MEASURE OF PHARMACISTS ROLE IN THE MANAGEMENT AND ADHERENCE OF HIV INFECTED PATIENTS IN A PUBLIC SECTOR HOSPITAL OF KWAZULU NATAL.

SALOSHINI GOVENDER

SUPERVISOR:
DR. P.NAIDOO
CO-SUPERVISOR: MS TONYA ESTERHUIZEN

SCHOOL OF PHARMACY AND PHARMACOLOGY
UNIVERSITY OF KWAZULU- NATAL

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Declaration

This research is the original work of S. Govender and has not been submitted in any form to any other University. The data was collected by the author.

Where use has been made of the work of others, it has been duly acknowledged.

S.Govender

Dedication

This thesis is dedicated to my Lord and Saviour Jesus Christ.

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ABSTRACT

Background:-

The HIV and AIDS epidemic is a major catastrophe that affects millions of people worldwide. Antiretroviral medication combinations have revolutionised HIV treatment since 1996, transforming the virus from a death sentence to a manageable condition. In order to obtain full therapeutic benefits it is vitally important that patients adhere to their prescribed medication. Being informed about the disease and medication contributes to patient adherence and management.

Pharmacists are considered to be the most accessible health professional and can help HIV-infected patients deal with barriers to medication access, manage adverse effects and medication interactions, and adhere to medication regimens by appropriate counselling. The public sector is defined as that part of an economy that is controlled by the state. At the study site, which is a public sector facility, the roll out of antiretroviral medication started in 2006. At the time all patients were counselled by trained counsellors, before seeing a doctor. At the pharmacy the medication was collected with no intense counselling by a pharmacist as the patients would have visited the trained counsellors first.

Subsequently it was found that there were many queries regarding HIV and AIDS. It was then decided in October 2007, that the pharmacist support the counselling done by the counsellors in that they should reinforce what was said by the counsellors, together with giving detailed information to patients on their health and medication.

This study was therefore undertaken **to measure pharmacists' role in the management and adherence of HIV infected patients at this institutional facility.**

Method:

The study was undertaken at a public sector health facility using anonymous structured questionnaires and was divided into 3 phases: Pre-Intervention, Intervention and Post-Intervention phases. After obtaining patient consent the questionnaires were administered during the 1st phase. A month later all patients visiting the pharmacy were counselled intensely on various aspects of HIV and the antiretroviral medication. Thereafter patients who took part in phase I were asked to participate in the 2nd phase. After obtaining their consent again, the same questionnaire was administered to them. Quantitative variables were compared between pre and post intervention using paired t-tests or Wilcoxon signed ranks tests. Categorical variables were compared using McNemar's chi square test (Binary) or McNemar–Bowker test for ordinal variables.

Results:

A response rate of 87.5% was obtained with the majority of the patients being female. Almost 70% of the participants were in the age-range of 21-40 years old. The majority of the participants did not have post school education.

Most of the participants (95.4%) did not know that HIV is a virus that causes AIDS in the pre intervention phase, but this decreased to 93.7% in the post intervention phase. The participants knowledge of people who have sexually transmitted diseases are least at risk of getting HIV, healthy food will cure HIV and smoking and drinking alcohol will weaken the HIV virus, increased significantly from the pre-intervention phase to the post intervention phase. Knowledge on the modes of transmission either increased or remained unchanged.

Overall the mean knowledge score on the disease itself had increased significantly (SD 6.6%) [$p<0.01$] after the pharmacists' intervention (pre-intervention was 82.1%,

post-intervention was 86.3%). In both phases, over 40% of all patients stored their medication in the cupboard. The majority of the patients took their medication either with or without food at both phases of the study. After the intervention, the frequency of taking medication with a fatty meal or any time they remember was decreased to 0. A significant improvement was noted in the overall knowledge score with regards to medication taking and storage ($p<0.05$).

Conclusion:

Pharmacist intervention had a positive impact on HIV infected patients' HIV and AIDS knowledge on the disease and on the antiretroviral medication use and storage.

CHAPTER 1

INTRODUCTION

Public sector is defined as that part of an economy that is controlled by the state. The human immunodeficiency virus (HIV) is a retrovirus that causes the acquired immune deficiency syndrome (AIDS). It is transmitted in body fluids, in which there is a severe loss of cellular immunity, leaving the sufferer susceptible to infection and malignancy.[1]

The World Health Organisation (WHO) has defined health as the state of complete physical, mental and social well being and not merely the absence of disease or infirmity.[2]

Pharmacists are often considered the most accessible health professional.[3] A pharmacist can help HIV-infected patients deal with barriers to medication access, manage adverse effects and medication interactions, and adhere to medication regimens[3] by appropriate counselling. A patients' ability to adhere to antiretroviral regimens is essential to achieving the goals of drug therapy.[3]
It has been estimated that >95% of all highly active antiretroviral therapy (HAART) doses must be taken to maintain durable suppression of HIV in >80% of patients.[4]

In order to ensure long-term viral suppression, the strict and sustained adherence to all prescribed antiretroviral medication is essential.[5] The development of resistance to

antiretroviral medication is a major impediment to optimum treatment of HIV infection.[6] The development of viral resistance and an increase in viral replication results from the intermittent exposure of the virus to the drugs.[5] This is then followed by the deterioration of the immune system. [5]

Failure to take all prescribed doses of antiretroviral medication, may result in inadequate drug concentrations, which can result in incomplete inhibition of HIV replication and may accelerate viral resistance to antiretroviral therapy.[7]

Antiretroviral therapy can fail because of poor adherence, acquired drug resistance, poor drug absorption, drug-drug interactions or lack of drug potency.[8]

If the individual drugs of an antiretroviral regimen are not taken correctly or omitted, there is a risk of resistant HIV strains developing. These resistant strains can be transmitted to other people.[9]

Like many other chronic illnesses, HIV infection affects nearly every organ system of the body. HIV is pathogenic in some instances, and super-infection by bacteria, other viruses, or fungi is common in the advanced stages of HIV infection.[3] Among those at high risk for HIV infection are intravenous drug users and the severely mentally ill, whose conditions may discourage testing for HIV infection or disclosure of HIV status can also hinder treatment.[3] In housing and employment, discrimination against HIV-infected individuals persists and can impede the delivery of health care by disrupting the stability of home and work life.[3]

The HAART (highly active antiretroviral therapy) regimens comprise at least three drugs and require that many medication be taken each day.[4] There are many reasons for patients being non-adherent to antiretroviral medication, but the most frequently cited one is that they forget; other reasons include being away from home; being busy or experiencing a change in daily routine.[10] Regimen complexity is composed of a number of regimen attributes, including the number of pills; pill size; frequency and timing of doses; dietary and/or water requirements or restrictions; the number of adverse events (AE's); medication storage requirements; number of prescriptions; as well as the influence of other factors on a patients' lifestyle.[3]

Efforts should be made to educate and motivate patients, simplify treatment regimens and tailor them to individual lifestyles, prepare for and manage side effects, and address the concrete issues that may be a barrier to adherence[10] and positive patient disease management.

HIV is a disease stigmatised by many. Patients do not always feel comfortable to ask the pharmacist or other health care professionals about the disease due to its stigma. One study revealed the extent to which people are stigmatised and discriminated against by health care systems. The study also revealed withholding of treatment, non-adherence of hospital staff to patients, HIV testing without consent, lack of confidentiality and denial of hospital facilities and medicines. Ignorance and lack of knowledge about HIV transmission also fuel such responses.[11]

Other reasons for poor adherence to antiretroviral therapy have been identified. These include poor clinician-patient relationship, drug and alcohol abuse, mental illness, lack of patient education and inability of patients to identify their medications, and the

lack of reliable access to primary medical care. Other factors that may influence poor adherence include domestic violence, discrimination, medication side-effects and homelessness.[12,13]

Pharmacists involved in the care of HIV-infected patients participate with other members of the health care team in the management of patients, for whom medication is a focus of therapy.[3] The pharmacists responsibility is to optimize the patients medication therapy.[3] Particular care is needed in the prescribing and dispensing phases because the names of many antiretroviral agents sound and look similar.[3] Verification of the antiretroviral regimen and their dosages is important because dosing recommendations change frequently as more becomes known about individual drug pharmacokinetics and because drug-drug interactions may be used clinically to simplify or increase the efficacy of drug regimens.[3] A number of antiretroviral medication cannot be taken with certain foods, and it is the responsibility of the pharmacist to ensure that the patient and caregivers are aware of these dietary restrictions.[3]

Seeing that 95% of all people diagnosed with HIV reside in developing countries, it is evident that the role of the pharmacist is one of the keys in the monitoring of compliance in HIV and AIDS infected patients. Since HIV and AIDS is a lifelong disease, the pharmacist must make a long term investment of time and commitment to infected patients, and must obtain and impart knowledge about the evolving treatments for the disease. [14]

The antiretroviral (ARV) clinic at the study site was in operation since October 2006. Prior to the study being conducted, all patients were counselled by trained counsellors on three consecutive visits to the ARV clinic, before being seen by a doctor for the first time and then going to the ARV pharmacy where pharmacists would hand over the medication, only explaining to patients when and how often to take the medication. No intense counselling on the ARV medication was done.

However there appeared to be many queries by patients regarding their health, medication, side effects, disease knowledge, and medication storage. Thereafter it was decided that the pharmacist support the counselling done by the counsellors in that they should reinforce what was said by counsellors, together with giving detailed information to patients on their health and medication.

