client's stage of HIV/AIDS affects adherence to ART.

1.5.2.3 To determine whether ARV drug side effects influence adherence to ART.

1.5.2.4 To identify socio cultural factors that may influence adherence to ART.

1.2.2.5 To make recommendations to the hospital management and National AIDS Council of Zambia.

1.6 HYPOTHESES

1.6.1 Patient's in stage Four (4) of HIV/AIDS will have low adherence to ART

1.6.2 Stigmatization leads to low level of adherence to ART.

1.7 STUDY VARIABLES

INDICATORS AND CUT OFF POINTS

VARIABLES	INDICATORS	CUT OFF POINTS
INDEPENDENT Marital Status	• Married • Not Married	Married Single Divorced Widowed
Level of Education	• High • Medium • Low • None	College/University Secondary School level Primary School Level No formal Education
Monthly Income	• High • Medium • Low • Very Low	K1000,000 and above K750, 000 to K1000,000 K500, 000 to K750,000 Less than K500,000
Distance to ART Clinic	• Very Near • Near • Far • Very Far	Less than1hour walking distance 1-2 hours walking distance 2-4hours walking distance Above 4 hours walking distance
Attitude of Health Workers	• Positive • Negative	Accommodative (Good) Cruel (Bad)
AIDS Condition	• Stage I • Stage II • Stage III • Stage IV	Asymptomatic, normal activity Symptomatic, normal activity Bed ridden,<50%/day during last month Bed ridden,>50%/day during last month
Alcohol Intake	• High • Moderate • Low	Twice per week or more Once per week Once per month
Follow -up Home Visits	• High	At least 2 visitation per month by

	• Low	ART Health worker 1 Visitation per month
Availability of ARV Drugs	• Good • Poor	Always gets drugs from clinic on time Not always getting ARV drugs on time
DEPENDENT VARIABLE Adherence to ARV therapy	• High(adherent) • Low (non-adherent)	Taking more than 90% of the prescribed pills in the past 3 days preceding survey. Taking less than 89% of the prescribed pills in the 3 days preceding survey.

1.9 Definition of Terms

1.9.1 AIDS: Acquired immune Syndrome is the end spectrum of HIV characterized by suppressed immunity.

1.9.2. Alcohol intake: frequency of beer consumption that leads to intoxication.

1.9.3 Antiretroviral Drug Resistance: Virus that is no longer sensitive to one or more of the antiretroviral drug being taken

1.9.4. Antiretroviral Therapies: Treatment with drugs that specifically attack and suppress the HIV replication.

1.9.5 Highly Active Antiretroviral Therapy(HAART):The phrase and abbreviation used for antiretroviral regimens that use effective combination of three or more agents, usually from two or more drug classes in order to achieve the greatest suppression of viral load.

1.9.6 HIV: Human Immune-deficiency Virus: It is the virus that causes HIV infection and AIDS.

CHAPTER TWO: LITERATURE REVIEW

2 .1 INTRODUCTION

Since its introduction in the mid – 1990s, the benefits of antiretroviral therapy for the management of HIV disease have been well established. New antiretroviral regimes have proved to be effective in decreasing HIV plasma viral load, improving CD4 cell counts, and have substantially altered the natural history of HIV infection (Wood, et al 2000). As a result, substantial improvements in HIV-related morbidity and mortality have been documented among persons receiving appropriate antiretroviral regimens, and in many areas of the world, HIV infection is increasingly being viewed as a chronic and manageable illness (Ledergerber et al.,1999).

Nevertheless, the clinical management of HIV disease continues to present major challenges. Treatment of HIV diseases with the regimens that are presently available aims to prevent progression to AIDS or death by reducing plasma HIV RNA to a slow a level for as long as possible. The eradication of HIV from the individual is not considered possible with presently available therapeutic agents. As result, persons undergoing treatment for HIV disease must take a daily regimen of at least three antiretroviral therapy of HAART, and follow a scheduled dosing protocol that often involves coordinating of dietary intake (Ickovics, et al, 2002). To date, a great deal of effort has been expanded in evaluating patient, physicians and health care, and delivery related factors that may limit or enhance daily adherence to antiretroviral therapy.

2 .3 ADHERENCE

Can a sufficient level of adherence be achieved – and how? "If all doses of HAART are taken, almost 100 percent of treatment – patients will achieve an undetectable viral load" (Fischl et al., 2001). It is extremely difficult to take all prescribed doses due to various factors such as socioeconomic and disease related factors. For chronic diseases, only 60 percent of prescribed doses are actually taken by the patients, (Stone, 2001). Generally, adherence posses a big challenge in whatever illness. It should be noted that the success of any treatment largely depends on adherence. If any drug protocol is not followed, the success and benefits of treatment may not be achieved. For HIV the adherence rate is generally higher, but studies have found that on average seldom more than 80 percent of doses have been taken in clinical practice (Stone, 2001). There are myriad of factors that may affect adherence such as the number of tablets taken per dose. During the first years of introduction of antiretroviral therapy, levels of adherence were generally low because the dosages comprised a lot of tablets. Nevertheless, the levels of adherence may have improved during the last one or two years with the current regimens that have fewer pills per day and fewer side effects than the regimen used a few years ago. It is assumed that when a dose comprises fewer pills it is easier to swallow than when it has more tablets. This could be supported by a study on antiretroviral therapy adherence in Brazil (Nemes et al., 2004), where adherence prevalence was 75 percent. This was associated with simple regimens and low number of tablets.

Furthermore, many people find it difficult to take medication and accept side effects when they have no symptoms. It has been proposed that this may be particularly difficult for people in some African cultures (Barford, 2002).

Despite the fact that accessibility to antiretroviral therapy has improved, treatment discontinuation and intermittent use of antiretroviral have also become a growing concern to adherence (Wood, et al., 2003). A study conducted on students in the province of British Columbia, Canada, commonly identified both side effects of antiretroviral therapy and history of injection drug use to be associated with therapy discontinuation (Silverberg, et al., 2001). Therapy discontinuation is highly associated with complications such as drug resistance that may lead to treatment failure.

For instance, among the 1422 treatment patients who initiated HAART in British Columbia, Canada since July 1996, 25 percent picked up medication less than 75 percent of the time, during first year on therapy. Among those who picked up antiretroviral drugs less than 75 percent of the time, there was nearly a three fold increased risk of death compared to those who picked up antiretroviral drugs at least 75 percent of the time (BC Centre for Exc, in HIV/AIDS unpublished data).

2 .3 SOCIO-ECONOMIC FACTORS

Substance abuse remains an important cofactor in the HIV epidemic. Individuals with history of injecting drug use account for 26 percent of AIDS cases in the USA (Center for disease Control and prevention, 1999). Active use of illicit drugs and alcohol are highly prevalent in patients treated for HIV. Substance abuse has been widely reported to negatively affect the use of antiretroviral medication and adherence to therapy (Center for Disease Control and Prevention, 1999). In the study on assessment of effects of drug and alcohol abuse on HIV treatment outcomes in urban clinic in the USA by Lucas et al., (2002), results showed that switching from non use to substance abuse was strongly associated with worsening antiretroviral therapy and adherence. In Brazil, a study by Nemes et al, (2004) also revealed that injecting drug use was associated with high chance of non-adherence. From these studies it should be noted that drug abuse may be considered as one of the main factors that can hinder adherence to antiretroviral therapy. It is therefore important to consider strategies of addressing substance abuse before setting up antiretroviral clinic.

In terms of the education level, a study on antiretroviral therapy adherence in Brazil (Nemes, Carvalho and Souza, 2004) revealed that a very low education level was a predictor of non adherence. In Brazil, education level has been considered in several studies as the best indicator of social status. The patient with fewer years of education were more likely to be non-adherent than those with more years of formal

education (Carvalho, 2004). This may be because educated clients are in a better position to read and understand instructions clearly. They also tend to follow medication instructions more clearly than the clients with no or little education. In addition, the spread of epidemics has shown generally an increasing incidence in groups with low education (Epidemia de AIDS no Brasil, 1998). Although several studies from developed countries have not observed an association between social status and adherence, results from poorer countries seem
to be different as supported by earlier Brazilian studies (Nemes, 2000; Kalichman, 2000). Despite free access to antiretroviral drugs, other economic barriers can be a threat to adherence. The issues of low education and social status may be strongly believed to affect adherence negatively and should be taken into consideration before scaling up ART services.

In South Africa a study by Orrell and Bangsberg (2003) on "barriers to successful antiretroviral therapy in South Africa." revealed that speaking the same language as site staff was beneficial to adherence. On the other hand, if there were differences in language spoken between the staff and
clients, giving treatment instructions to clients on antiretroviral therapy was proved difficult due to communication break down.

