

PERCEPTIONS AND BELIEFS OF PHYSICIANS ABOUT
ADHERENCE TO ANTI-RETROVIRAL TREATMENT BY
PATIENTS IN THE SOUTH-EAST DISTRICT OF BOTSWANA

by

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DEDICATION

This work is dedicated to my late father, Mr Brighton Samuel Dzinza, who had so much pride in his children's academic work.

To my dad "If only you had lived a little longer, to see me go through this study".

Irene Dzinza

DECLARATION

I declare that **PERCEPTIONS AND BELIEFS OF PHYSICIANS ABOUT ADHERENCE TO ANTI-RETROVIRAL TREATMENT BY PATIENTS IN SOUTH-EAST DISTRICT IN BOTSWANA** is my own work and that all other sources that I have used or quoted have been indicated and acknowledged by means of complete references and that this work has not been submitted before for any other degree at any other institution.

Irene Dzinza

20 July 2007

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ABSTRACT

This study sought to explore and describe the perceptions and beliefs of physicians about adherence to antiretroviral treatment by patients in the South-East district of Botswana. The Health Belief Model (Naidoo & Willis 2003:222) was adapted to suit and be used in the study. A descriptive, exploratory qualitative design was used. Unstructured interviews and unstructured observation data collection methods were applied. Informed consent was obtained prior to data collection. For triangulation purposes, observations were done following interviews, and data analysis was done by two different people. The findings of the study revealed that the perceptions and beliefs of treating physicians contributed towards adherence. Physicians perceived adherence as an important aspect in the success of antiretroviral treatment. Giving patients correct information, personal motivation, patients' understanding of treatment, traditional and religious beliefs were among other factors perceived by physicians to be impacting on adherence.

Key Concepts: Adherence, Antiretroviral therapy, Acquired Immune Deficiency Syndrome, Physicians, Perceptions, Beliefs.

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List of abbreviations

AIDS	Acquired Immunodeficiency Syndrome
ARV	Anti-retroviral
ART	Antiretroviral Therapy
BLH	Bamalete Lutheran Hospital
HIV	Human Immunodeficiency Virus
IDCC	Infectious Disease Care Clinic
NACA	National AIDS Coordinating Agency
SED	South East District
KITSO	Knowledge Innovation Training Shall Overcome

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OPERATIONAL DEFINITIONS USED IN THE RESEARCH

Physician – according to the Concise Oxford dictionary, physician is defined as “a person legally qualified to practise medicine and surgery; any medical practitioner” (Thompson 2001).

In the context of this research, a physician is a medical practitioner who is registered with the Health Professions Council of Botswana, and has undergone training for the management of patients on anti-retroviral therapy known as the *Botswana Knowledge Innovation Training Shall Overcome* “KITSO” AIDS Training Programme.

Adherence – adherence is defined by the Concise Oxford dictionary as “behaving according to; follow in detail” (Thompson 2001).

For the purpose of this study, adherence means that patients follow the prescribed anti-retroviral treatment regimens in accordance with time and dietary requirements.

Patient – a patient is defined by the Concise Oxford dictionary as “a person receiving or registered to receive medical treatment” (Thompson 2001).

In the context of this study, a patient is an HIV positive person who is registered to take anti-retroviral therapy.

CHAPTER 1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION

This study seeks to describe and explore the perceptions and beliefs of physicians about adherence to antiretroviral therapy (ART) by patients in the public sector, in the South East District (SED) of Botswana.

This chapter presents the background to the study and includes information on the prevalence rates of Human Immunodeficiency Virus (HIV) in Botswana for the past few years, policies and procedures of anti-retroviral (ARV) treatment and the health system in Botswana. Besides highlighting the significance of the research the chapter also spells out the objectives of the study and the questions to be answered by this study.

1.2 BACKGROUND TO THE STUDY

An estimated 40 million people are now infected with HIV in the world. Projections suggest that an additional 45 million people will become infected in developing countries between 2002 and 2010 (Malta, Peterson, Clair, Freitas & Bastos 2005:1425). Because of the high incidence rate of the HIV infection, Acquired Immunodeficiency Syndrome (AIDS) has become the leading cause of death in sub-Saharan Africa (Weiser, Wolfe, Bangsberg, Thior, Gilbert, Makhema, Kebaabetswe, Dickenson, Mompati, Essex & Marlink 2003: 281).

1.2.1 HIV and AIDS in Botswana

Botswana is one of the sub-Saharan countries hardest hit by the HIV epidemic (NACA 2004:12). The high incidence rate of the HIV infection has led the current president of Botswana, Festus G. Mogae, to declare the HIV/AIDS a national emergency in 2002 (NACA 2003 b: 1).

According to statistics obtained by an annual sentinel survey of pregnant women country wide, the prevalence amongst pregnant women in Botswana was 18% in 1992. By 2000, this prevalence increased to 38.5% and by 2001 and 2002, the prevalence had levelled at 36.2% and 35.4% respectively. During 2003, the prevalence amongst pregnant women was 37.4% and in 2004, it rose to 38% (NACA 2002: ii, NACA 2003a: iii, NACA 2004:12). The South East District (SED) HIV prevalence in pregnant women was 32.3% in 2001. This dropped to 26.5% in 2002 (NACA 2002:23).

The following section is a discussion of the health system and the provision of ART in Botswana.

1.2.2 The Health System in Botswana

The health system of Botswana follows a primary health care approach, which consists of decentralised primary health care facilities, district hospitals that are secondary health care facilities where patients that cannot be diagnosed or

treated effectively at primary health care level are referred to; and tertiary health care facilities where specialised health care is provided. Primary health care facilities include mobile health posts, primary health care clinics, and primary hospitals.

Primary health care facilities do not always have the logistics like manpower (doctors and pharmacists) to provide ART and also have insufficient storage space. Patients who qualify to be initiated into the ART programme depending on their clinical condition are referred from primary health care facilities to secondary health care facilities or to tertiary health care facilities depending on the proximity of the facility. Physicians mostly do initiation of patients to ART at secondary health care facilities.

As part of the strategy of fighting HIV/AIDS, the government of Botswana has engaged public-private partnership (PPPs) in the provision of health care and treatment of patients. The private sector is able to provide patients with a full scope of HIV/AIDS treatment (MASA 2004:2). Engaging the private sector ensures rapid enrolment of patients on ART.

1.2.3 Civil society networks in Botswana and HIV/AIDS

In addition to the government of Botswana, civil society networks in Botswana are also engaged in the fight against HIV/AIDS. These groups include the Botswana Network of AIDS Service Organisations (BONASU), which facilitates

and coordinates the work of its constituent organisations through information sharing, technical assistance and accessing resources; Botswana Network of Ethics, Law, and HIV/AIDS (BONELA) an organisation which addresses the human rights issues of people living with HIV/AIDS; the Botswana Network of People Living with AIDS (BONEPWA) whose objectives include facilitating networking and support for people living with HIV/AIDS and sharing information on HIV/AIDS; Botswana Christian AIDS Intervention Programme (BOCAIP) which constitutes church communities whose aim is the prevention of the spread of HIV/AIDS through community education and outreach programmes (NACA 2003b:70).

1.2.4 Antiretroviral treatment in Botswana

The national ART roll out programme was launched in 2002. Botswana has by far the highest treatment rate in Africa (Vardavas & Blower 2005:3). ART aims to maximise the life expectancy of HIV positive people. Recent substantial financial investments in Botswana have enabled the opening of 31 treatment centres. This means that the country is likely to reach its treatment goals by 2009 (Vardavas & Blower 2005:3). The decentralisation of treatment centres aims to reduce the barrier of distance to adherence. According to MASA (2006a:5), 50 044 patients were receiving treatment in the public sector in Botswana, by February 2006. That is above the goal to treat 45 000 patients in 2006. The target for 2009 is 85 000 patients (NACA 2003b:25). Statistics on patient enrolment to ART illustrate that by September 2006, 8500 patients had

been treated in the private sector, through the public-private partnerships in Botswana. By September 2006, 3 999 patients had been out-sourced by the public sector to the private sector and 58 186 had been enrolled in the public sector bringing the total of patient enrolment to 70 685 (MASA 2006b: 4).

The adherence rate in Botswana is approximately 70% (Weiser et al. 2003:283). Failure to comply with the strict adherence to therapy remains a problem in Botswana. Consequently, quality of life of those infected might not be optimally improved as would be expected. Instead, more problems might arise. Research indicates that for optimal viral suppression and effective outcome of ART, adherence should be more than 95% (Paterson, Swindells, Mohr, Brester, Vergis, Squier, Wagener, and Singh 2000:21).

1.2.4.1 Policies and access to antiretroviral treatment in Botswana

Until December 2006, antiretroviral drugs were freely available in the public sector to Botswana citizens only. Any one else could access ART in the private sector for a fee. But when the government out-sources patients to the private sector, the antiretroviral therapy and care is paid for by government. Indications for starting antiretroviral treatment in chronically infected adult patients in Botswana are divided into two groups. The first group consists of patients who are symptomatic, that is, patients who are presenting with severe or recurrent HIV related diseases or tumours, irrespective of the CD4 cell count. These conditions include wasting

syndrome, chronic diarrhoea, encephalopathy, and recurrent bacterial infections. Patients with tuberculosis qualify for treatment with ART in Botswana because tuberculosis is the commonest opportunistic infection and most patients who contract tuberculosis are co-infected with HIV. The second group includes asymptomatic patients with CD4 cell counts of below 200 per millilitre. These patients are at high risk of developing AIDS related disease and may, if not treated, die within a few months (Anabwani & Jimbo 2005:6).

1.2.4.2 Professionals and involvement in the provision of antiretroviral treatment in Botswana

In Botswana, physicians who have to manage HIV positive patients on ART undergo training known as the *Botswana Knowledge Innovation Training Shall Overcome* “KITSO” AIDS training programme. The Botswana-Harvard School of Public Health Partnership runs this programme. Other health professionals, such as nurses, pharmacy and laboratory personnel, who assist in the management of the HIV positive patients undergo an almost similar training. According to Malta et al. (2005:1424), physicians play a key role to foster ART adherence. Patients on ART always consult with physicians since physicians have the legal authority to prescribe the antiretroviral therapy.

Nurses assist in maintaining records, following-up and counselling patients. Pharmacy personnel dispense the treatment and assist in assessing adherence by doing pill counts when patients come for monthly treatment refills. Non-adherent patients are referred back to the nurses and physicians for adherence counselling. Laboratory personnel assist in the management and monitoring of patients on ART by running the relevant blood tests.

1.3 THE RESEARCH PROBLEM

Although ART is readily available in Botswana and provided free of charge in the public sector to patients who meet the eligibility criteria, it seems that people on ART often do not comply with the strict treatment regimen.

Physicians are key role players in screening, providing and monitoring patients on ART. Since physicians actively interact with patients on ART, an understanding of physicians' perceptions and beliefs about ART and adherence may contribute to the implementation of strategies that would improve the adherence rate of patients on ART.

Physicians' attitude towards ART is one of the many factors that influence the number of adherence counselling practices a physician performs (Golin, Smith & Reif 2004: 16-27). Therefore, a physician's attitude, perception and belief of HIV/AIDS and ART would influence a patient's adherence to ART and should be explored.

1.4 PURPOSE OF THE RESEARCH

The main purpose of this study is to explore and describe perceptions and beliefs of physicians on adherence to anti-retroviral therapy by patients in the South East District (SED) of Botswana.

1.5 OBJECTIVES OF THE RESEARCH

The following objectives will guide this research:

- I. To explore and describe the perceptions and beliefs of physicians about
 - a) the health and illness of persons with HIV
 - b) the importance of adherence to anti-retroviral therapy
 - c) the factors that can influence adherence
- II. To determine best practices by physicians in assisting their patients to adhere to anti-retroviral therapy

1.6 RESEARCH QUESTIONS

This research will answer the following questions:

1. What information about health and living a quality life does the physician convey to the patient on ART?
2. What are the perceptions and beliefs of physicians about ART and adherence?
3. Based on the knowledge and experience of the physician, what factors contribute towards adherence and/or non-adherence?

4. According to the physicians, what are the best intervention strategies to enhance patients' adherence to ART?

1.7 STUDY POPULATION

The population for this study was the physicians who are managing patients on ART in the public sector in the South East District (SED) of Botswana and who have undergone the "KITSO" AIDS training in the use of ART. No sampling was done due to the small number of participants who met the criteria of the study population.

A detailed discussion on the study population is presented in chapter 3.

1.8 RESEARCH APPROACH

A descriptive, exploratory qualitative design was used to address the research questions in this study.

The research approach is discussed in detail in chapter 3.

1.9 DATA COLLECTION

Data was collected mainly through in-depth one to one interviews. Observation was also used to collect and triangulate data.

A detailed discussion on data collection is presented in chapter 3.

1.10 DATA ANALYSIS

Tesch's approach (Poggenpoel 2001:343) was used to guide the data analysis for this research.

The process is discussed in detail in chapter 3 and 4.

1.11 THE SIGNIFICANCE OF THE RESEARCH

Strict adherence to ART is necessary to prevent the development of HIV resistant strains. In order to develop effective strategies to increase adherence it is important to understand the factors that influence adherence.

The findings of this study will help physicians to better understand why patients do not adhere to ART. New strategies based on best practices and on physicians' recommendations to increase adherence can be developed.

The government and the society at large will indirectly benefit because of the expected improved quality of life adjusted years (QALYs) of people living with HIV /AIDS. Upon analysing the research methodology used, health facilities in similar settings should be able to apply the recommendations from this research towards improvement of their service delivery to optimise patients' adherence to ART.

1.12 ORGANISATION OF THE RESEARCH REPORT

This section covers a discussion of the general organisation of this research report.

Chapter 1

The first chapter gives an overview of the study.

Chapter 2

The second chapter reports on the literature reviewed.

Chapter 3

The third chapter reflects the research methodology that was used.

Chapter 4

The fourth chapter reports on the research findings.

Chapter 5

In the fifth chapter, the discussion of the research findings is presented. The conclusions from the research findings are discussed. Recommendations based on the research findings are presented.

1.13 SUMMARY

Botswana's prevalence rate of 38% among pregnant women in 2004 is one of the highest in the world (Weiser et al. 2003: 281). The epidemic was announced as a national problem in Botswana in 2002. Since then treatment has been given free of charge to Botswana citizens. The effectiveness of the treatment depends on patients' ability to maintain strict adherence regimen. Strict adherence to ART results in suppression of viral multiplication (low viral load), improved immune response (high CD4 count) resulting in a reduction in morbidity and mortality due to HIV/AIDS. Non-adherence to therapy is associated with rapid HIV disease progression (Bangsberg, Perry, Charlebois, Clark, Robertson, Zolopa & Moss 2001b: 1182).

By exploring and describing the physicians' experiences, perceptions and beliefs about their patients' adherence to ART, this study will identify possible solutions to the problem of non-adherence from a physician's perspective.

The next chapter is on literature that was reviewed for this study.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The purpose of a literature review is to provide better insight into the dimensions and complexity of the research problem. A literature review further equips the researcher with a complete and thorough justification for the subsequent steps to be followed in the research process. Gaps in some previous research are identified through literature review. The literature review aims at refining and redefining the research questions as well (De Vos & Fouche 2001:66 – 67).

The research topic and related aspects are studied in-depth and discussed in the literature review chapter. The concept of adherence, the measurement of adherence and the importance of adherence will be clarified in the literature review chapter. Some of the modifying factors that impact on adherence are identified from previous studies and discussed. The Health Belief Model is used as the theoretical framework to describe and analyse the research issues. The relevance and application of the model will be discussed in the literature review chapter.

2.2 ADHERENCE

Machtinger and Bangsberg (2005:3) define medication adherence as the extent to which a patient takes medication in the way intended by a health care provider. In a study done by Weiser et al. (2003:282), adherence in relation to ART is defined in the

following terms: taking 95% of prescribed doses over the previous year which is equivalent to missing not more than one dose in a ten (10) day period. Other data suggest 100% adherence to achieve greater benefit to ART (Clinical Manual 2005:2). According to Nieuwkerk, Sprangers, Burger, Hoetelmans, Hugen, Danner, Van der Ende, Schneider, Schrey, Meenhorst, Sprenger, Kauffmann, Jambroes, Chesney, De Wolf and Lange (2001:1962), adherence to ART includes taking multiple drugs 2 to 4 times a day according to a strict schedule. For the purposes of this study, adherence means that patients follow the prescribed anti-retroviral treatment regimens in accordance with time and dietary requirements.

Adherence to medications is crucial for effective therapy. Unfortunately life long adherence to such levels is not very easy in Botswana and internationally (Clinical Manual 2005: 2; Machtinger & Bangsberg 2005:2-3; Weiser et al. 2003: 284). Despite the fact that long-term viral suppression requires near perfect adherence, the average rate of adherence to ART is approximately 70% worldwide (Machtinger & Bangsberg 2005:2; Clinical Manual 2005:2). According to Machtinger and Bangsberg (2005:3), non-adherence to ART is common in all groups of treated individuals. Lack of strict adherence to ART is considered one of the key challenges to AIDS care worldwide (Weiser et al. 2003: 281; Kgatlwane et al. 2005:4).

A study done in Botswana on barriers to ART adherence for patients living with HIV infection and AIDS revealed that a majority of patients found it difficult to achieve 95% adherence (Weiser et al. 2003:284). The study was a cross-sectional study of the social, cultural and structural determinants of treatment adherence. Levels of

adherence of people receiving ART in three private clinics in Botswana between January and July 2000 were reported. The patients were asked to indicate their adherence over the previous day, previous week, previous month, and previous year. Adult patients who had been receiving ART for at least three months were eligible. Health care providers (that is the physicians, nurses and the pharmacists) were asked to indicate their assessment of the patients' adherence over the previous year. Adherence was defined as taking 95% of prescribed doses over the past year. The findings were 54% of patients were adherent with more that 95% of prescribed doses.

The central role of adherence to ART to achieve successful treatment of HIV has prompted a flurry of research into adherence and has increased physicians' interests in an attempt to address adherence issues in the context of on going care (Turner 2002: S149).

The following section discusses the importance of adherence and the measurement of adherence.

2.2.1 The importance of adherence

Adherence, toxicity, and resistance are matters of intense research, which need to improve in order to overcome the current limitations of available drugs (Cahn 2004:55). According to Simpson, Whipper-Lewis, Mazyck [Sa] (downloaded 04/05/2006), adherence to ART is essential for both primary and secondary prevention in HIV related diseases. Adherence to ART results in a decrease in viral load, morbidity and mortality. Adherence to ART improves survival,

decreases hospitalisations and acute events and decreases the risk of transmission 10 to 100 fold. Proper adherence also results in minimising the emergence of drug resistant strains and an increase in CD4 lymphocyte count as discussed below. That adherence is important in HIV/AIDS treatment cannot be overemphasised. However, problems of drug resistance have cropped up and will be discussed in the following section.

2.2.1.1 Drug resistance

One of the biggest problems associated with ART especially in Africa is the emergence of resistant strains. Adherence remains a worldwide challenge to the success of ART especially with the emergence of resistant strains. Sub-optimal adherence facilitates the emergence of drug-resistance HIV-1 variants. Drug resistant strains are transmissible and that is why non-adherence becomes a public health concern. The problem of resistant strains can result in resistant viral strains of HIV being transmitted to newly infected individuals who will therefore have fewer treatment options from the start of their HIV infections (Kgatlwane, Ogeny, Ekezie, & Madaki 2005:7; Harries, Nyangulu & Hargreaves 2001:411).

Vardavas and Blower (2005: 2) did a study on the emergence of drug resistant HIV strains in Botswana. The study aimed at predicting the evolution of drug-resistant strains of HIV that may emerge as a consequence of ART. A mathematical model was used to predict the

temporal dynamics of transmitted resistance up to 2009. The results showed that if the drug resistant strains that evolve were only 25% as transmissible as the existing strains, then transmitted resistance would reach at most just below 3% by 2009. If drug resistant strains that evolve are 50% as transmissible as the current strains, then drug resistant strains will reach 6% by 2009. Levels of transmitted resistant strains are predicted to reach 13% by 2009 if the drug resistant strains are as transmissible as the existing strains. Higher results are expected if the drug resistant strains that evolve are more transmissible than the existing strains. Currently, relatively little is known about the transmissibility of drug resistant strains of HIV in vivo (Vardavas & Blower 2005:4). In United States, the average adherence rate to ART is 70% and this poses the risk of drug resistance (Clinical Manual 2005:2).

Adherence is therefore a very important area of research in the context of emergence of resistant strains.

2.2.1.2 Viral load and drug levels

The significance of adherence is emphasised in the study done by Nieuwkerk et al. (2001: 1961). This study done in the Netherlands, between 1998 and 1999 involved HIV infected patients who were 18 years or older. The patients were enrolled in an observational cohort study. Patients who reported deviation from this regimen showed lower drug exposure compared to fully adherent patients. Among those receiving ART for at least

24 weeks, patients reporting deviation from their regimen were less likely to have plasma HIV-1 RNA levels below 500 copies/ml compared to fully adherent patients. Patients who reported taking all their medications not according to time and dietary proportions as prescribed were more likely to have a viral load above 500 copies/ml. The results indicate that poor adherence results in lower drug levels and higher viral load.

A similar conclusion was obtained in a study done by Isabelle, Mounirou, Alice, Karim, Fatou, Barra, Omar, Eric and Ibrahima (2003:S103-S108) in Senegal. The study assessed adherence and identified the main reasons for treatment interruption in a prospective observational cohort of patients participating in an antiretroviral access programme in Dakar, Senegal between November 1999 and October 2001. The relationship between adherence and virologic efficacy was also established. Comparison of the mean viral load values was done between those with stated adherence of 90% or more and those with poorer adherence, which is below 90%. Viral load was higher in the less adherent patients.

These results show the importance of addressing the issues of adherence for viral suppression in patients on ART. Kgatlwane et al. (2005:7) reiterate that the viral suppressing effect of ART requires strict adherence to prescribed schedules.

2.2.1.3 Adherence and hospitalisation

In a study done in Pittsburgh, United States of America, Paterson et al (2000:20) also reported the importance of adherence. In their study, patients with treatment adherence of 95% or greater had fewer hospitalisation days than those with lower treatment adherence rates. In addition, no opportunistic infections or deaths occurred in patients who had an adherence rate to of 95% or greater.

2.2.1.4 Disease progression and CD4 lymphocyte count

In a study investigating the relationship between level of adherence and risk of progression to AIDS, Bangsberg et al. (2001b:1182) found a strong relationship between the level of adherence to ART and the risk of progression to AIDS. Disease progression was defined as a decline in the CD4 cell count to below 200 cells/ul or the development of an opportunistic infection during follow-up. In the same study (Bangsberg et al. 2001b:1182) using a population-based cohort of HIV positive urban adults with a high risk of non-adherence in San Francisco, America, it was found that none of those in the high adherence group developed an AIDS event during observation compared with 8% of those in the moderate adherence group and 41% in the low adherence group. A fall in viral load is associated with a steady rise in CD4 cell count (Anabwani & Jimbo 2005:3). The results from the study by Bangsberg et al. (2001b:1182) show the importance of

adherence in slowing down the rapid progression to AIDS by maintaining a low viral load and a high CD4 count.

Harries et al. (2001:410) emphasise the aspect of adherence as a significant barrier to the delivery of ART therapy in sub-Saharan Africa. Proper adherence has been shown to improve life expectancy and prevents the spread of drug-resistant strains. Studies that attempt to predict causes of non-adherence and studies that explore strategies that can reduce the number of missed doses continue (Castro 2005:4). Patients tend to trust physicians as sources of health information and advice (Hogan & Palmer 2005:9). Physicians are therefore well positioned to promote adherence because of the patient-physician relationships that already pertain. Studying physicians' perceptions and beliefs about patients' adherence to ART might offer useful insights into causes of non-adherence and into appropriate strategies that can improve non-adherence and foster proper adherence.

2.2.2 Measurement of adherence

ART is a life long treatment. However, pill fatigue usually sets in and patients who start off adequately adhering to therapy default at one moment or the other during treatment. Strategies that can assist patients who falter on their ART treatment and strategies that help to monitor and evaluate antiretroviral programmes and treatment outcomes need to be put in place if the fight against HIV/AIDS is to be won.

Although there are a variety of methods that can be used to measure treatment adherence no single method is perfect (Machtinger & Bangsberg 2005:16). Each measure has its own merits and weaknesses. According to Turner (2002:S143), measurement to adherence may include patient's self-report, pharmacy based approaches, pill counts and electronic monitoring.

2.2.2.1 Self- reports

Self-reporting is when the patient gives a drug history regarding missed or incorrect doses (Anabwani & Jimbo 2005: 2).

According to Turner (2002:S145), estimates of treatment adherence from patients' self reports are less complex to obtain than other methods. The advantages of self-reports is their low cost and flexibility of their design. Questionnaires that suit individual language are easily collected and can help to determine why patients are non-adherent. The major limitation of self-reports is that they are subjective and reflect only short term or average adherence and may often exaggerate adherence. In order to increase the validity of self-reported adherence, it is important to present a preamble that reassures patients that the information will not be held against them and that problems with adherence are not are nearly universal (Turner 2002:S146).

2.2.2.2 Pill counts

Pill counts involve counting of the remaining doses of medication in a specified cycle. The return of excess pills provides tangible evidence of non-adherence (Machtinger & Bangsberg 2006:16).

The health care provider or the pharmacist can do pill counts. The problem with this method is that it is time consuming and determining the date when the patient commenced the current prescription(s) can be difficult, especially when patients combine all their pills in one bottle (Turner 2002:S146). Another problem identified, is that patients dump pills in order to appear more adherent when counts occur. Unannounced pill counts were developed to counter this practice. This is when health care providers conduct pill counts at unannounced home visits. The problem with unannounced pill counts is that they are intrusive and cumbersome for common clinical practice (Machtinger & Bangsberg 2005:16).

2.2.2.3 Biological markers

According to Machtinger and Bangsberg (2005:16) biological markers of adherence are plasma concentration of antiretroviral drugs. According to the authors, the problem with this method is that it can only detect recent adherence behaviour. In addition, these tests are often expensive and

generally unavailable (Machtiger & Bangsberg 2005:16 - 17). This method is therefore rarely used in Africa.

2.2.2.4 Pharmacy refill data

Pharmacy refill data can serve as an adherence measure by providing the dates on which antiretroviral medications were dispensed (Machtiger & Bangsberg 2005:17). Poor adherence is noted when there are no timely refills of medication. This provides a less intrusive means of measuring adherence than most other measures (Machtiger & Bngsberg 2005:17).

2.2.2.5 Electronic monitoring devices

The Micro Electronic Monitoring System (MEMS) is an electronic device that can be used to monitor adherence. These devices are pill bottles with caps that contain an electronic chip that records the number of times the bottle is opened. Researchers or care providers can download the data periodically from the chip and identify patterns of adherence (Turner 2002:S151).

