

Sociodemographic factors associated with adherence to Antiretroviral Therapy among HIV patients receiving free Antiretrovirals at Bapong Community Health Centre.

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Declaration

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25th January 2012

Abstract

The aim of this quantitative study was to establish the sociodemographic factors associated with adherence among HIV/AIDS patients at Bapong Community Health Centre (CHC) in order to make recommendations to improve adherence to ART.

The researcher distributed 37 self-completion questionnaires to all the 37 patients at the ART clinic at Bapong CHC, all of which were completed. The research population included all the HIV-positive patients attending the Bapong CHC aged eighteen years old and above and were on ART for more than thirty days. Thirty-seven (37) patients were included in the study out of the 1200 patients attending the Bapong CHC by randomly sampling five patient file numbers of the patients attending the ART clinic at the Bapong CHC on a particular day. The study was conducted over a period of four months with data collection and analysis conducted in less than a month, in January 2012.

The researcher found that the numbers in this research study were generally too small with only one statistically significant result, of all the sociodemographic factors that were investigated - that of those whose CD counts were less than 50ml/uL at the start of treatment were more likely to default than those who had higher CD levels (Odds ratio 8.33, p value 0.03 - Fisher exact). Although the other findings were not significant, the study showed findings that were very important to Bapong CHC. Recommendations were made to improve ART adherence, and to conduct another study with larger samples to achieve statistical significant findings.

Opsomming

Die doel van hierdie kwantitatiewe studie was om die sosiaal-demografiese faktore wat verband hou met die nakoming onder MIV/vigs-pasiënte by die Bapong gemeenskapsgesondheid-sentrum te bepaal, ten einde aanbevelings te maak om die nakoming van anti-retrovirale behandeling te verbeter.

Die navorser het vraelyste aan 37 pasiënte van die anti-retrovirale kliniek by Bapong gemeenskapsgesondheid-sentrum uitgedeel, wat alles voltooi is. Die navorsing gevoer onder al die MIV-positiewe pasiënte van Bapong gemeenskapsgesondheid-sentrum, ouderdom van agtien jaar en ouer en wie vir meer as dertig dae op anti-retrovirale behandeling was.

Die navorser het bevind dat die getalle in die navorsing oor die algemeen te klein was om met slegs 'n statisties betekenisvolle resultaat van al die sosiaal-demografiese faktore wat ondersoek is - wat van diegene wie se CD tellings was minder as 50ml/uL by die aanvang van behandeling was meer geneig om die standaard as dié wat hoër CD vlakke (Odds verhouding 8,33, p waarde 0,03 - Fisher presiese). Alhoewel die ander bevindinge nie betekenisvol was nie, het die studie het bevindinge wat belangrik vir die Bapong gemeenskapsgesondheid-sentrum was. Aanbevelings is gemaak om anti-retrovirale behandeling nakoming te verbeter, en om nog 'n studie te doen met 'n groter steekproef om statisties beduidende resultate te bereik.

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Acronyms

3TC	Lamivudine
ABC	Abacavir
AIDS	Acquired immune deficiency syndrome
ART	Antiretroviral therapy
ARV	Antiretroviral
AZT	Zidovudine
BMI	Body Mass Index
CD4	CD4 cell or T4 'helper' lymphocyte
CHC	Community Health Centre
d4T	Stavudine
ddI	Didanosine
EFV	Efavirenz
FTC	Emtracitabine
HAART	Highly active antiretroviral treatment
HIV	Human immunodeficiency virus
LPV/r	Lopinavir/Ritonavir
NVP	Nevirapine
PMTCT	Prevention of mother to child transmission
REC	Research and Ethics Committee
SPSS	Statistical package for social sciences
TB	Tuberculosis
TDF	Tenofovir
uL	micro litre

Chapter 1: Introduction

1.1. Background

South Africa is the epicentre of the HIV epidemic and it has a generalised epidemic with a prevalence rate of 17.8% (UNAIDS, 2009). In 2009, the highest prevalence rates were in the following provinces, KwaZulu Natal (39.5%), Mpumalanga (34.7%), Free State (30.1%), North West (30%) and Gauteng (29.8%) (ibid). Consequently, the South Africa Government embarked on the largest antiretroviral treatment (ART) program in the world in order to mitigate this plight (HSRC, 2009). One of the clinics that are offering Antiretroviral Therapy (ART) was Bapong community health centre (CHC) in the Madibeng sub-district of Bojanala district of the North West province of South Africa.