In October 2007, pharmacists were expected to dispense and counsel on ARV medication as part of their management of HIV infected patients. This study was therefore undertaken **to measure pharmacists' role in the management and adherence of HIV infected patients at this institutional facility.**

With this aim in mind the following were the **objectives of the study.**

At baseline:

- To obtain the demographic profile of patients,
- to obtain patients current knowledge of HIV and AIDS
- to ascertain patients understanding of medication and side effects
- to assess practices with regard to medication use and adherence
- to determine perceptions about management.

After a month:

- to assess changes in all of the above objectives after comprehensive counselling on medication taking, disease condition, together with information on storage, side effects experienced and the importance of adherence.
- To disseminate findings and make recommendations to the relevant authorities

BACKGROUND

The initial introduction of the Acquired Immune Deficiency Syndrome (AIDS) in 1981 saw this new disease complex become a major global public health problem.[15]

1.1 Epidemiology

HIV remains a global health problem of unprecedented dimensions. Unknown 27 years ago, HIV has already caused an estimated 25 million deaths worldwide and has generated profound demographic changes in the most heavily affected countries.[16]

In the countries most heavily affected, HIV has reduced life expectancy by more than 20 years, slowed economic growth, and deepened household poverty.[16]

In South Africa in 2008, an estimated 5.2 million people were living with HIV and AIDS. Almost one-in-three women aged 25-29, and over a quarter of men aged 30-34 are living with HIV. Among those aged two and older, HIV prevalence varies by province with the Western Cape (3.8%) and Northern Cape (5.9%) being least affected, and Mpumulanga (15.4%) and KwaZulu-Natal (15.8%) at the upper end of the scale.[17]

The natural age distribution in many national populations in sub-Saharan Africa has been dramatically skewed by HIV.[16]

Sub-Saharan Africa remains the region most heavily affected by HIV, accounting for 67% of all people living with HIV and for 75% of AIDS deaths in 2007.[16]

The cause of the Acquired Immune Deficiency Syndrome (AIDS) has been shown to be a retrovirus. It is known as the Human Immunodeficiency Virus type 1 or HIV-1. Infection with this virus has become a pandemic and is a major cause of mortality in sub-Saharan Africa and other developing countries, whilst infection with HIV-2 is restricted to West Africa.[18]

1.2 Structure of the Human Immunodefiency Virus [HIV]

The virus has an outer envelop, its genetic message carried within a capsid as ribonucleic acid (RNA) that also encloses a reverse transcriptase enzyme to reverse transcribe its RNA to pro-viral deoxyribonucleic acid (DNA) in host cells.[8]

The virus is approximately 80-100nm in diameter. The surface of the virus is made up of 72 knobs or peplomers (glycoprotein structures–gp 120) placed on the viral envelope.[19]

The envelope glycoproteins are heavily glycosylated, and carry receptor sites for the CD4 lympocytes that are important for viral infectivity.[20]

The inner surface of the envelope is lined with the matrix protein p17 which is needed for viral structure. The virus contains a cylindrical or cone shaped core (p24 antigen) or nucleocapsid. The core contains the genome as well as the three viral enzymes reverse transcriptase (RT), integrase and protease.[19]

The proviral DNA of retroviruses in infected cells has three major genes: encoding structural proteins for nucleocapsid (gag), reverse transcriptase and other essential enzymes (pol) and the envelope antigen (env) which encodes the envelope glycoproteins. Theses genes give HIV-1 its expression, infectivity and replication control.[20,21]

1.3 The pharmacist and healthcare

The pharmacist is an integral part in the dispensing process where dispensing is defined in terms of the Pharmacy Act as being the "interpretation and evaluation of a prescription, the selection, manipulation or compounding of the medicine, the labelling and supply of the medicine in an appropriate container according to the Medicines Act and the provision of information and instructions by a pharmacist to ensure the safe and effective use of medicine by the patient"[22]

The information given must be structured to meet the needs of individual patients and the pharmacist must ensure that any information or services offered by a pharmacy to patients in the area of health promotion are safe, up-to-date and in accordance with the relevant local and national guidelines. Further more the information provided to patients regarding their medication use must always be done with professional judgement and the prescriber should be contacted when necessary. The pharmacist, as per the Act, is obliged to monitor patient outcomes by assessing the patient for signs of compliance, effectiveness and safety of the therapy.[23] Finally, the pharmacist should identify areas for modification, implementation of modifications (taking into account legal requirements), revise the patient record and record the action taken.[23]

1.4 Role of the Pharmacist in HIV and AIDS

As the management of HIV and AIDS patients often involves complicated medication therapy, pharmacists have been found to be the most appropriate persons to monitor and advise on this important aspect of care with one of the main areas of involvement

being the provision of advice and information on new medication, drug interactions, adverse drug reactions and establishment and maintenance of an AIDS data base.[24] The pharmacist can also act as a resource for information on HIV and AIDS to help dispel myths and misinformation about the disease and they can be a provider of testing services and counselling as well as preventative methods and information.[25]

1.5 HIV in South Africa

There were approximately 5.7 million people living with HIV in South Africa, and almost one thousand AIDS deaths occurring every day by the end of 2005.[26] It is believed that almost half of all deaths, and over 70% of deaths among those aged between 15 and 49 in South Africa, are caused by AIDS, with over half of fifteen year olds not expected to reach the age of sixty.[27] Caring for HIV and AIDS patients is placing a huge burden on the hospitals with estimates that HIV-positive patients would soon account for 60%-70% of medical expenditure in South African hospitals.[28] In 2006, 21% of teachers in South Africa were living with HIV thus having a major impact on the education sector as well.[29]

The South African Governments' response to the HIV and AIDS epidemic is found in the HIV/AIDS and STI Strategic Plan for South Africa 2007-2011. The plan purposed to provide a broad national framework around four areas: prevention and treatment; care and support; research, monitoring and evaluation; human and legal rights.[30]

In 2003 the South African government made a decision to provide antiretroviral (ARV) therapy in the public sector as part of the Operational Plan for the comprehensive HIV and AIDS care, Management and Treatment for South Africa.

The key to the success of this programme depended on patients adhering to their medication.[31]

The public sector roll-out programme for the prevention of mother-to-child transmission with nevirapine started at 18 pilot sites in 2000. An antiretroviral (ARV) treatment plan was published in 2003 and the roll-out of treatment started at 32 accredited sites in April 2004, aiming to treat all South Africans needing antiretroviral therapy.[17]

1.6 Social factors and myths associated with HIV and AIDS

Many people delay or refuse testing due to stigma and denial related to suspected infection. Diagnosis is often followed by fear and despair due to the poor quality of counselling and lack of support. Poverty prevents many infected people from maintaining adequate nutrition to help prevent the onset of illness. The limited access to clinics, long waiting lists for antiretroviral treatment programmes mean that many people become seriously ill before accessing treatment. In South Africa on average there are three women infected with HIV for every two men that are infected. Women therefore face a greater risk of HIV infection.[31]

Many myths about HIV and AIDS have contributed to prejudice and stigma about the disease. One myth is that HIV only affects gay men. The reality of this is that HIV can affect anyone. Behaviours such as unsafe sex and multiple sexual partners can put a person at risk for HIV infection. Another myth is that HIV can be cured by sex with a virgin and that new drugs can cure AIDS. The reality here is that there is no cure for HIV infection. The amount of virus in the body and symptoms of HIV can be managed by highly active antiretroviral therapy.[4] Sex with a virgin only exposes the

virgin to HIV and does not cure HIV. Some people believe that HIV and AIDS can be spread by mosquitoes not knowing that when a mosquito bites, it injects its own saliva into the person it is biting and not injecting blood from the last person it bit.[32]

1.7 Antiretroviral therapy

Advances in the treatment of HIV in the past several years have resulted in the HIV epidemic being looked at differently.[33] An increasing number of cases of HIV infection and rising mortality have intensified a search for an antiviral agent that effectively treats those already infected and a vaccine that is effective in preventing infection. At present antiretroviral therapy is capable of increasing, to some extent, the life expectancy of patients with symptomatic disease but according to current evidence it does not result in significant long-term benefit when given as mono therapy in asymptomatic infection.[34]

The best way to achieve maximum viral suppression is by highly active antiretroviral therapy (HAART) which consists of combinations of at least three antiretrovirals.[35]
A major impediment to the optimum treatment of HIV infection is the development of resistance to antiretroviral drugs.[36]

The primary goals of antiretroviral therapy is to decrease HIV related morbidity and mortality i.e. the patient should experience fewer HIV related illnesses, their CD4 count should rise and remain above the baseline count, the patients viral load should become undetectable (<400 copies/ml) and remain undetectable on antiretroviral therapy.[37]

The secondary goal is to decrease the incidence of HIV through the increased uptake of voluntary counselling and testing with more people knowing their status and practising safer sex, reduction of transmission in discordant couples and by reducing the risks of HIV transmission from mother to child.[37]

When initiating therapy it is recommended that it be guided by the monitoring of laboratory parameters such as the plasma HIV RNA and the CD4 T cell count. Different types of assays are used to detect viral load e.g. the polymerase chain reaction (PCR) test, the branched chain DNA (bDNA) test and the nucleic acid sequence-based amplification (NSBA) test.[38]

There are 4 classes of antiretroviral drugs, based on their mechanism of action[39]

Reverse Transcriptase Inhibitors :

These drugs inhibit the viral enzyme reverse transcriptase, (that copies viral RNA into DNA in the newly infected cell) in order to prevent HIV from replicating.