Some studies have shown the sensitivity for MEMS to be very high for detecting non-adherence. In a study done by Arnsten, Demas, Farzadegan, Grant, Gourevitch, Chang, Buono, Eckholdt, Howard and Schoenbaum (2001: 1417 – 1423), MEMS was compared with self-reported adherence in an on-going cohort of drug users in New York in 1985. Although MEMS was

found to be a more sensitive measure of clinically significant non-adherence it has its limitations. The system can only assess one prescribed medication, and in addition cannot generally measure adherence to the other components of the combination therapy. The number of pills withdrawn at each bottle opening is not recorded (Machtinger & Bangsberg 2005:16).

2.2.2.6 Measurement of adherence in Botswana

The ART guidelines in Botswana recommend three or more of the following methods for adherence:

- a) a careful drug history regarding missed or incorrect doses (self-reporting)
- b) directly observed therapy by a nurse , pharmacist, family member or friend
- c) pill count (patients asked to bring back all remaining medication)
- d) blood drug level measurements where available
- e) assessment of the mean corpuscular volume (MCV) in Zidovudine containing regimens
- f) periodic viral load and CD4 cell determinations (Anabwani & Jimbo 2005:2)

Clinicians are encouraged to assess adherence to ART at every routine visit (Anabwani & Jimbo 2005:6; Clinical Manual 2005: 32). In addition they are advised to

use language that patients can understand. Discordance between the patient and physician on adherence to drugs is often observed. Discordance is when there is a difference in the patient's adherence rate as perceived and estimated by the physician compared to patient's adherence rate as perceived by the patient. Most patients perceive themselves as adherent while physicians perceive more patients as non-adherent. A study done in 2000 in Italy by Murri, Ammassari, Trotta, De Luca, Melzi, Minardi, Zaccarelli, Rellecati, Santapadre, Soscia, Scasso, Tozzi, Ciardi, Orofino, Noto, Monforte, Antinori, and Wu (2004:1108) aimed at evaluating the rate of discordance (disagreement) between patients and physicians on adherence to ART. The results showed that physicians were more often discordant with patients when they rated patients as adherent, than when they rated patients as non-adherent. So from the physician's perspective, more patients were non-adherent. This discordance (disagreement) in the results was explained in part by inadequate communication between physician and patient. Similarly, in a study done by Weiser et al. (2003:285) in Botswana, there was some disagreement about which patients were able to adhere to treatment from the patients' self reports and the physicians' assessment. The observed amount of agreement between patients and physicians was 68%. So for clinicians to be able to accurately assess their patients' adherence, it is important to develop collaborative and non-judgmental relationship with patients (Machtinger & Bangsberg 2005:19).

2.3 THEORETICAL FRAMEWORK

The theoretical framework used in this research was adapted from the health belief model. Rosenstock originally proposed this model in 1966 and modified by Becker in 1974. It has been used to predict preventive health behaviour, such as screening and compliance with medical advice (Naidoo & Willis 2003: 222). The model has been used as a framework to develop the research objectives and the research questions of this study. The literature review is also based on this model. The model was also used to guide the development of data collection instruments, the research findings and the conclusions.

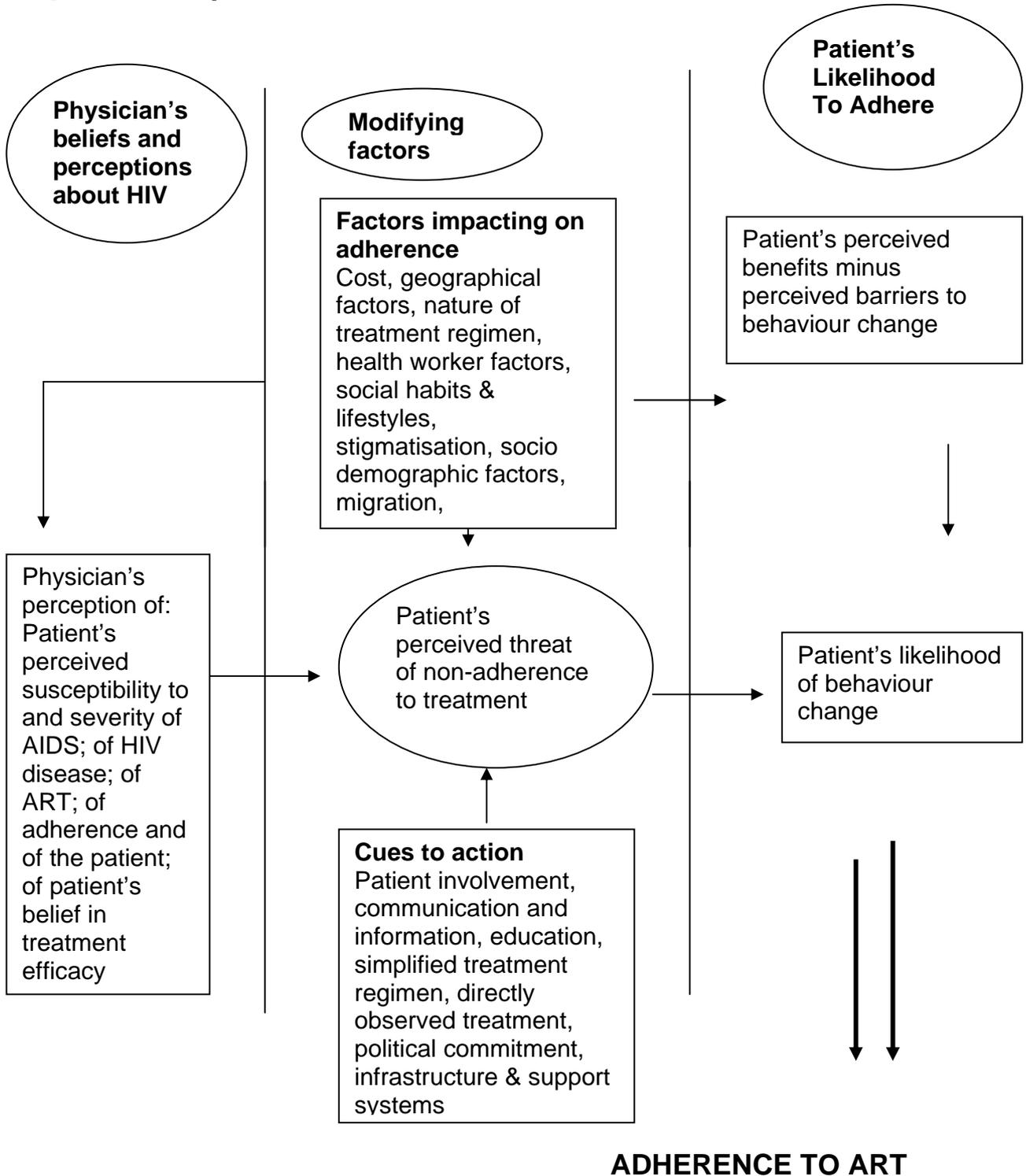
The health belief model is a commonly used framework in health behaviour change. As much as the health belief model is patient oriented, health care providers such as physicians also need to understand and use it as a tool to help promote behaviour change in patients. The health belief model is an appropriate theoretical framework to use to explore the behaviour of patient's adherence to antiretroviral treatment. The health belief model can also provide useful intervention for physicians in their attempts to make informed judgements about measuring the success of patient adherence ART. The health belief model presented below provides a model that can assist physicians to analyse factors that contribute to patients' perceived state of health and to predict patients' adherence patterns.

In applying the health belief model physicians need to recognise what patients perceive as benefits of avoiding progressing to AIDS. Secondly physicians need to

understand that patients have expectations concerning specific actions (strict adherence) that can prevent HIV to progress to full blown AIDS (Ulin, Robinson & Tolley 2005:216). In order to better help patients change their behaviour about adherence, physicians need to be aware of patients' perceptions of patient adherence to ART.

Figure 2.1 illustrates how the Health Belief Model by Janz, Champion and Strecher (2002: 52) is applied to this study.

Figure 2.1: Adapted Health Belief Model



Adapted from Becker 1974
Source: Naidoo & Willis (2003:222)

2.4 PERCEPTIONS AND BELIEFS ON HEALTH AND DISEASE

Physicians act as primary medical care providers to people with HIV/AIDS and physicians' attitudes, perceptions and beliefs towards HIV/AIDS are of utmost significance in the effective delivery of health care (Duyan, Agalar & Sayek 2001: 243). In a study determining the attitudes of surgeons towards HIV/AIDS, in Turkey, it was found that doctors were worried about contracting HIV/AIDS from their patients (Duyan et al. 2001:243-250). Physicians are not exposed to the same amount of blood that surgeons are. This may be the reason why physicians' attitudes towards HIV/AIDS could be different from those of surgeons. A study done by Golin et al (2004: 16-27) in North Carolina in 1999 to assess the adherence counselling practices of physicians caring for patients living with HIV/AIDS found physicians' attitude towards ART did in fact influence the number of adherence counselling practices they have with patients. Physicians' attitudes, perceptions and beliefs related to HIV/AIDS and ART have a significant bearing on patient's adherence to ART.

In a study to examine perceptions of race, socioeconomic and status based discrimination during interactions with HIV treatment providers (Bird, Bogart & Delahanty 2004: 19 -26) in America in 2001, a significant relationship was found between patient's perceived discrimination in HIV treatment and medication adherence. These findings suggest that if physicians have negative perceptions about HIV and AIDS, their interaction can negatively affect patients' adherence to ART.

In order to help patients change their behaviour about adherence it is important to understand physicians' perceptions and beliefs about patients' adherence to ART in

depth, because physicians' attitudes and perceptions do indeed impact on patients' adherence practices.

Other factors that influence patients' adherence to ART include the patient's own perceptions of their susceptibility to and severity of progressing to AIDS and the patient's own belief in the treatment. These perceptions influence the patients' behaviour to treatment.

2.4.1 Patient's perceived susceptibility

According to the health belief model, patients' beliefs about their perceived susceptibility do influence a patient's effort to change health behaviour (Ulin et al 2005: 216). If the patient perceives his/her health as very important, he/she would adhere to treatment. This will also assist the patient to understand their susceptibility to resistant strains of HIV and progression to AIDS. This information on a patient's susceptibility should be imparted to the patient by the physician during adherence counselling throughout the counselling continuum. Physicians need to personalise the risk of non-adherence based on a person's characteristic behaviour (perceived susceptibility) (Janz et al 2002:49).

2.4.2 Patient's perceived severity

The implications of failure to adhere (perceived severity) to treatment such as treatment failure, immunologic failure, rapid progression to AIDS and death

should be made clear to the patient by the physician (Janz et al. 2002:48). According to the health belief model, the seriousness of a condition influences a patient's effort to change to better health behaviour (Ulin et al. 2005: 216). Perceived severity to non-adherence is based to a great extent on the patient's knowledge about HIV and AIDS. A study was done in Brazil in 2001 to 2002 by Malta et al. (2005:1429) in which physicians were interviewed on their experiences in treating people living with HIV/AIDS. The results of this study (Malta et al. 2005:1429) suggest that patients who have experienced more health complications perceive a stronger relationship between poor adherence and AIDS related illnesses, and tend to adhere to medication. In a study by Montessori, Heath, Yip, Hogg, O'shaughnessy and Montaner [Sa] (downloaded 06/03/06) in Canada in 2001, similar results were obtained. The researchers found that patient characteristics and disease stage play an important role in the ability to comply with complex therapeutic regimens.

2.4.3 Patient's perceived belief in treatment efficacy

According to the health belief model, the patients' belief in the diagnosis and the therapy also does influence adherence. If patients do not believe in the treatment plan, they may not adhere to treatment as prescribed by the physician. If patients are in denial that they are infected with HIV, they will not find it necessary to take therapy. In America and Western Europe, lack of belief in treatment efficacy is associated with poor adherence to ART (Clinical manual 2005:3). In a study by Malta et al (2005:1429) in Brazil in 2001 to 2002,

physicians also identified patients' inadequate knowledge and negative beliefs about HIV disease and treatment effectiveness as an important barrier to ART adherence. These problems need to be addressed by physicians during patient counselling.

In a study done by Golin, Liu, Hays, Miller, Beck, Ickovics, Kaplan and Wenger (2002: 756-765) in North Carolina between February 1998 and April 1999, it was observed that patients who had positive beliefs about their medication also exhibited high self-efficacy to take medications. Eighty percent (80%) of the patients felt that the treatment was worth taking and agreed that antiretroviral medications would help them to live longer and 73% agreed that the quality of people's lives was improved by taking antiretrovirals.

2.5 MODIFYING FACTORS

Modifying factors in the health belief model include factors that are modifiable and have some effect on patients' adherence to ART. These include the factors impacting on adherence and the cues to action that can be implemented to promote adherence.

2.5.1 Factors impacting on adherence

Adherence to ART can be improved by identifying the barriers to adherence and factors that facilitate adherence. Therefore, identifying and overcoming the factors that reduce uptake of antiretroviral agents is of utmost importance for

prolonged viral load suppression. The physicians' understanding of the modifying factors and his/her perception of how these factors impact on an individual patient in relation to the patient's health belief, will determine the intervention strategies the physician will choose to use to modify patient behaviour of adherence to ART. Weiser et al (2003:286) are also of the opinion that identifying barriers is critical if policy makers in Botswana and other African countries are to identify pitfalls in current treatment strategies and if they are to devise effective AIDS treatment programmes.

From the literature reviewed in this study, the modifying factors that would have an impact on a patient's adherence to ART include cost, geographical factors, nature of treatment regimens, health worker factors, social habits and lifestyle, and stigmatisation, socio-demographic factors, migration. These factors are discussed in detail below.

2.5.1.1 Cost factors

The health belief model hypothesises financial cost as a modifying factor that has some influence on a patient's ability to change and maintain a healthy-related behaviour.

The patients' contribution to their treatment costs might have an impact on adherence. In developing countries high costs of antiretroviral treatment remain a barrier to effective treatment and have negative implications on

adherence. That high costs are a challenge in the treatment of HIV/AIDS in developing countries has been confirmed in a study done by Isabelle et al. (2002: S103-S108) in Senegal. The study, which aimed to assess adherence and causes of treatment interruption among patients, recruited from 1999 to 2001. Some patients were treated free of charge, while another cohort of patients contributed towards the cost of their treatment. One of the findings among others was that the mean adherence among patients decreased as their financial participation increased.

Cost was also found to be a factor influencing adherence in a study done in Botswana by Weiser et al. (2003) in 2000 before the national ART roll out programme. A cross sectional study on barriers to treatment adherence was done. Adherence was reported for patients receiving ART in three (3) private clinics, which served almost all patients receiving ART in Botswana at the time of the study. Both quantitative and qualitative methods were used. Questionnaires and interviews were used to collect data from patients receiving ART and their health care providers. Cost and financial constraints were found to be significant barriers to treatment. Seventy percent (70%) of potential participants mentioned cost as a problem. Fifty five percent (55%) of patients stated that their overall economic situation interfered with their ability to take treatment. About fifty six percent (56%) of the health care providers believed that financial problems often or always impeded adherence to ART. Patients on ART were receiving suboptimal regimens and underwent forced treatment interruptions due to these

financial constraints (Weiser et al. 2003:282). On the basis of logistic regression, if cost were removed as a barrier, adherence was predicted to increase from 54% to 74%.

2.5.1.2 Geographical factors

The adapted health belief model (figure 2.1) addresses distance as a probable modifying factor that has some influence to an individual's health behaviour change (adherence).

As illustrated in the study done in Botswana in by Weiser et al.(2003:285), some of the reasons cited as difficulties for patients to adhere to treatment included the need to be absent from work, leaving work to keep clinic appointments and the need to travel long distances to the clinic. Some patients lived far away from the clinics. Twenty eight percent (28%) of the respondents cited distance from the health facility as a barrier to adherence. The Botswana government has tried to improve adherence by increasing the distribution points for ARV. Thirty-one (31) treatment sites had been opened by 2005 (Vardavas & Blower 2005:3). The expansion of sites has been quick in an effort to reduce distance and improve adherence to ART.

2.5.1.3 Nature of treatment regimens

According to the adapted health belief model, the nature of treatment regimen is another factor that can influence adherence.

In their meta-analysis to determine predictors of virologic suppression, and using twenty-three (23) clinical trials involving 3257 patients, (Bartlett, De Masi, Quinn, Moxham & Rousseau 2001:1369) found that pill burden was one of the most significant predictor of antiretroviral response at forty-eight (48) weeks.

A prospective study of predictors of adherence to combination antiretroviral medication was done in North Carolina at a county hospital HIV clinic, between February 1998 and April 1999 (Golin et al. 2002: 756-765). The study found that dose frequency was related to adherence, although the total number of pills and the total number of antiretrovirals prescribed was not. Frequent dosing was seen to lead to forgetfulness and hence to patients missing doses.

A study done in Brazil from May 2001 to May 2003 by Palmira, Cibele, Francisco, Maria, Menezes, Juliana, Lorenza, Ricardo and Mark (2005:S5-S13) confirmed that the number of pills per day was associated with an increased risk of non-adherence. The study's objective was to assess the incidence, magnitude and factors associated with the first episode of non-adherence for 12 months after the first antiretroviral prescription.

Consistent results were also obtained by Weiser et al (2003:287) in their study in Botswana in 2000, where thirty percent (30%) of patients believed that they had swallowed too many pills every day. Five percent (5 %) of the

patients stated that the large quantity of pills interfered with their ability to take treatment.

According to Weiser et al. (2003: 287), side effects did not pose a large barrier to adherence in Botswana unlike in western countries where it did. Less than ten percent (10%) of patients indicated that side effects were a significant barrier to adherence in Botswana. In a study done by Malta et al (2005: 1428) where physicians were interviewed on adherence to ART, it was found that physicians did not engage in comprehensive dialogue with patients about adverse effects. This is in contrast to the American guidelines and the 2005 Version on Botswana guidelines on ART, which recommends comprehensive dialogue on treatment and the occurrence of side effects, on the disadvantages of stopping medication when side effects are experienced and on the importance of consultation with the physician (Anabwani & Jimbo 2005:2; Clinical Manual 2005:4).

2.5.1.4 Health workers related factors

Health workers related factors constitute another set of modifying factor that have been identified as having an impact on a patient's adherence to ART. The way patients were treated the last time they used health services could have some influence on their willingness to go back to the same place for service. Clinical studies investigating the effect of the patient-provider

relationship on adherence behaviour are limited (Machtinger & Bangsberg 2006:14).

A qualitative study investigating the effect of the patient-provider relationship on adherence behaviour in Brazil by Malta et al (2005:1429) from 2001 to 2002, found that factors that influenced patient's adherence included insufficient time, difficulty with discussing adherence and lack of dialogue about adverse effects.

The physicians had insufficient time to assess patients' needs or concerns that might affect ART adherence because they were overwhelmed with work. Some physicians avoided discussing adherence with their patients because of uncertainty about how to discuss ART adherence with their patients. Some physicians did not discuss the potential side effects of ART regimens even before setting their patients off on a new ART regimen. This is in contrast to the Clinical Manual (2005:4) which encourages clinicians to work closely with the patient and to treat side effects and to consider alternative regimen if necessary.

From the study done by Weiser et al (2003:284) in Botswana in 2000, it was found that most patients who were interviewed had excellent relationships with their practitioners and felt respected and supported by their caretakers. Many patients indicated that their health care providers had significantly impacted upon their lives in the medical, social, and psychological realms.

Physicians and nurses were often cited as the primary source of support in coping with the challenge of living with HIV/AIDS.

Physicians with greater experience in treating HIV related disease might have greater success in maintaining patients on prescribed therapy (Montessori et al downloaded 06/03/2006).

According to Machitinger and Bangsberg (2005:14), characteristic factors of a patient-provider relationship that may affect adherence positively include the patient's overall satisfaction and trust in the provider and the clinic staff, the patient's opinion of the provider's competence, the provider's willingness to include the patient in the decision-making processes, the affective tone of the relationship (such as warmth, openness, cooperation and so forth), and affinity of race/ethnicity between patient and provider.

2.5.1.5 Social habits and lifestyles

Active alcohol consumption, drug use and unstable housing are associated with poor adherence to ART in America and the Western Europe (Clinical Manual 2005:3). In Brazil, Malta et al (2005:1428) recruited forty (40) physicians who were involved in the treatment and care of people living with HIV/AIDS. In-depth interviews were conducted between 2001 and 2002 in which some physicians cited patients' social habits and routines as impacting negatively on adherence. Physicians were of the opinion that

improved understanding of an individual patient's lifestyle and guiding development of a regimen to fit the patient's specific needs can increase adherence.

The use of alcohol and illicit drugs was found to be associated with non-adherence in a study done in Brazil again by Palmira et al. (2005:S5-S13) between May 2001 and May 2002. The study enrolled HIV infected patients receiving antiretroviral prescription in public referral centres in Brazil with the aim of investigating factors associated with non-adherence.

In a study done in North California between February 1998 and April 1999, Golin et al. (2002:756-765) found the relationship between substance abuse and adherence to be complex. HIV infected patients who were attending a public hospital were enrolled and were followed for 48 weeks after initiation of therapy. Patients who drank alcohol and those who were current drug users were associated with suboptimal adherence. At the same time, there was no association between adherence and history of prior drug use. To address such problems, the use of alcohol and drugs needs to be discussed as a part of in-depth discussions about antiretroviral medication taking.

2.5.1.6 Stigmatisation

The threat of social stigma may prevent people living with HIV from disclosing their HIV status. This may serve as a barrier to ART adherence.

In a study done by Rintamaki, Davis, Skripkauskas, Bennett and Wolf (2006:366) in Chicago, the effect of social concerns on treatment adherence were evaluated. The overall mean age of the participants was 40.1 years. 45 % were African American and 80% were male. People with high stigma concerns were 3.3 times more likely to be non-adherent to their medication regimen than those with low concerns.

Weiser et al (2003:285) study arrived at similar conclusions about stigma. Stigma surrounding HIV Infection was pervasive in Botswana at the time of the study in 2000. The negative repercussions of stigma included broken marriages and relationships, rejection by family, ostracism by the community and loss of employment. Fifteen percent (15 %) of patients reported stigma to be interfering with their ability to take treatment. As a result patients keep their HIV status a secret from families and the community. Although most patients agreed that HIV infection and AIDS are associated with powerful social stigma, in Botswana perceived HIV stigma was not significantly associated with adherence at the time of the study.

2.1.5.7 Socio demographic factors

The original health belief model addresses demography as a factor that may affect an individual's perception and consequent health-related behaviours (Janz et al. 2002:50). The model emphasises socio-demographic factors, particularly education attainment, as having some indirect effect on health behaviour.

In a study done by Golin et al. (2002:756-765) in North California between February 1998 and April 1999, the predictors of adherence were assessed. The study design was a prospective cohort study of 140 HIV-infected patients at a county hospital. Lower educational achievement and lower income were each independently associated with lower adherence. Lower income would mean failure to buy food, thus resulting in difficulty to take treatment on an empty stomach.

The findings on the effect of socio-demographic factors on adherence were confirmed in a study by Nemes, Carvalho and Souza (2004: S19) in Brazil. The study evaluated the adherence to antiretroviral therapy in 322 Brazilian out patient services located in seven states. A cross-section of 1972 patients under ART visiting these services was interviewed using structured questionnaire. The variables associated with non-adherence were educational level and age quartile. Patients with fewer years of education were more likely to be non-adherent than those with more years of formal education. The age group 44.9 – 77 years old showed better adherence habits compared with those in the youngest quartile.

In Botswana, Kgatlwane et al. (2005:6) highlights socio-demographic factors as influencing adherence. This is in contrast to a study done in Botswana in 2000, and the literature from America where age, sex, educational status and HIV risk factor were not associated with adherence (Weiser et al 2003:287; Clinical manual 2005:3).

2.5.1.8 Migration

The adapted health belief model addresses migration as one of the factors impacting on the patient's adherence habits.

In a cross-sectional study done by Mohammed and Sarki (2004: 54) in Abuja, Nigeria, in 2003, 110 patients were assessed for compliance to ART. Travelling out of town was found to be one of the commonest reasons for missing a dose. Similarly, from previous studies in Botswana, migration has been found to have some effect on adherence. In a study done by Weiser et al. (2003:285) to assess the factors that impact on adherence in Botswana, 54% of patients were reported to have travelled or lived in more than one place since starting treatment. Ten percent (10 %) of the patients thought travelling had made it difficult for them to adhere to treatment regimens.

2.5.2 Cues to action

Since the importance of medication adherence is highly recognised, a number of studies investigating methods to support and improving adherence have been initiated. The health belief model addresses the 'cues to action' that motivate the decision making process (self-efficacy) about executing the target behaviour (adherence). In this model the cues to action that promote adherence include patient involvement, communication and sharing of information between patient and physician, simplification and individualisation of treatment regimens and support strategies that include directly observed

therapy, the political commitment, the infrastructure and support systems of the country.

2.5.2.1 Patient involvement

Antiretroviral adherence interventions are time consuming. They involve time with patients in which planning and support medication and adherence issues are discussed.

According to the health belief model the physician is required to do a comprehensive assessment of physical, social, cultural and psychological status of the patient and to involve the patient in analysing the barriers to adherence including providing inputs to modify his/her behaviour in terms of his/her belief about HIV, AIDS and adherence to ART. Machtinger and Bangsberg (2005:21) emphasise individualised collaborative medication planning as an effective intervention strategy. Patients should be made aware of how their lifestyle can influence their adherence behaviour before commencing treatment. Personalised dosing schedules should be developed with the patient including plans on how to manage side effects. Effort should be made to come up with dosing frequencies that suit the patient's lifestyle. The effectiveness of adherence like slow progression to AIDS, increased quality life adjusted years which out weigh the dangers of adherence like side effects, time to visit the clinic should be discussed between the patient and the physician (Janz et al 2002:48).

Adherence devices can be suggested to the patient. Reminder devices are commonly used when patients forget to take treatment. Alarms on watches, beepers, calendars (paper or electronic), cell phone alarms and other electronic items can be used. These devices were found to help patients in a study done by Golin et al. (2002: 760) in North Carolina between February 1998 and April 1999. Patients who used adherence aids as reminders were found to have better adherence levels to ART than those that did not use adherence aids.

Medication organisers are readily available. They allow patients to organise their weekly doses of medication. Pillboxes and medisets are examples of medication organisers. Pillboxes help clinicians monitor recent non-adherence (Machtinger & Bangsberg 2005:26).

2.5.2.2 Communication and information

According to the health belief model, the quality of advice received from others and the health care provider influence a patient's perception about the disease.