Bapong CHC has offered the ART services since February 2011. It provides the ART free of cost as per South African national policy to eligible human immunodeficiency virus (HIV) positive people that live in its catchment population. Bapong CHC ART services are divided into three clinics; paediatrics clinic, adult clinic, and prevention of mother to child transmission (PMTCT) clinic. The paediatrics clinic caters for children up to the age of sixteen when they join the adult clinic. The PMTCT clinic caters for HIV positive pregnant women until they stop breastfeeding or when the baby is six months old.

Focusing on the adult patients (this includes non-pregnant women), once eligible for ART, they are put on the adult ART regimens according to the South African National Department of Health Clinical Guidelines for the Management of HIV & AIDS In Adults And Adolescents (2010). These are divided into first line treatment, second-line and salvage (www.ndoh.gov.za, 2010).

The first line treatment regimens are as follows:

All new patients needing treatment start with the combination therapy comprising - Tenofovir (TDF) + Lamuvidine (3TC) or Emtracitabine (FTC) + Efavirenz (EFV) or Nevirapine (NVP). For Tuberculosis (TB) co-infection EFV is preferred. However, NVP is preferred for women of childbearing age (and pregnant women) who are not on reliable contraception (www.ndoh.gov.za, 2010).

Since the South African National Department of Health Clinical Guidelines for the Management of HIV & AIDS in Adults And Adolescents (2010) national regimen was recently changed to use TDF instead of Stavudine (d4T), due to d4T's side effects, there are patients that are on d4T. Therefore, if any client is on a d4t-based regimen with no side effects then the recommended regimen is d4T + 3TC + EFV or NVP. These should remain on d4T if it is well tolerated but an early switch should be instituted if the patient manifests any toxicity. It is important to substitute TDF if the patient is at high risk of toxicity (for instance, high Body Mass Index (BMI), older, Female, TB treatment). Any patients that have contraindications to TDF, such as those with kidney or renal disease, should be put on Zidovudine (AZT) + 3TC +EFV or NVP.

Those that fail on a d4T or AZT-based first line regimen are put on the second line regimen of TDF + 3TC or FTC + boosted Lopinavir (LPV/r). On the other hand, those that fail on a TDF-based first line regimen are put a combine regimen of AZT + 3TC + LPV/r (www.ndoh.gov.za, 2010).

Finally, any patient on treatment that fails on the second line is put on salvage therapy by an experienced HIV consultant (www.ndoh.gov.za, 2010).

The HIV positive patients that receive ART service at the Bapong CHC ART Clinic are male and females of all age groups, and mostly of African ethnicity. Heterosexual transmission of HIV is the most common mode of transmission among the people in

this area as is in the rest of South Africa and the Southern African region (UNAIDS, 2009).

All the ART patients are counselled and given patient education in order ensure adherence at this CHC. This is undertaken with patients before starting treatment and it continues during treatment. There is also support to the HIV positive patients that is offered at the clinic and in the community. This is also done in a form of a “buddy system” where all the patients must have a ‘buddy’ in order to start treatment. A buddy is the patient’s treatment supporter who lives in the same house or close to the patient. Patients have reminders to take treatment such as mobile phones and watches.

Adherence is the single most important aspect of ART provision. It is defined as intake of 95% of prescribed medications (Turner, 2002). As much as it is important to make sure that patients are adherent to medication, chronic treatment poses challenges of adherence (UNAIDS, 2009).

1.2. Research Problem

As discussed earlier, there is a robust adherence support program at Bapong CHC for the HIV positive patients. Initially, patients go through a two week counselling session before they are commenced on treatment. Once they start treatment, they have counselling at every medical follow-up visit, that is, either for a doctor’s consultation or for a pharmacy refill. Despite all this, there are anecdotal reports of non-adherence to ART amongst patients at this clinic. Some do not even turn up for follow up for several days or weeks. This is regardless of age, gender, and ethnicity, level of education, working situation or marital status. Therefore, we do not know what sociodemographic factors are associated with adherence of ART among HIV/AIDS patients at Bapong CHC in rural Madibeng.