Nucleoside Reverse Transcriptase Inhibitors (NRTI) / Nucleotide Reverse Transcriptase Inhibitors (NtRTI):

NRTI/NtRTI function by inhibiting the synthesis of DNA by reverse transcriptase (RT). The RT enzyme cannot distinguish phosphorylated NRTI from their natural counterparts and therefore attempt to incorporate both forms in the synthesis of viral DNA.

Non Nucleoside Reverse Transcriptase Inhibitors (NNRTI):

These drugs bind directly to the reverse transcriptase enzyme, thereby altering its structure, so that it is unable to function properly.

Protease Inhibitors (PI):

Protease a viral enzyme breaks up the proteins made by mRNA. By binding to the active site of the viral protease enzyme, PIs prevent the processing of viral proteins into functional forms. Viral particles are still produced when the protease is inhibited, but these particles are unable to infect new cells.

Entry and Fusion inhibitors:

These drugs inhibit HIV from entering a host cell by preventing the binding of gp41 to the chemokine receptor. With no attachment, HIV cannot insert viral RNA into the cell, and is thus unable to replicate.[40,41]

Integrase Inhibitors:

These drugs interfere with HIV's integrase enzyme, which is required for viral replication.[40,41]

Combination Therapy:

Combination therapy is associated with improved health outcomes for people living with HIV and AIDS. Antiretroviral drugs must always be combined in order to delay or prevent the emergence of HIV resistance. Mono therapy e.g. zidovudine should only be used in vertical transmission prophylaxis. A number of different combinations have been shown to be effective in reducing the number of opportunistic infections and other HIV related conditions and delaying the onset of AIDS.[9]

Recommended regimens[42] during the study

First line regimens for adults:

[Stavudine 30mg or 40mg /Lamivudine 150mg] twice daily

+

[Efavirenz 600mg or 400mg if < 40 kg] at night

Or

[nevirapine 200mg] daily for the first two weeks and then increasing to twice daily in next two weeks

Regimen 2 includes:

Zidovudine with didanosine and lopinavir/ritonavir

1.8 Antiretroviral adverse effects

Antiretroviral therapy can have a wide range of adverse effects on the human body. Common but mild adverse effects occurring early in most antiretroviral regimens include gastrointestinal effects such as bloating, nausea and diarrhoea, which may be transient or may persist throughout therapy.[43]

Other common adverse effects are fatigue and headache caused by Zidovudine and nightmares associated with Efavirenz. Other uncommon but more serious adverse effects associated with antiretroviral therapy, includes Zidovudine-associated anaemia, Stavudine-associated peripheral neuropathy, Protease inhibitor-associated retinoid toxicity and Non-nucleoside reverse transcriptase inhibitor-associated

hypersensitivity reactions. These are treated according to accepted therapy for these conditions in patients not receiving HAART. Other adverse effects include lactic acidosis, hepatic steatosis, hyperlactatemia, hepatotoxicity, hyperglycaemia, fat maldistribution, hyperlipidemia, bleeding disorders, osteoporosis and skin rash. Some of the adverse effects mentioned will be explained below.

Skin rash

Rash is a common adverse effect of the NNRTI's, particularly nevirapine. Approximately 16% of patients taking this agent experience a mild to moderate maculopapular rash, with or without pruritis, on the trunk, face and extremities, within the first 6 weeks on therapy.[44]

Although most rashes are self-limited, nevirapine should be permanently discontinued if the rash is severe.[45] Severe rashes occur in about 6.5% of nevirapine-treated patients, mainly during the first 4 weeks of treatment, including Stevens-Johnson syndrome and toxic epidermal necrolysis in less than 1% of all patients treated with nevirapine.[44]

Lactic acidosis, hepatic steatosis and hyperlactatemia

NRTI's are nucleoside analogues that prevent DNA elongation and viral reproduction. These drugs are triphosphorylated intracellularly to become nucleotides and are then incorporated into the viral DNA chain by the viral reverse transcription enzyme. Their presence in the DNA halts transcription.

Lactic acidosis has been associated with Zidovudine, Didanosine and Stavudine therapy.[46,47,48] The clinical course is often characterized by vague complaints of malaise, nausea and vomiting, fatigue and tacypnea, followed by liver failure,

cardiac dysrhythmias and death.[49]

In addition to this serious but rare syndrome, there is evidence of a persistent mild to moderate elevation of venous lactic acid (hyperlactatemia) in 10%-20% of patients undergoing long term treatment with NRTI containing regimens. The hyperlactatemia and associated symptoms tend to resolve when NRTI's are discontinued.[50]

NRTI-associated lactic acidosis occurs when during normal glycolysis, glucose is converted to pyruvate, which is then transferred into the mitochondria. There, most of the pyruvate is converted into acetylcoenzyme A, which in turn enters the tricarboxylic acid cycle to form NADH (the reduced form of nicotinamide adenine dinucleotide). The mitochondria uses the NADH to produce adenosine triphosphate through oxidative phosphorylation. DNA polymerase is inhibited in the presence of NRTI's, which diminishes mitochondrial function, especially oxidative phosphorylation. This allows pyruvate and NADH to accumulate, enhancing the conversion of pyruvate to lactate. Impaired oxidation may also lead to a decrease in fatty acid oxidation. Free fatty acids then accumulate and are metabolized to triglycerides. These excess triglycerides may accumulate in the liver, causing the characteristic hepatic steatosis. The risk factors for lactic acidosis are currently unknown.[50]

Hepatotoxicity

Transaminitis and hepatotoxicity are associated with most of the antiretroviral agents. Protease inhibitors are the drug class most focused on. The hypersensitivity reaction observed with nevirapine can also include severe transaminitis. NRTI's are also associated with the risk of mitochondrial toxicity and hepatic steatosis.[50]

Fat maldistribution

Lipodystrophy is part of a metabolic syndrome that includes dyslipidemias, insulin resistance and accelerated bone loss. The main clinical features are peripheral fat loss (lipoatrophy) in the face, limbs and buttocks, accompanied by central fat accumulation in the abdomen and breasts and over the dorsocervical spine (the 'buffalo hump') and lipomas. PI therapy has been most strongly linked to lipodystrophy syndrome, although NRTI's, especially stavudine have also been associated with lipodystrophy.[50]

1.9 Antiretrovirals and food restrictions:

The table below represents antiretrovirals and their food restrictions[51]

Nucleoside reverse transcriptase inhibitors (NRTI)

Generic Name	Food Restriction
Didanosine (ddl)	Take on empty stomach one hour before or two hours after food. Give 1 hr before or 2 hr after tenofovir. If tenofovir is taken together with didanosine, the dose of didanosine should be lowered.
Zidovudine (AZT)	No food restrictions
Lamivudine (3TC)	No food restrictions
Stavudine (d4T)	No food restrictions
Zalcitabine(ddC)	Do not take with antacids
Zidovudine+Lamivudine	No food restrictions
Abacavir	May be taken with or without food
Abacavir+Lamivudine+Zidovudine	May be taken with or without food

Nucleotide reverse transcriptase inhibitors (NRTI)

Generic Name	Food Restriction
Tenofovir	Absorption is enhanced by food. Give 2hr or 1hr after didanosine. If tenofovir is taken together with didanosine, the dose of didanosine should be lowered

Non-nucleoside reverse transcriptase inhibitors (NNRTI)

Generic Name	Food Restriction
Efavirenz	No food restrictions. A high fat meal may increase absorption and should be avoided
Nevirapine	No food restrictions
Delavirdine	Can be taken with food

Protease inhibitors (PI)

Generic Name	Food Restriction
Indinavir	Take with lots of fluid on an empty stomach or with a low-fat snack
Nelfinavir	Take with a meal or light snack
Ritonavir	Take with a full meal. Take 2 hrs apart from didanosine
Saquinavir soft and hard gel capsules	Take within 2 hrs of a high fat meal. Grapefruit juice increases saquinavir concentration
Amprenavir	Ingestion of a high fat meal may decrease absorption. Take antacids or didanosine at least 1hr before or after amprenavir
Lopinavir/ritonavir	Take 2 hrs before or 1hr after didanosine. Take with food to enhance absorption.[14]

Some drugs cannot be given concomitantly; many drugs alter the concentration of others, resulting in toxic and sub-therapeutic levels, thereby demanding a change in dosage of one or more medication. Some oral medication should be given with food and some medication should not be co-administered with other medication whilst some other medication will cause therapeutic failure.[52] Nausea and vomiting caused by antiretroviral medication may cause adherence to suffer and should be therefore

managed accordingly. Anti-emetics taken half an hour before the antiretroviral dose up to 3 times daily may be helpful.[37]

Therefore it becomes important for the proper counselling to be given to patients taking medication for their HIV and AIDS condition.

1.10 HIV Counselling and Testing (HCT)

HIV counselling has both prevention and care as its objectives. It concentrates on emotional, behavioural, and social issues related to possible or actual infection with HIV. In essence, counselling is a confidential dialogue between a client (in counselling, the word "client" is preferred to "patient") and a counsellor, aimed at enabling the client to cope with stress and take personal decisions related to HIV and AIDS.[53]

HIV counselling and testing (HCT) is a combination of two activities - counselling and testing - into a service that amplifies the benefits of both. It is an approach that is useful in all settings - resource-rich and resource-poor, urban and rural.[53]

HIV counselling and testing has a two-pronged approach. Firstly it helps to determine who requires care and treatment. This includes both antiretroviral therapy (ART) and interventions to prevent mother-to-child HIV transmission (PMTCT). Secondly it helps prevention and transmission of HIV infection to others.[53]

Additionally, HIV counselling and testing can also stimulate discussion about HIV and AIDS and in turn reduce stigma and discrimination.[53]

HIV testing needs to be done with much care and consideration. Due to the implications of receiving a positive result a person must always be counselled before testing in order to prepare the person as far as possible for the impact of the results (a pre-test counsel or interview). Careful counselling must be provided to a person after the test (a post-test counsel or interview). Counselling must be provided to persons whose results are negative to ensure that their results remain negative. It is critical at the start to establish a trusting relationship with the patient. Total privacy must be assured during the consultation with the patient.[23]

1.11 The study site

The study site i.e. the ARV clinic was situated in a public sector hospital (community health centre) situated in the northern suburbs of the eThekwini Metro of KwaZulu-Natal. The pharmacy in this facility saw plus 1000 patients per day ranging from patients visiting the facility for acute ailments to chronic conditions. Medicines were dispensed accordingly. The ARV roll out at this clinic started in October 2006, with the pharmacist being funded by a Non Governmental Organisation. However in May 2007, the management of the ARV pharmacy was taken over by pharmacists from the public sector institution.