As already indicated, studies suggest that physician-patient communication is very significant for patients' adherence to therapy (Weiser et al 2003; Malta et al 2005; Bird et al 2004). Patients must be reassured of the potential side effects of taking treatment. Adherence should be addressed and discussed throughout the counselling continuum, which is before the

patient commences treatment and should be discussed at every follow up visit (Anabwani & Jimbo 2005:2). The actual or potential barriers to communication should be identified and addressed. Information given to patients should be standard and correct for them to gain trust and confidence in the physician. However, there is need for adequate personnel in order for the programme to work efficiently. Botswana has been trying to address the problem of personnel shortage by recruiting more expatriate health professionals and training more of the local people.

2.5.2.3 Education

Educational interventions have been proved to improve patients' adherence habits to ART. In a study done by Kalichman, Cherry and Calin (2005: 3-15) in United States of America, nurses delivered antiretroviral treatment adherence intervention for people with low literacy skills, who were living with HIV. The authors undertook the development and pilot testing of a brief HIV treatment adherence improvement counselling intervention for people who were taking antiretroviral medications. Results from a pilot test with people with lower health literacy showed that the intervention increased patients' HIV/AIDS knowledge, improved their adherence and self-efficacy for adhering to medications. This proves that educating patients with less knowledge about HIV/AIDS improves their adherence.

2.5.2.4 Simplified treatment regimens

Regimen complexity (dosing frequency plus food instructions) and pill burden have been identified as predictors of non-adherence (Machtinger & Bangsberg 2006:25). According to Turner (2002:S153), reducing the number of doses can help simplify treatment regimens and is especially important when these regimens include more than two (2) medications. Treatment regimens as simple as two (2) pills once or twice daily are now available and can potentially reduce the scheduling requirements and pill burden (Machtinger & Bangsberg 2006:25).

According to the Botswana ART guidelines the first line regimen should have a low pill load or burden, and a treatment regimen of two pills twice a day and independent of food intake because of the concern of adherence (Anabwani & Jimbo 2005:10).

2.5.2.5 Directly Observed Therapy (DOT)

Directly Observed Therapy is one of the possible cues to action according to the adapted health belief model. Directly observed therapy is when patients take therapy in front of health personnel. This method (DOT) has been successful in the treatment of tuberculosis and has been identified as a possible means of assisting non-adherent patients in the provision of ART. Fischl, Castro and Monroig (2001) compared 50 patients receiving ART through directly observed therapy with 50 patients who monitored their own

medication. It was found that patients on directly observed therapy had a significantly higher chance of achieving undetectable viral load compared with self-monitored patients. Machtinger and Bangsberg (2005:25) also emphasise the feasibility and efficacy of the directly observed therapy to ART. However, the authors highlight the problems associated with directly observed therapy. The directly observed therapy is expensive, labour intensive, and potentially intrusive.

2.5.2.6 Political commitment and adherence

Kgatlwane et al. (2005:6) also highlights factors, which influence adherence. These factors are at national level and they include political commitment, policy framework, regulatory framework, and Governmental budgetary constraints. Having the political will to promote adherence to ART also means increasing life expectations and reducing the burden of orphans due to HIV/AIDS related deaths. The significant clinical, social and economic benefits from adherence to ART should incite governments to have strategies to improve patients' adherence to ART. Some developing countries like Botswana, Brazil and Uganda have a policy of free ART in the public sector for eligible candidates. This reduces the barrier of cost to adherence. Setting achievement goals at a national level helps the nation to have a basic working framework and to work towards the set strategies and interventions.

2.5.2.7 Infrastructure and support systems impact on adherence

Decentralisation of services helps patients to adhere to antiretroviral therapy. Having to travel long distance for services can hinder adherence as seen from the study in Botswana Weiser et al. (2003:285) study where patients cited the problem of having to travel long distances to the nearest clinic from work. Botswana has improved the antiretroviral distribution points; has increased availability of clinical and laboratory monitoring; and strengthened health infrastructures for delivery of care. National programmes like the 'KITSO' AIDS training programme trains physicians how to manage their patients and how best to assist them with adherence. Organisations for people living with HIV/AIDS should be encouraged as support systems for those infected as well as organisations for the caretakers. Kgatlwane et al. (2005:6) highlight factors that impact adherence at health facility level. These factors include manpower adequacy, knowledge and skills, and availability of treatment guidelines.

2.6 PATIENTS' LIKELIHOOD TO ADHERE

Underlying the health belief model is the theory of adherence as a function of perceived benefits minus perceived barriers to adherence. The likelihood of patients adhering to treatment is high if the perceived barriers by the patients are less than the perceived benefits. The way patients perceive HIV/AIDS and the ART, the effect of the modifying factors that impact on adherence and the modifiable cues to action

implemented by the physicians would determine the patient's likelihood to behaviour change. If the benefits of adhering are perceived to be more than the barriers, patients would adhere to ART.

The patients' understanding on the effects of not adhering to treatment would contribute to the patients' behaviour change. The combined levels of susceptibility and severity of the disease should energise the patient to act (to adhere). In order to improve patients' adherence behaviour and to plan on the cues to action, physicians need to understand the underlying concepts of the health belief model.

2.7 Summary

ART is a life-long therapy and patients are bound to experience pill fatigue. Regular assessment of patients' adherence to therapy for optimal treatment outcome is necessary. Adherence to ART is important as it has been shown to lead to reduced morbidity and mortality caused by HIV disease, increased immunologic response and the suppression of viral load and hence an improved quality of life of HIV infected people. The biggest concern of non adherence is the emergence of drug resistant strains, the use of complex and expensive regimens, and the rapid progression of HIV disease to AIDS. An adherence rate close to 100% is recommended for effective outcomes of ART. The predicted adherence rate for Botswana was 74% adherence if cost were to be removed as a barrier. Assessment methods include patients' self-report, pill count, electronic monitoring and pharmacy-based approaches and biological markers such as the plasma concentration of antiretroviral drugs.

A health belief model has been used to explain the modifying factors that would influence a patient to adhere to treatment. For behaviour change to succeed, people must feel threatened by the consequences of non-adherence (perceived susceptibility and severity) and believe that adherence to ART will result in an acceptable outcome.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter, the research methodology is discussed. The study design and approach are described. The application of scientific principles such as sampling, trustworthiness and research ethics are clearly illustrated. Appropriate methods of data collection are discussed and the process that was used for data analysis is described.

3.2 STUDY DESIGN

A descriptive, exploratory qualitative design was used to address the research questions in this study.

3.2.1 Descriptive studies

A descriptive design aims to describe and elucidate a phenomenon including factors, which may be related to the phenomenon (Polit, Becker & Hungler 2001:19). According to the authors, descriptive studies also use in-depth methods such as interviews to understand the phenomena. To describe the physicians' perceptions and beliefs about patients' adherence to ART in this study, in-depth interviews were used as the main data collection method. Descriptive studies do not involve manipulation of data, neither is there an

attempt to establish causality (Burns & Grove 2005:232). In this study, no manipulation of data occurred. The existing situation was described as it is, based on the perceptions, beliefs and practices of physicians in the management of HIV positive patients on ART. The researcher had minimal control over the data. Control was only over what was asked and observed.

Descriptive studies tend to use very small samples especially for the researcher who is interested in examining situations in more depth. In addition there is little relevance for generalisation (Burns & Grove 2005:356). The researcher in this study managed to collect data from five out of the six participants in the study population. The aim was not to generalise the findings of the study to the general population of physicians prescribing ARTs, but to get an understanding of the issues related to adherence for replication in smaller settings.

The design facilitated the detailed descriptions of the existing variables: the “perceptions” and “beliefs” of physicians on patients’ adherence to ART (Lobiondo-Wood & Haber 2006: 240).

3.2.2 Exploratory studies

Exploratory studies in qualitative research approach are not intended for generalisation to large populations. The studies aim to increase knowledge in the field of study (Burns & Grove 2005:357). Further, exploratory qualitative research is designed to shed light on underlying processes (Polit et al 2001:19).

This study was interested in gaining knowledge on physicians' perceptions and beliefs about patients' adherence to ART.

Data collection is likely to be less structured in exploratory studies. In this study, unstructured interviews were found to be the most appropriate in collecting data to explore the physicians' perceptions and beliefs in relation to adherence to anti-retroviral treatment of HIV/AIDS patients.

3.2.3 Qualitative studies

Qualitative research is the investigation of phenomena, typically in an in-depth and holistic fashion, through the collection of rich narrative materials using a flexible design (Polit et al 2001:469). According to Burns and Grove (2005:747) qualitative research is a systematic, interactive, subjective approach used to describe and give meaning to life experiences. In this research on physicians' perceptions and beliefs about patients' adherence to ART, data was collected in a systematic way using an interview guide, through the interaction of flexible in-depth interviews.

Qualitative research characteristically provides insight into the meanings of decisions and actions taken. It explores, discovers, and involves respondents as active participants (Ulin et al 2005:6). This study attempted to provide insight into the physicians' decisions and actions in promoting patients' adherence to ART. The physicians explained their perceptions about patients living with HIV, about the disease and about ART. The physicians were active participants in this study since they had the platform to air their views and concerns.

3.2.4 Study design for this study

A descriptive, exploratory qualitative study design was used in this research.

According to Polit et al (2001:19), descriptive exploratory qualitative approaches use in-depth methods to describe the dimensions of a phenomenon. Unstructured in-depth methods were used to collect data mostly in natural settings, that is, at the Infectious Disease Care Clinics.

3.3 THE THEORETICAL FRAMEWORK

The theoretical framework of the health belief model has already been discussed in chapter 2. This framework was used to guide data collection for this research. For physicians to better understand the patients' behaviour to treatment it is necessary to understand patients' perceptions and beliefs about HIV and AIDS and about adherence to ART. Understanding the modifying factors (factors impacting on adherence and the cues to action) that influence adherence to ART is important because it allows physicians to assist their patients better. The health belief model was the appropriate model to guide the data collection in this study.

3.4 SOCIO-GEOGRAPHICAL BACKGROUND

Botswana is a landlocked country with an area of 581 730 km². The country is bordered by Namibia, Zimbabwe and South Africa. According to the 2001 population census report, the population was at 1 640 110. 51% of the population lived in cities and towns. In 2001, the doctor to patient ratio was 1:4300. Botswana is made up of eleven (11) districts (Microsoft Encarta 2005).

This study was carried out in the South East District (SED) of Botswana. The district is one of the smallest of Botswana's districts with an area of 1492km². The entire eastern part of the district is an international boundary with the Republic of South Africa. According to the SEDDC (2002:9), the total population of the SED in 2001 was 60623 of which 31% of the population was aged between 0 and 14. Those aged between 15 and 64 years were 64% while 65+ made up 4% and 1% constituted the unknown age group. The district is made up of peri-urbanised villages with close proximity to the capital city, Gaborone (SEDDC 2002: 9).

The SED administratively includes two (2) infectious disease care clinics where management of patients on ART is done. These are Bamalete Lutheran Hospital Infectious Disease Care Clinic and Tlokweng Infectious Disease Care Clinic.

Table: 3.1 South East District Health Statistics for 2001

Doctor per population (number)	1 Doctor per 5000
Nurse per population (number)	2 Nurses per 1000
Population within 15km of a Health facility (%)	10
Population within 8km of a Health facility (%)	90
Crude death rate (per 1000)	25
Crude birth rate (per 1000)	10

Source: District health Team, South East in SEDDC (2002:101)

3.5 PERMISSION TO ACCESS THE STUDY POPULATION

To gain access to any study population it is very important to seek permission from the relevant authorities. Before conducting the study, the researcher sought permission from the Health Research Unit under the Ministry of Health in Botswana. Permission was granted on the 17th May 2006 (see annexure 1). The researcher altered the title of the research in October 2006 from “Health care providers’ experiences of patients’ adherence to antiretroviral therapy in Botswana” to “Perceptions and beliefs of physicians about adherence to anti-retroviral treatment by patients in SED of Botswana”. This was because the research aimed at elucidating information only from physicians providing ART not all the health care providers in the district. The Health Research Unit was notified of the change of the title and another permit was granted on 29th November 2006 (see annexure 2). Permission from the University of South Africa to carry out the research was granted on the 24th November 2006 (see annexure 3). To gain access to the field of study, permission was requested (see

annexure 4 and annexure 6) and granted by the management of Bamalete Lutheran Hospital on the 13th December 2006 (see annexure 5) and Tlokweng clinic granted permission on the 14th December 2006 (see annexure 7).

3.6 STUDY POPULATION

Burns and Grove (2005:746) define a study population as all "...elements (individuals, objects, events or substances) that meet the sample criteria for inclusion in a study; sometimes referred to as a target population." In this study, all medical practitioners in the South East District (SED) of Botswana who had undergone the 'KITSO' AIDS training and interacted regularly with patients on ART in the public sector for at least six months formed the study population (target population).

The Bamalete Lutheran Hospital Infectious Disease Care Clinic is run by four physicians who take turns to run the clinic. Approximately 1000 patients had enrolled for antiretroviral treatment as indicated in the register on the 1st October 2006. Tlokweng Infectious Disease Care Clinic has two physicians and approximately 286 patients had enrolled for antiretroviral treatment by the 1st October 2006.

All the six (6) physicians in the study population were eligible participants in the study and no sampling was performed. Polit et al (2001:470) are of the opinion that in qualitative studies the size of participants is determined by the purpose of the study. The purpose of this study was to explore the physicians' perceptions and beliefs about patients' adherence to ART. A qualitative design was found to be the most appropriate way to obtain the type of data this study sought to investigate.

Burns and Grove (2005:358) suggest that the number of participants in a qualitative study is adequate when saturation of data is reached. The authors define data saturation as when additional sampling provides no new information.

Qualitative samples are usually small because

- from there, a rich and a large amount of information is yielded
- qualitative research is highly intensive in terms of resources so it becomes manageable when samples are small
- there is no determination of statistically significant discriminatory variables (Ritchie, Lewis & Elam 2003:83-84).

3.6.2 The eligibility criteria

Burns and Grove (2005:342) define eligibility criteria or the inclusion criterion as a list of characteristics essential for eligibility in the target population. The authors further elaborate that the eligibility criteria determine the target population (study population).

In this study the participants had to fulfil the following criteria:

1. Participants had to be medical practitioners registered with the Botswana Health Professions Council
2. Participants had to have completed the 'KITSO'AIDS training programme in the past six months
3. Participants had to be practising in the SED
4. Participants had to be actively involved in ART treatment for at least six months

5. Participants had to be in the public sector at least for six months

6. Participants had to be willing to participate in the study

Six (6) doctors working in the SED complied with these criteria and were therefore all included in the study population.

3.7 DATA COLLECTION

Data collection is defined as the precise and systematic gathering of information relevant to the research purpose, objectives and questions. The researcher is totally involved – perceiving, reacting, interacting, recording and attaching meaning (Burns & Grove 2005:539,733). In this study, the researcher was involved in interacting with the participants through the interviews. The researcher was also involved in recording the field notes and attaching meaning to what was perceived during observation methods. The researcher was the sole collector of data in this study because the number of subjects in the sample was small enough to make data collection manageable. Having a very small sample in qualitative studies has some implications - it may reduce the ability to generalise the findings to the study population. The researcher approached the participants in order to request their involvement in this study. In the discussion with the participants, the researcher explained the background, the purpose, and the significance of the study and the methods of data collection involved. The ethical issues of confidentiality were discussed as outlined in the informed consent (see annexure 10). All the six physicians verbally agreed to participate and appointment dates for interviews were set. The informed consent forms were signed just before the interviews started. Appointment dates for observation methods were set after each

interview. Out of the six (6) eligible participants, the researcher managed to collect data from five (5) physicians. One physician failed to make it for the interviewing appointments on four occasions. The researcher assumed that the participant lacked interest and did not pursue the matter with the physician. Observation methods were made on the physicians' practices and on their communication with patients. Only four physicians were observed. This was because the fifth physician was transferred from the district soon after the interviews had been done.

3.7.1 Timing of the study

Data was collected from five participants from the 14th December 2006 to the 29th December 2006. Data analysis began with transcribing the interview transcripts on the 14th December 2006 and continued through to the beginning of January 2007. The study was to be completed by the end of January 2007 but it took up to July 2007 to submit the study. This was because of the editorial process the research had to go through.

3.7.2 Methods of data collection

Unstructured interviews and unstructured observation data collection methods were applied during the study. Unstructured data collection approaches are commonly used for studies of qualitative design.

3.7.2.1 Unstructured interviews as a method of data collection

Interviews are one of the most commonly recognised forms of data collection in qualitative research. These involve verbal communication between the researcher, and the subject during which information is provided to the researcher (Burns & Grove 2003:284).

The responsiveness and the interactive nature of the unstructured interviews made the method appropriate for data collection in this research (Arthur & Nazroo 2003: 137; Legard et al 2003:141). This is because interaction between the researcher and the interviewee was the most appropriate way to collect information on the physicians' perceptions and beliefs.

Unstructured interviews are primarily used in descriptive and qualitative studies (Burns & Grove 2005: 540). In unstructured interviews, the researcher has some sense of themes that they wish to explore. These themes allow the researcher to frame interview guides. Interviews are generally based on an interview guide (see annexure 8) (Legard, Keegan & Ward 2003:141). The health belief model was used as a framework for topics in this interview guide. The interview guide was used to maintain focus during the interviews. The structure of the interview guide was sufficiently flexible to permit topics to be covered in the order most suited to the interviewee and to allow the researcher to be responsive to relevant issues raised spontaneously by the interviewee. The questioning techniques were flexible with no pre-stated order or question wording. This

allowed for a more informative exploration and description of the physicians' perceptions and beliefs about their patients' adherence to ART.

Because of the flexibility of unstructured interviews, responses were probed and explored; information was obtained from the physicians in their own words without imposing any of them (refer to transcript, annexure 14).

In interviews, new knowledge is generated and participants are invited to put forward ideas and suggestions on a particular topic (Legard et al 2003:142). In this study, physicians were invited to put forward ideas and suggestions on improving patients' adherence to ART.

3.7.2.1.1 The interview guide

Concerning the significance of interview guides in unstructured interviews, Schurink (2001:299) says, "The schedule is a guideline for the interviewer and contains questions and themes that are important to the research." An interview guide with very few open-ended questions was used (see annexure 8). The interview guide used in this study was (1) to act as a prompt to the interviewer, (2) to act as a security blanket when the interviewee is stuck in the middle of the interview, (3) as a way of monitoring the progress over the period of the interview and (4) to ensure that all relevant areas are covered during the interview (Bauer & George 2001: 151).

However, some researchers do not support the use of interview guides. Polit et al (2001:265) and Burns and Grove (2003: 284-285) argue that in unstructured interviews, the researcher has no preconceived view of the content or flow of information. The researcher asks the participant a broad “grand tour question” where subsequent questions are guided by the initial response.

The use of an interview guide in unstructured data collection methods remains a controversy. However, the researcher in this study used an interview guide in line with what Schurink (2001:299), Arthur and Nazroo (2003: 115), Bauer and George (2001: 151) and Legard, Keegan and Ward (2003:141) have to say about interview guides. These researchers encourage the use of interview guides even in the most unstructured interviews.

An interview guide in unstructured interviews has to be flexible enough not to always ask questions in the same way (Arthur & Nazroo 2003:115). In this study, while the phrasing of questions to the participants was not exactly the same, the themes were similar. Arthur and Nazroo (2003:115) are of the opinion that if an interview guide is designed as a kind of a semi-structured questionnaire, it will limit the degree to which the researcher can interact with interviewees. This is why the questioning techniques in this study were flexible with no pre-specifying wording.

The interview guide was formulated on the basis of the health belief model framework. Since the research objectives and questions were developed using the health belief model, it was only appropriate to develop the interview guide using the same framework.

A pre-test was done to test the interview guide, which was modified accordingly. The interview guide addressed issues concerning physician's perceptions and beliefs about the health of their patients; perceptions and beliefs about adherence to ART; factors perceived to be impacting on adherence; physicians' best practices and experiences that led to improved patients' adherence to ART and physicians' recommendations on how to best improve the benefits of ART. There were no categorisations to limit the field of inquiry in these open qualitative interviews. An open-ended question was asked for each theme and information was allowed to flow from the interviewee. The interviewer kept the discussion on track by acting as a guide.

3.7.2.1.2 Pre-testing of the interview guide

Pre-testing of the interview guide was carried out in September 2006 before getting into the data collection for the major study. One physician from Gaborone, which is outside the SED area where the study was conducted, was interviewed. The participant was a medical practitioner who had

undergone 'KITSO' AIDS training and was actively involved in the management of patients on ART in the public sector for at least six months. After the pre-test, the interview guide was modified accordingly. Annexure 13 includes the interview guide that was used for the pre-test interview, the interview transcript and the results from the pre-test. Annexure 8 is the modified interview guide. The results for the pre-test were not included in the data analysis for the major study.

3.7.2.1.3 The interview process

All eligible participants were initially approached in person where the introduction to the study was made informally and the need to audio tape the interview sessions was explained. Appointments with the participants were then made in advance with those participants who agreed to be interviewed. Interviews were carried out in the afternoons when it was presumably less busy at the clinics. Interviews were carried out from the 14th December 2006 to the 19th December 2006. The dates were confirmed to the physicians' best convenience within the month of December 2006. The participants were interviewed individually and mostly in their natural settings, which is at the Infectious Disease Care Clinics. One participant was interviewed from his district office because it was convenient for him. The researcher arrived ten (10) minutes before the scheduled time to prepare the voice recorders and to receive the participant at the venue of choice. The voice recorders were prepared and put aside and were only

used after obtaining permission from the participants during informed consent. A “do not disturb” sign was hung outside the door during the interview session making the other personnel aware of what was going on inside the office. A digital voice recorder and a tape recorder were used to collect the interview data. Two voice recorders were used so that data would not be completely lost if one recorder failed to work. For confidentiality, there was no mention of the physician’s name during the interview recording.

Data was collected at Bamalete Lutheran Hospital Infectious Disease Care Clinic first, thereafter at Tlokweng Infectious Disease Care Clinic. This was because the Bamalete Lutheran Hospital Infectious Disease Care Clinic physicians were easily accessible to the researcher. Bamalete Lutheran Hospital Infectious Disease Care Clinic is the main site in the SED offering care to patients on ART.

3.7.2.1.4 Interview duration

The average duration of each interview session was seventeen (17) minutes to fifty-two (52) minutes. The possibility of follow up interviews was indicated and appointment dates for observation were set. In this study, no follow up interviews were found necessary.

3.7.2.1.5 Problems of unstructured interviews

The problems with unstructured interviews are that they are time consuming, and that the vast amount of data that is collected makes ordering and interpretation difficult (Schurink 2001:300). A vast amount of data, which needed a lot of time for analysis, was collected in this research. Bracketing is also another challenge in qualitative interviews. Bracketing is when the researcher becomes aware of personal biases and has to set them aside when engaged with participants in order to pursue the issues of importance introduced by the participant (Lobiondo-Wood & Haber 2006: 560). The researcher had to put effort to bracket during data collection in this study. The researcher had to put aside that entire she knew about patients' adherence to ART and allow information to flow from the participants. No other problems were faced with the interview sessions in this study.

3.7.2.2 Non-participant unstructured observation method

Observation was the second most appropriate method for data collection in this study because observation offers an opportunity to record and analyse behaviour and interactions as they occur (Ritchie 2003:34). The main reason for using observation was to observe the physicians' practices and their interaction with patients.

After Malta et al (2005:430) did a qualitative research with physicians on patients' adherence to ART in Brazil using interviews as the sole data collection method, they recommended further research to include observation methods. The authors added that observation methods would capture the actual interactions between physicians and patients hence the use of observations in this study.

Ulin et al (2005: 72-76) describe the observer in two ways. The observer can be seen as an outsider (non-participant observation) and as an insider (participant observation).

Participant observation (inside observers) reduces the observer's distance and it allows the observer to join the activities and interact with people in order to view events through their eyes and ears (Ulin et al 2005:72). Since the researcher was not involved in the provision of ART to patients, it was difficult for the researcher to join the activities of consultation of patients. Participant observation was therefore not possible in this study.

Non-participant observation (outside observer) is when the observer maintains a distance in order to view events unobtrusively as much as possible (Ulin et al 2005: 72). This technique is chosen when the researcher aims to see some things that happen by direct observation. Non-participant unstructured observation was therefore the most appropriate observation method used in the study. The researcher did not have to be involved in the

activities, as the main purpose of observation was to observe the physicians' practices and interactions with patients.

Unstructured observation is the collection of descriptive information through direct observation and recording with minimum prior planning (Burns & Grove 2005:754; Polit et al 2001:473). Unstructured observation allowed the collection of observational data with a minimum of structure and researcher-imposed constraints. Unstructured observations permitted the researcher to develop a rich understanding and appreciation of the phenomena of interest and to extract meaning from events and situations (Polit et al 2001:280). This made it possible for the researcher to extract meaning of the physicians' practices.

3.7.2.2.1 The observation guide

Aspects of interest during the observation sessions are discussed in the observation guide (annexure 9). These included greetings between the physician and the patient, the assessment method of adherence to ART, openness between the physician and the patient including discussions on side effects to some drugs especially for those initiating treatment, the kind of education and advice offered to the patient, and any strategies to improve adherence to those considered to be non-adherent.

The observation guide allowed the observer not to lose focus.

3.7.2.2.2 Observation process

Observations were done during consultation between the physician and the patient at the infectious disease care clinics. Observations were done in the mornings during which the physicians did much of their consultations. Verbal consent was obtained from the patients prior to sitting in consultations. Because of the intensity of the process in observation, Burns and Grove (2005:540) recommend that observations should not take longer than thirty (30) minutes per session. The field notes were recorded and analysed in the same way as the interviews. Out of the five participants, the researcher managed to collect data by observing four physicians. This was because the fifth physician had been transferred from the district shortly after the interview, before observations could be done.

3.7.2.2.3 Problems with observation methods in this study

The limitations to this method of data collection are that people might not be happy about being observed in their work, especially physicians. Some were not very comfortable with having their practices observed. So the researcher had to assure them of maintaining confidentiality and refraining from using the results against them. Other problems lie in the time required to complete the observations. The researcher observed for approximately thirty (30) minutes per observation session so as not to lose focus as recommended by Burns and Grove (2005:540). Another problem with observation is the risk of

observer bias, that is, when the observer sees what they want or expect to see. Using the observation guide and trying to record exactly what was seen overcame this problem. Another point to consider is the Hawthorne effect, where participant behaviour changes as a result of being observed (Polit et al 2001:286). Besides making a pledge of confidentiality to the participants to reduce the Hawthorne effect, there was nothing much the researcher could do to control it.

3.7.2.2.4 Observation notes

The most common forms of record keeping in observation studies are logs and field notes. Field notes were used to provide data in the observation of physicians' activities (see annexure 11). Filed notes are written descriptions of observations made and interpretations thereof (Polit et al 2001: 283, 462). The author further elaborates that field notes can be categorised into observational notes, theoretical notes, methodological notes and personal notes depending on their purpose. For this study, observational notes provided objective descriptions of events and conversations. Information such as time, place, activity, and dialogue was recorded as completely as possible. Observation notes were identified through the use of code numbers which only the researcher could link to a particular participant for confidentiality.