Contrary to the studies conducted in Brazil, a study by Orrell (2003) on the low social status indicated that poor patients in Sub Saharan Africa could achieve high rates of adherence and viral suppression. However, in Botswana, a study on barriers to antiretroviral adherence for HIV/AIDS patients by Sheri, Weiser et al (2003) identified financial constraints 44 percent, stigma 15 percent, migration 10 percent, and side effects 9 percent as principal barrier to adherence.

Non availability of adequate food is also another constraint to adherence as some antiretroviral drugs are required to be taken together with food. This may be a concern in a Zambian rural setting where food is scarce. Migration is also a constraint to adherence as it involves traveling from one place to another. Certain occupations such as truck driving are likely to attribute to missing review dates and doses due to the fact that most of the time drivers are in transit. In addition, stigma is widely believed to be a barrier to adherence in that the clients are afraid of being noticed that they are on ART for fear of being labeled as promiscuous.

In a study conducted in Uganda by Stone (2001) on adherence, 399 patients who were able to pay for their drugs were treated at the highest level of medical care. In 221 of these cases, data on adherence was collected. In 88 percent of the cases, the patients told their physician that they took their medication as "about prescribed" some 4 percent of patient said they took their medication "not at all" and 8% took medication as, "less often than prescribed". However, only 50 percent of the patients on HAART achieved viral load below 400copies/ml. Similarly, in Senegal, 58 patients, who were considered able to adhere, and who were able to pay something for their drugs, were treated (Laurent et al, 2002). Eighty-eight percent of these patients told their physicians that they had taken more than 80 percent of their medications. After 18 months, 60 percent of the patients had a viral load below 500cp/ml. These differences between high levels of adherence and low viral loads confirm the general pattern of patients over estimating of their adherence.

Notwithstanding the economic constraints, a study on "access and adherence to antiretroviral therapy among marginalized population in developed world" (Wood, et al., 2003) demonstrated that a substantial proportion of homeless and marginally housed individuals managed high adherence to antiretroviral therapy Including Protease Inhibitors (PIs) and that resistance to PIs were among those that were non-adherent (Orrell, 2002). These results are in support of the ethical principle which is against withholding HAART from patients who are presumed to be poor.

Apart from economic constraints, a study by Gifford et al, (2000) found that organizational difficulties (e.g., too busy, forgot, away from home, change in routine) and other emotional issues were the most common reasons given for missed doses. It should be noted that a large proportion of the patients included in the study were men (86%) and men are generally known to be heavily involved in social activities that may disrupt their drug regimens. Several other studies have been conducted on barriers to treatment adherence among HIV-infected women. Among 520 women, depressive symptoms, adverse life events, and HIV-related stress were significantly associated with non-adherence (Moore et al, 2000). In one study of 895 women, those with poor adherence were more likely to have used intravenous drugs, to smoke, and to have a lower mean quality of life (Wilson et al., 2000).This shows the negative impact of drug abuse on adherence among clients on ART. In another survey, more than 200 women completed anonymous questionnaires; the majority stated that care giving commitments prevented them from adhering to their own treatment regimens (Lang and Bernstein et al, 2000).

In Botswana, a study by Weiser and Sheri, (2003) was conducted on ARV adherence for patient living with AIDS. It was revealed that ARV adherence rates were comparable with those seen in developed countries. As elsewhere, health care providers in Botswana were often unable to identify which patients were adherent to ARV regimens. The cost of ARV therapy was the most significant barrier to adherence.

Furthermore, other barriers to antiretroviral therapy adherence may range from geographical to cultural barriers. Geographic location may influence access to HAART, with more accessible locations possibly being associated with better access (Mc Kinney and Marconi, 2002). This was consistent with other studies that had found missing clinic to be a strong predictor of adherence and virological failure (Anderen , 2002).

In Zambia, adherence to long term treatment presents many challenges to people living with HIV/AIDS, particularly in poor environments. This is because in poor settings clients may not have easy access to health facilities and may have inadequate information on adherence to antiretroviral therapy. Adherence to Tuberculosis Preventive Therapy (TBPT), has been used as a model for ARVs in Zambia (Zambart Project, 2002). TBPT is advocated for individuals living with HIV in high TB incidences areas. Implementation of this has been difficult to achieve and adherence to treatment is poor. In an operational study of 1147 individuals commenced on TDPT in Lusaka, adherence was only 23.5 percent despite positive feedback from both clients and counselors. A study conducted on TB Preventive Treatment disclosed that in poor community there were many obstacles to adherence. Social problems such as hunger might have also played an important role in non adherence. Non- disclosure of HIV status and stigma affected adherence to TBPT but might also had important implication for HIV control and ARVs adherence (Shasulwe, et al., 2003).

However, the expansion of ARV drug treatment programme in Lusaka, Zambia, has produced successful results over the last two years (JAMA 2006).This was revealed after examining the progress of people receiving HIV/AIDS care at 18 clinics through a Zambian Governmental programme(Attman, 2006).

2 .4 DISEASE-DRUG RELATED FACTORS

In the "AIDS" publication (Cheevers, 2000), it was reported that simplified dosing frequency was beneficial to antiretroviral therapy adherence. However, three times daily therapy was found to be the strongest predictor for both poor adherence and virological failure. Food restrictions on medication taking and absolute tablet count did not impact on adherence .Several other studies such as the ones conducted in South Africa on adherence by Orell (2004), have also shown that the best improvement in adherence comes with the reduction of dosing frequency from three to two times a day.

Increasing age was found to correlate with a higher likelihood of remaining on therapy for 48 weeks, as well as improved adherence and virological outcomes. This was found to be particularly relevant given the rapid increase in the HIV seroprevelence in young (19-25 year- old) South Africans. In the same study, clinical stage of HIV at commencement of therapy did not predict adherence (Harries and Nyangulu et al., 2001). Individuals with or without AIDS had the same adherence. In the same edition of AIDS publication, Liechty and Bangsberg (2003) argued that the anticipated need to deliver ART as directly observed therapy in developing countries might be premature.

Many clients on ART experience side effects .Despite the great success of HAART in improving the prognosis of treated patients, considerable problems persist. Among Swiss patients, 47 percent presented clinical adverse events and 27 percent had laboratory adverse advents probably or definitely attributed to antiretroviral treatment (Fellay et al., 2001). Metabolic changes are among the most common and worrisome side effects. Carr and colleagues (1998) originally described a syndrome of peripheral lopodystrophy (fat wasting of the face, limbs and upper trunk), hyperlipididaemia and insulin resistance in 64 percent of patients receiving potent HIV protease inhibitor.

In addition to side effects, one major concern is loss of virological control in some patients. Persistent viral replication during insufficient treatment may lead to progression of clinical disease and will often also lead to development of HIV strains that resistant to the antiviral drugs with which the patient is being treated. Low adherence may lead to low concentration of drugs, resulting in treatment failure and development of resistance.

2 .5 SERVICE- RELATED FACTORS.

The study on antiretroviral therapy in Brazil by Maria and Carvalho, (2004) revealed that the health services rated the worst in terms of quality of care showed a chance of non-adherence 20 times more than the health services classified in the level of best quality care. From this finding, it should be suggested that good quality health services are essential in improving the adherence levels in patients on ARV therapy.

Another study in Uganda by Wood et al. (2003) on expanding access to ART among marginalized population in the developed world, reviewed that physician-patient relationships affected the antiretroviral therapy. Not only did the physician's reluctance to prescribe antiretroviral was shown to be a barrier to access, it was important to note that certain physician- related characteristics had also been strongly associated with better access, adherence, and retention in treatment. For instance, satisfaction with one's physician has been associated with higher levels of adherence and willingness to initiate HAART has been associated with patient trust in their physician (Altice, 2001). Health workers' attitude in health institution may affect adherence in several ways. If the attitude is good, it is believed that adherence to ART will be better compared to the situation where the attitude of health workers is poor. In addition, among injection drug users being treated by a physician with greater experience treating HIV disease was associated with accessing antiretroviral therapy. These findings demonstrate both that the physician –patient relationship is critical, and that care for population at risk of poor access is best delivered by highly experienced physician, especially considering that patient at risk of poor access may face additional challenge such opportunistic infections, mental illness and addiction.

2 .6 Conclusion

Adherence to antiretroviral therapy has emerged as a critical predictor of HIV treatment success. The level of adherence needed to successfully treat HIV appears to be 100 percent. There are a myriad of factors that may influence adherence such as socio-economic, disease service related factors.