1.12 The Province of KwaZulu-Natal

This province remains the epi centre of the epidemic with a prevalence of 38.7%[54]

In South Africa there is considerable geographical variation in the distribution of HIV infection, being highest along the east coast and lowest in the west coast of South Africa.[55] While the overall doubling time at the start of the epidemic in South Africa was 13.8 months, the doubling time at a provincial level varied from 9.2 months in the Northern province of South Africa to 14.1 months in KwaZulu-Natal. The province of KwaZulu-Natal has the largest population in South Africa with just over 10 million people, according to mid 2007 estimates by Statistics South Africa.[56] Slightly more than 50% of South Africa's population live in urban areas, due to migration from rural to urban and also because much of the open space is dry and arid.[56]

The eThekwini Metro in KwaZulu-Natal has a high urban concentration[56] with a population of 3,090,126, where 51.9% (1 605 080) are females whilst 48.1% (1 485046) are males.[57]

CHAPTER 2

RESEARCH METHODOLOGY

2.1 Study design and Site

A descriptive cross sectional study was undertaken at the ARV clinic in a public sector institutional facility situated in the province of KwaZulu-Natal. This site was chosen because the researcher was based at this ARV clinic. The study was done in October and November 2007. The researcher had taken employment in January 2007 at which time the medicines were handed over to the patients without much counselling.

The study was divided into three phases: Pre-Intervention Phase (Phase 1), Intervention phase (Phase 2), and a Post-Intervention Phase (Phase 3). There was no control group as participants acted as their own controls in the pre-intervention phase.

2.2 Sample Population

During the study period, 400 patients were on the database of the ARV clinic. All of these patients were invited to participate in the study. Of these 200 patients gave consent to be part of the study.

2.3 Instruments

An anonymous closed ended structured questionnaire was designed in both languages i.e. English (Appendix 1) and Zulu (Appendix 2). The questionnaire included sections on demographics, knowledge of medicines, medicine taking and disease conditions together with questions on storage, side effects experienced and adherence patterns.

The questionnaire was pilot tested amongst the nurses at the ARV clinic and also amongst the pharmacists in the clinic before administration. The nurses and pharmacists amongst whom the questionnaire was pilot tested were then required to give input and any discrepancies or other ethical issues that was raised, was noted and corrected in the questionnaire.

2.4 Pre-Intervention Phase (Phase 1)

During the patients' clinic visit, the study was explained to each participant (Appendix 3) and a consent form was completed (Appendix 4). The questionnaire was then administered and assistance was given by the researcher to participants who needed clarity on any questions.

On completion of the questionnaires, they were collected and coded. A register of these participants with their corresponding coding was opened and their details entered.

2.5 Intervention Phase (Phase 2)

One month after Phase 1, all patients visiting the ARV clinic were comprehensively counselled by the pharmacists on all aspects of their medicines, medicine taking in terms of when to take it and how to take it, disease condition i.e. how HIV and AIDS is caused; what HIV and AIDS stands for; how it is transmitted; how it can be avoided, together with information on storage i.e. where it should be stored and at what temperatures it should be stored, side effects that could be experienced by patients such as fatigue, headaches, skin rashes, nausea and diarrhoea, peripheral neuropathy, nightmares etc. and the importance of adherence. The pharmacist further helped the patient to plan dose times, explain what to do if a dose was missed and suggest ways to remember to take medication and also how to manage side effects. This counselling session lasted about ten minutes for each patient.

2.6 Post-Intervention Phase (Phase 3)

After the counselling session those patients that participated in Phase 1 of the study were once again asked to consent to be part of Phase 3 of the study.

The same questionnaire that was used in Phase 1 was again completed by the participants who gave consent to be part of this phase. In order to ensure confidentiality, the register of the participants was destroyed after the completion of Phase 3 of the study.

2.7 Data Analysis

The data was captured and analyzed using SPSS version 15.0 (SPSS Inc., Chicago, Illinois, USA). Knowledge was scored allocating a score of 1 to each correct answer and then summing up the scores, and expressed as a percentage out of the total possible score with higher percentages indicating higher levels of knowledge. The changes in all factors between pre and post intervention were assessed statistically. Quantitative variables were compared between pre and post using paired t–tests or Wilcoxon signed ranks tests. Categorical variables were tested using McNemar's chi square test (Binary) or McNemar-Bowker test for ordinal variables.

2.8 Ethics

Ethical approval was obtained from the University of KwaZulu-Natal Research and Ethics Committee (ethics clearance number: FECHSC 002/07) and from the senior management of the study site and the provincial health department in KwaZulu-Natal. Anonymity of responses was maintained by requesting participants not to disclose their personal details on the questionnaires.

CHAPTER 3

RESULTS AND ANALYSIS

3.1 Response Rate

200 persons consented to be part of Phase 1 of this study. Only 175 completed the second phase of the study resulting in a response rate of 87.5%

3.2 Demographic profile of the participants

The demographics of the participants are depicted in Table I

Table I: Demographic profile of participants

	Frequency N=175	Percent
GENDER		
Male	39	22.3%
Female	136	77.7%
AGE GROUP		
21-30	47	26.8%
31-40	75	42.8%
41-50	45	25.7%
51-60	7	4%
61-70	1	0.5%
POST SCHOOL EDUCATION		
Yes	13	7.4%
No	162	92.6%

The majority of the patients were female. Almost 70% of the participants were in the age-range of 21-40 years old. Majority of the participants did not have post school education.

3.3 Knowledge of HIV and AIDS

3.3.1 General HIV and AIDS knowledge

Table II: General knowledge of HIV and AIDS (n=175)

Question	% Correct	
	Pre	post
HIV is a bacteria which causes AIDS	4.6%	6.3%
People with AIDS cannot fight sicknesses such as diarrhoea, TB and pneumonia	61.7%	46.3%
The HIV virus attacks the heart and liver	49.1%	53.1%
You can tell from a persons' appearance that they have the HIV virus	80.5%	91.4%
A person has less chance of getting the HIV virus if they have one partner	84.0%	89.7%
A person can get infected with the HIV virus if they have unprotected sex with someone who has HIV	97.1%	98.9%
People who have sexually transmitted diseases (STD's) are least at risk of getting the HIV virus	35.4%	61.1%
Not all babies whose mothers are HIV positive, are born with the virus	89.7%	91.9%
Healthy food will cure HIV	52.9%	86.3%
Smoking and drinking alcohol will strengthen the body	98.3%	98.3%
Smoking and drinking alcohol will weaken the HIV virus	68.0%	93.1%
Support groups cannot help people with HIV and AIDS deal with anger and loneliness	80.6%	93.7%
Diarrhoea is when you pass two or more loose or watery stools a day	93.1%	94.9%
When a person starts to cough, cough mixtures to stop the cough can be taken	63.4%	84.0%
People with HIV and AIDS have problems with their skin, for example rash	97.1%	98.3%
A person can get re-infected with HIV	92.6%	95.4%

Most of the participants (95.4%) did not know that HIV is a virus that causes AIDS in the pre intervention phase, but this decreased to 93.7% in the post intervention phase. The participants' knowledge of people who have sexually transmitted diseases are least at risk of getting HIV, healthy food will cure HIV and smoking and drinking alcohol will weaken the HIV, increased significantly from the pre-intervention phase to the post intervention phase.

When asked if their antiretroviral medication was a complete cure, 87.4% said no whilst a small minority 10.3% said yes and 2.3% were unsure prior to the intervention.

After the intervention, 88.6% said no, while 8.6% said yes and 2.9% did not know.

3.3.2 Knowledge of modes of transmission

Table III: Modes of transmission (n=175)

Modes of Transmission	% Correct	
	Pre	post
Sharing Needles with a person infected with HIV and AIDS	97.7%	99.4%
Unprotected sexual contact with a person infected with HIV and AIDS	99.4%	100.0%
Contact with blood	98.3%	98.3%
Sharing toilet seats with a person infected with HIV and AIDS	93.1%	95.4%
Using the same eating and drinking utensils of a person infected with HIV and AIDS	95.4%	96.0%
Kissing a person infected with HIV and AIDS who has sores in his or her mouth	84.0%	87.4%
Touching a HIV patient	94.9%	94.9%
Being bitten by a mosquito	68.6%	75.4%
Sexual contact with a homosexual with an unknown HIV status	15.4%	15.4%
Working with a person infected with HIV and AIDS	96.6%	96.0%
Sexual contact with too many partners with an unknown HIV status	92.0%	97.1%

Knowledge on the modes of transmission either increased or remained unchanged. Majority of the participants (94.6%) did not know that sexual contact with a homosexual with an unknown HIV status can result in HIV.