3.8 DATA ANALYSIS

Data analysis is the systematic organisation of research data, which is conducted by reducing data to give meaning (Burns & Grove 2005:754; Polit et al 2001:473). There are several reasons why analysing qualitative data poses a challenge for the researcher. Firstly, there are a number of ways to analyse data in qualitative research and no approach is right or wrong (Poggenpoel 2001:337). In addition there are no systematic rules for presenting qualitative data. This makes replication difficult. But there are general guidelines a researcher can adhere to, to overcome such challenges. Tesch's approach was used to analyse data in this research (Poggenpoel 2001:343).

The second challenge is that the large amounts of data, which are often of limited generalisability, are expensive to analyse. To overcome this challenge, all subjects in the study population formed eligible participants for data collection.

The final challenge is in reducing the qualitative data for reporting. If qualitative data is compressed too much, the very point of maintaining the integrity of narrative materials during the analysis phase is lost (Polit & Hungler 2001:381). Maintaining the narrative materials in the participants' own words as presented in chapter 4 helps to avoid data compression.

Interview data, which was collected by means of audio recorders, were transcribed. Observation data, which was collected as observation notes, were analysed the same

way as the interview transcriptions. Data was analysed manually. Open coding was used in the content analysis.

3.8.1 Data Transcription

The researcher had to read through all the transcriptions carefully (Tesch in Poggenpoel 2001:343). The most interesting interview was picked and re-read. Using words and sentences as units of analysis, the spoken words and sentences were underlined. Thoughts that occurred during transcription were written in the right margin (see annexure 14). When the researcher had completed this task, a list of all topics (the underlined words) was made. The underlined words (still in the participants own words) were then transferred to a table where similar topics were clustered. These were formed into columns that were arranged into categories. The theoretical framework used in this study, which is the health belief model, was used to guide the conceptualisation of categories and themes in the data analysis.

The categories that were obtained included the following:

- a. Physicians' perceptions and beliefs about HIV disease (PPB-H)
- b. Physicians' perceptions and beliefs about ART (PPB-T)
- c. Physicians' perceptions and beliefs about the patient (PPB-P)
- d. Physicians' perceptions and beliefs about adherence (PPB- A)
- e. Physicians' perceptions and beliefs about patients' perception of perceived susceptibility to disease (PPB-S)

- f. Physicians' perceptions and beliefs about patients' belief in treatment efficacy (PPB-Rx)
- g. Factors impacting on adherence (FA)
- h. Cues to action (CA)

There were unique topics under the categories factors impacting on adherence (FA) and cues to action (CA). The categories were abbreviated with codes as shown above and the codes were written next to the appropriate segments in the raw data in the left margin. A preliminary organising scheme was done to see whether new topics and codes had emerged. The most descriptive wording for the categories was used to turn them into the following main themes:

1. Physicians' perceptions and beliefs around HIV/AIDS
2. Physicians' perceptions and beliefs about modifying factors.

Categories with common themes were grouped together in an effort to reduce the list of categories. Categories such as the cues to action and the factors impacting on adherence were grouped together under modifying factors; and all other perceptions by the physicians were grouped under physicians' perceptions and beliefs around HIV/AIDS. Annexure 14 is an illustration of how the data analysis was applied. A summary of the main themes, the categories and further categories that were obtained is presented in table 4.1 and table 4.2.

The raw data was sent to an independent coder for analysis. The selection criterion for a coder was a professional who had some experience in qualitative data analysis at least at a master's level.

The coder who was selected was a researcher working as a tutor at one of the nursing institutions in Botswana. He completed a qualitative research qualification at a master's level in 2003 in the nursing field and was planning to work towards his doctorate degree. He therefore had experience in qualitative data analysis. He was involved in the supervision of some students in their research during the time of this study.

The coder had to do an inquiry audit by scrutinising the raw interview transcripts against the voice recordings on the interviews. The aim was to make sure the researcher had not missed any information during transcribing.

A protocol (see annexure 12) together with the transcripts and the field notes were sent to the coder. The research questions, the research purpose and objectives together with the health belief model were given to the coder. A meeting took place with the coder after independent coding with the aim of comparing the themes and reaching a consensus.

3.9 TRUSTWORTHINESS OF THE STUDY

Trust-worthiness is the scientific rigor used in qualitative methods. According to Poggenpoel (2001:349-350), there are four aspects, truth-value, applicability, consistency and neutrality that are relevant to ensure trustworthiness.

3.9.1 Truth-value (credibility)

Truth-value (credibility) asks whether the researcher has established confidence in the truth of the findings of the study and the context in which the research was undertaken (Poggenpoel 2001:349).

Polit et al (20001:313) advise *prolonged engagement* as an important step in producing credible data. This is done to eliminate misconceptions and to win the trust of the group. In this study, truth value was achieved through spending time with the participants during the interview and observation period. This time was assumed to be sufficient to have an in-depth understanding of the views and the practises of the physicians. Furthermore, the researcher associated with the participants even before data collection was done, and in addition alerted participants about the research.

Triangulation is another technique to enhance credibility.

Polit et al (2001: 472) define *triangulation* as the use of multiple methods or perspectives to collect and interpret data about a phenomenon for accurate representation of reality. For the purpose of triangulation on the physicians' practices and interaction with the patients in this study, non-participant observations were done following interviews. Data analysis and interpretation was subjected to a critical discussion of another coder.

3.9.2 Applicability (transferability)

Applicability (transferability) is the degree to which findings can be applied to other contexts and settings or with other groups (Poggenpoel 2001:349). In this study, the research method and process could be applied in other settings, even though generalisation is not recommended. Sufficient descriptive data was been provided in the research report.

3.9.3 Consistency (dependability)

Consistency (dependability) considers whether the findings would be consistent if the enquiry were to be replicated with the same subjects or in a similar context (Poggenpoel 2001:350). Interviews and observation methods of collecting data were triangulated to enhance the dependability of the research findings on the physicians' practices and interaction with patients. Data was basically captured through voice recording of the interviews to make sure no information was missed, and through detailed field notes in simple observation method. A dense description of the research methods was provided to create the opportunity for repeating the research. Polit et al (2001:315) is of the opinion that an inquiry audit is done to enhance dependability of a research. In this research an independent coder added impact in this regard.

3.9.4 Neutrality (confirmability)

Neutrality (confirmability) refers to the degree to which the findings are a function solely of the informants and conditions of the research and not of other processes, motivations, and perspectives (Poggenpoel 2001:350). According to Polit et al (2001:315) confirmability is the objectivity and the data's relevance. Qualitative researchers increase the neutrality of the findings by decreasing the distance between the researcher and the participant. In this study neutrality was achieved by the researcher's prolonged contact with the participants prior to data collection in an effort to gain trust from the participants. The interview guide was tested in a pre-test interview and modified accordingly thereafter.

Table 3.2 below is a summary of the application of the principles of trustworthiness in this study.

Table 3.2: Summary of the application of the principles of trustworthiness in the study

	Truth value	Applicability	Consistency	Neutrality
Researcher	Prolonged engagement	Sufficient descriptive data in the research report	Dense description of the methodology used	Prolonged engagement
Population	Interviewing diverse informants	Participants were strictly selected as per established criterion	Participants were strictly selected as per established criterion	Participants were strictly selected as per established criterion
Research instrument	Use of two data research instruments; the interview guide and the observation guide to verify the physicians' practise	Detailed transcripts and detailed field notes were done	Use of two data research instruments; the interview guide and the observation guide to verify the physicians' practise	A pre-test was done to test the interview guide
Data analysis	Two people independently coded the data	Detailed description of method of analysis	Inquiry audit was done by the coder	Two people independently coded the data

3.10 ETHICAL PRINCIPLES

The purpose of applying ethical principles in research is to make sure the participants' rights in the research are protected throughout the research process. In this research, humans were the subjects under study. It was important to exercise great care in ensuring that their rights are protected in the study. Ethics are defined by Polit et al (2001:461) as "A system of moral values that is concerned with the degree to which

research procedures adhere to professional, legal and social obligations to the study participants". The standards of ethical conduct in this research were based on the primary ethical principles of beneficence, respect for human dignity and justice.

3.10.1 Principle of beneficence

The ethical principle of beneficence is one of the fundamental ethical principles in research. It states that one should do well, and above all, not harm individuals in all respects (Polit et al 2001:75). The authors further elaborate that in research, discomfort and harm can be physical, emotional, social, and/or economical. The subjects in this study were interviewed, which usually involves minimal physical risk. Information on how to contact the researcher if it became necessary at a later date was given to the participants. The subjects were not exposed to any economic risks in any way. They were not put through any financial expenses of any sort. The subjects were assured that the information they provided will not be held against them in any way. It was made clear to the subjects that there shall be follow-up interviews when necessary and there will be no direct benefits to the participants, but to the society as a whole (Polit et al 2001: 75-76).

3.10.2 Principle of respect for human dignity

The principle of respect for human dignity includes the right to self-determination (Polit et al 2001: 77). This means that participants have the right

to decide voluntarily whether to participate in the study or not without incurring penalty or prejudicial treatment (Polit et al 2001: 78). The subjects in this study had the right to voluntarily decide whether or not to participate and they had the right to terminate their participation at any point with no fear of penalties.

Coercion as defined by Burns and Grove (2005: 730) occurs when one person persuades another to obtain compliance, by intentionally presenting an overt threat of harm or excessive reward. There was no coercion in this research.

Deception is another controversial technique in research. This means deliberately withholding information about the study or providing participants with false information (Polit et al 2001:81). No deception was used in the research. In order to respect the participants' right to full disclosure the researcher described the nature of the study, the subject's right to refuse to participate, the researcher's responsibilities, and the likely risks and benefits that would be incurred before seeking informed consent from the participants.

Informed consent is when the participant has been given adequate information regarding the research; comprehended the information, and has the power of free choice enabling them to consent voluntarily to participate or not in the study (Polit et al 2001:78). This process was done and documented by having the participant and the researcher sign a consent form before the interviews were undertaken (see annexure 10). The informed consent addressed the purpose of the study; the eligibility criteria used; the procedures in data

collection, the possible risks and benefits; the absence of costs to be incurred and compensation of a drink after the interview. Interviews were audio recorded with the permission from the participating physicians only after an explanation of the reasons for audio recording was given. The main reason for audio recording was to ensure that all information is captured. The researcher sought verbal consent from the patients as well, during observational data collection process. This was done prior to sitting in consultations. The patients were informed that they had a right to refuse the presence of the researcher in the consultation room before or during the observation process. The right to withdraw was elaborated upon and how the privacy of records will be maintained was explained. Information on how to contact the Health Research Unit of Botswana was given in case there were queries concerning the ethical considerations of this study.

3.10.3 Principle of justice

The principle of justice includes the right to fair treatment and the right to privacy. The subjects were treated fairly and equal before, during and after the study. Subject selection was based on the research requirements. There was no prejudicial treatment of individuals who refused to participate or those who withdrew from the study; the agreement made between the researcher and the subject was honoured; subjects had access to the researcher at any time; and respect and courteous treatment prevailed at all times (Polit et al 2001: 81).

Invasion of privacy was avoided and confidentiality maintained by not sharing any private information concerning the research without the individual's consent (Polit et al 2001:81). Only individuals acting on behalf of the university and the coder had access to review the information collected.

Anonymity is when even the researcher cannot link the participant to data. In qualitative research, this is almost impossible because the researcher becomes thoroughly involved with participants (Polit et al 2001:82). Therefore, a promise of confidentiality to participants in this research was pledged. The interview sessions and observation notes were coded using numbers. Only the researcher could link the numbers to the particular physicians. This tallying of numbers with interview sessions is necessary for follow up interviews and for linkage with field notes from observation studies.

3.11 SUMMARY

This chapter described the steps that were followed by the researcher when conducting the research process. A descriptive, exploratory qualitative approach was used to explore and describe the adherence to ART by patients as perceived by physicians. A qualitative research design, which involved in-depth one-to-one interviews, was used. Medical practitioners who had undergone the 'KITSO' AIDS training in Botswana and were actively involved in ART provision in the public sector of the SED were eligible to participate in the research. Data was collected from physicians attending to patients on ART at Bamalete Lutheran Hospital Infectious Disease Care Clinic and the Tlokweng Infectious Disease Care Clinic. Unstructured data collection approach methods were used. These included qualitative in-depth interviews and non-participant simple observation methods. Qualitative in-depth interviews allowed for in-depth information on the physicians' perceptions and beliefs about patients' adherence to ART. An interview guide was used the main purpose of which was to ensure that relevant topics are covered during the interview. Interviews were audio recorded and observation notes were used to capture data during the periods consultations were observed. The Tesch's approach of data analysis was explained as a means to be used in data analysis. Measures taken to enhance trustworthiness of this research were addressed. The scientific rigor and the ethical principles that were taken into consideration in this research were explained.

CHAPTER 4: RESEARCH FINDINGS

4.1 INTRODUCTION

In this chapter, the findings of this research are presented. The demographic data of the participants for this research is presented as well. Using the health belief model to guide the presentation of the research findings, the researcher and the coder came up with two main themes. The main themes are:

1. Physicians' perceptions and beliefs around HIV/AIDS
2. Physicians' perceptions and beliefs about modifying factors.

The researcher used several categories and sub-categories and a few unique categories as displayed in table 4.1 and table 4.2. The themes were directed to satisfy the requirements of content analysis. Content analysis requires the researcher to decide on the unit of analysis, which includes words, paragraphs and phrases that are used in the report. In unit analysis, categories group the data for easy presentation. The development of categories was done to reduce the data into smaller chunks with the aim of facilitating understanding of data.

4.2 DEMOGRAPHIC DATA OF THE PARTICIPANTS

The total number of interviewed participants was five (5) out of six (6) participants in the study population. The number of participants that were observed for their practices and communication during their consultations with patients was four (4). The participants were all male expatriates who had at least a medical degree. Some had

gone up to a master's level within the medical profession. They had all done at least the basic "KITSO" AIDS training and were registered with their registering body. The participants mean number of years of experience in the provision of ART was 4.5 years. The participants mean number of years in the public sector was 3.5 years. The researcher therefore assumed that the participants' working experience in the provision of ART in the public sector was adequate to provide their perceptions and beliefs about patients' adherence to ART.

4.3 THEME 1:PHYSICIANS' PERCEPTIONS AND BELIEFS AROUND HIV/AIDS

The physicians' perceptions and beliefs around HIV disease was one of the two main themes that were found in this research. The participants' perceptions around HIV/AIDS were found to be positive. The main theme as indicated in table 4.1 was further divided into categories and sub-categories, which are highlighted in the table.

The categories are:

1. Physicians' perceptions and beliefs about HIV disease
2. Physicians' perceptions and beliefs about ART
3. Physicians' perceptions and beliefs about the patient
4. Physicians' perceptions and beliefs about adherence
5. Physicians' perceptions and beliefs about the patients' perceived susceptibility to and severity of progressing to AIDS
6. Physicians' perceptions and beliefs about patients' belief in treatment efficacy

Table 4.1: Summary of theme 1: Physicians' perceptions and beliefs around HIV/AIDS

Main theme	Category	Sub-category	Meaning units
Physicians' perceptions and beliefs around HIV/AIDS	Physicians' perceptions and beliefs about HIV disease	Is a chronic disease	It is like any other chronic illness or disease
		Similar to other diseases	It is not the only disease which is not curable
		Has aspects of stigmatisation	Stigma is based on what we (ourselves) perceive that we may be stigmatised
	Physicians' perceptions and beliefs about ART	Negative effects if ART is not in use	The era before the ART was a desperate situation for both the HIV infected patients and the physicians
		Positive effects if ART is used	After starting the ART, most patients look much healthy
	Physicians' perceptions and beliefs about the HIV infected patient	Patients' adherence habits classified	Young patients staying with their mother are irresponsible; Single mothers are better at adhering
			They are patients just like any other patient
		Somebody with a chronic disease	HIV positive patients are like anyone else who has a chronic disease
		Some patients think that HIV is treatable	Some people who are not well educated think that there are drugs to treat HIV/AIDS
Perceptions about non adherent patients		Physicians perceived non adherent patients to be always giving invalid excuses	

Table 4.1: Summary of theme 1: Physicians' perceptions and beliefs around HIV/AIDS (Continued)

Main theme	Category	Sub category	Meaning units
Physicians' perceptions and beliefs around HIV/AIDS	Physicians' perceptions and beliefs about adherence	Adherence - An essential component for ART success The concept of adherence	Physicians believed that hope and success of ART depended on patients' adherence Adherence means adhering to all procedures involved in the provision of ART
	Physicians' perceptions and beliefs about patients' perceived susceptibility to and severity of progressing to AIDS	Level of education Fear of death	Patients who are well educated seem to understand susceptibility better Patients who had been severely ill before were more likely to understand the susceptibility and severity of AIDS
	Physicians' perceptions and beliefs about patients' belief in treatment efficacy		A wrong perception about treatment efficacy was corrected Some patients believe in the treatment and some patients believe in other things other than ART

The findings of the above categories and their sub-categories are presented below. Quotations in the participants' own words have been used to enrich the findings of this research.

4.3.1 Physicians perceptions and beliefs about HIV disease

From the findings of this research, participants seem to have accepted the disease and are trying to control it like any other chronic illness. This category was further divided into sub-categories as indicted below:

- Chronic disease
- Similar to other diseases
- Aspects of stigmatisation

The findings of these sub-categories are separately presented below.

4.3.1.1 Chronic disease

Some physicians seem to perceive HIV disease just like any other chronic disease, which needs continuous monitoring for patients to live longer and healthy. It has been likened to diabetes and hypertension. The following are the quotations from the interview transcripts:

“If you can maintain it (the HIV disease) by follow up... give the patient proper treatment they live longer and healthy.”

“It's like any other chronic illness or disease.”

“If you do not control it, then the same hypertension or diabetes will kill the patient, the same is with the virus (HIV).”

“Patients are no longer condemned to death (to have HIV).”

4.3.1.2 Similar to other diseases

One of the physicians perceives HIV disease to be like any other incurable disease.

“It’s not the only disease which is not curable, we have got a lot of them ... why not talk about Ebola also a viral infection.”

4.3.1.3 Aspects of stigmatisation

The perception around the stigmatisation of the HIV disease varied among physicians. Some physicians perceive stigmatisation not to really exist as evidenced by one physician who indicated that:

“Stigma is based mostly on what we (ourselves) perceive that we may be stigmatised, not really because there is real stigma, but because we think that there is risk of stigma.”

Other physicians were of a different opinion altogether. They perceived stigma around HIV disease to exist and pointed how some patients had lost their jobs because they were infected with the virus and were sick.

“Stigma is still going on. Whatever we say we are fighting, but it is still there.”

“They (HIV infected patients) lost their jobs because they were sick.”

“In Botswana up to this time, there is no law which really protects people with HIV.”

4.3.2 Physicians perceptions and beliefs about ART

Participants highlighted their clinical experiences before ART were in use in Africa and their perceptions after ART became available.

The findings were divided into sub-categories, which are:

- The negative effects if ART is not in use
- The positive effects if ART is in use

The findings on these sub-categories are discussed below.

4.3.2.1 The negative effects if ART is not in use

From the findings of this research, the era before ART seems to have been a desperate situation for both the HIV infected patients and the physicians.

The effects were so negative and it impacted negatively on some physicians

as one physician explained “it left a terrible mark on my career”. The physicians narrated their experiences:

“The levels of HIV infection rate were high at that time, there were no antiretrovirals and it was quite demoralising ... I was so affected by the whole problem.”

“The magnitude of the problem of HIV and the magnitude of the disease burden was in all the wards I worked in, the major issue was HIV.”

“Before I was exposed to antiretroviral treatment ... I didn’t have hope for the patients.... I would tell them to rearrange their lives, to plan, maybe put wills. I would tell them that this was incurable.”

“Way back when we didn’t have ARVs (antiretrovirals), we used to lose a lot of patients.”

“You could not keep them longer, most of them would die.”

“We knew it was just a case where you knew that the patient would end up dying.”

“Some years back, yes, that was the case that this person was condemned to death.”

One physician narrates that he was in a ward with more than three patients who had Cryptococcal meningitis, which was associated with HIV. There was no treatment for the Cryptococcal meningitis (Amphotericin B) or any ART. He asked a visiting consultant from a non-governmental organisation

what he would do if it were him; the physician narrates the consultant as saying:

“Sedate them, its better for them to die at least without pain than with pain.”

This was a real desperate and hopeless situation.

4.3.2.2 The positive effects if ART are in use

The advent of ART seems to have brought back hope to some physicians. All the participants in the research had a very positive feeling regarding the use of antiretroviral. They expressed their perceptions from their experiences as follows:

“After starting the ARV, most of them keep up. They look much healthy and they do their normal work...”

“Since the advent of antiretroviral treatment, my view of HIV has changed.”

“With ARVs, a lot of patients are better, they can go back to work and they can go back to school.”

“But it’s no longer the case (condemnation to death) because of the management with ARVs.”

4.3.3 Physicians' perception and beliefs about the HIV infected patient

The way the physicians perceived patients who are infected with HIV was another category that emerged from the research findings. Their perceptions varied a bit, though generally the perception about the patient was more on the positive side. This category was further divided into sub-categories, which are:

- Patients' adherence habits classified
- Similar to other patients
- Somebody with a chronic disease
- Some patients still believe HIV is treatable
- Perceptions about non-adherent patients

The following section will present these categories.

4.3.3.1 Patients' adherence habits classification

Physicians seem to have a variable classification of the HIV infected patients and their adherence habits. Educational level and socio-demographic factors were used to classify patients' adherence patterns in the South-East District of Botswana.

The physicians' views were expressed as follows:

"... Patients who have HIV you know are different ... we have those who are well educated and those who are not really well educated."

“There are two groups ... there are some who... there are some who are staying with their mothers, who are a little bit irresponsible.... Another group of patients but generally the majority who are women and are single mothers, they are better adherents.”

4.3.3.2 Similar to other patients

The physicians saw HIV infected patients just like any other patient that comes to the clinic, despite the fact that they might need more information. Their views are expressed as follows:

“They are patients like any other person, any other human being.”

“We cannot consider someone who is having AIDS to be a very sick patient..... I think he is a human being like any other patient.”

“But they need more information, I need to talk to them really longer than another person, but they are patients like any other.”

4.3.3.3 Somebody with a chronic disease

Some physicians view the HIV positive patients are like anyone else who has a chronic disease. This is shown in the following statements:

“When I look at an HIV positive patient, I put them in the same category as somebody with diabetes or high blood pressure.”

“It’s more like a chronic illness or disease..... like somebody who suffers from diabetes or hypertension.”

4.3.3.4 Some patients believe HIV is treatable

Despite education classification being used to classify patients’ adherence habits, one of the physicians believed that some patients still believed that HIV is treatable, regardless of their education. However, he tried to elaborate that there are more of the less educated group and less of the well-educated group who still believed that HIV infection can be treated. His experiences are as follows:

“Sometimes people that are not well educated think that really, we have the drugs which can treat the HIV/AIDS.”

“Even among those who are educated, you do find a small percentage of them that still believe..... that AIDS is still curable once they start the treatment. But these are very few.... fewer than those who are not educated.”

4.3.3.5 Perceptions about non-adherent patients

Young unemployed men staying with their mothers are perceived by physicians to be a bit casual about treatment. Their adherence pattern is reported to change over time. The physicians were displeased with these

young men as they were mentioned over and over again. Other physicians perceive non-adherent patients to be always giving invalid excuses. The following are the supporting quotations:

“They (young unemployed men) will be adherent because they are sick, but once they get well, they tend to miss appointments..... they give excuses like no I can't come, I will come the other week.”

“I know somebody who said he couldn't adhere because he didn't have enough food at home, but some people who adhere have less food than him... I didn't believe.”

“No I travelled and my pills got finished there, I am late by only two days.”

4.3.4 Physicians perceptions and beliefs about adherence

The way physicians perceive the importance of adherence was identified as another category from the research findings. Most physicians seemed to acknowledge adherence as an essential component in the provision of ART. The category was divided into the following sub-categories, which are subsequently presented as:

- Adherence - an essential component for ART success
- The meaning of adherence.

4.3.4.1 Adherence – an essential component for ART success

Physicians elaborated on the importance of adherence for the success of ART even though assessing adherence was reportedly not easy. The physicians emphasised to the patients that hope depended on their adherence to treatment. The risk of developing resistant strains that can be a danger to the whole community is associated with the importance of adherence. The following were the views of the physicians:

“A significant aspect of antiretroviral treatment is adherence which is supposed to be life long.”

“The most important thing for ARV as you know is the adherence”

“A few months (after starting ART) the person is as fit as you and me ... as long as he is properly adhering to treatment.”

“Adherence is considered the most important aspect of the treatment for the success of the treatment.”

“Assessing adherence is a complex issue but it’s unfortunately a very essential component of HIV treatment.”

“It means one non adherent person developing resistance is a danger not only to himself but to the community.”

4.3.4.2 Adherence: The concept

Adherence was explained to be not just adhering to treatment, but to all procedures involved in the provision of the treatment. One physician made the following elaboration on adherence.

“Adherence to treatment means also adherence to all procedures that go with the treatment, adhering to the appointments... to a normal lifestyle that is positive, continuously using condoms to avoid extra infections with strains that may be more virulent....taking the treatment properly, respecting the time, not jumping days ... eating properly, sleeping properly...when they follow these things, they recover quite easily.”

4.3.5 Physicians perceptions and beliefs about patients' perceived susceptibility to and severity of progressing to AIDS

Physicians perceive the level of education and the fear of death to be influencing patients' perception about their susceptibility to and severity of progressing to AIDS. The category was further divided into the following sub-categories, which are subsequently discussed:

- Level of education
- Fear of death

4.3.5.1 Level of education

From the findings in this research, the understanding of susceptibility to and severity of progressing to AIDS seems to be mostly associated with the level of education. Physicians were quoted as follows:

“Education, I think matters here. The ones who are maybe well educated ... sometimes understand easily.”

“I think it depends on the background, the knowledge as well as their education.”

The same physicians argue that it does not mean that the less educated do not understand; what matters is how things are explained to them. The following are some of the explanations that are given by physicians to the less educated patients:

“If you jump treatment today, how does it happen... the pills may not be effective again as they were before.”

“We explain. How should people regress? It is because they did not adhere to treatment. We have to explain how it happens.”

“You also try to explain properly what they should expect if they don't take the treatment properly.”

4.3.5.2 Fear of death

When some physicians were asked about their patients' perceived susceptibility to the severity of AIDS, some physicians explained that some patients feel susceptible because they fear death. Physicians perceived patients who had been severely ill before to be more likely to understand the susceptibility to and severity of AIDS. The following are the direct quotations from the interviews:

“Somebody who was almost dead and was saved by the treatment, finds himself or herself alive again, of course understands that ‘if I stop, if I don't adhere, I will go back to where I was and that means one millimetre from the grave,’ that's a very stimulating factor to adherence.”