A lot of work has been done in Industrialized Countries in identifying these factors that lead to low level of adherence, however, in Sub Saharan Countries such as Zambia very little work has been done specifically on adherence to antiretroviral treatment. It is envisaged that this study will identify the factors that lead to low level of adherence and these may contribute to solve the problems of low adherence.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 INTRODUCTION

The study assessed the level of adherence to antiretroviral therapy at Chikankata ART clinic. It also identified the factors affecting adherence.

3. 2 STUDY DESIGN

A Descriptive Cross -Sectional Study was used to study the levels of adherence among clients attending ART clinic at Chikankata hospital. Its aim focused on a systematic collection and presentation of data to give an insight of the problem. The design quantified the distribution of variables of interest in a study population at one point of time. This was the suitable design at Chikankata hospital because of limited resources such as time, human and other logistics.

3 .3 STUDY SITE

The study was conducted at Chikankata Mission Hospital. It is located in the Southern Province of Zambia and its 130 km south of Lusaka and 31km from the main road. The hospital is First Level providing both preventive and curative services to a catchment's population of 60 000 people. The hospital is in the rural area surrounded by villages and the main economic activity is peasant farming. The hospital runs an ART clinic and by January 2006 had 708 clients on antiretroviral treatment. The prevalence rate of HIV in Mazabuka is 17 percent (CSO, 2002) .The site was chosen because it had a good number of clients who were *attending* ART *Clinic. In addition there was no study specifically conducted on adherence to* antiretroviral treatment.

3.4 Study Population

The target population consisted of the clients on antiretroviral treatment in Chikankata catchment's area who were attending ART clinic. The clients were being attended to at the Clinic on monthly basis.

3. 5 SAMPLE SIZE DETERMINATION

The sample size was calculated using the following formula.

Formula: $N = \frac{Z^2 P Q}{d^2}$

N = sample size

P= prevalence (60%)

Q = 100—p

D = Margin of error +or—5%

Z = value for 95% interval =1.96

$$N = \frac{1.96 * 1.96 * 60 * (100-60)}{5 * 5}$$

$$= \frac{3.84 * 60(40)}{25}$$

n=368 /0.9 = **408**

3.6 SAMPLE SELECTION

The study unit was selected using a systematic random sampling technique. It is a method in which every **kth** client was selected and **k** was determined by dividing the number of clients in the sampling frame that is, clients on ART register by the sample size of 408 clients. The following was the formula:

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

K= Sampling Interval.

$= \frac{850}{402} = 2.1 = 2.$ Every **2nd** client was taken as a respondent.

The first client was selected using rotary.

3 .6 .0 SELECTION CRITERIA

3 .6 .1 INCLUSION CRITERIA

Clients on antiretroviral therapy attending the ART clinic for more than two months and were willing to participate were included in the study.

3.6.2 EXCLUSION CRITERIA

The exclusion criteria involved the critically ill clients because they might not have had mental and physical capacity to be interviewed. In addition, clients who were under the age of 18 years were not included because they were not legally capable of giving consent. Clients on ART for less than two (2) months were also excluded because it was going to be difficult to determine their consistency in taking drugs.

4.1 DATA COLLECTION TOOL

A structured interview schedule (appendix 2) was used to collect data from the clients. It consisted of 34 questions and four different sections. Section one comprised demographic characteristics such as age, sex, denomination, marital status and level of education. These variables are important in order to understand the characteristics of the study. The second section elicited information on socio-economic status of the clients. All the questions asked were focused on the economic situation of the clients. In the third section the variable measured were related to the services provided by the clinic. In section four, the variable measured elicited information on the client's condition in relation to AIDS. Questions were translated into local languages during the interview for the respondents who did not speak English.

4.2 DATA COLLECTION TECHNIQUES.

Data collection technique is the process of gathering information needed to address a research problem (Polit and Hungler, 1997). For this study, interviews were conducted using a structured schedule to collect data. Data was collected from January to May 2007 and data was obtained from about 8 clients on each clinic day.

Before the interview, the research assistant introduced herself to the client and verbal permission was sought. The purpose of the study was explained carefully to the client and they were assured of confidentiality. Afterwards, they were requested to sign a consent form. This technique is favoured because it promotes good rapport between the researcher and the clients, therefore increasing the response rate.

Data collection was conducted at the ART clinic in the closed room for privacy. This was done by three health personnel who were trained as research assistants.

4.2.1 VALIDITY

Validity refers to the degree to which an instrument measures what is intended to measure (Polit and Hungler, 1997). To ensure the quality of data collection instrument, it was important to establish its validity and reliability. The instrument consists of question on each variable to be measured. In order to achieve validity of the instrument, the questions in the structured interview schedule were checked by experts working in the ART clinic to ensure that relevant issues concerning adherence were captured.

4.2.2 RELIABILITY

Reliability relates to the instruments' capacity to provide reproducible measurements (Dawson and Trap, 1997). Reliability of the instrument was measured by pre testing. During the pre testing phase, respondents were interviewed in order to identify ambiguity of questions. During the pre testing phase the respondents were asked to identify ambiguity of questions and problems with comprehensions. In addition open ended questions that were included in the interview schedule provided the opportunity for respondents to add their own ideas in their own words. This helped to generate more critical response than pre coded questions.

5.1 ADHERENCE MEASURE AND DEFINITION.

A self – report method was used to assess adherence because it was less complex than other methods. Clients were asked to report the number and frequency of antiretroviral tablets taken in the past three days. This was because clients could easily remember the tablets taken within the period of 3 days. According to Names et al (2004), adherence means client reporting taking more than 95 percent of their prescribed tablets in the past 3 days. In this study, adherence means taking more than 90 percent of the prescribed tablets in the 3 days preceding the study. Adherence to ART was calculated using the formula: (sum of tablets prescribed over 3 days - sum of tablets missed over 3 days preceding the study) / (total tablets prescribed over 3 days preceding study).

.1 ETHICAL CONSIDERATIONS

Ethical clearance was sought from the University of Zambia Research Ethics Committee. Permission to conduct a research was obtained from the Chikankata Hospital Management. The study objectives were explained to clients eligible to participate in the study before they signed (or thumb print for those who were not able to write) a voluntary informed consent. For anonymity, there were no names written on the interview schedule. Confidentiality and privacy were ensured by interviewing one client at a time in a separate closed room. Clients were not forced to sign the consent and those unwilling were left out. Those who participated were not remunerated in any way.

.1 PRE-TEST

Pretest was conducted at Mazabuka District Hospital. This hospital was chosen because it had a good number of clients who were attending ART clinic. Pre test was essential to test the effectiveness of the data collection tool. It ensured that the questions were clear and concise as well as to refine the instruments in order to yield reliable and valid data. The rephrasing of some questions were made to make them clear. Interview schedule was conducted on 20 clients. The clients were selected using the systematic sampling technique. Every third client was interviewed.

.2 LIMITATION OF THE STUDY

The main limitation of the study was to reach the required number of respondents especially at Chikankata ART Clinic. The required number using the prevalence rate of 60 percent was 408.Some clients transferred from the clinic thus making it difficult to follow them.

The second limitation was limited data on adherence to ART locally in Zambia. No scientific study has been conducted to date.

CHAPTER FOUR: DATA ANALYSIS AND PRESENTATION OF FINDINGS

4.1 INTRODUCTION

A total of 322 clients were interviewed. The findings of the study have been presented using tables and graphs. The order of the presentation is as follows: Demographic characteristics; Socio-economic; Service related and Disease related characteristics.

4.2 DATA PROCESSING AND ANALYSIS

The data was entered and analyzed with the use of Epi-info statistical software. Raw data was first edited for completeness and accuracy. The statistical data was presented in table form, in an explanatory manner with all percentages presented. A P-value of 0.05 or less was considered significant. Regression analysis was conducted in order to adjust for confounding factors.

4.3 DATA PRESENTATION

Table 1a: Social demographic data

Age(years)	Frequency	Percentage
18-29	44	13.6
30-39	152	47
40-49	98	30.4
50 & above	28	9
Total	**322**	**100**
Sex		
Male	136	44
Female	186	56
Total	**322**	**100**
Marital Status	51	15.8
Single	186	57.8
Married	34	10.6
Windowed	50	15.5
Total	**322**	**100**
Denomination		
Salvation Army	188	58.6
SDA	74	23
New Apostolic	18	5.6
Catholics	14	2.2
UCZ	7	4.7
Others	15	4.7
None	6	15
Total	**322**	**100**

Table 1a: The study showed that the majority 47% of the clients who were on ART were in the age group of 30 to 39. Out of these 56% of the client were females and 57.8% were single. With regards to religious denomination affiliation 58.6% belonged to Salvation Army.