3.3.3 Knowledge of HIV prevention

Table IV: Responses on HIV prevention (n=175)

Prevention	% Correct	
	Pre	post
By abstaining from sex	93.7%	94.9%
By using latex barriers (condoms)	97.7%	97.1%
By preventing needle sharing	98.9%	98.3%
By being faithful to one partner	97.1%	96.0%
By not associating with HIV and AIDS patients	91.4%	92.6%

The mean knowledge score Pre-Intervention was 82.1% with a standard deviation of 6.6% while after the intervention it had increased to 86.3% (SD 6.6%).

Table V: Paired t-test for the comparison of mean knowledge score pre and post intervention

	Mean	N	Std. Deviation	Std. Error Mean	p value
knowledge score Pre-Intervention	82.10	175	6.598	0.499	<0.001
knowledge score Post-Intervention	86.35	175	6.628	0.501	

3.4 Participants perceptions of HIV and AIDS

Table VI: Perceptions of HIV and AIDS (n=175)

Perception	% Correct	
	Pre	post
Sex with a virgin can cure HIV and AIDS	97.7%	97.7%
Sex with a child can cure HIV and AIDS	100.0%	98.3%
Traditional healers can cure HIV and AIDS	97.7%	98.9%
If a person is too thin, he/she has HIV and AIDS	90.3%	93.7%

All but one participant pre intervention (n=174, 99.4%) reported that they ate a balanced healthy diet, and 100% reported eating a balanced healthy diet post intervention. Most of the participants (over 90%) stated that fruit; vegetables; dairy products; chicken; red meat and starches formed the main components of their diet.

3.5 Counseling

3.5.1 Adherence

Twelve participants improved their adherence from pre to post intervention, whilst 4 of the participants adherence worsened. Although this suggests an improvement trend, it could not be confirmed statistically. (p=0.077)

3.5.2 Side effects

When asked if the side effects of the medication were explained to the participants, 98.3% (n=172) said yes whilst 1.7% (n=3) said no in the pre-intervention phase. This increased to 100% (n=175) in the post intervention phase.

In terms of participants' understanding of medication and side effects, when side effects were experienced, 96% (n=168) said they would go to a doctor or clinic

immediately in the pre-intervention phase. This increased to 99.4% (n=174) post-intervention.

When asked what they would do if they vomited after taking their medication, 94.9% (n=166) stated that they would take their medication again if they vomited less than 30 minutes after taking the medication, and at post intervention this improved to 97.7% (n=171). 92% (n=161) said they would do nothing if they vomited more than 30 minutes after taking their medication pre intervention while this improved to 96% post-intervention.

Thus the intervention resulted in a slight improvement in medicine taking, none of which were statistically significant.

3.5.3: Storage of antiretroviral medication

Table VII: Storage of antiretroviral medication pre and post intervention (n=175)

		Pre-Intervention	Post-Intervention
		%	%
Stavudine	Cupboard	49.1%	51.4%
	Handbag	31.8%	32.9%
	Other	19.1%	15.6%
Lamivudine	Cupboard	49.7%	52.0%
	Handbag	31.4%	32.6%
	Other	18.9%	15.4%
Nevirapine	Cupboard	43.2%	47.2%
	Fridge	.0%	2.8%
	Handbag	40.5%	44.4%
	Other	16.2%	5.6%
Efavirenz	Cupboard	52.5%	54.0%
	Handbag	28.8%	29.5%
	Other	18.7%	16.5%

In both phases, over 40% of all patients stored their medication in the cupboard. There were no significant differences in terms of storage of the antiretroviral medication in both pre and post intervention.

3.5.4 Ways in which medication are taken

Table VIII: Ways in which antiretroviral medication are taken (n=175)

		Pre	Post
		%	%
Stavudine	with food	62.4%	70.5%
	without food	14.5%	11.0%
	empty stomach	22.0%	18.5%
	fatty meal	.6%	.0%
	any time when I remember	.6%	.0%
Lamivudine	with food	62.3%	70.3%
	without food	14.9%	11.4%
	empty stomach	21.7%	18.3%
	fatty meal	.6%	.0%
	any time when I remember	.6%	.0%
Nevirapine	with food	57.9%	69.4%
	without food	13.2%	13.9%
	empty stomach	28.9%	16.7%
Efavirenz	with food	63.5%	70.5%
	without food	15.3%	10.8%
	empty stomach	19.7%	18.7%
	fatty meal	.7%	.0%
	any time when I remember	.7%	.0%

Table VIII shows that the frequency of initially reported taking medication with a fatty meal or any time they remember was decreased after the intervention to 0. The

majority of the patients took their medication either with or without food at both phases of the study.

CHAPTER 4

DISCUSSION

The respondents knowledge on HIV and AIDS ($p<0.001$) and on medicine taking and storage ($p<0.05$) had increased significantly after the intervention of the pharmacist which suggested that the pharmacist did make a positive impact on the knowledge of the HIV infected patients who attended the public sector facility where the study was carried out.

In terms of the specific questions asked on general knowledge, most of the participants knew about the disease with the exception of the question relating to HIV being a bacteria that causes AIDS, where a very small percentage knew the correct answer.

One possible reason could be that the participants may not have known that there is a difference between a bacteria and a virus as over 92% of them did not have post-school education.

Despite the pharmacist counselling the patients, the second possible reason could be that those respondents still believed that HIV (irrespective of whether it is a bacteria or a virus) does not cause AIDS. This belief could have been influenced by the dissident view shared by the previous South African President, Mr Thabo Mbeki, where he stated that HIV was not responsible for AIDS.[58,59]

With regard to sexually transmitted infections being a risk to contract HIV, just over a third of the respondents had answered correctly however after the intervention about

two thirds of the respondents showed a greater knowledge towards sexually transmitted diseases and HIV infection. This finding is also supported by a study done in Ghana where it was found that pharmacists played a crucial role in the effective management of sexually transmitted infections.[60]

Another study done amongst high school students in Kathmandu Valley, Nepal, found that pre-education knowledge of sexually transmitted infections was quite low (41.7%) as compared to post-education knowledge which increased to 87.2%.[61]

Smoking and drinking alcohol seemed to be perceived by some of the respondents as a means of weakening the virus as only 68% of the respondents answered this question correctly before the intervention of the pharmacist. Even though this number greatly increased after the intervention, a small percentage of 6.9% still believed that smoking and drinking alcohol does have an effect on the virus. This could possibly be one of the reasons why smoking and alcohol consumption are so common amongst HIV infected individuals as shown by some studies.[62] Other studies have shown that smoking and alcohol consumption amongst HIV positive individuals is high, due to the stress caused by HIV status disclosure. Also many patients believed that stopping smoking would not improve their health.[63]

In this study a small percentage of the respondents, both in the pre-intervention (12.6%) and post-intervention (11.4%) phases, felt that AIDS could be cured which correlated to a study done in Malaysia amongst young Malaysian adults where it was found that 18.1% believed that there was a cure for AIDS.[64]

A large majority of the study population knew how HIV was transmitted with a further increase in the numbers knowing the different modes of transmission after the pharmacist intervention. However the percentage that responded to the question on whether sexual contact with a homosexual with an unknown HIV status can cause

AIDS remained the same in both the pre and post intervention phases even though the pharmacist counselled them. A possible reason could be that the terminology 'homosexual' had been used and not the common terminology 'gay', thus leading to respondents being confused or not understanding the question but too afraid to ask. Possible reasons could be that some patients may feel embarrassed to ask questions. Studies have shown that patients are afraid to ask questions or request explanation of terms for fear of being ridiculed, fear of the illness and treatment or fear of the doctor, in this case it could be the researcher.[65]

Almost a third of the respondents believed that being bitten by a mosquito could transmit the virus, however of concern is that even after the intervention, a quarter of the respondents still maintained this belief. The belief that mosquitoes are vectors for HIV is a quite common misconception that has been shown in other studies as well.[66]

A further concern was that even though the respondents were counselled by the pharmacist and there was a positive outcome, a small percentage of respondents still retained their own beliefs. With the exception of whether having unprotected sex can transmit the virus, the other responses in the post intervention phase did not give a 100% positive response to the questions. Of concern were questions on transmission (viz. via contact with blood, HIV infected persons with sores in mouth being kissed, sexual contact with too many partners of unknown status could lead to risky behaviours) which if respondents do not accept as means of possible modes of transmission could further lead to the spread of the virus. Therefore more education on the different modes of transmission is essential in order to prevent further transmission thereby containing the epidemic.

Over 91% of the respondents were familiar with HIV prevention methods as they answered correctly to the questions given. However a small percentage still did not

change views or beliefs even after the intervention in that they still maintained that abstaining from sex, using condoms, being faithful to one partner etc. would not contribute as HIV prevention methods. The finding relating to condom use correlates to another study where it was found that only 79.5% knew that HIV could be prevented by using condoms.[64]

Even though 12 participants improved adherence from pre to post intervention in this study and although it was not statistically significant, there was an improvement with the intervention of the pharmacist. This can be likened to a US based study where it was shown that few non-compliant patients obtained an undetectable viral load prior to the pharmacists' intervention. However a significantly higher proportion of patients achieved an undetectable viral load after attending a pharmacist counselling clinic. In treatment experienced patients, the incorporation of a pharmacist in the HIV care team had a significant impact on patient outcomes.[67]

In terms of side effect knowledge, the pharmacist intervention resulted in an improved response from the pre to the post intervention phases.