“The fear makes them change their behaviour.”

“The fear of death ... they have something to do in life so they really want to live.”

4.3.6 Physicians perceptions and beliefs about patients' belief in treatment efficacy

In this category, a wrong perception about treatment efficacy was corrected. No sub-categories emerged from this category. The findings were that the current beliefs on patients' perception on treatment efficacy seem quite encouraging. The initial concern about treatment efficacy was explained as follows:

“Initially, patients were not believing in the treatment because when the programme (National ART Programme) started, they (patients with HIV/AIDS) would get on the programme and die within the first three months, the community associated this with the new HIV treatment, yet they had got onto the treatment in the last stages of HIV illness, the treatment couldn't help much besides the side effects that were encountered.”

This must have been a great challenge for the health system because patients got worse (due to side effects) and died after the treatment was introduced. Fortunately, this perception did not persist among the patients in the South East District (SED). The following were most of the physicians' perceptions about patients' belief in treatment efficacy:

“They have hope that treatment will make them better and they are more likely to adhere to treatment.”

“Some patients understand that if they don't take the pills, there might be repercussions.”

“Once they get the correct information, they do believe that the treatment is doing well for them.”

“They do believe that the treatment is doing well for them and by taking the medication they really have hope.”

Despite the majority of patients believing in the treatment, some physicians believed that other patients believed in other things other than antiretroviral treatment. These perceptions are confirmed in the following statements:

“Some of them might be convinced by the traditional healers.”

“There are people who are trying everything else outside the ARV treatment.”

4.4 THEME 2:PHYSICIANS’ PERCEPTIONS AND BELIEFS ABOUT MODIFYING FACTORS

Physicians’ perceptions and beliefs about modifying factors was another main theme from the research findings in this research. The modifying factors were the extrinsic (environmental) factors that were perceived to influence the patients’ behaviour to taking medications. These factors could be modified. This included the factors impacting on adherence and the possible cues to action that were also modifiable to increase a patient’s likelihood to take medication. The theme was divided into two categories, which are:

1. Factors impacting an adherence
2. Cues to action

Table 4.2 is a summary of the second theme and its categories, sub-categories and further categories. The meaning units were not summarised in the table.

Table 4.2: Summary of theme 2: Physicians' perceptions and beliefs about modifying factors

Main theme	Category	Sub-categories	Further categories
Physicians' perceptions and beliefs about modifying factors	Physicians' perceptions and beliefs about factors impacting on adherence	Factors that enhance adherence	<p>Correct information to patients</p> <p>Continuous counselling</p> <p>Personal positive motivation</p> <p>Patients' understanding of the nature of treatment</p> <p>Patients' satisfaction with health personnel</p> <p>Giving patients hope and encouragement</p> <p>Supportive environments</p>
		Factors that do not enhance adherence	<p>Traditional medicine</p> <p>Religious beliefs</p> <p>Patients' healthy states</p> <p>Patients' lack of understanding about treatment</p> <p>Alcohol consumption</p> <p>Side effects of antiretroviral drugs</p> <p>Stigmatisation related to HIV</p> <p>Pill burden</p> <p>Unsupportive families</p> <p>Economic factor</p>
		Unique category	Physicians' mixed views on the impact of education level on adherence

Table 4.2: Summary of theme 2: Physicians' perceptions and beliefs about modifying factors (continued)

Main theme	Category	Sub-categories	Further categories
Physicians' perceptions and beliefs about modifying factors (continued)	Physicians' perceptions and beliefs about the cues to action	Physicians' intervention strategies	Information and education Health workers adherence to guidelines Use of adherence partner or treatment buddy Communication skills Managing side effects of antiretroviral drugs Advise on lifestyles Community mobilisation Addressing religious beliefs Continuous counselling Multiplication of information
		Methods of assessing adherence	Pill counting Patients' self reports Monitoring CD4 and viral load Assessing appointments
		Unique category	Physicians' recommendations Information physicians convey to patients

The categories are discussed below together with the sub-categories and further categories and the meaning units. The relevant quotations from the interview transcripts have been used to enrich the data.

4.4.1 Factors impacting on adherence

Factors that impacted on adherence were found to be those for adherence and those against adherence. This category was divided into the following sub categories and the findings are subsequently presented:

- Factors that enhance patients' adherence
- Factors that do not enhance patients' adherence
- Unique category

4.4.1.1 Factors that enhance patients' adherence

The physicians' perception about factors that enhance patients' adherence were found to be:

- i. Correct information imparted to patients
- ii. Continuous counselling
- iii. Patients who have a personal motivation
- iv. Patients' understanding of the nature of treatment
- v. Patients' satisfaction with health personnel
- vi. Giving patients hope and encouragement
- vii. Supportive environment

These factors are discussed below.

i. Correct information imparted to patients

From the findings, giving patients the correct information to enhance patients' adherence seemed to be a strong factor. All physicians indicated that giving correct information to the patients improved patients' adherence. In addition to being correct, the information given should be consistent, and in the right tone and attitude in order to be understood by patients. One physician continuously echoed the need for giving the right information to patients and how that influenced the way patients understood and adhered to treatment. The following are some of the direct quotations from the interview transcripts:

“Once you give them the correct information, they change their perception about this disease.”

“Giving patients the right information, with the right tone, at the right time with the right attitude, the patients will trust us and once they trust us, they will also try not to disappoint us.”

“What makes them adhere to this treatment is basically information first You give them the correct information.”

ii. Continuous counselling

From the findings of this research, physicians seem to perceive continuous counselling as a factor that can promote patients' adherence. Counselling patients each time they visit the clinic, regardless of how long they have been on treatment was perceived as a promoting factor in the SED.

"Continuous counselling, whatever time they come to the clinic you keep on ...even if the patient has been on treatment for 2 or 3 years, but keep on talking and explaining ..."

"I think continuous counselling is what can keep the patient on adherence"

"We have to reinforce the information all the time."

"If you meet them and you don't counsel them, some of them will think that this is now the time to relax."

iii. Patients who have a personal motivation

Two of the physicians perceived patients' personal motivation in life and positive attitudes exhibited by the patients as factors that promote adherence to ART. These physicians felt that patients who had something to do in life would really want to live longer in order to achieve their goals. Such patients would more likely be loyal to treatment. This also depended on the patient's attitudes because according to the physicians, some patients, even though might have something to do in life, their attitude

towards treatment remains negative. Some of the personal motivations in life as noted by the physicians were having a job and having children. This was the case usually with single mothers. Single mothers were perceived to be eager to see their children grow, resulting in a positive attitude towards treatment. Some physicians really perceived this to be an influencing factor to adhere to treatment. The following are the quotations from the physicians regarding personal motivation:

“In the African setting, it’s like having children to take care of at home is actually a motivation ... a positive influence on adherence.”

“Single mothers who are taking care of kids who have no fathers are motivated to live as long as possible to take care of these kids.”

“There are those who are highly motivated, who have an internal will ... a very high self-sufficiency urge, they have this motivation to take pills.”

“Someone who has a job or doing something in life is motivated to take medication.”

“Patients who show a positive behaviour and a positive attitude towards the treatment usually recover in a very spectacular way.”

“Young men who are not employed, who stay with their mothers who really don’t have much to look up to in life, tend to be a bit casual about everything their adherence pattern tends to change over time.”

iv. Patients' understanding of the nature of treatment

Understanding the nature of treatment and possible side effects associated with the treatment and what possibly to do about the side effects was perceived to be an influencing factor to adherence.

“Understanding of the nature of the disease, the nature of the treatment, the fact that life of the person depends on that treatment.”

“When a patient does understand properly the nature of his treatment, the different possibilities that may arise and that she should always bring any problem forward so that this can be managed ... they usually adhere.”

v. Patients' satisfaction with health personnel

Physicians in this study seem to perceive patients' satisfaction with the health personnel to be positively impacting on adherence. Patients are said to promise to return if they are happy with the services received. If they were not happy, they would rather leave and go to the private institution and pay and be satisfied. The following are some of the statements made by physicians regarding the importance of patients' satisfaction.

“Once they leave your office, they are happy, they promise to come again.”

“Some of them (patients) actually opted to go to private, because they couldn't talk to some people in the IDCC.”

“No, they would rather pay (in private) for the medication and be comfortable.”

vi. Giving patients hope and encouragement

Giving patients hope for life, assuring them that they can still operate as normal and be important to the community only if they adhere was perceived to be a factor positively impacting on adherence. Patients also need positive reinforcement when they are healthy to keep on taking treatment. The following are the quotations from the physicians:

“Tell them that they can still have hope in life ... we can help them, they can still work, and they can still... add to the community by taking medication correctly.”

“You are healthy now, it’s only because you have been taking these drugs properly.”

vii. Supportive environment

A supportive environment was perceived to influence adherence. Some physicians think that patients are taking drugs because of pressure within their environment.

“They are adhering because of pressure.... they take medication because of certain pressures like the relatives, close friends or the doctor.”

4.4.1.2 Factors that do not enhance patients’ adherence

The physicians’ perceptions about factors that do not enhance adherence were found to include the following:

- i. Traditional medicine
- ii. Religious beliefs
- iii. Patients’ healthy states
- iv. Patients’ lack of understanding about treatment
- v. Alcohol consumption
- vi. Side-effects of antiretroviral drugs
- vii. Stigmatisation related to HIV
- viii. Pill burden
- ix. Unsupportive families
- x. Economic factors

A presentation of these factors as per physicians’ perceptions follows.

i. Traditional medicine

From the research findings, the influence of traditional medicine seems to be impacting negatively on patients’ adherence. It is the physicians’ opinion

that most patients in our African setting seek help from traditional healers after they are diagnosed with the HIV. Some patients seek help from traditional healers whilst they are already on ART. Physicians perceive this to be wrong since these patients get wrong information from the traditional healers. These views were expressed during the interviews as follows:

“You know, in African tradition, most of our patients will have started on traditional medicine.”

“Some patients still have the belief that traditional medicine can also help them.”

“We have one case really, one patient who went to the traditional healer to have more information about AIDS so really we thought that it was really wrong but anyway, he managed to come back.”

ii. Religious beliefs

Physicians perceived religion to be negatively impacting on patients' adherence to ART. The physicians explained that patients were advised to stop taking ART after joining some churches because the pastors claimed they would pray for the patients to cure the disease. So patients were given wrong information from their religious groups. These were the physicians' quotations as regards to religion:

“I have seen some of my patients stop taking treatment after joining this group of religion.”

“They were told no, you just have to believe in this, you don’t need to take any medicine and you will be fine. I have seen patients go down and I was really wondering what it is and then they told me it was from the church.”

“You know the pastors have got the faith and they talk to the patients ...that they really can cure some diseases by some magic power of God.”

“But there is even no proof from them to say that really they (Pastors) can cure that disease (the AIDS).”

“Those who are going to see the Pastor ...are sometimes given wrong information.... like they (Pastors) say that the virus is sometimes coming from the devil, it belongs to the Pastor to pray for them so that they get cured.”

Despite these views, one physician highlighted that there are not many patients who have been negatively influenced by religion. This is confirmed in this quotation:

“I can say there are few... Out of 1000 patients.... I have seen four cases.”

However, in terms of adherence, this can be significant due to the evolution of resistant strains. One physician echoed that one non-adherent person could be a danger to the whole community.

iii. Patients' healthy states

From the findings in this research, four out of five of Physicians felt that when patients start feeling better, some of them stop taking pills and some start giving all sorts of excuses for missing treatment, appointments and medicine refills. Some patients are said to think that missing tablets for a short time will not have much effect on them since they are already well. The following were some of the physicians' views concerning adherence and patients' healthy states:

“Often, when patients start to feel better, they actually make a decision by themselves to stop taking drugs they will say they stopped because they felt better.”

“So they (patients) also feel like they are fine, and if they don't take treatment for two to three weeks, they will not see any difference.”

“At the start of treatment some will be fine with adherence and when they just get better, they become reluctant to continue and will start forgetting to take treatment, they become lazy to come to the clinic, and when they come, they are now healthy looking, they just say I forgot to collect my drugs, or I forgot to do my tests. You gradually lose them.”

Such behaviour could be due to patients' lack of understanding of the importance of adhering to treatment for life.

iv. Patients' lack of understanding about treatment

Some physicians think that if patients do not get enough and correct information about the treatment, they will not understand and will therefore not adhere properly. Some patients are perceived to find it difficult to understand that HIV exists. This is confirmed by the following quotations:

“Non adherence among patients is mostly when they do not understand the nature of the treatment, the importance of the treatment.”

“Poor adherence might be due to not giving them enough information ... if you explain to them well, they will adhere.’

“Sometimes they can even deny that HIV does exist.”

v. Alcohol consumption

The misuse of alcohol was perceived by three of the physicians in this research not to be enhancing patients' adherence to ART. Mixing alcohol and adherence is perceived by the physicians to reduce adherence. The following quotations express the physicians concern about the negative effect of alcohol on adherence.

“Like people who drink too much, they are likely to go back to some drinking business.”

“Bad influence ... like drinking company, friendships and things like that.”

“Because when you mix the two (alcohol and adherence), adherence usually suffers, they keep forgetting to take medication”

“A few adults drink and they do not remember to take their medication”

vi. Side-effects of antiretroviral drugs

From the physicians' experiences, side effects were found to be influencing some patients not to adhere. Patients were reported to stop taking drugs once they felt the adverse effects were due to the antiretrovirals. The physicians' experiences were:

“Some of them will tell you ‘because of side effects, I stopped taking drugs’ .”

“Some of them, once they start the treatment then after some days they vomit or have diarrhoea, they think it's the medication, the ARVs.”

vii. Stigmatisation related to HIV

Some of the physicians perceive stigmatisation to be a factor influencing patients not to adhere. According to the physicians, some patients have lost their jobs because they were sick due to HIV infection. Some patients hide their HIV status because of fear of being stigmatised. The following quotations expressed the physicians' concerns:

“Some patients lose jobs after being diagnosed HIV positive and adherence is affected as they are not motivated to take pills.”

“There are a lot of them; they lost their jobs because they were sick.”

“Up to now, there are people who have stigma, who hide it (HIV results) and thereafter hide their HIV status”

viii. Pill burden

Pill burden was perceived to be negatively impacting on adherence. Physicians indicated that some patients get tired of taking medication. This is worsened by the medication for other opportunistic infectious.

“One of the issues is pill burden. They take too many pills at the same time”

“They just get fed up of taking drugs everyday.”

“Pill burden is an issue as they are not only on ARV drugs but also on other treatments like there are pneumonias, there is gastro-enteritis and everything including TB.”

ix. Unsupportive families

Some physicians thought that some families are unsupportive to patients who are HIV infected to such an extent that the patients end up hiding everything. This means that it becomes difficult for the patients to take their treatment. One physician commented:

“People whose families are not supportive ... the patients are likely to develop denial attitudes People are likely not to adhere because they will try to hide things.”

x. Economic factors

The other factor that does not enhance adherence was found to be poor financial status. Some people are unemployed and so they fail to secure transport fare to get to the clinic. Some do not have money to buy food at home, resulting in problems with taking medication. This is confirmed by the quotations from the interview transcripts:

“They need to get help for transport to come this side (to the clinic).”

“And maybe also get food at home.”

4.4.1.3 Unique category

The impact of education on adherence was identified as a unique category by the researcher. This was because physicians expressed varying views about the impact of education on adherence. Some physicians thought that the well educated patients understood and adherence than the less educated. The following statements support this:

“Those who are well educated, once you give them the proper explanation during adherence counselling, they understand very well that the treatment is a life long treatment.”

“You talk to them (the well educated ones); you find out that they really can handle the situation.”

Physicians also perceived the level of education to be enabling the understanding of patient's susceptibility to and severity of progressing to AIDS as explained in section 4.3.5. One of the physicians explained that people might be well educated and understand but still act irresponsibly. Some physicians ruled out the aspect of education as a factor that can influence adherence. The following are some of the quotations that show how education and adherence are related:

“People who do not adhere can come from any educational level; people who do not adhere can come from any ... socioeconomic level.”

“The biggest influence of adherence is not age, or socio demographics like education, it is money.”

“Even those who are educated, you can find a small percentage of them still believing ... that HIV/AIDS is curable once they start treatment. But these are very few.”

4.4.2 Physicians' perceptions and beliefs about the cues to action

Cues to action were found as another category under the main theme of physicians' perceptions and beliefs about modifying factors. Cues to action can be modified to influence patients to adhere to treatment according to the adapted health belief model. Cues to action have been divided into sub categories, which include the following:

- Physicians' intervention strategies
- Methods of assessing adherence
- Unique category

Discussion of these categories follows below.

4.4.2.1 Physicians' intervention strategies

The following are the intervention strategies that the physicians implemented in the SED of Botswana in an effort to promote patients' adherence to ART:

- i. Information and education
- ii. Health workers and adherence guidelines
- iii. Use of adherence partner or treatment buddy
- iv. Communication skills
- v. Managing side effects of antiretroviral drugs
- vi. Advise on social lifestyle
- vii. Addressing the religious beliefs

- viii. Community mobilisation
- ix. Continuous counselling
- x. Multiplication of information

i. Information and education

The physicians perceive that giving patients information through educating them has proved to be successful in assisting patients to adhere. Some of the physicians' perceptions include the following remarks:

“The information is the one which is very important.”

“Correct information about HIV treatment, they get it from the health workers. In the village or anywhere else they go, they will get conflicting or twisted information so if we give them the right information ... the patients will trust us.”

ii. Health workers and adherence guidelines

Another intervention strategy that has proved successful in assisting patients to adhere to ART in the SED is adhering to the national guidelines. The perception is that these guidelines are results of research and have proved to yield success elsewhere. This is confirmed by the following quotations:

“The only way for us health workers to encourage adherence is to adhere to the policy and procedure guidelines that have been given to us.”

“For me, the only way to do this is to follow strictly on the guidelines.”

“They work (the guidelines) and the results we are having are due to the way we are implementing those procedures and policies.”

On being asked if there is any particular policy that has really proved to work; the use of adherence partners was mentioned. This came up as an intervention strategy, which is discussed below.

iii. Use of adherence partner or treatment buddy

Two of the participating physicians perceived the use of adherence partners to be working in assisting patients on ART to adhere. The physicians explained that it is government policy. It involves asking the patient before they commence therapy to bring to the clinic somebody they are close to whom they trust enough to reveal their status, who will be supporting the patient in the treatment. Some of the physicians were of the opinion that if the patient can disclose their status to someone whom they can trust, they feel better and relieved. The adherence partner is said to be possibly a friend, a relative, a sexual partner or any other person that can be trusted. The adherence partner is expected to attend the adherence counselling with the patient. The physicians explained that this person is also supposed to

be involved in the treatment taking of the patient. The physicians expressed the following opinions:

“We have ... treatment buddy or adherence partner, who is to come with the patient the first time we initiate treatment, and then we try to influence the partner to be part of the treatment campaign and to keep reminding the patient. I have seen in some instances that it really worked.”

“The issue of a caretaker is important for adherence.”

“When you think the adherence is not good, then you call the partner ... the adherence partner, then you ask him/her ... you say we think there is a problem here ... some of them are very active.”

“The patients need to remember to take the pills at the right time at the same time everyday ... it’s difficult for one person alone ... when you are two, you are likely to miss less than when you are alone.”

“It helps the patient psychologically, not only because the partner will be reminding him of medication to be taken, but the fact of disclosing their condition.”

Despite the effectiveness of the use of adherence partners in the SED, physicians also explained that some patients are not very comfortable with that. The physicians perceive that some patients feel as if they are being forced to reveal their status to other people, or they feel the health workers are trying to refuse them treatment. Actually, the physicians make the patients continue with treatment with or without the adherence partner if

patients have problems identifying one. The following quotations confirm this:

“Some people feel that we are forcing them to reveal their status to others, like we are trying to refuse them treatment because they didn’t bring a partner and things like that ...”

“If somebody says no, I am able to cope with things myself, I don’t need to reveal this to anybody, and I don’t see whom I can trust ... you cannot say no, you are condemned to death just because you didn’t bring a partner. This person still has the right to treatment.”

iv. Communication skills

Communication skills are perceived by physicians to work in the provision of ART successfully. It was noted that the way health workers talk to patients does influence adherence. One physician highlighted that some patients left the Infectious Disease Care Clinic when they were not happy with the communication skills of some support staff to the physician. The patients left the free treatment and opted to pay in the private sector. The physicians’ perception is that showing interest in what the patient has to say makes them open up and they usually do quite well. The following were some quotations indicating how the physicians believe communication skills to have worked in assisting patients to adhere to treatment:

“But what I have seen is that, if you are open with the people, I normally experience it ... when you are open and you allow the patient to speak out their feelings, their concern, their worries, their expectations of the treatment, they tend to be so frank even if they have not done things right ... they just come and tell you ... I made this mistake, what do you think I should do now.”

“Openness, the way health care workers talk to patients, in other words communication is the key to improving adherence.”

“Once you take time to ask people what is going on in their lives, and they really see the interest you have in them ... they tend to be very open.”

These remarks were confirmed during my observations of the physicians. All the physicians were expatriates. This meant that they spoke other languages other than Setswana, the local language. The researcher thought the communication skills of all the physicians who were observed were quite remarkable. Although the physicians were all expatriates they had put effort to speak “Setswana” the local language, as much as possible. All patients were greeted and asked how they were feeling in the local language. The researcher noticed the way the patients were also free to speak out their concerns to the physicians. The assistants to the physicians were quite efficient in their interpretation duties as well.

v. Managing side effects

Addressing patients' concerns and managing side effects were perceived as an intervention strategy that had worked in helping the patients in the district to adhere to treatment. The physicians reported that when necessary they withdrew the drugs, which were causing problems to the patient. A quotation from one physician was:

“Those with side effects, we try to manage the problems or withdraw ... the medication that is causing the problems.”

vi. Advise on lifestyle

Since some physicians in this research had indicated alcohol to be interfering with patients' adherence to therapy, their intervention strategy was to advise these patients to change their lifestyles. The following quotations by physicians from the interview transcripts support this strategy:

“We usually encourage them to stop drinking if drinking alcohol is the problem.”

“Try to explain to them why they have to continue to keep on taking the drug, to change their lifestyle.”

vii. Addressing the religious beliefs

Since some of the physicians perceived that the wrong information that people get from the churches interfered with adherence, the intervention strategy was to address the pastors from the churches. The physicians stated that they usually pay the pastors a visit to try and discuss with them the information to be given to people so that people do not receive different messages:

“We also go to the pastor, we talk to them if they can also teach, if they can give the correct information in the churches about HIV/AIDS.”

viii. Community mobilisation

On being asked what has been done that has proved successful in promoting patients' adherence to ART, one physician explained that giving information to the community through community mobilisation has helped. The following quotation from one of the physicians highlights the need for community involvement in adherence to ART:

“We mobilise the community by giving them information and request for public speeches to disseminate information on the importance of disclosure, adherence to ART and a healthy lifestyle.”

ix. Continuous counseling

Continuous counseling was identified as one of the intervention strategies that have been proved to help in the SED. One physician testified that counseling patients each time they come to the clinic has worked.

x. Multiplying information

Another intervention strategy that was observed to be effective in the district was the multiplication of information. Giving patients pamphlets; multiplying information through the media, which are the radio and the television; pictures about HIV/AIDS in the clinics; and showing patients educational video films in the clinic waiting areas seemed to help. Some patients are reported to have sought clarity from the physicians on what they would have seen on television, video or heard on radio.

“These pictures that we have ... in the programme ... here in the clinic, you know sometimes they come ... they ask, they say ‘doctor I have seen a picture saying ABCD, what does it mean’ ”

4.4.2.2 Methods of assessing adherence

This was identified as another category under the cues to action. The methods of assessing adherence are modifiable and can influence

adherence to ART. If patients are not assessed about taking treatment the right way, they become relaxed. Below is the presentation of how physicians assess patients' adherence to ART in the SED. The methods included:

- i. Pill counting
- ii. Patient self report
- iii. Monitoring CD4 cell counts and viral load
- iv. Assessing appointments

These methods will be discussed in this section.

The physicians' practices, which include the way they assess patients' adherences to ART, were observed during observation period. These observation results are discussed under the particular method of assessment. The limitations as perceived by the physicians are presented.

i. Pill counting

All of the physicians identified "pill counting" as a method of assessing patients' adherence to ART. Some physicians reported that they do pill counting for the first three months for patients who are starting the treatment. After six months when the patients show good adherence, the physicians relax on pill counting. It is left to the pharmacy personnel. Some physicians reported to do pill counting for each and every patient.

"We do pill counting and see how many pills were given before and how many they come back with, then we tell the difference..."

“We ask the patient to show the tablets that are remaining from his or her last supply.”

- **Observation on pill counting**

From the observation studies done by the researcher, the physicians who reported doing pill counting for every patient during interviews were observed to be doing pill counting for every patient during consultation. Those who said they do not do for every patient during consultation were observed not to do pill counting for every patient. They were doing pill counting for patients who had just been initiated onto the treatment. This is supported by following quotations from the interview transcripts:

“Somebody who was already on treatment, comes in to consult, the first thing we ask that person is to show the tablets that are remaining from his or her last supply”

“I don’t do pill counting for every patient, but of course... in the first three months, for every patient whom I have initiated the treatment, I am doing the pill count ... when it goes to the sixth month and I see the patient has stabilised, then I would relax a bit”

- **Limitation of pill counting**

Some physicians raised concerns over the method of pill counting. “Pill dumping” was the most raised concern by physicians. Physicians are of the opinion that some patients throw away pills to appear to be more adherent. This limits the reliability of this assessment method. The following were some of the reports:

“A patient can also be clever; they can remove and throw them (pills) away.”

“But you know somebody can still throw away the tablets.”

Some physicians therefore think that enquiring from the patient the number of times they take treatment and asking whether they have ever missed treatment (self-reporting) is helpful. This method is discussed below.

- ii. **Patients’ self reporting**

Physicians in the SED use patients’ self reporting as one of the methods to assess patients’ adherence to ART. Physicians explained that this is when they sit down with the patient and ask how the patient has been taking medication. If communication skills are good, the physicians believe that the patient will be free to even include the wrong things that they do. The following are quotations from the physicians that illustrate the use of patients’ self-reporting:

“We just talk to them; you know a patient should be free to tell you really the correct thing. You should not be watching over him like a policeman.”

“We check the times that this person takes treatment ... we ask ‘how you take the treatment, with this one, how do you take it,’ the person will tell you I take it twice a day, what time? He will tell you the time, if he happens to be taking mistakenly, already you have a clue.”

“And when you sit down with the patient and try to talk to them, some admit that they skipped treatment.”