1.3. Significance of study

This study will be undertaken because there is no evidence present that described the sociodemographic factors that affect adherence at Bapong CHC. Several studies have been conducted around the world about adherence but the researcher did not come across one that addresses adherence in this district or this particular sub-district. This study will benefit the CHC, as it will help to predict which patients would be more adherent to treatment than others would. Therefore, it will help increase the support given to the patients that fall in the poor adherent category. All in all, it will be possible to formulate strategies to improve adherence at this CHC.

1.4. Research Question

What are the sociodemographic factors that are associated with adherence to ART among HIV/AIDS patients at Bapong CHC in rural Madibeng?

1.5. Aim and Objectives

1.5.1. Aim

To establish the sociodemographic factors associated with adherence among HIV/AIDS patients at Bapong CHC in order to make recommendations to improve adherence to ART at Bapong CHC.

1.5.2. Objectives

- To assess the sociodemographic characteristics of the HIV/AIDS patients receiving ART at Bapong CHC
- To analyse the adherence to ART among HIV/AIDS patients receiving ART at Bapong CHC
- To identify correlations between sociodemographic characteristics and the adherence to ART among these patients
- To make recommendations to improve adherence of ART patients receiving ART at Bapong CHC.

1.6. Terms of Reference

In order to research this topic thoroughly, the study was informed by sociodemographic factors associated with ART adherence findings as discussed in the literature. The study utilised primary research to survey the sociodemographic factors associated with ART adherence at Bapong CHC. This data was collected using a carefully designed questionnaire as informed by the literature review. In the final analysis, this study was able to make the researcher understand what the sociodemographic factors were associated with ART adherence at Bapong CHC. The findings also enabled the researcher to make recommendations to improve adherence of ART patients receiving ART at Bapong CHC.

1.7. Limitations of the Study

This was a non-funded research and therefore the researcher used his own funds for transport and purchasing stationery. Considering that the patients were asked intimate questions regarding themselves, some might have found it difficult to give unbiased answers to the questions and some respondents might have been apprehensive. Although, it is foreseen that no potential risks were to be encountered, some patients may have experienced discomfort during the research process, therefore an opportunity was given to them to express those feelings to the researcher who would refer them to an appropriate counsellor. Some would have been afraid to give responses to the questionnaire that meant that the patient was non-adherent to ART, but all the clients were assured that would in no way affect your rights to further treatment at the health centre. This study was only limited to the Bapong clinic and consequently the sample size was limited ($n = 37$). Therefore, results did not represent the whole Madibeng sub-district. There was a time constraint for carrying out this study due to the fact that there was a delay in the granting of ethical clearance by the Research and Ethics Committee (REC) to conduct this study. This meant that the researcher had less than one month, instead of the planned four months to collect, analyse the data and finalise the study.

Chapter 2: Literature Review

This literature review was undertaken in order to find secondary empirical data that supports the aim of this study, which is to establish the sociodemographic factors associated with adherence among HIV/AIDS patients at Bapong CHC in order to make recommendations to improve adherence to ART at Bapong CHC. This was done by first defining sociodemographic factors and adherence. Then the literature that described the relationship between the two was further reviewed. All this was contextualised to what this research was investigating.

2.1. Sociodemographic Factors

According to the Oxford dictionary, social is defined as relating to society or its organization, while demography is the study of statistics such as births, deaths, income, or the incidence of disease, which illustrate the changing structure of human populations (<http://oxforddictionaries.com>). Therefore, examples of sociodemographic factors are age, sex, education level, income level, marital status, and occupation.

2.2. Definition of Adherence

There is debate regarding the difference between adherence and compliance. Mehta, Richard, & Graham, (1997) reduce this confusion by describing adherence to be that which relates to the extent to which the patient follows a prescribed regimen, while compliance is an overall evaluation of adherence. However, they used the terms adherence and compliance interchangeably in their study. Nonetheless, Mehta, Richard, & Graham, (1997) preferred to use adherence as it was a less derogatory term.

Gordillo et al (1999) further went on and assigned a numerical value to the definition of "good" adherence to ART therapy. They described good adherence as having more than 90% consumption of the prescribed pills. Turner (2002) pushed it a notch higher where he used 95% as the level of cut off for good adherence to ART by HIV infected

patients. These levels of adherence are needed, as improved high levels of adherence are required to obtain the maximum benefit to HAART (Turlidra & Wu, 2002). It is for this reason that there is a need to develop efficient strategies to improve adherence to ART for the patients at Bapong CHC. All in all, it is important to note that adherence is a process not a single event (Amberbir, Woldemichael, Fatechew, Girma, & Deribe, 2008) and therefore, education and counselling that encourages adherence has to be done all the time.