Pharmacists played a positive role in the way patients took their medication with regard to food in that most patients would avoid taking their medication with a high fatty meal after the intervention and took their medication correctly either with or without food. This is important since food can affect the absorption, metabolism, distribution and excretion of antiretroviral medication. Important interactions include efavirenz with a high fatty meal which should be avoided due to an increased drug absorption.[51]

Some of the respondents chose the bedroom, drawers in bedroom, drawer in dressing table, headboard, in a box, in a bag, in shoe box, in underwear drawer, on top of wardrobe and on shelves in bedroom as places of storage for their antiretroviral

medication. This proved to be interesting since patients seemed to be hiding their medication. This could have been due to the patients not wanting anyone to know their HIV status and also because HIV is associated with stigma and discrimination, as these individuals, if found out to be HIV positive, could face rejection by their families and communities.[26] AIDS related stigma and discrimination can also directly hamper the effectiveness of AIDS responses. Stigma and discrimination can directly affect the likelihood of protective behaviours.[68]

Most of the participants stored their medication either in their handbags or in the cupboard. This could have been done out of convenience and also because of accessibility. Therefore no amount of counselling could have changed this behaviour. Only a small percentage of respondents (2.8%) wanted to store their medication in the fridge even after the intervention of the pharmacist. A possible reason could be that they did not have a fridge and those who indicated after the intervention that they stored their medicines in a fridge could have acquired one or found a fridge where they could store their medicines after knowing the importance of storing ARV medications in the fridge.

In terms of perceptions of HIV and AIDS, when asked if sex with a child can cure HIV and AIDS, 100% of the participants answered correctly however after the intervention 1.7% of the participants answered incorrectly. A question similar to this that asks if having sex with a virgin can cause AIDS, resulted in 2.3% of the participants answering it incorrectly in both the pre and post intervention phases even after the pharmacist intervention. This finding is consistent with studies where it has been shown that people believe the myth that having sex with a virgin could cure AIDS. These people would choose a child with the belief that the child is more likely to be a virgin.[69]

Another study done in Lesotho, had shown that some people believe that having sex with a virgin can cure HIV infection and they also feel that having sex with a child is similar to having sex with a virgin.[70]

Limitations

This study was limited to patients who were willing to participate in the study. The sample size was relatively small and confined to one hospital. Secondly, the reliability and validity of the participants' self reporting was unknown.

CHAPTER 5

CONCLUSION and RECOMMENDATIONS

CONCLUSION

This study shows that a pharmacist led intervention can lead to a significant improvement in the knowledge of HIV and AIDS patients regarding the HIV disease, its mode of transmission, prevention methods and antiretroviral medication use, storage and also adherence to medication. Pharmacists play a crucial role in distributing AIDS-related information to the public and promoting the understanding of HIV and AIDS.

RECOMMENDATIONS

- Pharmacists whether in the public or private healthcare sector should become more involved in the management of HIV infected patients.
- Pharmacists should play a pivotal role in the dissemination of HIV and AIDS information.
- The data from this research study could be a useful guide in the development of campaigns or programmes designed to convey accurate information about HIV and AIDS in terms of knowledge and adherence.
- Interventions such as patient education, counselling, health promotion, reminders and provision of resources should be employed to improve adherence to HAART.

- Another intervention study should be done with a larger sample size and a longer interval between the pre and post intervention with similar variables from this study

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APPENDIX 1

Patient questionnaire (English)

(Please tick where necessary)

1. GENDER

Male ☐ Female ☐

2. AGE

_____ Years

3. ARE YOU SOUTH AFRICAN OF

African origin ☐ Indian origin ☐ Coloured origin ☐ White origin ☐ Non South African ☐

4. WHAT IS YOUR HIGHEST GRADE OF FORMAL EDUCATION

Grade_____

4a. IF YOU HAVE COMPLETED GRADE 12, DO YOU HAVE ANY POST SCHOOL EDUCATION

Yes ☐ No ☐

4b. IF YES, PLEASE SPECIFY

_____

5. HOW LONG HAVE YOU BEEN TAKING THE MEDICINES FOR

_____Months _____Years

6. WHAT ARV MEDICATION ARE YOU TAKING:

Lamivudine(3TC) ☐

Zidovudine(AZT) ☐

Stavudine(d4T) ☐

Nevirapine(NVP) ☐

Kaletra™(Lopinavir/Ritonavir) ☐

Efavirenz(EFV, EFZ, STOCRIN™) ☐

7. HOW MANY PILLS DO YOU TAKE PER DAY FOR THE HIV INFECTION

_____

8. HOW MANY TIMES A DAY DO YOU TAKE THE MEDICATION AND AT WHAT TIMES DO YOU DO THIS

Medication	Number of times	Time/Times	Don't know, anytime when it is convenient day and night	Don't know, anytime when convenient. Only during the day	Other times
Lamivudine (3TC)					
Zidovudine (AZT)					
Stavudine (d4T)					
Nevirapine (NVP)					
Kaletra™ (Lopinavir/ Ritonavir)					
Efavirenz (EFV,EFZ, STOCRIN™)					

9. HAVE YOU EVER MISSED TAKING MEDICATION ON ANY DAY SINCE STARTING THE ARV MEDICATION

Yes ☐ No ☐

9a. IF YES, HOW OFTEN DOES THIS HAPPEN

Once a day ☐ Once a week ☐ Twice a week ☐ other-specify ☐

9b. SINCE WHEN HAS THIS HAPPENED

In the last month ☐ In the past 2 months ☐ In the last 6 months ☐ In the last year ☐

9c. INDICATE THE REASON FOR NOT TAKING THE MEDICATION AND ALSO INDICATE HOW OFTEN THIS WAS THE REASON FOR YOU NOT TAKING THE MEDICATION

	Never	Rarely	Sometimes	Most of the time	Always
Was away from home					
Forgot to take pills					
Had too many pills to take					
Had too many side effects					
Did not want anyone to know my HIV status					
Had problems taking pills at specific times of day					
Had other illnesses as well					
There are too many directions to take meds.					
Ran out of medication					
Shared medicines, did not have enough for myself					
Was busy with other things					
Found difficulty in swallowing medication					
Don't know why medication is being taken					
Have to take medication too many times a day					
I was in school					
Other					

10. DO YOU HAVE SOMEONE TO REMIND YOU TO TAKE MEDICATION

Yes-always ☐ Yes-sometimes ☐ No ☐

11. HOW DO YOU STORE YOUR MEDICATION(tick all that apply)

	Kaletra in capsule form	Kaletra in solution	Zidovudine	Stavudine	Lamivudine	Nevirapine	Efavirenz
Cupboard							
Fridge							
Shelves in kitchen							
Bathroom cabinet							
Under mattress							
Bury medication in ground							
Car cubby							
Handbag							
Other (specify)							

12. HOW DO YOU TAKE THE FOLLOWING MEDICATION(only tick under the medication that you are currently taking)

	Kaletra in capsule form	Kaletra in solution	Zidovudine	Stavudine	Lamivudine	Nevirapine	Efavirenz
With food							
Without food							
Empty stomach							
Fatty meal							
Any time when I remember							
Don't know							

13. DO YOU EXPERIENCE ANY OF THE FOLLOWING SIDE EFFECTS:

	Yes	Start time after drug treatment
Nausea &/vomiting		
Diarrhea		
Severe abdominal pain(pancreatitis)		
Headaches		
Dizziness		
Rash		
Tiredness/weakness		
Abnormal body changes (fat distribution-lipodostrophy)		
Numbness,tingling,pain in feet/hands(neuropathy)		
Problems sleeping (insomnia)		
Enlargement of breasts (Gynaecomastia)		
Hyperlactaemia		
Nausea, vomiting, abdominal pain, fatigue, weight loss (lactic acidosis)		
Other		

13a.WHAT DO YOU DO WHEN THESE SIDE EFFECTS ARE EXPERIENCED

Stop the medication completely ☐

Go to a doctor/clinic as soon as possible ☐

Stop medication and then start again ☐

Don't know ☐

13b.HAVE THE SIDE EFFECTS OF THE MEDICATION BEEN EXPLAINED TO YOU BEFORE YOU STARTED TAKING THE MEDICATION

Yes ☐ No ☐

14a.WHAT DO YOU DO IF YOU VOMIT LESS THAN 30 MINUTES AFTER TAKING THE MEDICATION

Do nothing ☐ Take pills again ☐ Don't know ☐

14b.WHAT DO YOU DO IF YOU VOMIT MORE THAN 30 MINUTES AFTER TAKING THE MEDICATION

Do nothing ☐ Take pills again ☐ Don't know ☐

15. DO YOU FEEL THAT THE MEDICATION ARE WORKING FOR YOU
Yes ☐ No ☐

15a.IF YES, HOW DO YOU KNOW THAT THEY ARE WORKING

I feel better ☐

I can go to work ☐

I am not tired ☐

I do not feel sick ☐

Other ☐

15b.IF NO, HOW DO YOU KNOW THAT THEY ARE NOT WORKING

I still feel sick ☐

I still cannot go to work ☐

I feel tired all the time ☐

Other ☐

16. DO YOU COME EVERY MONTH TO COLLECT THE MEDICATION
Yes ☐ No ☐

16a.IF NO, WHAT IS THE REASON FOR NOT COMING TO COLLECT THE MEDICATION EVERY MONTH

Clinic is too far	
No transport	
Unwell	
Nobody to accompany me to the clinic	
Financial problems	
Other	