- **Observation on self-reporting**

During the observation some physicians would ask the patients “are you taking the pills well” and the subject would change. Some physicians would ask the patients in detail how often they take the particular tablets, and what they would do if they forget to take the pills. Some physicians would enquire from all their patients while others would only enquire from those who had just been started on therapy.

- **Limitations of self-reporting**

The problem cited with self-reporting was that the method solely relies on the information from the patients and the fact that patients sometimes do not tell the truth. The physicians were quoted as saying:

“A patient who has been on treatment for a long time can always manipulate the information they give the physician... they can still lie to you.”

“They tell you that they are taking the drugs, but the truth is they are not taking the drugs at all.”

“They tell us they are adherent, they have never missed a pill and we believe.”

iii. Monitoring CD4 cell counts and viral load

Out of the four physicians who were asked on how they assess patients' adherence to ART, two of them indicated that they monitor CD4 cell counts and viral load. One physician indicated that sometimes when some patients decide to stop taking drugs this would be reflected by a change in the viral load- it goes high. The following are supporting statements from the interviews:

“You keep on looking at the CD4 and viral load and if you see there is a change, especially if the viral load shoots up, then you wonder what is causing that.”

“...you actually discover it when doing a viral load.”

Despite the belief by most physicians that CD4 cell count and viral load help to monitor patients' adherence to ART, one of the physicians had a different opinion. He explained that he did not believe in sending blood to the laboratory for assessing patients' adherence to ART. The argument was that

poor immunologic or virologic response could be due to poor adherence or other factors other than poor adherence. This is expressed in the following quotations:

“You cannot assess adherence by drawing blood and sending it to the laboratory.”

“So finding that my patient is not responding immunologically doesn’t mean that this person is not adhering. There are other factors that may make the drug not to work.”

iv. Assessing appointments

Physicians identified keeping of appointments as another method of assessing patients’ adherence to treatment in the SED. The feeling was that patients who do not keep appointments whether for consultation or for drug refills are usually non-adherent. The following quotations are from the physicians and they support the importance of assessment in adherence to ART:

“If it happens that this person is not ... respecting appointments, you have a clue.”

“Most patients who tend to miss appointments ...are non adherent.”

4.4.2.3 Unique categories

Under the category of cues to action, a unique category was established from the research findings. The unique category was further divided into:

- i. physicians recommendations
- ii. information physicians convey to patients

These further categories were cues to action but could not be categorised under the practiced intervention strategies or methods of assessment. This is because the physicians' recommendations were only their recommendations, not what they were actually practicing. The information they conveyed to patients ranged from the importance of adherence, to the explanations about the disease.

The findings are presented below.

i. Physicians' recommendations

From their experiences, physicians had recommendations to make to improve patients' adherence. If the recommendations were implemented, they would become physicians' intervention strategies. The interventions can then be modified to suit the situation in the SED. The recommendations varied. They ranged from strong patient follow up, drug combination, educating the patients, creating counseling jobs for the healthy patients and giving individualised care. These recommendations are discussed below.

- **Strong patient follow up**

Physicians in this research recommended strong follow up of patients who show signs of poor adherence. The reason for such a recommendation was that because “that person is at risk of developing resistant strains that will spread into the community, to all of us.”

- **Drug combination**

Because pill burden was perceived as a factor that did not enhance patients' adherence to treatment in the SED, the use of combined drug was raised as a recommendation. Knowledge of the combination of drugs and giving patients one drug daily was perceived to be acceptable to patients.

- **Educating the patients**

Giving patients enough knowledge about the disease was another recommendation from the participating physicians. Knowledge on treatment itself and the possible outcome should be imparted to the patient before they even start on the therapy.

- **Creating counseling jobs for the healthy patients**

Another recommendation was to create counseling jobs for those who found themselves jobless because they were sick but were now feeling healthy. Physicians were of the opinion that these people can be empowered to counsel others, from their experiences, from the treatment, from the social experiences, and on what they think about the situation. These can act as living testimonies to those patients who feel stigmatised.

- **Individualised care**

Physicians in the SED recommended giving individualised care for patients from their experiences in the provision of ART. The reason given was that individual patients respond differently to HIV treatment. Individualised care was perceived as the way to go in future to achieve success.

- ii. **Information physicians convey to patients**

When physicians were asked what kind of health information they conveyed to their patients, the information varied. Some physicians made their patients understand the disease. By emphasising the aspect of adherence to treatment the physicians gave the patients hope. Some physicians gave patients information on how they can protect themselves from further

infection with virulent strains and how they can protect other people around them.

The following are some of the quotations conveying the information physicians gave to patients:

“The information I would give initially is to explain to them, just like any other disease, the diagnosis of and ... what it entails.”

“I would tell them that yes, you have this disease but all hope is not lost, there is still hope; but the hope depends on your attitude.”

“I would try and make them understand their disease as much as possible and try to tell them that treatment will make a difference ... and talk about treatment before they start for them to know that once they start, they have to take treatment for life...”

“The most important thing for ARVs as you know is the adherence because everything depends on that.”

“The patient has to understand that this treatment is something strong ... has side effects and needs to be managed ...”

“We talk to them about how they can protect themselves and protect others around them.”

4.5 SUMMARY

This chapter dealt with the presentation of the research findings. The demographic characteristics of the participants are presented. These included the general clinical experiences and the experience in the provision of ART. Content analysis was used to analyse the data. The two main themes were the “Physicians’ perceptions and beliefs around HIV disease” and “Physicians’ perceptions and beliefs about the modifying factors”. Each of these main themes had several categories that were designed to further reduce the data into smaller manageable chunks.

The following chapter is on the discussions, the conclusions and recommendations according to the researcher.

Chapter 5: DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter presents a discussion, the conclusion and recommendations made by the researcher. The discussion draws from the research questions and the theoretical framework, which is based on the health belief model. In this discussion, the researcher compares and confirms these findings with existing literature related to adherence to ART. Conclusions are drawn from the research findings and recommendations are made.

5.2 DISCUSSION

In this section the main themes and the categories that were developed during data analysis will be discussed. This was done in order to meet the research objectives and to make sure that the research questions are answered. The participants' demographic data is discussed. Physicians' perceptions and beliefs around HIV disease and a discussion of the other main theme, the physicians' perceptions and beliefs about the modifying factors follow the discussion.

5.2.1 The Demographic characteristics of the participants

The demographic characteristics of the participants that were seen to be very useful for this research were the number of years of experience in the provision

of antiretroviral drugs to patients in the public sector in Botswana; and the attendance of the basic “KITSO” AIDS training of Botswana. The physicians’ experience in managing patients on ART in the public sector allowed them to share their experiences and give their perceptions about patients’ adherence to ART. This also made the physicians resourceful when it came to sharing their recommendations on how to assist patients who are poor adherents to ART. The participants were able to identify factors that they perceived to be impeding patients’ adherence to ART in the SED from their experience. The participants shared some strategies they used to improve adherence.

5.2.2 The physicians’ perceptions and beliefs around HIV disease

This discussion includes the discussion of physicians’ perceptions and beliefs about HIV; about ART; about the patient; about adherence; about patients’ perceived susceptibility to and severity of progressing to AIDS; and about patients’ belief in treatment efficacy.

5.2.2.1 Physicians’ perceptions and beliefs about HIV

One of the most important things in the delivery of health care is for health workers to understand the disease. It is very encouraging that the physicians themselves have got to accept the disease as a chronic disease that needs close monitoring and follow up. The participating physicians have likened the disease to diabetes and hypertension on several occasions.

Some have even argued for the need to talk about other diseases such as Ebola which is a viral infection and even more fatal. The physicians do not seem worried about contracting HIV/AIDS from the patients as was found in a study done by Duyan et al (2001). The authors found that doctors in Turkey were worried about contracting HIV/AIDS from the patients. These findings differ from the findings of this research most probably because the doctors in Turkey were surgeons, and this research included physicians who were not involved in surgical operations with the patients.

5.2.2.2 Physicians' perceptions and beliefs about ART

All the participants in this research appreciate the advent of ART. They gave their clinical experiences before and after the use of ART. The life of those infected with HIV before the use of ART was described as hopeless. During that time, some physicians would advise their patients to even start rearranging their lives and put wills in place, because it was a hopeless situation. All the physicians seemed to have gained hope with the use of ART. They also give hope to their patients because of ART. The physicians perceived that the positive effects of ART are in line with the opinion of the Deputy Permanent Secretary and Director of Health Services in Botswana in 2005. His views were that antiretroviral drugs do not cure HIV infection. However, they improve the quality of life and prolong survival and should enable many to return to work (Anabwani & Jimbo 2005: ii).

5.2.2.3 Physicians' perceptions and beliefs about patients

Some physicians' perceptions about patients with HIV included the following: "like any other patient; somebody with a chronic disease; some patients believe that HIV is treatable". The majority of patients were reported to be adherent. However, physicians had experiences with non-adherent patients as well. They perceived these patients to be always giving invalid excuses for missing appointments or for not adhering to treatment. Some of the perceived invalid excuses given by patients were that patients were travelling and that they had insufficient food. In a study done in Abuja, Nigeria, by Mohammed and Sarki (2004:54), travelling out of town and non-availability of food were some factors found to be interfering with adherence. However, in this study, the general physicians' perception about patients was positive. The physicians did not sound discriminatory against those with HIV. The positive attitude of physicians in the SED to their patients is quite encouraging.

5.2.2.4 Physicians' perceptions and beliefs about adherence

All the physicians in this research all appreciated the importance of adherence and regarded it as an important component for the success of ART. Some physicians elaborate that the resistant strains can evolve because of one non-adherent patient and affect the whole community.

Some physicians clarified the concept of adherence as not only adhering to treatment, but to all procedures that go with treatment.

Similarly, Nieuwkerk et al (2001:1966) illustrate the significance of adherence in lowering the viral load in HIV infected patients. Bangsberg et al (2001b: 182) found a strong relationship between the level of adherence to ART and the risk of progression to AIDS in San Francisco. These findings signify the importance of adherence for the success of ART, which is similar to the findings from this research where the physicians identify the significance of adherence in the provision of ART.

5.2.2.5 Physicians' perceptions and beliefs about patients' perceived susceptibility to and severity of progressing to AIDS

The participants in this research perceive patients' understanding of susceptibility to and severity of progressing to AIDS to be associated with patients' education level. The less educated were reported to understand susceptibility after explanations in simple language. Physicians' perceptions were that patients who had been severely ill before were more likely to understand the severity of the disease, resulting in change of behaviour.

These findings are similar to those found by Malta et al (2005:1429) in Brazil. According to the physicians in that research, patients who had experienced AIDS related symptoms perceived the condition as serious and were usually more adhering to treatment.

5.2.2.6 Physicians' perceptions and beliefs about patients' belief in treatment efficacy

There was an initial de-campaign to treatment efficacy when the national ART programme started in the SED. This was because patients got enrolled on the programme in the end stage of HIV illness and invariably died after starting with treatment. Fortunately, this perception did not persist. Most of the patients in the SED are perceived to have trust in the treatment once they get the right information. Some patients are said to understand the repercussions of not taking pills. However, some patients seem to be convinced by other people like pastors and traditional healers, thus interfering with patients' belief in treatment efficacy. These factors are discussed further under 'factors not enhancing adherence'. Physicians in Brazil (Malta et al 2005: 1428) have also confirmed that traditional healers influence patients' belief in ART. In the United States, lack of belief in treatment efficacy is one of the contributing factors that have been associated with poor adherence (Clinical Manual 2005:3).

5.2.3 Physicians' perceptions and beliefs about the modifying factors

This discussion is on the factors that are modifiable in the patients' environment (extrinsic factors). The discussion is divided into factors impacting on adherence and the cues to action from a physician's perspective.

5.2.3.1 Factors impacting on adherence

The discussion on factors impacting on adherence is further divided into factors that enhance patients' adherence and factors that do not enhance patients' adherence. Dividing the discussion into factors allows for simplification of the presentation.

- **Factors that enhance patients' adherence**

Physicians in this research perceived the following factors to be enhancing patients' adherence to ART in the SED of Botswana: correct information, continuous counselling, positive personal motivation, patients' understanding of treatment, and patients' satisfaction with health personnel, giving patients hope and encouragement and supportive environment.

Continuous counselling was perceived by physicians to be assisting patients to adhere to therapy. Giving patients standard correct information during continuous counselling is perceived by physicians to enhance patients' adherence to ART. Anabwani and Jimbo (2005:2) echo similar sentiments about the role of continuous counselling in patients' adherence to ART. The Clinical Manual (2005:5) also emphasises the need for basic correct information about the regimen and duration of therapy. Giving patients correct consistent information is important for making them understand their disease and the treatment involved. Patients' understanding of the nature of

the treatment was perceived by physicians from this research to be enhancing adherence. However, for patients to adhere to treatment patients should be made to understand the possible adverse effects associated with the treatment and what they have to do about the adverse effects. Health workers have been advised to “reassure the client that some adverse effects may occur, that many of these lessen with time, and that simple symptomatic remedies can alleviate many of them” states Anabwani and Jimbo (2005:2).

Some physicians think that their patients in the SED are adhering to treatment because of the way the physicians communicate with them. The researcher has confirmed the good communication skills that the physicians exhibit during the observation of consultative practices of these physicians. The researcher observed encouraging relationships amongst physicians and patients. Most patients looked happy and free to communicate their concerns. This study seems to suggest that the doctors observed in this study have good relationships with their patients. In a research done by Weiser (2003:284) in Botswana in 2000, the patients reported to have felt respected and supported by their practitioners. Unlike in Brazil, the physicians had insufficient time with the patients and they did not engage in comprehensive dialogue with patients (Malta et al 2005:1429). The physicians in Brazil even reported that they were not free to discuss issues about side effects with their patients. This is in contrary with the ART guidelines for America and for Botswana, which encourage clinicians to

manage patients' side effects (Anabwani & Jimbo 2005:2; Clinical Manual 2005:4).

Physicians in the SED perceived that giving patients hope and encouragement when they do well motivates them. The Clinical Manual (2005:6) also encourages clinicians to reinforce any patient behaviour that leads to high level of adherence. Sharing of positive information about the patient's health such as positive changes in CD4 cell counts and viral load is important in encouraging a high level of adherence (Clinical Manual 2005:6).

Supportive environments were found to be impacting positively on adherence to ART. The physicians perceive that some of the patients take treatment to please others like friends, families or the doctor. Similarly, in a study done by Holstad, Pace, De and Ura (2006:14) in the South-Eastern United States, adherence was significantly associated with perceived support.

- **Factors that do not enhance adherence**

Physicians in this research perceived the following factors to be negatively interfering with patients' adherence to ART: traditional medicine, religious beliefs, patients' healthy states, and patients' lack of understanding, alcohol

intake, side-effects, stigmatisation, pill burden, unsupportive families and economic factors

Traditional healing was perceived to be impacting negatively on patients' adherence to ART. Physicians are of the opinion that traditional medicine is more preferable in our African setting. Unfortunately, patients get wrong information from the traditional healers. These perceptions were similar to the physicians' perceptions in Brazil (Malta et al 2005: 1428). The following quotation illustrates views about traditional healing and adherence to ART from the physicians in Brazil:

“A patient told me that she needed a drug holiday. She told me that even her traditional healer agreed with her. This guy told her she had taken so many pills that she now has a kind of a ‘superpower’ inside her”

Traditional healers give patients wrong information, which is of concern to the physicians in SED of Botswana and in Brazil.

As much as people are encouraged to be religious, the concern that was raised by the physicians was that pastors were giving people wrong information as well. Some patients were advised by the pastors to stop taking ART because the pastors would pray for them and the patient would be cured. These behaviours are also confirmed in a research done by Maisels, Steinberg and Tobias (2001: 185) in the United States of America.

In the study, religious beliefs, was among other factors, a reason for patients' non-adherent behaviour.

This makes religious beliefs not only an African concern but also a concern that affects other countries.

Physicians perceived patients' lack of understanding about HIV/AIDS and the nature of treatment as a factor that does not enhance patients to adhere to therapy. The Clinical Manual (2005:5) and Anabwani and Jimbo (2005:2) advised health workers to make patients understand the nature of the treatment. The authors further encouraged patients to be assured that the management of side effects that may arise. This lack of understanding contributed to a decrease in adherence to treatment after patients felt healthy. This lack of understanding of the nature of treatment and its negative implications on adherences was a concern among physicians. When patients got healthy after being started on treatment, they forgot to take the pills, they started missing appointments and thought missing treatment for a short while will not make much difference. This was all because they did not have the proper understanding about HIV/AIDS and treatment. Unlike in the United States of America, Holstad et al (2006:14) found that adherence was significantly associated with higher levels of perceived general health. The difference in these research findings could be because people in the United States of America have a better understanding about the treatment because of the better literacy levels.

Alcohol was perceived by most of the physicians to be interfering with patients' adherence to ART. Similarly, alcohol consumption is associated with poor adherence to ART in the United States of America and Western Europe (Clinical Manual 2005:3). In Botswana, Weiser et al (2003:286) also confirm the negative effects of alcohol consumption on adherence

From the research findings, side effects were perceived by physicians to be interfering with adherence to ART in the SED of Botswana. Maisels et al (2001:188) found similar results in the United States of America. Patients did not continue with treatment because of side effects. In Brazil, the physicians did not even want to discuss much about side effects with their patients (Malta et al 2005:1428). Amazingly, side effects did not pose a barrier to adherence in 2000 in Botswana from the findings by Weiser et al (2003:287). This could be due to the fact that in 2000 when Weiser et al (2003) carried out the research, antiretrovirals were not free then. Patients would not want to stop taking treatment because of side effects after incurring financial costs. They would rather persevere.

Stigmatisation was perceived to be one of the factors interfering with patients' adherence to ART by physicians in the SED. Some patients were reported to have lost their jobs after they got sick. Physicians report on patients being too demoralised to take treatment. Some patients are perceived to hide their status and not seek treatment. Rintamaki et al (2006:366) in Chicago in United States of America found similar results. The

authors found that people with high stigma concerns were 3.3 times more likely to be non-adherent to their medication regimen than those with low concerns.

Pill burden was found to be another factor that impeded adherence. The findings correlate with those of a meta-analysis done by Bartlett et al (2001: 1369) to determine predictors of adherence. Similar results were found in Botswana in 2000 when patients felt that they had swallowed too many pills (Weiser et al 2003:287). The Botswana 2005 ART guidelines recommend the first line regimen to have a low pill burden because of concerns about adherence (Anabwani and Jimbo 2005:10).

Economic factor has also contributed to poor adherence among the unemployed. This was because at times patients would fail to get money for transport to come to the clinic. Where this was the case, patients in Botswana cited distance to be interfering with adherence (Weiser et al 2003:287). The Government of Botswana has tried to address the problem of distance by decentralisation of treatment centres. With a population of 1,600 000, thirty-one (31) treatment centres were opened by 2005. Because of poor financial status, some patients failed to get proper food, thus adherence to treatment was affected.

The factor of education as influencing patients' adherence was not very conclusive in this study. Physicians expressed varying views about

education as a factor of adherence. Some physicians use educational level to classify their patients' adherence habits. The levels identified are "the well educated" and "the less educated". The reason physicians classified adherence according to education was that these physicians found it easy to talk to the "well educated" patients who once they got the information, complied. Some physicians also thought that the well-educated patients understood susceptibility to and severity of progressing to AIDS better than the less educated. But understanding susceptibility might not guarantee adherence, as one physician expressed that some patients might have understood but would not adhere because of personal attitude. Some physicians were of the opinion that people who did not adhere came from any educational background.

Similarly, education was not found to be a factor in predicting adherence in Botswana in 2000 (Weiser et al 2003:287). In Brazil though, low education level was found to be a predictor of non-adherence (Nemes, Carvalho & Souza 2004: S19).

5.2.3.2 Cues to action

The discussion on the cues to action was divided into the following:

- Physicians' intervention strategies
- Methods of assessing adherence
- The unique category

- **Physicians' intervention strategies**

This discussion is on the intervention strategies that have proved to work in the SED in assisting patients to adhere to therapy.

Some physicians in the SED have proved that giving patients information and educating them has worked. The Botswana 2005 ART guidelines also advised health workers to give patients adequate information about the treatment (Anabwani & Jimbo 2005:2). The 2005 America guidelines also advised that providing patients with education prior to writing a prescription is important in assuring adherence to ART (Clinical Manual 2005:4).

Some physicians have experienced success with adhering to the 2005 national ART guidelines. A particular procedure that was highlighted by some participants was the use of adherence partners. The use of adherence partners is perceived to free the patients psychologically, besides the support and reminder to take treatment, the person finds a person to disclose to. The Botswana ART guidelines advise health workers to provide appropriate "information to family members and the significant others regarding the importance of adherence and solicit their support and involvement" (Anabwani & Jimbo 2005:2).

Good communication skills that physicians in the SED exhibit are perceived to help the patients a great deal. The researcher witnessed this during periods of observing physicians in the practice. Machtinger and Bangsberg

(2005: 14) are of the opinion that the health care provider's affective tone of the relationship that is, the warmth, the openness and cooperation affect patients' adherence. Similarly, in a study done in Latin America by van Servellen and Lombardi (2005:38), physician-patient communication or relationships was significantly associated with adherence to medication schedule.

Managing side effects due to treatment is perceived to help patients adhere to treatment from the physicians' experiences. The Clinical Manual (2005:4) confirms this perception by advising clinicians to "work closely with the patient to treat adverse effects and consider changes in ART if side effects are not tolerated".

Advising patients about changing lifestyles to suit the treatment regimens has been found to be helpful. Where alcohol interferes with adherence, patients are encouraged to stop taking alcohol.

Community mobilisation has been found to help in getting information to the community since poor adherence was also attributed to lack of proper information in the district. Community mobilisation also helps in addressing the problem of stigmatisation.

Some physicians indicated that since some religious beliefs interfere with patients' adherence to therapy. Some pastors have been approached

concerning this. Pastors have been advised to give correct information to the congregation. The district has also tried to multiply the information about HIV/AIDS in the district. This has been successfully done through giving patients pamphlets, providing pictures and posters on the clinic walls, through showing patients video cassettes and through the television and radio broadcasting about ART.

- **Methods of assessing adherence**

The methods of assessment that are used by the physicians in the SED are pill-counting, self-reports, monitoring CD4 cell counts and assessing patients' appointments.

All physicians talked about pill counting as a method used for assessing adherence. During practice observation, it was noted that some physicians would do pill counting for all the patients that they consulted. Other physicians would do pill counting only for the patients who had just been started on therapy, as they had explained during interviews. The failure to do pill counts for all patients could be because pill counting is said to be time consuming (Turner 2002:S146) and the task was left for the pharmacy personnel. Pill dumping was raised as a problem limiting the method. Self-reporting then appeared to be a better option.

The majority of the participants talked about self-reporting. The limitation associated with self-reports as discussed by the physicians was that in

some instances, patients did not tell the truth. Turner (2002:S146) advises clinicians to reassure the patients before asking adherence questions and that the information will not be held against them. The researcher did not observe this reassurance during observation methods. Maybe because the Botswana 2005 ART guideline does not advise in that manner, many physicians did not practice it.

Monitoring of CD4 cell count and viral load as a method of assessing adherence was mentioned with mixed feelings among the physicians in the SED. Some physicians mentioned the use of CD4 cell count and viral load for monitoring adherence. This was confirmed during the observation studies when some physicians would reinforce patients' information by the positively changing CD4 cell counts and viral load as evidenced in the blood test results. Some physicians did not believe in this method of assessment. The reason was that there are other factors that affect immunologic and virologic responses other than adherence.

Amidst all this confusion amongst the physicians, the Botswana 2005 ART guidelines states that "the earliest indicator for the success of the chosen regimen is a rapid fall in the viral load by 3 months after start of therapy ... that fall in the viral load should be associated with a steady rise in CD4 cell count" (Anabwani & Jimbo 2005:3).

Periodic viral load and CD4 cell count have therefore been identified as one of the suitable methods for monitoring adherence in Botswana (Anabwani & Jimbo 2005:3).

Assessing the way patients keep clinic appointments is also used to monitor patients' adherence in the SED. Machtinger and Bangsberg (2006: 17) are also of the opinion that poor adherence is noted when there are no timely refills of medication. This method of assessing adherence is not indicated in the Botswana 2005 ART guidelines. Based on the experience of physicians, it is recommended that this aspect be included in the Botswana 2005 ART guidelines.

- **The unique category**

The physicians' recommendation and the information conveyed to their patients are discussed below.

Because of the physicians' experience and position in the provision of ART, the researcher found it necessary to allow physicians to cite their recommendations to improve patients' adherence to ART. These recommendations were to assist patients' adherence to ART in the SED.

Since the danger of the evolution of resistant strains is a threat not only to the non-adherent individual, but also to the community as a whole, strong follow up of non-adherent patients was recommended. This means the current system of following up non-adherent patients in the SED should be improved.

Physicians recommended the use of combined drug therapy in ART provision to enhance adherence. The pills for opportunistic infections increase the number of pills a patient on ART has to take.

Creating counselling jobs for the healthy patients who lost their jobs was another recommendation. These people, as counselors, would be better acceptable to other patients and can share lived experiences with patients.

Giving individualised care was another recommendation from the physicians. This recommendation was given because patients are never the same, so they need individualised different approaches.

These recommendations seem quite feasible in the SED and would be of great benefit to the society. No literature has been found to support these recommendations.

The information that physicians conveyed to patients was variable. The physicians in their practice gave patients hope but warned them that hope depended on adherence habits.

5.3 CONCLUSION

Physicians in the SED of Botswana have a positive perception about the HIV disease, its treatment and their patients. Physicians seem to understand their patients and this

fosters good relationships between physicians and patients. This was confirmed by the observation studies that were done by the researcher. The physicians' good communication skills help them become quite knowledgeable about the factors that interfere with their patients' adherence to ART. This in turn has resulted in them implementing the appropriate intervention strategies to address the issues related to adherence. This is quite encouraging for the national antiretroviral programme considering the high cost for HIV treatment which is 400 Pula or 67 US\$ per person per month.

The use of a nurse and a hospital orderly in assisting the physician whilst consulting with patients appeared very helpful in giving the patient information. Since all the physicians who participated in this study did not speak the local language, the nurse assisted with academic understanding and interpretations from the physician to the patient. At times hospital orderlies might not understand the physician's academic language so by the time the information gets to the patient, it is all distorted, and thus the provision of ART can be affected.