Table 1b: Social Demographic Data

Employment status		
Unemployment	211	65.5
Formally employed	111	34.5
Self employed	0	0
Total	**322**	**100**
Distance Travelled		
Less than 1 hour	48	14.9
1-2 hours	143	44.4
More than 2-4hours	71	22
More than 4hours	60	18
Total	322	**100**
Mode of transport		
Walking	215	67
Ox-cart	20	65
Bicycle	21	6.5
Car/bus	66	20.4
Total	322	100
Level of income		
750 & above	42	13
K500 000-749 000	21	6.5
K250 000-499 000	19	6
Less than K250 000	240	74.5
Total	**322**	**100**

Table 1b: 52 % of clients had attained primary educational level, 65.5% of the clients were unemployed. On the distance covered when going to clinic, 44.4% spent 1-2 hours traveling and the majority 67% traveled on foot. The majority of the clients 74.5% earned less than K250 000

RELATIONSHIP BETWEEN VARIABLES

Table 2: Relationship of age of respondent with adherence to ART.(n= 322)

Age	Adherence	Non adherence	Total
18-29	32 (9.9%)	9 (2.8%)	41(12.7%)
30-39	123 (30.2%)	29 (17%)	152(47.2%)
40-49	82 (25.4%)	16 (5%)	98(30.4%)
50 & above	29 (8.9%)	3 (o.7%)	31(9.6%)
Total	**266 (82.6%)**	**57 (17.4%)**	**322(100%)**

47.2 percent of the respondents were in the age group 30-39 and (30.2%) were adherent.

(p value 0.195)

Table 3: Relationship between sex of respondents and adherence to ART.(n=322)

Response	Male	Female	Total
Adherence	109(33.9%)	156(48.4%)	265(82.3%)
Non adherence	27 (8.4%)	30(9.3%)	57(17.7%)
Total	**136(42.2%)**	**186(57.8%)**	**322(100%)**

Majority of respondents (57.8%) were females and (48.4%) were adherent (p value 0.803)

Table 4: Relationship between marital status and adherence to ART.(n=322)

Marital Status	Adherence	Non adherence	Total
Single	41(12.1%)	10(2.9%)	**51(15.8%)**
Married	153(46.9%)	33(10.9%)	**186(57.8%)**
Divorced	32(9.8%)	6(0.8%)	**34 (10.6%)**
Widowed	44(13.5%)	7(2.2%)	**50(15.5%)**
Unknown	**0**	**1 (0.3)**	**1(0.3%)**
Total	**266(82.6%)**	**56(17.4%)**	**322(100%)**

Majority of the respondents (57.8%) were married and (46.9%) were adherent to ART. (p value 0.855)

Table 5: Determining the effect of educational level of client on adherence to ART.(n =322)

Educational Level	Adherence	Non adherence	TOTAL
No education	38(11.8%)	5(1.6%)	43(13%)
Primary	139(43.1%)	31(9.6%)	170(53%)
Secondary	71(22%)	15(4.7%)	86(27%)
College/University	18(5.5%)	5(1.5%)	22(6.8%)
Unknown	0	1(0.3%)	1(0.3%)
Total	**266(82.6%)**	**57(17.4%)**	**322(100%)**

Majority of Respondents (53%) had primary education and (43.1%) were adherent.(p value 0.934)

Table 6: The relationship between employment status and adherence to ART.(n=322)

Employment status	Adherence	Non adherence	Total
Unemployment	177(54.9%)	34(10.6%)	211(65.5%)
Formal employment	88(27.4%)	22(7.1%)	111(34.5%)
Total	**265 (82.3%)**	**57(17.7%)**	**322(100)**

Majority of respondents (65.5%) were unemployed and (54.9%) were adherent to ART. (p value 0.396)

Table7: Relationship between the duration a respondent is away from home and adherence to ART.(n=322)

Duration of absence from home	Adherence	Non adherence	Total
Several hours	28(8.7%)	195(60.6%)	**223(69%)**
Several days	0	39(11.2%)	**39(11.2%)**
Several weeks	0	4(1.2%)	**4(1.2%)**
Several months	**9(2.8%)**	**47(14.6%)**	**56(17.4%)**
Total	**37(11.5%)**	**285(88.5%)**	**322(100%)**

Majority of respondents (69%) were only away from home for several hours and (60%) were not adherent. (p value = 0.700)

Table 8: Relationship between distance from home and adherence to ART.(n=322)

Distance between home & ART clinic	Adherence	Non adherence	Total
Less than 1 hour	39(12.1%)	9(2.8%)	**48(14.9%)**
1-2 hrs walking time	116(36%)	27(8.4%)	**143(44.4%)**
>2 hrs walking time	60(18.6%)	11(3.4%)	**71(22%)**
4 hrs & above	49(14.7%)	11(3.3%)	**60(18%)**
Total	**264(82%)**	**57(18%)**	**322(100)**

44.4% of the respondants spent 1-2hours travelling to clinic and (36%) of them were adherent to ART. (p value 0.819)

Table 9: Mode of transport in relation to adherence to ART.(n=322)

Mode of transport	Adherence	Non adherence	Total
Walking	185(58%)	33(9%)	215(67%)
Ox-cart	15(4.5%)	5(2.5%)	20(65%)
Bicycle	18(6%)	3(1%)	21(6.5%)
Car/bus	51(15.5%)	15(4.5%)	66(20.4%)
Total	**266(82.5%)**	**57(17.5%)**	**322(100%)**

Majority of respondents (67%) travelled by walking to clinic and (58%) were adherent to ART (p value = 0.068).

Table 10: Relationship between levels of income and adherence to ART.(n=322)

Level of income	Adherence	Non adherence	Total
K1000,000 & above	31(9.6%)	11(3.4%)	42(13%)
K750,000- K999,000	16(5%)	5(1.5%)	21(6.5%)
K500,000- K744,000	13(4%)	6(2%)	19(6%)
Less than K499,000	201(62%)	31(12.5%)	236(73.3%)
Unknown	0	4(1.2%)	4(1.2%)
Total	**234(80%)**	**57(20%)**	**322(100%)**

Majority of respondents (73.3%) had monthly income of less than K499 000 and (62%) were adherent to ART. (p value = 0.383)

Table 11: Frequency of alcohol intake in relation to adherence to ART.(n=322)

Frequency of alcohol intake	Adherence	Non adherence	Total
Twice per week	8(18.4)	2(4.6%)	**10(23%)**
Once per week	9(20.9)	3(7%)	**12(27.9%)**
Once per month	16(37.2)	5(10.8%)	**21(48.8%)**
Total	**33(76.7%)**	**10(23.3%)**	**43(100%)**

Most of respondents (48%) consumed alcohol once per week and (37.2%) were adherent to ART.
(p value = 0.050)

Table 12: Assessing whether reminding respondent by a relative has effect on adherence.(n=322)

Effect	No	Yes	Total
Adherence	1(0. 5%)	263(81.6%)	263(82%)
Non Adherence	5(1.5%)	53(10.4%)	57(18%)
Total	**6(2%)**	**316(98%)**	**322(100%)**

Majority of respondent (98%) relative to remind them and (81.6%) were adherent to ART.
(p value = 0.0726)

Table 13: Relationship between the respondent's feelings and adherence to ART. (n =322)

Effect	Bad	Good	Total
Adherence	47(15%)	218(67%)	**265(82%)**
Non adherence	17(5%)	40(13%)	**57(18%)**
Total	**64(20%)**	**258(80%)**	**322(100%)**

Majority of respondents (80%) felt bad when somebody noticed that they were on ART and (13%) were non adherent to ART. (p value = 0.035)

Table 14: Relationship between client follow- up and adherence to ART.(n=322)

Effects of follow-up on client	Yes	No	Total
Adherence	115(36%)	150(46%)	265(82.2%)
Non adherence	26(8%)	31(10%)	57(18%)
Total	**141(44%)**	**181(66%)**	**322(100%)**

Majority of respondents (66%) did not have follow-ups and (10%) of them were not adherent.
(p value = 0.402)

Table 15: Relationship between the amount of waiting time at clinic and adherence to ART.(n=322)

Time spent at ART clinic	Adherence	Non adherence	Total
Less than 1 hour	7(2%)	6(2%)	13(4%)
1-2hours	100(31%)	18(5.5%)	118(36.5%)
2-3 hours	92(28%)	21(7%)	113(35%)
3-4 hours	38(11.2%)	9(3%)	47(14.5%)
4 hours and above	26(8%)	5(2%)	31(10%)
Total	**263(82%)**	**59(18%)**	**322(100%)**

Most of respondents (36%) spent between 1-2 hours attending ART clinic and (31%) were adherent

(p value 0.422).