17. WITH REGARD TO THE FOLLOWING STATEMENTS, PLEASE TICK IF TRUE/FALSE

	True	False
*HIV is a bacteria which causes AIDS	☐	☐
*People with AIDS cannot fight sicknesses such as diarrhoea, TB and pneumonia	☐	☐
*The HIV virus attacks the heart and liver	☐	☐
*You can tell from a persons' appearance that they have the HIV virus	☐	☐
*A person has less chance of getting the HIV virus if they have one partner	☐	☐
*A person can get infected with the HIV virus if they have unprotected sex with someone who has HIV	☐	☐
*People who have sexually transmitted diseases (STD's), are least at risk of getting the HIV virus	☐	☐
*Not all babies whose mothers are HIV positive, are born with the virus	☐	☐
*Healthy food will cure HIV	☐	☐
*Smoking and drinking alcohol will strengthen the body	☐	☐
*Smoking and drinking alcohol will weaken the HIV virus	☐	☐
*Support groups cannot help people with HIV and AIDS deal with anger and loneliness	☐	☐
*Diarrhoea is when you pass two or more loose or watery stools a day	☐	☐
*When a person starts to cough, cough mixtures to stop the cough can be taken	☐	☐
*People with HIV and AIDS have problems with their skin, example rash	☐	☐
*A person can get re-infected with HIV	☐	☐

18. THE CAUSE/S OF HIV AND AIDS IS/ARE

	Yes	No	Don't know
*Sharing needles with a person infected with HIV and AIDS	☐	☐	☐
*Unprotected sexual contact with a person infected with HIV and AIDS	☐	☐	☐
*Contact with blood	☐	☐	☐
*Sharing toilet seats with a person infected with HIV and AIDS	☐	☐	☐
*Using the same eating and drinking utensils of a person infected with HIV and AIDS	☐	☐	☐
*Kissing a person infected with HIV and AIDS who has sores in his/her mouth	☐	☐	☐
*Touching a HIV patient	☐	☐	☐
*Being bitten by a mosquito	☐	☐	☐
*Sexual contact with a homosexual	☐	☐	☐
*Working with a person infected with HIV and AIDS	☐	☐	☐
*Sexual contact with too many partners	☐	☐	☐

19. HIV AND AIDS CAN BE PREVENTED

	Yes	No	Don't know
*By abstaining from sex	☐	☐	☐
*By using latex barriers (condoms)	☐	☐	☐
*By preventing needle sharing	☐	☐	☐
*By being faithful to one partner	☐	☐	☐
*By not associating with HIV and AIDS patients	☐	☐	☐

20. DO YOU THINK THAT

	Yes	No	Don't know
*Sex with a virgin can cure HIV and AIDS	☐	☐	☐
*Sex with a child can cure HIV and AIDS	☐	☐	☐
*Traditional healers can cure HIV and AIDS	☐	☐	☐
*If a person is too thing, he/she has HIV AND AIDS	☐	☐	☐

21. DO YOU THINK THAT THE ARV MEDICATION IS A COMPLETE CURE FOR HIV AND AIDS

Yes	No	Don't know
☐	☐	☐

22. DO YOU EAT A BALANCED, HEALTHY DIET?

Yes ☐ No ☐

23. WHAT DO YOU EAT TO KEEP HEALTHY (list the items)

APPENDIX 2

Patient questionnaire (Zulu)

IMIBUZO YEZIGULI

(Khombisa ngo maka necessary)

1. UBILILI

☐ Owesilisa ☐ Owesifazane

2. IMINYAKA

_____ Iminyaka

3. INGABE UNGOWASE NINGIZUMU AFRIKA

Umumyama ☐ Uindiya ☐ Uyikhaladi ☐ Umhlophe ☐ Ungowoku Hamba ☐

4. IZINGA LAKHO ELIPHEZULU LEZEMFUNDO

_____

4a.UMA UWUHOTHULILE UMATIKULETSHENI,INGABE WAKWAZI UKUQHUBAKA.

Yebo☐ Cha ☐

4b.UMU KUWU YEBO, SICELA WENABE

_____

5. LEMITHI USUYITHATHE ISIKHATI ESINGAKANANI:

_____Izinyanga eziwu _____Iminyaka ewu

6. IMIPHI IMITHI YEMISHANGUZO OYITHATHAYO:

Lamivudine(3TC) ☐

Zidovudine(AZT) ☐

Stavudine(d4T) ☐

Nevirapine(NVP) ☐

Kaletra™(Lopinavir/Ritonavir) ☐

Efavirenz(EFV, EFZ, STOCRIN™☐

7. MANGAKI AMAPHILISI OWATHATHAYO NGELANGA OWATHATELO IGCIWANE LESANDULELA NCULAZI

_____

8. UWATHATHA IZIKHATHI EZINGAKI AMAPHILISI FUTHI NGAZIPHI IZIKHATHI

Umuthi	Izikhathi ezingaki	Nga siphi isikhathi	Angazi/noma inini lapho ngithola khona isikhathi. Emini na-ntambama	Angazi/Noma nini uma nginesikhathi emini kuphela	Nsezinye, izikhathi
Lamivudine (3TC)					
Zidovudine (AZT)					
Stavudine (d4T)					
Nevirapine (NVP)					
Kaletra™ (Lopinavir/ Ritonavir)					
Efavirenz (EFV,EFZ, STOCRIN™)					

9. SELOKHU WAQALA UKUTHATHA IMITHI YAKHO,USUKE WAKHOHLWA NJE UKUYITHATHA

Yebo ☐ Cha ☐

9a.UMA KUWU YEBO SEKWENZEKE IZIKHATHI EZINGAKI

Kanye osukwini ☐ Kanye evikini ☐ Kabili evikini ☐ Okunye ☐

9b.KWENZEKE NINI LOKHU

Ngenyanga eyedlule ☐ Ezinyangeni ezinbili ezedlule ☐ Ezinyangeni eziyithupha ezedlule ☐

Ngonyaka odlule ☐

9c. AWUCHAZE IMBANGELA YOKUNGAWA THATHI AMAPHILISI FUTHI UKHAZE UKUTHI KWENZEKE IZIKHATHI EZINGAKI.

	Awukaze	Akuva misile	Kuyenzeka kwesinye isikhathi	Izikhathi eziningi	Njalo
Ngangikude nasekhaya					
Ngakhohlwe ukuthatha amaphilisi					
Nyangi namaphilisi amaningi okwakufanele ngiwathatha					
Ayengiphatha kabi					
Ngangingafuni abantu bazi ukuthi nginegciwane					
Nganginenkinga ukuthatha amaphilisi kwezinye izikhatha osukwini					
Ngangigula ngiphethwe okunye ngaphandle kwegciwane					
Miningi kakhulu imini ngwane yokuthatha lemithi					
Ngaphelelwa amaphilisi					
Ngangiwaboleka, ngingenawo awami anele					
Ngangibambekile ngibhizi neziny izinto					
Amaphilisi ayengagwinyeki kunzimu ukuwa thatha					
Angazi ukuthi lemithi ithathewani					
Lemithi ithathwa izikhathi eziningi ngosuku					
Ngisele ngisesikoleni					
Okunye					

10. KUKHONA NJE UMUNTU OKUKHUMBUZAYO UKUTHI UTHATHE IMITHI

Yebo-njalo ☐ Yebo-kuyenzeka ngesinye isikhati ☐ Cha ☐

11. IMITHI YAKHO UYIGANU KANJANI (Tshengisa ngamake)

	Kaletra (ipilisi)	Kaletra (umuthi – ukethu)	Zidovudine	Stavudine	Lamivudine	Nevirapine	Efavirenz
Ekhabetheni							
Efrijini							
Emalayini ekhabethe							
Endaweni yoku gezela							
Ngaphansi kombhede							
Ngiyigabhela ngaphansi komhlabathi							
Emothweni kukhabuyoni							
Esikhwameni engisiphatha njalo							
Enye indawo (chaza)							

12. LAMITHI ELANDELAYO UYITHATHA KANJANI (faka umaki ngaphansi kwemithi oyithathayo kuphela)

	Kaletra (ipilisi)	Kaletra (umithi – ukethu)	Zidovudine	Stavudine	Lamivudine	Nevirapine	Efavirenz
Nokudla							
Ngaphandle kokudla							
Esiswini esinganalutho							
Okunamafutha							
Noma ngaziphi isikhatini uma ngikhumbulile							
Angazi							

13. INGABA IMITHI IYAYE IKWENZE UZIZWA SENGATHI UNOKUNYE KWALO KHI OKULANDELAYO

	Yebo	Isikhathi okwenzeka ngaso emva kikutha tha umuthi
Ukujana ukubiyisa/ukubuyisa		
Ukukhishwa isisu		
Ubuhlungu obukhulu ngasesiswini		
Ukuphathwa ikhanda		
Isiyezi		
Ukuqubuka		
Ukukhathala/nokuphelelwa Amandla		
Ukushintsha emzimbeni (fat distribution-lipodostrophy)		
Ukubandikindiki, amahlaba, ubunlungu ezinyaweni nasezandleni		
Ukungalali		
Ukukhuliswa icuoamabele (uGynaecomastia)		
uHyperlactaemia		
Inzululwane,phalaza,inhulungu zaseswini,ukukathala,ukuncipha		
Okunye		