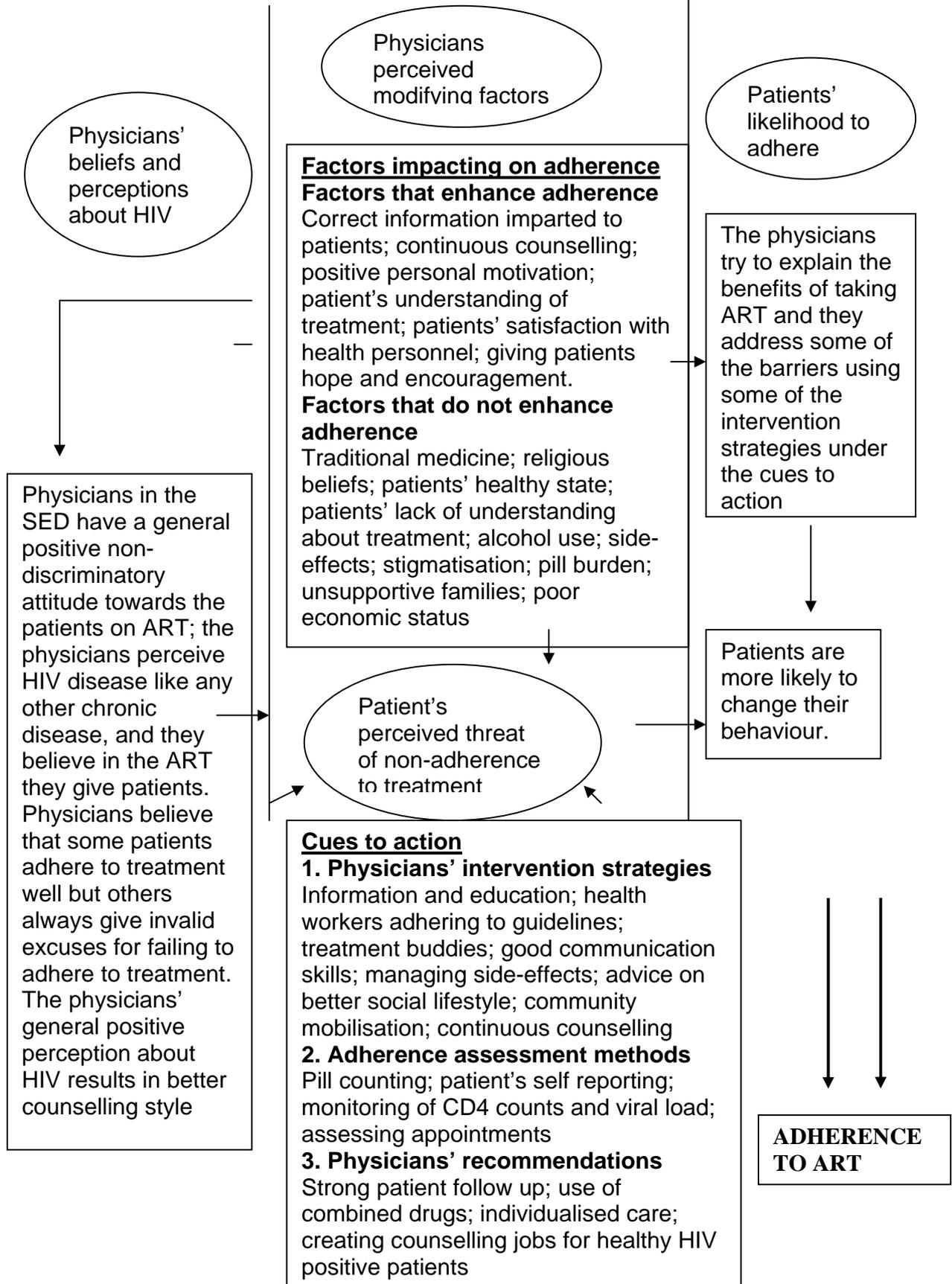
As much as the physicians seem to understand the importance of adherence assessment for the success of ART, it was observed that assessment of adherence was not consistent among all physicians. Some physicians did pill counting and self-reporting for all patients that they consulted. One physician admitted during the interviews "assessing adherence is a complex issue, but unfortunately a very essential component of HIV treatment". Physicians appeared a bit relaxed on assessing adherence for those who had been on treatment for a long time. The most frequent

question asked by physicians was “are you taking the pills well”. This question sounds insufficient and there was no probing as to whether they have missed any doses before. Pill counting was not consistent most probably because it is known to be time consuming. The physicians could have been quite busy. And so pill counting was left to the pharmacy personnel for patients who have been on treatment for a long period. But some physicians who believed in following the ART guidelines would do pill counting for all the patients they consulted.

According to physicians in the study, pill dumping and not telling the truth during self-reporting are some concerns that affect assessment of adherence. Unfortunately some sensitive methods like Medication Events Monitoring System (MEMS) or biological markers might be too expensive for the SED setting. The current adherence methods in the SED therefore need to be improved.

The results of this study can be generalised to the physicians in the SED since all the physicians in the district were participants for the study. Generalising the results to similar settings can be done with caution after analysing the methodology followed. These results cannot be generalised to the whole of Botswana. Figure 5.1 below is a presentation of the summary of the conclusion presented on a health belief model.

Figure 5.1: The Health Belief Model: Summary of the conclusion



5.4 LIMITATIONS OF THE RESEARCH

The limitation to this research was that some physicians were not very comfortable with having their practises watched. This could result in the Hawthorne effect, which the researcher did not have much control over. However, efforts to address this limitation included the researcher assuring the physicians of confidentiality and promising the physicians not to use the results against them.

5.5 RECOMMENDATIONS

Recommendations based on the findings have been made for the health system and for further research by the researcher.

5.5.1 Recommendations for the health system

1. Unannounced pill counts can be developed to curb pill dumping even though this can be intrusive and cumbersome.
2. To increase the validity of self-reporting, a preamble needs to be done before asking adherence questions. This is to reassure patients that the information will not be held against them and that problems with adherence are nearly universal, so that they should tell the truth.
3. Nurses should do the pill counting for all the patients before they get into the consulting room since physicians seem not to be able to do it routinely most probably because of time and pressure of work.

4. Busy clinics should be run by at least two physicians especially on busy days to allow for proper adherence assessment and continued monitoring and counseling by the physician.
5. Physicians need to have standard information on the use of CD4 cell counts and viral loads for monitoring adherence. The physicians in the SED could probably have meetings where they share such information and other experiences.
6. Stigmatisation remains a problem in Botswana. There should be law to protect the HIV-infected persons from being dismissed from their work places.
7. There is need for the conventional medicine to work in collaboration with traditional medicine and religion. Traditional healers and pastors should be well informed about HIV/AIDS and information communicated to patients should be consistent.

5.5.2 Recommendations for further research

1. A research study exploring the knowledge of pastors and traditional healers on HIV/AIDS.
2. A research study on the exploration of perceptions and beliefs of other health workers other than physicians, about patients' adherence to ART. The health workers should be all the staff involved in the provision of ART.
3. A research study on the exploration of perceptions and beliefs of the employers about HIV positive employees.

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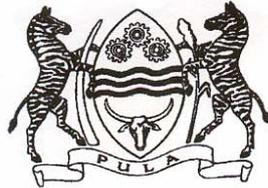
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Annexure 1: Permission letter from Health Research Unit

TELEPHONE: 3632000
FAX: 3914467
TELEGRAMS: RABONGAKA
TELEX: 2818 CARE BD



MINISTRY OF HEALTH
PRIVATE BAG 0038
GABORONE
BOTSWANA

REPUBLIC OF BOTSWANA
MINISTRY OF HEALTH

REFERENCE No: PPM&E 13/18 PS Vol I (20) May 17, 2006

Irene Dzinza
P.O. Box V1951
Ramotswa

Research Permit: "Health care providers experiences of patients adherence to antiretroviral therapy in the South East District in Botswana."

Your application for a research permit for the above stated research protocol refers.

The application form, protocol and consent form have been reviewed and found to be ethically and scientifically appropriate. **Permission is therefore granted to conduct the above-mentioned study.** This approval is valid for a period of 1 year, effective May 17, 2006.

This permit does not however give you authority to collect data from selected institutions without prior approval from the management of the institutions. Similarly, consent should also be sought from all the participants prior to undertaking data collection.

The research should be conducted as outlined in the approved proposal. Any changes to the approved proposal will need to be resubmitted to the Health Research Unit in the Ministry of Health.

Furthermore, you are requested to submit at least one hardcopy and an electronic copy of the report to the Health Research Unit, Ministry of Health within 3 months of completion of the study. Copies should also be sent to relevant authorities.

Approval is for academic fulfillment only.

Thank you,

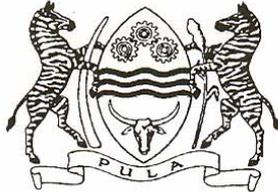
S. El-Halabi

For Permanent Secretary Ministry of Health



Annexure 2: Permission letter from Health Research Unit

TELEPHONE: 3632000
FAX:3914467
TELEGRAMS:RABONGAKA
TELEX: 2818 CARE BD



MINISTRY OF HEALTH
PRIVATE BAG 0038
GABORONE
BOTSWANA

REPUBLIC OF BOTSWANA
MINISTRY OF HEALTH

REFERENCE No: PPM&E 13/18 PS Vol I (48) November 29, 2006

Irene Dzinza
P.O. Box V1951
Ramotswa

"Perceptions and beliefs of physicians about adherence to antiretroviral therapy by patients in the South East District in Botswana.

Reference is made to your 26 November 2006 letter. In your letter you request to change the title of the approved study "Health care providers experiences of patients adherence to antiretroviral therapy in the South East District in Botswana" to "Perceptions and beliefs of physicians about adherence to antiretroviral therapy by patients in the South East District in Botswana". This study was approved by the Health Research Unit on May 17, 2006 (PPM&E 13/18 PS Vol I (20)) for a period of 1 year.

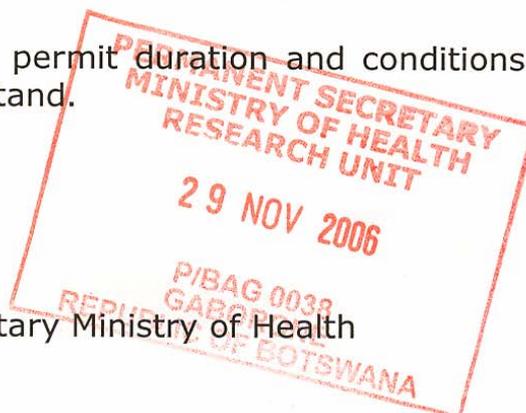
Documentation revised accordingly have been reviewed. Permission is hereby granted for the proposed changes.

Please note that the permit duration and conditions outlined in the May 17, 2006 letter still stand.

Thank you,

A handwritten signature in black ink, appearing to read 'S. El-Halabi'.

S. El-Halabi
For Permanent Secretary Ministry of Health



Annexure 3: Permission letter from the University of South Africa



Department of Health Studies
UNISA
PO Box 392
Pretoria
South Africa
24 November 2006

To whom it may concern

RESEARCH: IRENE DZINZA: STUDENT NUMBER 34808264

It is herewith confirmed that Ms Irene Dzinza is a registered student with the Department of Health Studies, UNISA.

As part of her studies she has to conduct and complete a research project.

Her topic is: *Perceptions and beliefs of physicians about adherence of anti-retroviral treatment by patients in Botswana*

Her research approach and methodology have been assessed and approved by the Research and Ethics Committee in UNISA.

We trust that you would enable her and support her in the completion of this study .

Regards

**Prof SP Human (Supervisor)
Department of Health Studies**

Annexure 4: Application letter for permission from Bamalete Lutheran hospital

P. O. Box V1951

Ramotswa

28 November 2006

To The Management

Bamalete Lutheran Hospital

P. O. Box V6

Ramotswa

Re :Application for permission to carry out a research

Dear Sir/Madam

I am applying for permission to carry out a research from Bamalete Lutheran Hospital. The research is entitled "Perceptions and beliefs of physicians about adherence to antiretroviral therapy by patients in the South East District in Botswana". The research is being carried out for academic fulfilment only.

Please find enclosed a copy of the research permit to conduct the study, which was granted by the Health Research Unit of Botswana and a copy of a study approval from the university I am studying at, and an interview guide. Enclosed is a copy of the research proposal as well.

Employer's time shall not be used to collect data. The interviews shall be one during my lunch hour and observations shall be done during my off days in the morning.

Hoping to receive a favourable response from you.

Yours truly,

Irene Dzinza

Annexure 5: Permission letter from Bamalete Lutheran Hospital



TELEPHONE: (267) 5390212

FAX: (267) 5390826

BAMALETE LUTHERAN HOSPITAL

P.O. BOX V6
RAMOTSWA
BOTSWANA

Ramotswa, 13/12/2006

Irene Dzinza
Lab
BLH

RE: Request to do research at BLH

Dear Ms Dzinza,

Your request to conduct a research project at the Bamalete Lutheran Hospital has been discussed by management.

The request is granted.

You are asked to make prior arrangements so that the interviews do not interrupt patient services. Preferably the interviews have to be done in the afternoons or when it is less busy. The relevant doctors and nurses have to be identified for interview.

Please **make sure** that you are conducting your research outside your working time as services have not to suffer.

Furthermore you are requested to provide a copy of the research findings and report to the CMO office.

You are asked to fully share the results with the staff as soon as possible.

I wish you well for the research and hope you will be benefiting from the project as well as our institution.

Kind regards

Dr. Ruth Pfau
Chief Medical Officer

Annexure 6: Application letter for permission Tlokweg Clinic

P. O. Box V1951
Ramotswa

05 December 2006

To The Assistant Council Secretary
Tlokweg Sub District
P. Bag T05
Tlokweg

Attention: Matron

Re: Application for permission to carry out a research

Dear Sir/Madam

I am applying for permission to carry out a research from Tlokweg IDCC. The research is entitled "Perceptions and beliefs of physicians about adherence to antiretroviral therapy by patients in the South East District in Botswana". The research is being carried out for academic fulfilment only.

Please find enclosed a copy of the research permit to conduct the study, which was granted by the Health Research Unit of Botswana and a copy of a study approval from the university.

My aim is to interview the physicians (doctors) who are running the IDCC at Tlokweg at their best convenient time preferably in the afternoons during the month of December 2006. The interview sessions will take not more than 40 minutes. Observations during their consultations will be done in the mornings for not more than

30 minutes per session at the doctors' best convenient days as well. Appointments shall be made with them in advance.

You cooperation shall be greatly appreciated.

Yours truly,

Irene Dzinza

Annexure 7: Permission letter from Tlokweng Clinic

FROM: ASSISTANT COUNCIL SECRETARY


(K. THEBENYANE)

TO: IRENE DZINZA

12/12/2006

P. O. BOX V1951

RAMOTSWA

RE: PERMISSION TO CONDUCT STUDY

I hereby write to inform you that permission has been granted for you to conduct a study on "Perceptions and beliefs of physicians about adherence to antiretroviral therapy by patients in South East District in Botswana". You are to contact the Principal medical officer at Tlokweng main clinic for appointment before you start.

Thank you.

Annexure 8: Interview guide

Question Guide for the Qualitative study on “Perceptions and beliefs of physicians about adherence to antiretroviral therapy by patients in the South East District in Botswana”

1. Please tell me about your professional background
 - how did you get to be one of the doctors running the IDCC

2. Please tell me what you think about patients living with HIV
 - how you perceive their health
 - do you have hope for them or otherwise
 - what information about health do you convey to them

3. Do you think the following has some effect on your patients' adherence?
 - Their perception on susceptibility to complications associated with non-adherence, like resistant strains, treatment failure
 - their belief in treatment efficacy

4. May you please tell me about your perceptions and beliefs about?
 - factors that contribute to adherence
 - factors that contribute to non-adherence from your experience

5. Can you share anything with me from your experience that proved successful in increasing adherence of patients to ART?

Annexure 9: Observation guide

Communication and practices

- Greetings
- Openness – discussion on nature of treatment
- Assessment methods by the physician
- Kind of education offered
- Strategies to improve adherence

Annexure 10: Informed consent form

Informed Consent Form

1. Introduction: You are invited to take part in a research study entitled "Perceptions and beliefs of physicians about adherence to antiretroviral therapy by patients in the South East District in Botswana"

Before you decide to be a part of this study, you need to understand the risks and benefits. This consent form provides information about the research study. I will be available to answer your questions and provide further explanations. If you agree to take part in the research study, you will be asked to sign this consent form. This process is known as informed consent. Your decision to take part in the study is voluntary. You are free to choose whether or not you will take part in the study.

The researcher is Irene Dzinza of the Laboratory Department at BLH in Ramotswa

1. **Purpose:** As a student of the University of South Africa (Pretoria, RSA), I am carrying out a research to explore and describe the health care providers' experiences of the management of HIV patients on ARV treatment in the public sector in the South East District of Botswana towards my master's degree in public health. Successful, this could help in the design of targeted messages aimed at promoting adherence and recommend for improvements in the health care delivery system for improved adherence to achieve maximum benefits from the National ARV program.
2. **Eligibility:** All doctors running the National ARV clinics in the South East District of Botswana are eligible for the study.
3. **Procedures:** The interviews will be carried out at the ARV clinics in the afternoons assuming the afternoons are less busy. Interviews will be audio taped for the sake of transcription after the session. The observation methodology shall be done in the mornings when the doctors are consulting with patients. Data shall be collected any time in December 2006. Appointments shall be done well in advance. Interviews will not take more than an hour, the same as observation method
Follow up interviews might be necessary.

4. **Possible risks:** The information collected will not be used to cause you any form of harm.
5. **Possible benefits:** You will not get any personal benefit from taking part in this study. You will only be able to express your concerns, for the benefit of the patient on ARV therapy. A can of drink shall be offered after the interview.
6. **Costs:** There are no costs to you for taking part in this study. Only your time shall be requested.
7. **Compensation:** You will not receive compensation for information given or for participating in this research. Only drinks shall be offered after the interview.
8. **Right to withdraw from the study:** Your participation in this study is voluntary. You may decide not to begin or to stop this study at any time.
9. **Privacy of research records:** The interview will be private. Individuals acting on behalf of the University may review the information collected. If that happens, we will give them copies of the information that are only related to the study. These copies will not have any information that can link you to the study. The data derived from these interviews will be used for research purposes only and at the end of the study; all records will be destroyed.
10. **Questions:** If you have any questions about the study, please speak to Ms Irene Dzinza in person at the BLH Laboratory department or contact her on 5390212, ext. 2046 (W) or 72620495.

If you have any questions about your rights, complaints about how you were treated in the study, or feel that maybe your information was not protected, please call and speak to Mrs S. El Halabi, Head of the Health Research Unit. Tel: 3914467/ 3632018, email: sel-halabi@gov.bw
12. **Signatures:** By signing this consent form, you agree that you have read this informed consent form, you understand what is involved, and you agree to take part in this study. You do not give up any legal rights by signing this informed consent form.

.....
PARTICIPANT (PRINT or TYPE NAME)

.....
SIGNATURE

.....

DATE

11. Researcher statement

I certify that the research study has been explained to the above individual by me, the procedures, the possible risks and potential benefits associated with participation in this research study. Any questions raised have been answered to the individual's satisfaction.

.....

Irene Dzinza,

Investigator

Date:

Annexure 11: Field notes

Observation Doctor 5 28 December 2006

40 minutes

Verbal consent was obtained from the patients who were waiting to see the doctor with the help of one of the nurses assisting in giving the explanations

Patient 1

Present in the counseling room were the patient, the adherence partner, the Health Orderly (interpreter and assistant to the doctor)

Doctor greets the patient in Setswana and the patient responds. Speaking in Setswana, he tries to find out if the patient has been having any problems with the medication. The patient is asked if he has been taking the pills well and he asks for the remaining tablets from the adherence partner. The adherence partner is also asked if the patient has been taking the pills well and eating well. The adherence partner responds expressing her concerns – she thinks the patient is taking the pills well but does not see any improvement in the patient's health. The doctor assures the adherence partner that the patient has just started treatment since this was their second visit since commencing treatment so it might be too soon to observe any change. Doctor enquires from the patient how often he takes the different pills and the exact times and the number of pills, and the patient explains and the doctor is satisfied with the response. The adherence partner asks for the blood test results but they are not yet back from the laboratory.

Doctor prescribes for tablets to refill the containers. The doctor examines patient in the mouth, and doctor enquires about the Isonazid Prevention Therapy (IPT) medication for TB prevention. Appointment for the next visit is set. The interpreter is not doing much interpretation maybe because the adherence partner understands and speaks English so she interprets for the patient where necessary.

Adherence partner enquires if sharing the same cutlery with the patient puts the entire family at risk of acquiring HIV, the doctor assures the adherence partner and explains that only sex and getting into contact with the patient's blood is unsafe. The adherence partner thanks the doctor and he responds and they leave. The adherence partner was doing much of the talking but the communication looked very free.

Patient 2

Patient walks into the consultation room together with her adherence partner.

The doctor greets the patient, and the patient looks very jovial as she is walking into the consultation room greeting the doctor and first complains about the pain on the face. The doctor explains that the pain is due to the Herpes zoster infection, which the patient once had. The adherence partner also explains some complains and pains which the patient at times experiences. Doctor did an enquiry about blood collection. Both the patient and the adherence partner look a bit free to communicate to the doctor and they are communicating in English, though not very fluent. The doctor does the pill counting. This is the patient's first visit after commencing on ARV. Doctor asks patient what times she takes each of the drugs and the dosage.

The doctor realized that the patient is not on IPT for TB prevention and he suggest that the patient should start the IPT for six months. Doctor explains to the adherence partner that drugs should be refilled before they get finished whether they are coming for consultation or not. The adherence partner explains this to the patient.

The next appointment date is set and the doctor prescribes more drugs.

The patient and the adherence partner thank the doctor and they leave. They look very free to talk to the doctor.

Patient 3

Patient walks into the consultation room alone.

Greetings between the doctor and the patient are done. The doctor asks the patient how he is and how the stomach pains are before he even looks at the patient's card

(most probably he remembered the patient's problem from the previous visit). Patient responds about the stomach pains. Not much drugs have been commenced because the patient is still awaiting CD4 results, patient is on IPT for TB prevention and some folic acid tablets. Patient is speaking in English directly to the doctor and the conversation looks very free. They discuss about the need to extend the sick leave. The health orderly is tasked to do a follow up on the patient's CD4 results so that are prescribed.

The patient is given a date for next visit and he thanks the doctor and leaves.

The doctor later explains to the researcher that the patient is not yet on ARVs but is visiting the ARV clinic because of wasting syndrome, but the doctor feels he should monitor the patient closely before starting on ARVs before the CD4 results even though it is possible to start patient on ARVs irrespective of their CD4 results if they are having AIDS

The researcher thanks the physician for the cooperation and she walks out of the consulting room.

Annexure 12: Work protocol for data analysis

The method of open coding as described by Tesch in Poggenpoel (2001:343) from a book Research at grass roots: A primer for the caring professions, edited by De Vos pages 334 – 353 is used to analyse data. The following steps are followed.

1. Read through all the transcriptions carefully.
2. Pick the most interesting interview and read again.
3. Using words and sentences as units of analysis, underline the spoken words and sentences.
4. Write thoughts that occur during transcription in the right margin.
5. When this task has been completed for several participants, make a list of all topics (the underlined words).
6. Transfer the underlined words (still in the participants own words) to a table where similar topics are clustered together. These can be formed into columns that are then arranged into categories.
7. The theoretical framework used in this study, which is the health belief model, can be used to guide the categories and themes in the data analysis in this study.
8. The categories are then abbreviated as codes and the codes should be written next to the appropriate segments in the raw data in the left margin. A preliminary organising scheme can be done to see whether new topics and codes emerge.
9. The most descriptive wording for the categories was used to turn them into main themes.

Annexure 13: The pre-test of the interview guide

Pre-testing interview was one on the 11 September. It took 28 minutes.

Questionnaire guide used for the pre-testing

1. What do you think are the main barriers and facilitators to your patients' strict adherence to ART?
2. How best do you think non adherence patients can be best assisted
3. How do you assess your patients' adherence to ART?
Do you think that is the best way in your situation or more can be done?
4. Any special experiences on patients' adherence to ART that you would like to highlight?

I Interviewer

R Participant

I what do you think are the main barriers and facilitators to your patients whom you are managing on ARV

R Okay, can we start with the barriers?

I Yes, we can start with the barriers that you perceive as affecting your patients from your experience actually

R Many of our patients, particularly in the public sector are not educated patients

I Okay

R And therefore it's —eh—its one thing getting information across to them which is very difficult

I Is it?

R Eh but obviously its probably —eeh—if you are working with Batswana who Tswana eh , its easier in a way to pass information that e-eh- it must be people who

obviously also have --eh-mu- a good amount of command of English because sometimes obviously you might be passing which is not getting across to the patient

I Okay

R Exactly the way you want it to get across

I Okay

R But only so obviously, it's eh for most physicians it's a situation where most of them are foreigners who do not know much Setswana so its one thing that comes in the way of
--eh—information

I Okay uuhm uuhm

R So that is one thing most of our patients are from very low-income groups

I Okay

R The other thing that obviously comes along with that is that --eh—quite a number of them, don't have resources

I Okay, yeh

R Okay, and sometimes you will be surprised when you ask them why you came late for your appointment, why did you come late to collect your medication

I Yes

R They say I don't have even 2pula to get a combi to get to the clinic

I Okay, yes

R So those are issues that --eh—obviously you think there is free medication yes, but sometimes people sometimes find it difficult even to get to that free medication because they don't have money to get to the facility

I Okay

R So it's a barrier, but there are other factors obviously when you talk of most of our patients, they have very deep-rooted traditional beliefs

I Okay, okay

R You will be surprised sometimes they will tell you –eh-mm—eh—I don't think I can take medication now or I have stopped taking medication because either my partner has died and therefore I need to take traditional medicine for whatever rituals

I Okay, yeh hmm

R Its basic things like that, they are---, they are barriers in a sense

I Yah, they are

R Yah they are barriers, so patients don't take their medication appropriately because of some of those reasons. Some of them they go –eh—look—ah—ah—it is usually an issue of sometimes distance. We are in Gaborone for instance now most of our patients when we start them on treatment; they come to Gaborone because they are with relatives

I Yes

R Okay, and usually will tell you a lie like " look, I stay in Gaborone, I stay in old Naledi" things like that but in actual sense, they don't stay in Gaborone

I Oh

R They have come here and because they think here its fast track, they will get medication quickly and immediately they get medication they go away

I Oh, okay

R Then they have problems now later on for follow up visits because of distance

I Okay

R They probably could be staying somewhere like in Molepolole or so, things are lessening now because of the roll out of the programme into these areas

I Okay

R But initially we started this way but its still happening because most of the patients don't want to be transferred to those areas where they are coming from but they still want to continue with therapy, but you find that it is a barrier in a sense because of distance

I Okay,

R Anyway, those are some of the things that I can just highlight

I Okay, yes, --eh so like –eh if they go there – does it means they will be coming from an area where there is no treatment centre

R Eh most – some—eh even if there is treatment because now there is the rollout programme in the whole country, there are quite a lot of treatment centers around even so, because of eh – for some unknown reasons, you find the thing that –eh- although there is a lot of talk about this stigmation, a lot of people still feel that they cannot be known to be talking medication, where they are coming from

I Okay, where they are coming from yes

R They would rather come to a place which is far away so that they are as few people as possible who know that they are taking antiretrovirals

I Okay, okay

R So yes, that's one area to talk on this one

I Okay, all right. So you were talking about- like – communication being a barrier Especially because most of the physicians are foreign, don't you have like eh- interpreters

R Yeh, that's one thing. Yah, that's why I mentioned it a question of how good your interpreters are because sometimes the so called helpers, their level of-eh in fact they are--- like in the council--- the people we are using as our called Nurse Orderlies, their level of understanding even antiretroviral

I Uhhm

R Even basic medical language is very minimal

I Okay

R Eh, people who can be more helpful when you are dealing with a problem like that would be probably nurses

I Okay

R But we don't have personnel to help us –eh to help us in that particular sense

I Okay

R Alright

I Yes

R So in the council particularly its dire because the people that we are using, really they have a kind of humble educational background

I Yes

R So that sometimes you are not sure whether what you are communicating is really what you want to communicate to the patient

I Okay, yah

R Because you wont hear. So that is a problem we have. They may be there physically but probably the information they would have gotten and the way you want it to get it across would be different. *(He stops)*

I Okay. What about like besides the barriers do you think there any facilitators to adherence that you would want to highlight like the positives

R Eh

I May be some patients---

R Eh, what would you be probably particularly interested in that? Would you like to give me an example?