Table 16: Relationship between information received on ART and adherence to ART.(n=322)

Response	No	Yes	Total
Adherence	59(18%)	206(64%)	**265(82.3%)**
Non adherence	11(3.4%)	46(14.3%)	**57(17.7%)**
Total	**70(21.7%)**	**252(78.3%)**	**322(100%)**

Majority of respondents 79.3% had good response to treatment and 64% were adherent to ART.

Table 17: Relationship between the amount of information received and adherence to ART(n=322)

Response	Adherence	Non adherence	Total
Adequate	163(79.9%)	41(20%)	204(80.9%)
Fair	24(11.9%)	12(2.4%)	36(14.3%)
Not adequate	8(3.8%)	4(.2%)	12(4.8%)
Total	**195(77.4%)**	**57(22.6%)**	**252(100%)**

Majority of respondents (80.9%) had received adequate information and (99.9%) were adherent to ART.

(p value = 0.006)

Table18: Relationship between the supply of ARV drugs and adherence to ART.(n=322)

Effects of ARV supply	Adequate	Inadequate	Total
Adherence	255(79.1%)	5(1.6%)	**260(80.7%)**
Non Adherence	58(18.1%)	3(1.2%)	**62(19.3%)**
Total	**313(97.2%)**	**9(2.8%)**	**322(100%)**

Majority of respondents (97.2%) had adequate drug and (79.1%) were adherent to ART.

(p value 0.173)

Table 19: Health workers' attitude in relationship with adherence to ART .(n=322)

Effects of health workers attitude	Positive	Negative	Total
Adherence	228(71.1%)	36(11.2%)	**264(82.3%)**
Non adherence	46(13.6%)	12(4.1%)	**57(17.7%)**
Total	**274(85.1%)**	**48(14.9%)**	**322(100%)**

Majority of respondents (85.1%) considered health workers attitude as positive and (71.1%) were adherent to ART. (p value = 0.140)

Table 20: Effects of reminding a client on ART and adherence to ART. (n=322)

Effects of reminding client on ARV	Yes	No	Total
Adherence	181(56%)	84(26.1%)	265(82.3%)
Non adherence	34(10.6%)	23(7.1%)	57(17.7%)
Total	**215(66.8%)**	**107(32.2%)**	**322(100%)**

Majority of relationship (66.8%) were being reminded to take drugs and (56%) were adherent

(p value 0.001).

Table 21: Number of doses taken per day in relation to adherence to ART.(n=322)

Number of dose of ARVs	Adherence	Non adherence	Total
Once	9(2.8%)	2(0.6%)	11(3.4%)
Twice	253(78.5%)	54(16.8%)	307(95.5%)
Thrice	39(0.9%)	1(0.3%)	4(1.2%)
Total	**265(82.6%)**	**57(17.1%)**	**322(100%)**

Majority (95.5%) of respondents took two doses per day and (78.5%) were adherent to treatment

(p value = 0.016).

Table 22: Client's response to ART in relation to adherence to ART treatment.(n=322)

Response	Adherence	Non adherence	Total
Good	227(70.5%)	41(12.7%)	268(83.2%)
Fair	34(10.6%)	13(4.0%)	47(14.6%)
Poor	4(1.3%)	3(0.9%)	7(2.2%)
Total	**265(82.4%)**	**57(17.6%)**	**322(100%)**

Majority of respondents (83.2%) had good response to treatment and (70.5%) were adherent to ART

(p value = 0.028)

Table 23: ART side effects in relation to ART adherence.(n=322)

Level	Yes	No	Total
Adherence	108(33.5%)	157(48.8%)	265(83.3%)
Non adherence	25(7.8%)	32(10%)	57(17.8)
Total	**133(41.3%)**	**189(58.8%)**	**322(100%)**

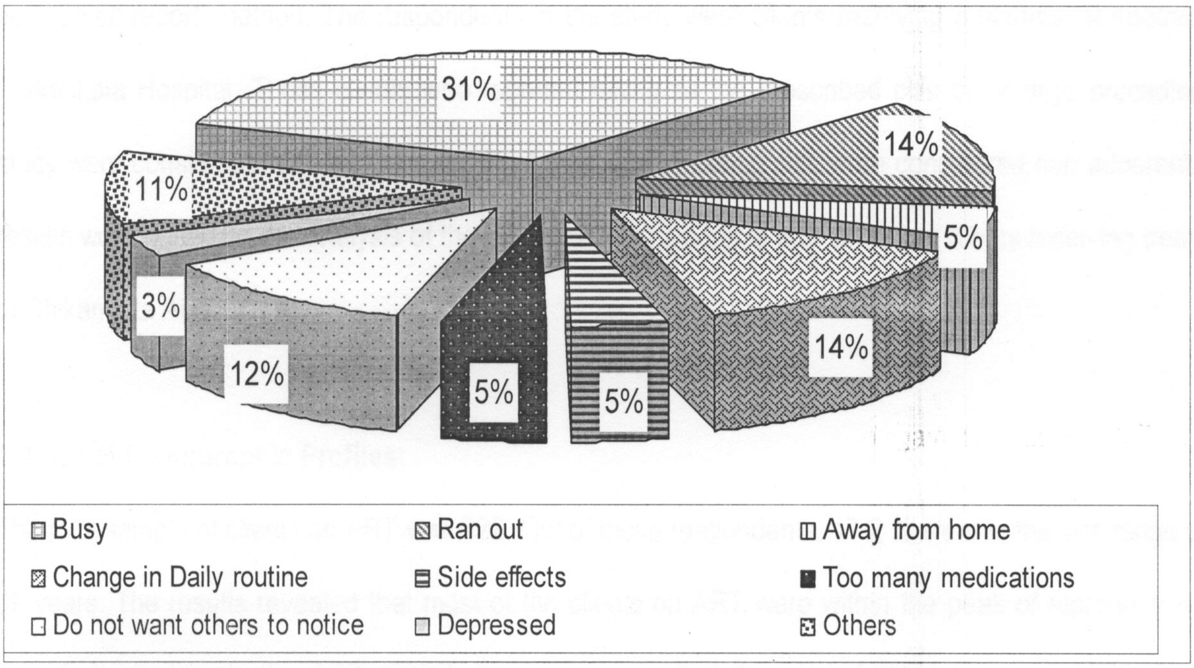
Majority of respondents (58 8%) had no side effects and (48 .8%) were adherent to ART. (p value = 0.748)

Table 24: Clients' stage of HIV/AIDS in relation to adherence to ART.(n=322)

HIV STAGE	Adherence	Non adherence	Total
Stage 1	159(44.4%)	40(12.4%)	**199(61.8%)**
Stage 2	90(28%0	10(3.1%)	**100(31.1%)**
Stage 3	16(4.9%)	7(2.2%)	**23(7.1%)**
Total	**265(77.3%)**	**57(17.7%)**	**322(100)**

Majority of respondents (61.8%) were in clinical stage one and (44.4%) were adherent to ART (p value = 0.131).

Figure 3: Showing the reasons respondents on antiretroviral treatment gave for missing pills



Out of 58(82%) of the respondents who were not adherent to ART,31% of gave reason for not adhering as being busy;14% of running out of drugs;14% change in Daily Routines;12% Do not want others to notice;

CHAPTER FIVE: DISCUSSION OF FINDINGS

5.1 Introduction:

The study sought to assess the level of adherence to antiretroviral treatment. The method used to assess was a 'self-report' method. The respondents in the study were clients receiving antiretroviral treatment at Chikankata Hospital. Those clients who reported taking all the prescribed pills three days preceding the study were considered adherent and those who reported missing pills were considered non adherent. The results were based on the analysis of the response from a sample size of 322 of clients receiving treatment at Chikankata ART Clinic.

5.2 Social-Demographic Profiles:

The total sample of clients on ART was 322. Out of these respondents, 47.2 % were in the age range of 30-39 years. The results revealed that most of the clients on ART were within the peak of reproductive age. This finding supports the CSO (2003) data that shows that the rate of HIV infection is highest among people of 30 to 39 years. This may be attributed to the fact that as people are in early and late twenties they become sexually active. This study has shown no association between age of the respondents with adherence to ART. The results of this study do not support the findings by Gordillo eta al., (2000) who found that adherence to antiretroviral therapy was better among clients aged 32 to 35 years.