13a.WENZE NGANI UMA LAZIZINTO EZINGAPHAZULU OZISHILO ZIKUHLASELA

Ngiyayiyeka imithi ngingabe ngisayithata nhlobo ☐

Ngiya kudokotela/eclinic ngokushesha ☐

Ngiyayiyeku la se ngiphinda ngiyithatha futhi ☐

Angazi ☐

13b.INGABE WACHAZELA NGALEZI EZINTO EZIMBI EZENZIWA YILEMITHI NGESIKHATHI UQALA UKUTHATHA IMITHI

Yebo☐ Cha ☐

14a.WENZENJANI UMA UBUYISILE EMIZUZWINI ENGAPHANSI KWEWU 30 EMVA KOKUTHATHA IMITHI

Angenzi lutho ☐ Ngikhatha amanye ☐ Angazi ☐

14b.WENZENJANI UMA UBUYISILE EMIZUZWINI EWU 30 EMWA KOKUTHATHA AMAPHILISI

Angenzi lutho ☐ Ngikhatha amanye ☐ Angazi ☐

15.UCABANGA UKUTHI LEMITHI IYAKUSEBENZELA

Yebo ☐ Cha ☐

15a.UMA KUWU YEBO, WAZIKANJANI UKUTHI AYASEBENZA

Ngizizwa ngingcono ☐

Sengiyakwazi nokuya emsebenzini ☐

Angisakhathali ☐

Angizizwa ngigula ☐

Okunye ☐

15b.UMU KUWU CHA, WAZI KANJANI ULUTHO AWASEBENZI

Ngizizwa ngesagula ☐

Angikakwazi ukuya emsenenzini ☐

Ngizizwa ngikhathele ngasonse isikhathi ☐

Okunye ☐

16.UZA NGAZO ZONKE IZINYNGAUKULANDA IMITHI YAKHO

Yebo ☐ Cha ☐

16a.UMA KUWU IYIPHI IMBANGLA EKWENZA UNGAKWAZI UKULONDA IMITHI YAKHO ZINYANGA ZONKE

Iklinikhi ikude kakhulu	
Anginayo into yokuhamba	
Uyagula	
Akukho ongihelezelayo ukuya eklinikhi	
Anginamali	
Okunye	

17.MAYELANA NALEZIZITAIMENDE, FAKA UMAKI USHO UKUTHI IQUNISO NOMA

	Qiniso	Amanga
*i-HIV iyigciwane elidala AIDS(ingculaza) (isandulela ngculaza)	☐	☐
*Abantu abane AIDS (ingculaza) abakwazi ukulwa nezifo ezifana nesifo sohhvoo, nesifo sesifuba (TB), isifo sama khaza esihlasela amaphaphu	☐	☐
*Isandulela sengculazi sihlasela inhliziyo kanye nesibindi	☐	☐
*Uyakwazi ukubona ngendlela abukeka ngayo ununtu ukuthi une-sandulela senglulaza	☐	☐
*Umuntu othandawa nomuntu oyedwa unama thuba amangane ukuthu abe-sandulela ingculaza	☐	☐
*Umuntu angiyithola isandulela ngculaza uma eya ocansini akazi vikelanga nomuntu onesandulela sengulazi	☐	☐
*Abantu abanezifo zocansi ezesulelanayo basemathubeni amancane ukuthi bathole isifo sesandulela ngculaza	☐	☐
*Akusibo bonke omama abanesifo sesandulela ngculaza ukuthi izingane zabo zizalwa nalo igciwane	☐	☐
*Ukudla okunempilo kuyayilapha incgulaza	☐	☐
*Ukubhema kanye nokuphuza utshwala kuwunika amandla umzimba	☐	☐
*Ukubhema kanye nokuphuza utshwala kuwenza cibethaka isandulela ngculaza	☐	☐
*Itimba labantu labalekelelayo atibasizi abantu abenegculaza kanye nesesandulela ngculazi ukuze bakwazi ukuthi bamelane nokucasuka nomzwangedwa	☐	☐
*Isifo sohhvoo senzaka uma-ukhishwa isisu esihlabulukile esikukhipaya	☐	☐
*Uma umuntu eseqala ukukohlela, kumele aphuze umuthi wokukohlela	☐	☐

*Abantu abanengculaza nesandulela ngculaza ☐ ☐
Babanenkinga nezikhumba, isibonga irash

*Umuntu angaphinde ayithole ingculaza ☐ ☐

18.IMBANGELA YOKUTHELA IGCIWANE LE HIV ILELILEZI EZILANLELAYO

	Yebo	Cha	Angazi
*Ukusebensisa izinaliti ezidowa nomuntu onegawane le HIV nengculaza ngaphandle kokuviketa	☐	☐	☐
*Ukulala nomunu onegciwane le HIV nengculaza	☐	☐	☐
*Ukuhlangana kwegazi	☐	☐	☐
*Ukuhlala esihlalweni zendlu yoingasese ebesihlale umuntu onegcwane le HIV nengculaza	☐	☐	☐
*Ukusebenziza izinto ezizodwa zokudla nomuntu onegciwane le HIV nengculaza	☐	☐	☐
*Ukuqabulana nomuntu onegawane le HIV nengculazu nezilonde emlonyeni	☐	☐	☐
*Ukuthinta umuntu onegawane le HIV	☐	☐	☐
*Ukulunywa umoskito	☐	☐	☐
*Ukulala nomuntu oyinkonkoni	☐	☐	☐
*Ukusebenza nomuntu onegcwane le HIV nengewu	☐	☐	☐
*Ukulala nabantu abaningi ozwana nabo	☐	☐	☐

19.IGCIWANE LE HIV NENGCULAZA LINGAVIKELWA

	Yebo	Cha	Angazi
*Ngokuthi ona kwi-sex/ ukulalana	☐	☐	☐
*Ngokusebenzisa ama-khondomu	☐	☐	☐
*Ngokuvimbela ukusebenzisa inilithi eyodwa/ ezizokwa	☐	☐	☐
*Ukuziphatha kahle kumuntu wakho oyedwa	☐	☐	☐
*Ngokungahlale/ngokungazi andakanyi nabantu abasegabwane le HIV ne ingculazi	☐	☐	☐

20.INGABE UCABONGO UKUTHI?

	Yebo	Cha	Angazi
*Ukulala nomuntu oyitshitshi kuingalelapha igciwane lesandulela ngculazi nengculazi	☐	☐	☐
*Ukulala nengane encane kungelapha igciwane lesandulela ngculazi nengculazi	☐	☐	☐
*Izinyanga zesintu zingalelapha lgciwane lesandulela ngculazi nengulazi	☐	☐	☐
*Uma umuntu ehlile emzinbeni (owondile) kusho ukuthi unesandulela ngculazi nengculazi	☐	☐	☐

21.UCANGA UKUTHI IMISHANGUZA AMA ARV AYILAPHAIPHELE IGCHLAZI

Yebo	Cha	Angazi
☐	☐	☐

22.NGABE UDLA UKUDLA OKUNEMPILO?

Yebo ☐ Cha ☐

23. IKUPHI UKUDLA OKUDLAYO OKUKUGCINA UNEMPILO (SICELA UBALE)

APPENDIX 3

Introductory Letter

Dear Sir/Madam

Re: Research Project: Informed Consent

I am currently doing a study to determine if you have any problems with your antiretroviral medication in terms of how you take it and whether you take it regularly or if not, why not. The study involves doing research. There are no right or wrong answers. The information you give will help me find better ways to help you. It is voluntary to answer these questions and the answers you give are strictly confidential. In this research, I will also be looking at your prescriptions or history profile to see if your medication have been taken regularly and also if you are adhering to treatment. All your information, whether your name, diagnosis, or treatment will be confidential. Later, I will need to contact you again to re-question you in order to see if your adherence to treatment is improved or not.
I thank you very much for your help.

Mnumzane/Nkosazana

Ngenza ucwaningo ukuze ngithole ukuthi unayo yini inkinga mayelana nendlela yokuthatha imishanguzo yegciwane lesandulela ngculazi (phecelezi, ama-antiretrovirals). Ulwazi ozonginikeza lona luzongisiza ukuthi ngikwazi ukuthola indlela egcono yokukusiza. Awuphoqekile ukuphendula le- mibuzo futhi izimpendulo zakho zizogcinwa ziyimfihlo phakathi kwami nawe. Kulolu-cwaningo, ngizobheka uhlobo lwemishanguzo oluseenzisayo noma umlando wokuthatha lemishanguzo ukuze ngibone ukuthi ikusizile yini nokuthi ubuyithatha ngendlela efanele yini. Yonke imininingwane yakho, igama lakho, isifo esikugulisayo noma imishanguzo oyithathayo izogcinwa iyimfihlo phakathi kwani nawe. Sekunyothi ngemuve nje kwazinsuku waqala ukuphuza imishanguzo ngiphinde ngixhumane nawe ngocingo ngfune ukwazi ukuthi akuphethe kanjani amaphilisi, ikhona inqubekela phambili noma cha.

APPENDIX 4

Consent form

Patient Consent Form:

I, (name) _____, hereby consent to participate in the study. The study has been explained to me in a language that I understand and I do not have any objections to having my information given to the researcher. I understand all information will be confidential and I will remain anonymous and that there will be no way in which information provided by me will be identified with me. I am also aware that if at any stage I withdraw from the study there will be no penalties for my action and that I could withdraw from the study if I choose not to continue.

Signed: _____
Dated: _____

Mina (igama) _____, ngiyavuma ukuthi ngizobamba iqhaza kulesisifundo. Lesisifundo ngiye ngachazelwa ngaso ngolimi lwami engiluqondayo futhi anginazo izizathu zokuphikisana nokunikeza ulwazi lwami umcwaningi. Ngiyaqonda ukuthi lonke ulwazi luzoba yimfihlo. Futhi ngiyakwazi ukuthi uma kwenzeka ngihoxa kulolu cwaningo ngeke ngihlawuliswe ngesenzo sami futhi uma ngiqoka ukuthi ngingaqhubeki.

Sayina: _____
Usunu: _____