I Okay, yes. What I mean is I think you have some patients who don't adhere right—but maybe say, there are some who are better –right—

R Uhhh uhhm

I What do you think makes them better, what really—or maybe you have none – *(then they both laugh)*

R No, it's a paradox there if –eh—the way I am looking at it, eh in our experience. Those we tend to counsel – we manage to counsel! *(he pauses)*

I Yes

R Alright –eh the people who seem to do better in terms of adherence, the way I have seen it myself, in fact when I compare with those who are –eh—terrible defaulters.

I Yes

R It is sometimes those who are eh terrible defaulters are sometimes those who are very well educated

I Is it?

R Apparently

I Okay

R That's why I was saying it's a paradox. Those who are very well educated who seem to think they have understood, alright

I Uuhm

R Those are the real culprits who would come back and say they have missed their medication by three hours and things like that.

I Okay

R The people who are –eh—who have a very humble kind of background, sometimes when you explain to them, this you don't miss, they seem to take it as a gospel truth

I Okay, okay

R Eh, so I don't know whether I should say that –eh—contradicting myself by saying that apparently after you have counseled them, those who have a humble education tend to do better, than those who are well educated (*he laughs*) I don't know why

I Uuhm (*laughs a bit*)

R I don't know why, I cannot explain why

I Yah, yah

R But that is just my experience, that's what I have just noticed

I Yes

R That you tend to get across once you have passed on all the information, and they have understood, those who have a humbler education, tend to do better, I don't know why the other group doesn't.

I Okay

R Uuhm so obviously those are maybe isolated cases but that's just my experience – uuhm

I Okay, so like for example – do you think –eh—there are any okay like I wanted maybe some patient physician factor, but maybe we talked about communication already,

R Yah

I And then we talked about the socio-economic and things like that

R Yes

I So yourself, how do you assess adherence of your patients?

R In our facility?

I Yes, in your facility

R Eh--- usually—we assess each patient that comes to see a doctor, we usually would want to see their pills

I Their pills?

R Uuhm. Usually we count how many are remaining from the time they were last seen by the doctor. Usually there is a chart that they are given at the pharmacy, that gives the number of pills given at the time they were seen by the doctor and so essentially it's a matter of trying to see how many pills are still remaining from the time they were given supplies, that we follow up usually at each visit but secondly we also enquire, you know, general things like how many doses have been missed, Whether the patient has missed any doses, by maybe how many hours like they skipped and how many minutes, those questions are posed them.

I Okay

R So at each visit, we ask those general questions. We also –eh—want to ask generally how they are taking the medication because some of them –I mean – if they are taking the medication with traditional medicine, sometimes we ask them, because adherence –eh—if they are taking alcohol or traditional medicine as well those are the things that will affect their treatment

I Okay

R So we usually, indirectly ask open ended questions – like last time they took traditional medicine, to try and help us see if there is any problem –eh—with –eh—and to find out really, sometimes the side effects, you find that if they are having any trouble taking medication, any side effects, whether that is affecting the way they are taking medication.. So there are many ways we try to go round it because sometimes they don't come out open

I Okay, hmm. So I mean, that is your way of assessment on adherence to therapy, do you think that is the best you can do?

R Oh, well, with the circumstances, given the scenario now, probably that is the best we can do? (*He stops*)

I After we talked about communication being a barrier, money for transport that is resources and a distance how do you think the non-adherence patients can be best assisted? What is your own view?

R Uuhm, probably its also addressed with some of those issues that I have already mentioned. Okay, for instance, eh , the issue of distance, it is--, I try as much as possible, each visit that the patient comes, we ask them whether they have changed their address and eh- if they tell me that they have changed their address, I ask them where they are now. If they are within Gaborone, maybe I will still consider by keeping them at the present clinic. Sometimes if they have shifted to a clinic, which is near another facility that we are running, I would still ask them if they can go to the other clinic. some even refuse but I always offer them that but those who are coming from outside Gaborone, I always also ask if they are willing to go back to their home area and many times if you explain the problems that are associated with distance, sometimes they understand, though they may reluctantly do, but sometimes ---- and I think that is one that we should try perhaps to spread the message perhaps of eh removing stigma, because I think the biggest problem why they don't want to go back to where they stay so if that can that be addressed in our campaigns, I think may it will go a long way trying to handle this area of distance.

The eh the, I don't know, you see if at our level there is anything much that we can do about our resources to most of our patients because that has eh – far reaching consequences in terms of government coming in because alleviation of poverty really will address some of the issues really on adherence, because if a patient can't even afford a 2pula for a combi, its not the doctor who is going to provide that, so its an economic factor that - eh- could probably be addressed by the government

I Hmm, by the government

R Yes, by the government, hmm. Eeh, the issue of communication, hmm –uuh- we have always been pleading that its one thing to have personnel that

I Yes, uhh, uhh

R And I think that needs to be addressed. Its eh, the Orderlies, if want the Orderlies to be effective, maybe we educate them and try to orient them as much as possible but I think that people who have a basic knowledge of medical language probably would be better useful to the patient

I Okay

R If we have more nurses in the facilities that are providing antiretrovirals, I think sometimes we will overcome this - probably we will overcome that barrier quite a great deal

I Okay

R Uuh that is what I can say regarding some of this

I Do you have any other special experiences with patients especially pertaining to their adherence that you might want to highlight that, can also help maybe in improving patients adherence

R Uuh, I'm not really sure really, but its probably something that I haven't really thought about probably I may have or I may not have but I can't think of anything of hand right now probably, let me not waste time

I Okay but we are not really in any much of a hurry, you can take your time

R Eh eh, I am not sure if there is anything else that I eh , I need to highlight really regarding -eh – now –eh I probably it never occurred to me. You know that –eh- in this country, one of the other problems that I should have probably mentioned is that, -eh- which affects –because I have had a lot of fallouts, particularly from ladies. Ok

I Okay

R But probably it still gets to the problem of disclosure and I think many of the women or ladies who fallout , it is basically because they have a partner – they are on treatment – either when they started treatment, they didn't have a partner or they could have a partner at the time of treatment but they haven't told their partner and then they start treatment, and then you start having problems with adherence and timelessly taking pills because the partner doesn't know

I Uuhm Uuuhm

R And they are hiding from the partner and many of them have fallen out and sometimes you ask now – look, why can't you tell your partner? It becomes a big issue. There is at one time when I had a very terrible experience where the lady just said – I cannot, that guy is the one who is feeding me, he is the one who is – right now I don't have the stress of not having money

I Hmm hmm

R He provides me with every single 'thebe', now if I tell him, that will be end and he will kill me. I would rather stop taking the medication

I Is it?

R Yah, they cant that tell the guy. You can see how deep rooted it is

I Yes

R Eh, so it is sometimes that comes out quite clearly in the area of adherence –eh- I have had a very nasty of experience that this lady come from – one of them had come from the private sector to the government sector and then –eh, she had trouble then,

we changed her medication, when she was here again, she said No, I can't tell my boyfriend

I Okay, is it?

R Then she just stopped. Quite a number of them also do the same kind of thing. They end up getting pregnant in the process. You start them on first line, they ah, they don't tell their new boyfriend

I Uuhm

R And eh they start having trouble taking their medication, they don't use any protection when they meet and then they fall pregnant, then you have problems again to start on treatment

I And they are not on family planning? Hmm

R Oh no. So it is that aspect as well that contributes to poor adherence

I Okay, so it means they don't also mind infecting their partners?

R No they don't. At that point like the example I gave, she wouldn't mind, in fact the way I discovered is that she had gone out and she had missed her treatment by eh a week. I ask where did you go? Oh no, he had taken me somewhere what-what--what--and I couldn't tell him until we finished

I Oh uhm hmm

R So I said, they don't use any protection and that when they have chosen not to tell

I Yes, aha, they don't use any

R Yes, uhm, they don't

I Oh, I see like now the last question, do you think the majority of the patients are adherent or non adherent?

R Oh, obviously looking at the statistics generally that we have, because eh looking at the numbers that we had, the past two three years, the cumulative figure that we had and the few whom we have started, on second line, either due to non adherence or poor adherence, I think that on a large scale, we have a very good take of good adherence

I Okay

R Yes, certainly more people have good adherence. But obviously there is a proportion that is eh poorly adhering but its not as big

I Okay, not as big

R No no not from the statistics that we have even those who are on second line if we were to assume that all of those on second line are poor adherents, they are still very few compared to the total number of patients

I Is it?

R Yah

I Okay. No that's fine. Eh, I think we come to the end of our interview. Thank You very much for the information. There shall possibly be follow ups of the interview that is if more interviews from you become necessary, we shall communicate with you. Thank you once again. Now I will switch off the voice recorder.

A). Preliminary coding of the pre-test

1. On barriers to patients adherence to ART Communication barrier

- Lack of education
- many of the patients in the public sector not educated
- “getting information across to them which is very difficult”
- “information which is not getting across to the patient exactly the way you want it to get across”
- most physician are foreigners who do not know the local language –Setswana

2. Lack of resources

- “most of our patients are from very low income groups”
- patient do not have resources – monetary
- “I don't even have 2 pula to get the combi to get to the clinic

3. Beliefs

- deep rooted traditional beliefs

4. Distance

- problems with follow up visits because of distance.

5. Low decentralisation of services

- causes patients' dishonesty
- problems with follow up visits

6. Stigmatisation

- patients not willing to take treatment from their home area

7. Insufficient personnel

- lack of nurses to assist with interpretation between physician and patient

B). On facilitators to patient's adherence to ART

1. Education

- when the information gets well to the less educated, they adhere to treatment better than the educated

C). On methods of assessment to adherence

- pill counts
- patients' self-reports
- assessment done at each visit to enquire about other factors like traditional medicine and alcohol

D). How non-adherent patients can be best assisted

Reducing distance

- Transferring the patient to the nearest treatment centre

Stigmatisation

- Spread the message of removing stigma

Economic

- Alleviation of poverty

Communication

- Nurse orderlies to be educated and oriented well on medical language
- “-have more nurses in the facilities that are providing antiretrovirals”

E) Any special experiences with patients' adherence

Problem of disclosure

- Having problems with adherence and timeously taking pills because the partner doesn't know
- lack of financial independence
- they have unprotected intercourse and they fall pregnant

Annexure 14: Data analysis illustration of interview transcript

Interview transcript: Physician 1

05 December 2006

It took 29 minutes

The process of informed consent took place just prior to starting the interview session, then the session started. The voice recorders were switched on after the informed consent was obtained and the purpose for the use of the voice recorders was explained and permission granted to use the voice recorders

(N.B. comments and topics are bold and italicized on the right. Codes are on the left and bold and italicised)

The codes that were used are from these categories:

- i. Physicians' perceptions and beliefs about HIV disease (**PPB – H**)
- j. physicians' perceptions and beliefs about ART (**PPB-T**)
- k. physicians' perceptions and beliefs about the patient (**PPB-P**)
- l. physicians' perceptions and beliefs about adherence (**PPB- A**)
- m. physicians' perceptions and beliefs about patients' perception of perceived susceptibility to disease (**PPB-S**)
- n. physicians' perceptions and beliefs about patients' belief in treatment efficacy (PPB-Rx)
- o. factors impacting on adherence (**FA**)
- p. cues to action (**CA**)

I –Interviewer

R- Participant

I okay, we can start, right?

R yah, its fine

I okay, please tell me about your professional background,
 how you got to got to be one of the doctors running the IDCC at BLH?

- R actually, eh. I have been practicing medicine for almost 12 years .. I can say ***clinical physician's experience***
- I okay
- R and I started being in involved in HIV/AIDS management or treatment in 2002 ***physician's experience in providing ART:4years***
- I okay
- R eh we started as project for staff at BLH
- I uuhmm
- R and then the national programme started in 2004 ***physician's experience in providing ART to patients on the national ART programme: 2years***
- I okay
- R I was the first ... I can say doctor who started on the committee (district ARV committee) and I was like acting as the site manager from 2004 up to now (he pauses)
- I In 2004 you say the national programme was started, do you mean nationally or here in the district?
- R here in the district
- I on here in the district, okay okay
- R and nationally, I think it started 2002
- I yah okay, okay

(the participant gets quiet)

I okay, you have been dealing with patients like you said from 2004,
the ones on the national ARV programme, 2002 it was the staff project

R uhmm uuhhmm

I what do you think or what can you say about the health of HIV
patients, I mean do you consider them very sick patients? Do you
have hope for them?

R **PPB-T** actually, I can see the difference. If I remember in late 90s, when **negative effects**
you know the HIV patients most of them they died because of **if ARVs are not in use**
opportunistic infections

I okay

R **PPB-T** and you could not keep them longer, most of them would die, but **negative**
effects

If ARVs are not in use

PPB-T when I saw them after starting the ARV, most of them they keep up **positive effects**
and there are patients who have been on treatment for a long time **if ARVs are in use**
now, they look much healthy and they do their normal work like some of
the staff here, they are just at work and the ones on the national ARV,
they are also doing very well after starting them on ARV

I okay, okay. There you are, do you consider them as really sick or
you think they are just normal like any other HIV negative person

R **PPB-T** Well, I think what has changed now on HIV I can say, in 80s or 90s, **HIV was a burden**
HIV was a burden especially in the third world, we didn't have any **before ARVs were**

option any more, I mean we knew it was just a case where you know *in use*
the patient will end up dying..... *negative effects if ARVs are not in use*

I okay

R **PPB-H** but now its more like a chronic illness or disease *chronic condition*

I okay

R **PPB-H** somebody who suffer by diabetic or hypertension, they never *chronic condition*
go away but if you don't control it then the same hypertension or diabetic
will kill the patient, the same way is with the virus (HIV)

I okay

R **PPB-H** yes, so its more like a chronic disease which if you can maintain *a chronic disease*
PPB-T it by follow up and eh.. eh , give the patient proper treatment *proper treatment necessary*
then the patient, they live longer and healthy. (he stops) *positive effects if using ARVs*

I okay, okay

Eh your patients here, do you think they adhere to treatment?

R Adhering?

I yes, adhering, do you think they adhere to treatment?

2 groups of patients-

R **PPB-P** you know, there are about two groups I think I can say. There *good adherents and*
are some who.....they adhere, there are some who are not that *poor adherents*
good adherents because 1. they start treatment and some of them

PPB-P will be fine on adhering and when they just get better, some of *patients initially motivated*
them they become reluctant, they start forgetting to take treatment, *to take treatment,*
they become lazy to come to the clinic *when better, poor adherence, forgetting*

- I okay okay
- R **PPB-P** so when they come, they are now healthy, they just say I forgot **forgetting blood tests for**
to come to collect my drugs or I forgot to do my tests **monitoring and drug**
- I okay okay **refills when better**
- R **PPB-P** so they the ones also, slowly you can lose them **patient's lost to follow up**
- I okay...you lose them
- R **FA** then there is also other type they are adhering because of pressure, **positive**
 I mean they take they take the drugs because of certain pressures **influences on**
like the relatives, close friends or the doctor when they come here ... **adherence,**
 that's why they act like they are really taking but after some time **patient's giving**
PPB-P they come and tell you they are taking the drugs, but the truth is they **false self reports**
are not taking the drugs at all **to appear adherent**
- I okay
- R **PPB-P** yes but because they look healthy and when they come they
 say yah- I am okay – Are you taking tablets? They say yes. **patient's giving**
But the truth – he doesn't take, just they don't want to tell you **false self report**
- I okay, so if the truth is they don't take, how do you catch them
 that hey don't take
- R **CA** now, you keep on looking at the CD4 and viral load and if you **monitoring and**
 see there is a change, especially the viral load, it just shoots **assessing adherence**
 up then you wonder what is causing that
- I oh, is it?

R yah.

I okay okay

R **CA** And when you sit down with the patient and try to talk to them, some admit and some of them they don't tell you that I was – eh- skipped this treatment **assessing adherence self-report**

I okay

R **FA** But there are other patients who have been on treatment for a long time, so they also feel like they are fine, and if they don't take treatment for 2 or 3 weeks they will not see any difference **patient's poor understanding impacting negatively on adherence**

I oh okay, they don't see any difference

R yah, so also they do that

I okay,

R yah

I Alright, besides noticing non adherence using viral load or CD4 counts, do you have any other method that you can use to assess patients' adherence?

R **CA** We have – eh the pharmacy, even the nurse sometimes, even myself sometimes...I'm doing...I just ask the patient to give me the containers he took last time because they have to return it every time for refill or when they come to see the doctor, we **support system**

CA check it and see if this person really...we do pill count and see ***pill counting***
how many pills were given before and how many came back...
I mean they came back with, and then we tell the difference.

I okay

R yes, but you see sometimes you see a patient can be clever also

I yes. yes

R **PPB-P** They can remove and throw them away ***patient's deceiving on adherence***

I oh, okay

R yes, and the next thing they are empty

I okay

R **CA** But you see, some of them we catch them from there..You say ***assessing adherence***
but look at these tablets, they are more than what you are supposed
to bring

I yeh..yes okay

R yah (he pauses)

I So do you do that for everybody?

R **CA** That one, I don't do for every patient, but of course, beginning... ***physician's practice***
the first three months, for every patient whom I have started with,
I am doing like that

I okay

R **CA** Yes, and then when it goes to the sixth month, and I see the patient ***physician relaxing***
with a good adherence, then I would relax a bit ***on pill counting for adherent***
I yes yeh okay ***patients***

R **CA** Yah, but the first three months I keep on doing that ***physician's practice***
I okay

R yah. (he pauses)

I okay, do you think like –eh – maybe there are patients who think if they don't take treatment maybe they would have consequences like treatment failure – or maybe have resistant strains, do you think that can affect the way they take treatment, their behaviour?

R **FA** Yah it does. Some of them – I don't know – it's a – education ***Level of education***
PPB--S I think it matters here. The ones who are maybe well educated ***associated with***
sometimes they understand easily ***understanding***
susceptibility to AIDS

I is it?

R **PPB-P** but I don't think the ones who are not well educated do not ***physician's communication***
CA understand, but it's the way also of explaining to them that –eh – ***to the less educated***
you know there is a virus. If you do not do this, the virus will
come back and you get sick

I okay okay

R But then, you also try to explain what they should expect ***physician explain susceptibility***
CA if they don't take properly the treatment, in a way that you think ***in a simple way***
he or she would better understand

I okay

- R yah...
- I what about, do you think maybe their belief in treatment does affect or influence their behaviour? The belief in treatment I mean?
- R some believe, why I say ...because there are few who are not really **patient unsure**
PPB-Rx sure –eh- that they believe in this ...the drug eh because you know **of treatment**
 in African tradition, most our patients will have started on traditional **efficacy,**
medicine... **traditional medicine preferable**
- I yes
- R and then they get into this to help. But some still have the belief **belief in traditional**
PPB-Rx that traditional medicine can also help them **medicine**
- I okay okay
- R **PPB-Rx** Those are very difficult to know which one they trust now. And **physician finding it**
 the new thing which come in, the faith, there is a lot of new **difficult to understand**
 religion that come with it.. **patient's belief to**
treatment
- I Yes
- R **FA** There are some eh eh I have seen some of my patients stop **the effect of religion**
taking treatment after joining this group of religion
- I Okay, yes
- R **FA** And they were told that no you just have to believe in this, **patients advised not to take**
you don't need to take any medicine and you will be fine and I **therapy by their religion**
have seen the patients go down...
- I Is it?

- R **FA** Yah. And I was really wondering what is it and then they say it's from the church ***physician's perception religion-patients health deteriorating***
- I Okay
- R **FA** So it is also there ... even I can say there are few. I can not compare with- say - out of 1000 patients I have, I think I have seen only four cases. ***not many people influenced by religion***
- I Alright, alright. So do they come back?
- R **FA** They don't come back. The only way I found was somebody when they were already in the ward very sick ***patients not come back to clinic***
- I Is it?
- R **FA** Yah. And I ask what is going on? And they say – eh- doctor you know I had to participate in this church and they told me to stop (treatment), I will be healed ***negative effect of religion to adherence***
- I Oh. Okay
- R Yah...
- I Alright. In your experience in the management of patients on ARV, what do you think are the factors that would – eh – influence them to adhere to treatment?
- R (he breathes out deeply)
You know- (he pauses) – counseling is a ... and it's not one... ***continuous counseling***

- FA** it's continuous counseling. What ever time they come to the clinic, you keep on .. even if the patient has been on treatment for 2 to 3 years, but keep on talking and explain –eh – that - eh how – eh could the treatment...and if they have already seen the difference which is there...that you see you are healthy now, **enhancing adherence**
- CA** it's only because you can take these drugs properly. So you see, I think continuous counseling is what can keep the patient on adherence **encouraging patients in a healthy state to keep adhering/ perceived benefits**
- I Is it ?
- R FA** Yah. If you meet him between and you don't counsel them, some of them will think that this is now the time to relax **effect of lack of continuous counseling not enhancing adherence**
- I Okay
- R** Yah (he pauses)
- I Okay. What about – eh – what really influences them not to adhere?
- R** (he takes a deep breathe again)
- FA** There are a lot of problems – eh there is social problems ...eh social influences
- Eh economic – I can not really say that is a factor because –eh – **unemployment- no**
- FA** but some of them are unemployed, they are staying far from the clinic, then they need to get help for transport to come this side (to the clinic) **transport fares to get to clinic**
- I Okay
- R FA** Yah, and maybe the food at home. So this can be economic wise. Social, if this person was formerly –eh - maybe the way he or she –eh – been –eh maybe somebody like when you like alcohol before and never cared and never said I should reduce that alcohol... **lack of food- negative to adherence alcohol negative**

FA usually these are the people who end up...because when you mix these two, the adherence also goes down, they keep forgetting, **to adherence**
they could do that and so sometimes adherence is going down

I Okay

R Yah (he pauses)

I So like if they keep forgetting like that, what do you do to help them adhere?

CA As I said, counseling. You pull the patient back again, sit down talk, speak to them and try to explain why they have to continue to keep on taking the drug, to change their lifestyle **intervention counseling, communication advise to change lifestyle**

I Okay okay

R Yah

I Maybe anything you would want to share with me from your experience that has proved to really increase adherence. Like you have mentioned counseling, so besides counseling, anything else that you have proved it worked from you experience?

CA You know, we have – eh what you call it – treatment buddy or adherence partner, who come with the patient the first time when we do the initiation, and then we try to influence these partners to be part ...even if maybe they are not the ones who take...but the issue will be to keep on reminding the patient. **intervention strategy**
And I have seen in some circumstances it really worked **proved to work**

I Is it?

R **CA** When you think the adherence is not good, then you call the partner...the adherence partner, then you ask them...we think there is a problem here...we see there is problem here. Some of them they are very active **effectiveness of adherence partner**

I Okay

R Yes. (he pauses)

I So these adherence partners, who are...what relationship are they supposed to have with the patient? Should it be a spouse? Should it be a relative or a friend?

R **CA** We give the choice to the patient to choose- or ask them that bring somebody whom you trust – like the first person they told their HIV status... **adherence partner to be someone trusted by patient**

I Okay

R or to disclose if I may say. If the patient had guts to disclose to that person, then he has trust in that person. Stigma is still going on. Whatever we say we are fighting, but it is still there. **stigmatisation**

PPB-H

I Yah yah

R **CA** So we tell the patient to try to get somebody who is close whom to disclose the HIV status and who can come to the clinic with him or her and we talk to them. So if you see this person doesn't have any idea whom to chose, then we give them a choice. Okay like an example...if you are a woman, **duty of adherence partner**

characteristic of adherence

your partner – a husband, boyfriend- come with one of them **partner**

I okay

R Yes, maybe ask again, who is the closest person you are staying **characteristic of**
with, or one can come with the parents. If somebody is **adherence partner**

CA married...is a man, the wife can come. It should be somebody **adherence buddy**
living near by **to be near**

I Uuhhmm uuhhmm

R Yes not far because sometimes it doesn't help much

I Okay, because of the distance

R Yah (he pauses)

I I don't know, do you have any other experience which
you would like...or anything you would to share or a
recommendation the system or anything?

R Yah, I don't know what really I would say, but I could say
that there is a big change now from the patients I have seen this
time. Uuhhmm the ones I have seen a long time -eh – here at the
clinic is only 2 years is it?

I Yes

R But at least there are some who appreciate that after taking this **some patient appreciate**
CA treatment, now they feel much better, they are back to their **treatment**

CA normal life. And the I think my idea was. If we still use
CA these ...as the health sector... to use the same people again **creating counseling**
Jobs for the healthy
patients

I okay

R **CA** To empower them to act on this counseling

creating counseling

Jobs for the healthy patients

I Uuhmm

R **CA** And issues of all HIV, they are the ones who can talk and they tell us the experience they have, from the treatment they take, the social, how they think the situation is , so as to help the other ones because there are people who have stigma, who hide it at home up to now. There are still people who know their status but they don't want to come for treatment and these are the only people to empower them. There are a lot of them, they lost their job because there were sick after they get help now, of course we encourage them to go back to work, but where are the jobs now!

using life experiences to counsel others

stigmatisation impacting negative on treatment

patients losing jobs because of stigmatisation

I Yes yes

R **CA** so I they could be a way of making them work. To help counseling others

creating jobs for those with HIV who are jobless

I Okay, so it will be like they are a living testimony?

R Yes yes

I Okay, okay I see. No it's fine. Thank you very much doctor. We have come to the end of our interview session and I am sure the information you have given will be of great help to help

address the problem of non adherence

R you are very welcome.

I okay, maybe I can switch off the voice recorders now.

The doctor was offered a caned drink but he did not take because he was coming from having a drink.
The participant was told that he was free to contact the researcher for anything regarding the research.