Most of the respondents (57.8%) were females and this was in agreement with the regional picture which shows that women are more infected with HIV than men (WHO, 2002). Out of 57.8 % of female respondents, 48.4% were adherent and 9.3% were non adherent to ART. Similarly, out of 42.2% male respondents, 33.9% were adherent and 8.4% were non adherent. The findings showed that sex had no influence on adherence to ART. The results were statistically insignificant.

In addition, 57.8% of the respondents were married. This may be the fact that that married people traditionally are considered to be more responsible of their well-being than the unmarried. In the rural setting of Chikankata married women tend to take a leading role in domestic activities. As a result, women are more afraid of becoming unproductive economically thus seeking treatment early. Out of the married respondents, 46.9 % of them were adherent and the remaining 10.9 % were non adherent. The single respondents were 15.8% and out them 12.1% were adherent and the remaining 2.9% were non adherent to ART. On the other hand, 10.6 % of the participants were divorced, and out of them 9.8% were adherent and the other 0.6% were non adherent. The findings revealed that marital status had no effects on adherence to ART.

With regards to level of education, the study shows that the majority of respondents (53 %) had attained primary education level and out of them, 43.1% adherent and 9.6% were non adherent. In addition to this, 27% of the respondents had reached secondary school level and out of them, 28% were found to be adherent and 4.7% to be non adherent to ART. Those without education were 13%, and out of these, 11.8% were found to be adherent and 51.6% were non adherent. From the above findings, it may be suggested that the level of education had no influence on adherence. The findings are statistically insignificant (P value 0.9) and are not in support of other studies that reviewed that a very low education level was a predictor of non adherence (Nemes, 2004). According to the UPND (2007), education is believed to give a slight advantage over those clients with no formal education when it comes to reading information on the importance of adherence. This may contribute to yielding positive results on adherence.

In Chikankata catchment's area the majority of the participants 53 % had attained Primary Education Level. This may be in support of the current low level of literacy rate of 68% in the country (UNDP 2007).

Furthermore, most of the respondents, 65.5% were unemployed; this again is in support with the current high level of unemployment in the country. In the rural areas of the country employment opportunities are rare to come by because there are no industries which can provide employment. The result shows that the majority of the respondents, 74.5% had a monthly income of less than K250 000. This is in agreement with data which shows that 68 % of Zambian population lived below K111 747 for their daily needs (CSO, 2004).

The findings reveal that 65.5% of the respondents were unemployed, and out of these 54.9 % respondents were found to be adherent and the remaining 10.6% were non adherent to ART. The formally employed respondents were 34.6%, and out of them 27.4% were adherent and the remaining 7.1% were non adherent. These findings suggest that the respondents' employment status had no influence on adherence to ART. The findings of this study are in support of a study conducted in South Africa that found no association between socio-economic status and adherence (Bangsberg, et al., 2003).

This study has also revealed that 44 % of the respondents spent one to two hours traveling to the ART clinic and 67% walked to the health facility. In rural area of Chikankata, the road network is so poor that there is limited public transport which, if available, is too expensive for a poor villager to afford. As a result, most of the clients were forced to walk to the clinic. The relationship between the distance from home and ART clinic did not affect adherence to antiretroviral treatment. This result was not in agreement with a study by Marconi eta al (2002), which showed that accessible location could positively influence adherence to treatment.

The duration a client is away from home in respect to adherence to ART was also studied. The majority of respondents(69%) were away from home for several hours and most of them (60.6%) were adherent, and only 8.7 % were non adherent. Those who were away from home for several days were 39%, and all of them were adherent to ART. Those who were away for several weeks, 4.28% were adherent. The study showed that 17.4% of the respondents were away from home for several months and 4.7% of them were adherent and only 2.8 % were not adherent. The findings are statistically insignificant to suggest that being away from home affects adherence. Contrary to the findings in this study, travelling away from home was associated with poor adherence to ART (Muri, 2000).

The findings revealed that 44.4% of the respondents spent 1-2 hours walking to the health facility to access ART. Out of these,36% were adherent to ART .The minority 14.9% spent less than 1 hour traveling and 12.1% of these were adherent. This finding show that traveling time had no effect on adherence (p value 0.819).

The relationship between the modes of transport to ART clinic with adherence was also assessed. The study revealed that the majority (67%) of the respondents walked to the ART clinic and out of these, 58 % were adherent and 9% were not adherent. This finding was statistically insignificant. It showed that there was no relationship between mode of transport and adherence to ART.

The study further compared the relationship between levels of income and adherence to ART. The majority 74.5% of respondents were earning less than K249 000. Out of these 62 % were adherent and the remaining 12.5% were no adherent. The minority 6.5% were earning more than K750 000, and out of these, 1.5% were adherent and 1.5% were not adherent. The findings show that the level of income had no influence on adherence. This may be due to the fact that in Zambia ARVs are provided free of charge and most of the drug regimen do not require to be taken together with food unlike in the past when a client was told to pay in form of cost sharing and most of the ARVs were prescribed to be taken together with food.

The effect of alcohol on adherence was also studied. The study revealed that 13.4 % of clients reported having been taking alcohol. Out of those 48.8% were taking alcohol once per month, and 37.2% were adherent and 10.8% were non adherent. These findings showed an association between alcohol and adherence to ART (p value 0.O50). This finding supports a study by Lucas, et al (2002), which found that the use of alcohol was one of the determinants of poor adherence. It is common knowledge that active alcohol use may impede adherence in several ways. Firstly, alcohol abuse may be associated with life style instability that is not conducive to stringent adherence to therapy. When someone is intoxicated with alcohol he is likely to forget the drug regimen therefore, missing some doses. Secondly, alcohol abuse is also associated with poor social support and mistrust by family members and health workers. It is important to note that social support is very important in achieving good results of adherence. If the client on antiretroviral treatment is experiencing the above problems, adherence may be negatively affected.

In this study, the respondents were asked to state the feeling they developed when other people knew that they were on antiretroviral treatment. The majority of the respondents (80%) felt bad and 67% were adherent and 13% were non adherent to ART. Those respondents (20%) who felt good, 15% were adherent and 5 % were non adherent to ART. From these findings we can suggest that the feelings a client develops (stigma) has influence on adherence (p value 0.035).This is consistent with the study by Andersen (2001) that revealed that 'perceived or real stigma' contributes to low levels of adherence and limited access to antiretroviral therapy. The findings are in support of the study hypothesis which states that stigmatization leads to low levels of adherence to ART.

The relationship between the information received on antiretroviral treatment and adherence was also studied. The finding reveals that 80.9% of the respondents had received adequate information and 79.9 % were adherent to ART. The minority 4.8% received inadequate information and .2% was non adherent. The findings are statistically significant (p value 0.006.) and show that the amount of information received on ARV drugs had influence on adherence.

In terms of waiting time, most of the clients (36%) spent about one to two hours during attendance at the ART clinic and 31% of these were adherent to treatment. The results were statistically insignificant (p value0.42). The waiting time that the client spent did not have influence on adherence. The findings were not in support with the study by Abah and Addo (2004) that identified long waiting time as a factor that influence adherence.

The majority of the respondents (66.8%) had someone to remind them to take ARV drugs: Out of these 56% were adherent and 10.6% were non adherent to ART. In the other category, 33.3 % of the respondents had no one to remind them. Out of them, 26.1% were adherent and 7.15 were non adherent. The findings are statistically significant (p value 0.005). This may be true in sense that clients do not adhere well because of forgetfulness. Once they are reminded the problem of poor adherence could be minimized.

5.3 Disease and clients' condition

This study has revealed that 41.3% of the respondents reported that they experienced side effects, and out of these 33.5 % were adherent and 7.8% were non adherent to ART, however, these findings showed that side effects had no influence on adherence. This was contrary to the study by Grant (2001) which found an associated between side effects and treatment discontinuation.

With regards to the number of doses taken per day in relation to adherence, the majority of the respondents (95.5%) took two doses of ART per day and out of them 78 .5% were adherent and 16.8% were non adherent. In the other category, 1.2% of the respondents took three doses per day and .3% were adherent. The study did not show any relationship between the number of doses per day and adherence. These findings were in support of the study by Cheevers (2000) which revealed that simplified dosing was beneficial to treatment adherence.

The relationship between respondents' response to antiretroviral treatment and adherence was also studied. The majority (83.2%) of the respondents had good response to ART, out of these 70.5 % were adherent and 12.7% were non adherent. On the other hand, 2.2% of respondents had poor response to treatment with 1.3% adherent and 0.9 % non adherent to treatment. The results are statistically significant (P value 0.028). These findings indicate that respondents whose HIV/AIDS conditions improved as a result of antiretroviral treatment were more likely to adhere to treatment than those clients whose conditions did not improve. Its common knowledge that when somebody enjoys the benefit of something he is likely to be motivated, therefore, will comply with all requirements of the treatment.

The relationship between the respondents' stage of HIV/AIDS and the effects on adherence was also studied. The respondents who were in stage 1 were 61.8% and out of these 44.4 % were adherent and 12.4 % were not adherent to ART. There were many respondents who were in stage 1(one), because the study was conducted at the out-patient clinic. Normally, it was common knowledge that respondents who felt better were able to attend the ART clinic. This could explain why there was an increase in the number of respondents in Stage 1(one) as compared to Stage (3) Three and (4) Four where respondents were very sick and might have been bed ridden. It may also indicate that most of the respondents on the treatment were improving from Stage 3 and 4 which are considered more serious than stage one, which is less serious. The high percentage of respondents in Stage One may also be attributed to good response to antiretroviral treatment. If there is good response it means that clients are graduating to Stage One. In Stage Three, there were 7.1% of the respondents and out of these 4.9% were adherent and 2.2% were non adherent to ART. The above findings were statistically insignificant therefore; there was no relationship between client's stage of AIDS and adherence to ART. This result is consistent with the study by Orrell et al (2003) that showed that clinical stage of HIV at commencement of therapy did not predict adherence ART.

5.4 Reasons for missing doses

The findings revealed that out of the total of 322 respondents, 18 % of the respondents reported having missed some doses in the past 3 days preceding the survey. The first reason the respondents gave for missing some doses was being busy with other things. This comes not as a surprise because when someone is occupied with other activities and daily routines in order to make ends meet, his or her attention could be disrupted therefore, forgetting to take the ARVs. Most of the respondents in Chikankata area were peasant farmers who were involved in farming activities. The second reason given by 14% of the respondents was that they ran out of drugs and that of change in daily routine. Running out drugs did not signify the shortage of ARVs because the ART clinic at Chikankata was well stocked with drugs. The respondents ran out of drugs because of missing appointment dates for drug collection. Another reason (14%) was of change in daily routine. The respondents were likely to forget about the clinic appointments more especially if they were busy with other routine activities. With regards to change in daily routine, most of the respondents (14%) studied were peasant farmers. Depending on the season, the respondents could experience a change in daily routines, for instance, during the rainy seasons villagers are forced to go early in the morning to their farming fields. This may disrupt the schedule for taking ARVs. The third reason for missing doses was that 12% of the respondents did not want others to notice that they were taking ARV drugs. This might be true to a certain extent because of fear of stigma, therefore, they would not like others to know that they are on ARV treatment. This could be the case when the time to take ARVs coincides with a social gathering. A client may post pone taking the drug because she may not be comfortable taking it in presence of others. This may eventually lead to missing doses. Being away from home was also reported as a reason for missing the doses. This might be true because it is likely for a client to forget carrying the drugs while in transit. Another explanation could be that a client may not have someone to remind him or her. These reasons compounded together may have negative influence on adherence. The findings on the reason for missing doses are in support of a study by Grifford, eta al (2000) that revealed that organizational difficulties such as daily domestic routines may affect adherence.

5.5 Adherence

The study revealed that 82% of the clients were adherent to antiretroviral treatment. This result differs from the findings of a Brazilian study which showed an adherence of 75% (Nemes, 2004). The percentage of the respondents is slightly higher in the study because in Zambia ARVs are provided free of charge in all public health institutions. This has removed the main obstacle of cost to adherence thus making it affordable to every client on ART.

In this study, a Self Report Method was used in assessing adherence to ART. This was chosen because it was less complex to use than other methods. Its strength relies on the client's self report over each of the past three days, however, the main weakness it has is that respondents tend to wish to please his or her health care provider by overestimating the amount of doses taken. This has been described as 'Social desirability bias' (Turner, 2002).

To increase the validity of self-reported adherence, a preamble was given before asking adherence question number 33 on the interview schedule. This was important to reassure respondents that the information was not going to be used against them and that problems with adherence are nearly everywhere in the world. An explanation was given to them in order to establish good rapport with them, therefore creating an atmosphere of mutual trust.

5.6 Nursing Implications

5.6.1 Nursing Practice

Nurses play a leading role in the delivery of quality health care. With the increase in the number of clients on antiretroviral therapy, they are expected to take an active part in promoting adherence. The success of antiretroviral therapy mainly depends on high levels of adherence.

The study revealed that 82% of the clients were adherent, which is encouraging, however with the antiretroviral therapy higher level of adherence are needed. It is for this reason that nurses being the majority of health workers should be involved heavily in the promotion of adherence at all levels of facilities. The study also revealed that the reasons for missing doses by the respondents included; being busy with other activities, running out of ARV drugs due to missing review dates, change in daily routine and being away from home. This implies that nurses should formulate some schedule to be reminding the clients to take the medication despite being busy. This should be in such way that it is incorporated within the client's activities.

5.6.2 Nursing Education

Nursing Education forms an integral part in the management of clients. One of the findings in the study is that about 80% of the respondents interviewed felt bad when people realized that they were on antiretroviral therapy. Nurses should work hard by educating clients on the effects of stigma on adherence. Health education should be focused on changing the attitude and perception of clients towards AIDS and antiretroviral treatment. In addition, clients should be educated on the nature of antiretroviral treatment. Nurses should teach the client that the treatment is life long. It should be emphasized in during education that any interruption in treatment may lead to consequences such as drug resistance.

Furthermore, nurse educators should integrate the concept of adherence to ART in the curriculum for nurses in school of nursing. This will greatly strengthen the new nurses with skills and knowledge to address the problem of adherence to antiretroviral therapy.

5.6.3 Nursing Research

Adherence to ART plays an integral part in the treatment of clients. It should be noted that current method of improving treatment adherence are mostly complex, labour intensive and not predictably very effective. Nursing researchers should actively participate in innovative approaches to assist clients to follow prescriptions for medication. This should be done by conducting research periodically in order to identify various factors affecting adherence to ART in various geographical locations

5.7 Conclusion and Recommendations:

5.7.1 Conclusion

The study was conducted in order to assess the level of treatment adherence to antiretroviral therapy and to establish the factors that may have the impact on adherence.

The study has reviewed that 82% of the clients were adherent. Furthermore, it has reviewed that socio-economic factor such as level of income, and education and clinical stage of AIDS do not affect adherence treatment. On the other hand, alcohol and the feeling the clients developed when someone discovers that they are on antiretroviral treatment may affect adherence.

5.7.2 Recommendations:

5.7.2.1 Recommendations for improvement on adherence to ART

Based on the study findings, the following recommendations were made:

- The government through the Ministry of Health should continue expanding the provision of antiretroviral therapy to HIV/AIDS clients despite there socio-economic status. This study has re-confirmed the socio-economic of the client does not influence adherence to ART.
- Stigma is still the barrier to achieving good adherence. Health workers should take an active role in the fight against stigma. This should be done by developing a mult-sectoral approach whereby or stakeholders are involved in developing a policy against stigma. Information, Education and Communication (I.E.C) should be intensified and expanded to all sectors of society.
- Alcohol use by clients on antiretroviral treatment should be discouraged. This should be done through counseling session by substance abuse counselors. In addition to this, clients should be provided with good support system that includes family; friends and other patient may act as role models.

5.7.2.2 Recommendation for further study

- There is need to replicate the study by using a larger sample and other methods of measuring adherence to antiretroviral treatment so that reliability and validity are achieved.

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Appendix 1

INFORMED CONSENT

ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG HIV/AIDS CLIENTS ATTENDING ART CLINIC AT CHIKANKATA HOSPITAL.

INTRODUCTION

I, Ronald Katongo; a student of Master of Science in Nursing from the University of Zambia is kindly requesting for your participation in the above-mentioned research study because it is important to assess adherence to Antiretroviral Therapy. Before you decide whether or not to take part in this study, I would like to explain to you the purpose of this study, any risks to you and what is expected of you. If you agree to take part, you will be asked to sign this consent or make a thumb print in front of someone.

Your participation in the study is entirely voluntary; you are under no obligation to participate. You should be aware that the Research Ethics Committee of the University of Zambia has approved this study, which is there to protect you.

PURPOSE OF THE STUDY
The study will assist to obtain more information on adherence to Antiretroviral Therapy among clients attending ART clinic therefore.

PROCEDURE
After you sign the consent form and have had a chance to ask questions, you will be asked questions concerning the influence of various factors on adherence to antiretroviral therapy.

RISKS AND DISCOMFORTS
No risks or discomfort is involved apart from the use of your time in answering the questions that you will be asked by the interviewer. Answering the questions will take approximately 30 minutes.

BENEFITS

By taking part in this study, you will be able to provide us with the information that would help relevant authorities and policy makers to come up with strategies and policies that would help in improving adherence to antiretroviral therapy. No monetary favours will be given in exchange for information sought but counseling and information may be given to you on support systems available for you. There will be no direct benefits to the participants in this study.

CONFIDENTIALITY

Your research records and any information you will give will be confidential to the extent Permitted by law. You will be identified by code and personal information will not be released without your written permission, except when required by law.

FREEDOM

There is freedom of withdrawal and refusal to answer question at any point during the interview. These shall NOT interfere with the participants' treatment at the hospital.

CONSENT TO PARTICIPATE IN THE STUDY

I have been fully informed of the purpose of the study, the benefits, discomforts, risks and confidentiality, and I agree to participate willingly.

Sign/Thumb print: ______________________________ Date: ____________

PLEASE NOTE

Witness (Name): ________________________________ Sign ____________

1. Your participation in this study is entirely voluntary.

2. Your refusal or withdrawal from participation shall not affect the benefits of your treament

Persons to contact for problems or questions

1. Ronald Katongo, University of Zambia, Post Basic Nursing Department, P.O. Box 50110, Lusaka. Cell: 097477761

2. Mrs. C. Ngoma, Head, Department of Post Basic Nursing , University of Zambia P.O. Box 50110, Lusaka,

3. The Chairman, Research Ethics Committee, University of Zambia, P.O. Box

   50110, Lusaka.

Appendix 2

UNIVERSITY OF ZAMBIA

SCHOOL OF MEDICINE

INTERVIEW SCHEDULE

TITLE: ADHERENCE TO ANTI-RETROVIRAL THERAPY.

DATE: ________________________________

PLACE: ________________________________

RESPONDENT'S NUMBER ………………………..

INSTRUCTIONS TO THE INTERVIEWER

The tool shall be filled by clients on antiretroviral therapy.

1. Explain the purpose of the study and obtain the informed consent before the interview.
2. **NO** name should appear on this interview schedule.
3. Information given will be considered **strictly** confidential.
4. Indicate the answer to the question by ticking in the box provided and write the response to open-ended question in the space provided. Please answer faithfully.

SECTION A

BIO-DEMOGRAPHIC DATA.

1. Age in years

1	18-29	
2	30-39	
3	40-49	
4	50 and above	

2. Sex:

1	Male	
2	Female	

3. What is your Marital status

1	Single	
2	Married	
3	Divorced	
4	Widowed	

4. Which Church do you belong to?

1.	Salvation Army	
2	SDA	
3	New Apostolic	
4	Catholic	
5	UCZ	
6	Others	
7	None	

5. Which Language (s) do you speak?

1	Tonga	
2	English	
3	Nyanja	
4	Bemba	
5	Others,specfy	

6. Educational level.

1	No formal Education	
2	Primary	
3	Secondary	
4	College/University	

SECTION B

SOCIO-ECONOMIC DATA

7. What is your Employment status?

1	Unemployed	
2	Formally Employed	
3	Self employed	

8. Does your employment make you travel away from home?

1	Yes	
2	N0	

9. If yes to question 8, how long are you away from home?

1	Several hours	
2	Several days	
3	Several weeks	
4	Several months	

10. How far is your home from ART clinic?

1	Less than 1 hour walking distance	

2	1-2 hour walking distance	
3	2-4 hour walking distance	
4	4 hours and above	

11. How do you get to the ART clinic?

1	Walking	
2	Ox-cart	
3	Bicycle	
4	Car/bus	
5	Any other, specify	

12. How much is your monthly income?

1	K750,000 and above	
2	K500,000-K749,000	
3	K250,000 –K499,000	
4	Less than K249,000	

13. Do you take Alcohol?

1	No	
2	Yes	

14. If yes to question 13, how many times do you take alcohol?

1	Twice per week or more	
2	Once per week	
3	Once per month	
4	Others, specify	

15. Do you have someone to remind you to take drugs as prescribed?

1	No	
2	Yes	

16. If yes to question 15, what is the relation?

1	Spouse	
2	Family member	

3	Friend	
4	Others, specify	

17 How many people know that you are on ART?

1.	Many	
2	Few	
3	None	

18. How do you feel about people knowing that you are on ART.

1	Bad	
2	Good	

SECTION C
SERVICE RELATED DATA

19. Do you receive follow-up visit at your home on ARV adherence from trained community health worker?

1	Yes	
2	No	

20. If yes to question 20, how many times per month?

1	One	
2	Two or more	

21. How much time do you spend attending the clinic?

1	Less than 1 hour	
2	1-2 hours	
3	2-3 hours	
4	3-4 hours	
5	4 hours and above	

22. Do you receive information on ARV adherence from health workers during the clinic?

1	No	
2	Yes	

23. If yes to question 22, how would you classify the information you receive?

1	Adequate	
2	Fair	
3	Not adequate	

24. How would you classify the supply of ARV drugs to the clinic?

1	Adequate	
2	Inadequate	

25. How do you classify the attitude of staff at the ART clinic?

1	Positive	
2	Negative	

26. Give reason to your answer

SECTION D

DESEASE/CLIENTS CONDITION DATA

27 How many ARV pills do you take per dose?

1	One	
2	Two	
3	Three	
4	Others, specify	

28 How many times do you take ARV drugs per day?

1	Once	
2	Twice	
3	Thrice	
4	Others, specify	

29. How many ARV pills have you missed in the past three (3) days?

1	0 pill	
2	1 pill	
3	2 pills	
4	3 pills	
5	4 pills	
6	Others specify	

30. What do you think are reason(s) for missing pills?

1	Ran out	
2	Away from home	
3	Change in daily routine	
4	Busy with other things or forgot	
5	Avoid side effects	
6	Too many medication	
7	Do not want others to notice	
8	Drug holiday or break	
9	Depressed	
10	Others	

31 How has been your response to ARV treatment?

1	Good	
2	Fair	
3	Poor	

32Do you experience any side effects of Ant-Retroviral Drugs?

1	Yes	
2	No	

33 If yes to question 32, how would you classify the effects?

1	Very severe	
2	Severe	
3	Mild	

34 How do you describe your condition?

Stage1	Asymptomatic, normal activity	
Stage2	Symptomatic, normal activity	
Stage3	Bed ridden, less than 50% of a day, during last month	
Stage4	Bed ridden more than 50% of day during last month.	

THE END

Thank you for your participation

The Salvation Army
Zambia Territory
Chikankata Health Services
Private Bag S 2, Mazabuka, Zambia
Tel: 01 222060
Fax: 01 226784
E-Mail: Chikankata@zamnet.zm

18th May 2007

The Chairman
REC
UNZA
School of Medicine
LUSAKA

Dear Sir,

PERMISSION TO CONDUCT RESEARCH AT CHIKANKATA HOSPITAL: MR. RONALD KATONGO

This is to confirm that the above named Postgraduate Student was granted permission to conduct research at this institution, entitled Adherence to Art-Retroviral Therapy From December 2006 to May 2007.

Yours sincerely

DR. T. KAILE
CHIEF MEDICAL OFFICER
CHIKANKATA HEALTH SERVICES

THE UNIVERSITY OF ZAMBIA

RESEARCH ETHICS COMMITTEE

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Lusaka, Zambia

Assurance No. FWA00000338
IRB00001131 of IORG0000774

11 December, 2006
Ref.: 003-10-06

Mr Ronald Katongo
Department of Post Basic Nursing
School of Medicine
University of Zambia
LUSAKA

Dear Mr Katongo

RE: RESEARCH PROPOSAL: **"ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG HIV/AIDS CLIENTS ATTENDING ART CLINIC AT CHIKANKATA HOSPITAL"**

The above research proposal was presented to the Research Ethics Committee meeting held on 1 November, 2006 where changes were recommended. We would like to acknowledge receipt of the corrected version with clarifications. The proposal has now been approved. Congratulations!

CONDITIONS:

- This approval is based strictly on your submitted proposal. Should there be need for you to modify or change the study design or methodology, you will need to seek clearance from the Research Ethics Committee.
- If you have need for further clarification please consult this office. Please note that it is mandatory that you submit a final copy of your results at the end of the study.
- Any serious adverse events must be reported at once to this Committee.

Yours sincerely,

Prof. J. T. Karashani, MB, ChB, PhD
CHAIRMAN

Date of approval: 11 December, 2006 **Date of expiry:** 10 December, 2007