The opposite of adherence is non-adherence, which is detrimental to the health of the patient if ever practiced. Every effort is made at Bapong CHC that not all the patients fall into this category of non-adherence that is defined as a default rate from follow-up or significant deviation from a prescribed regimen (Mehta, Richard, & Graham, 1997)

2.3. Factors that influence Adherence

Sociodemographic factors influence the degree of adherence to ART (Gordillo et al, 1999). Nevertheless, there are studies that have found out that sociodemographic factors do not predict behaviour, although they have found that male sex, white ethnicity, older age, higher income, higher education and literacy correlate with better adherence (Ickovics & Meade, 2002). However, Wang & Zunyou (2007) did not find an association between adherence to ART and demographic characteristics. They found out that adherence was associated with correct knowledge of side effects and correct knowledge which perceived effectiveness of ART among other things.

2.3.1. Gender

The female sex was statistically associated with greater non-adherence than males (Bonolo, et al., 2005). However, Wools-Kaloustian, et al. 2006 found that, among other things, males were significantly more likely to be lost to follow up than females. Despite all this, males were more likely to admit to being more adherent to ARVs than females (Uzuchukwu et al, 2009).

2.3.2. Age

Age is a factor that can affect adherence. Mehta, Richard, & Graham (1997) one of the characteristics of good adherence was increase with age, except in the most elderly (that is, those over 75 years of age). Moreover, Uzuchukwu et al (2009) reported that those less than 35 years were less likely to report adherence to ARVs. They however, they did not find the reason why people that were aged over 35 years would adhere more to ARVs. According to them, age was not a factor that could have been the culprit on its own; they therefore postulated that for those that were under 35, non-adherence could have been a result of a combination of low economic power as they could be unemployed and unmarried. But, in an 18 month observational study to evaluate the risk factors for treatment denial and lost to follow up in an ART cohort in a rural setting in Western Kenya, the researchers found out that higher age was risk factors to non adherence (Karcher et al, 2007).

2.3.3. Marriage

Unmarried respondents were less likely to report adherence to ARVs. (Bonolo et al, 2005; Uzuchukwu et al, 2009).

2.3.4. Education

Lower education is a predictor of poor adherence (Golin et al, 2002; Karcher et al, 2007). To be more specific, Bonolo et al (2005) found out that non-adherence was statistically associated with lower schooling (less than five years). In a cross sectional study to determine the adherence to ART and its determinants in India, Sarna, Pujari, et al (2008) showed that less than university education was associated with lower adherence (that is less than 90%). Besides, Uzuchukwu et al (2009) also reported that those without formal education were less likely to report adherence to ARVs.

2.3.5. Race

Race or ethnicity plays an important role in adherence. In a study conducted by (Kleeberger et al, 2001) found out that African American race led to poor adherence. As this study was conducted in the United States of America, this kind of

generalisation can only be made to that population. Golin, et al., (2002) did not support this finding.

2.3.6. Income and Employment

In the USA, income of less than 50,000 USD per annum, led to poor adherence (Kleeberger et al, 2001). It is however important to note that 99% of people in South Africa earn less than this. Golin, et al., (2002) support this notion when they concluded that lower income was a predictor of poor adherence. This could be an occurrence in the Bapong area as it is rural and most of the people are unemployed or work as casual workers in the mines and therefore have a low income. Moreover, Sarna et al (2008) showed that, being unemployed was associated with lower adherence (that is less than 90%).

2.3.7. ART

Wools-Kaloustian, et al. (2006), found that ART treatment in adults resulted in significant and persistent clinical and immunological benefits. However, Wang & Zunyou (2007) did not find an association between adherence to ART and demographic characteristics. They found out that adherence was associated with correct knowledge of side effects and correct knowledge which perceived effectiveness of ART among other things.

Chapter 3: Research Design and Methods

3.1. Introduction

This chapter discusses the overall structure of a plan of a research and the practice and techniques that were used in collecting processing, analysing data, sample size and methods of sampling (Bowling, 2009). A qualitative approach to this study was used because a positivist, empirical stance was adhered to (Bowling, 2009).

3.2. Research Population

The research population included all the HIV-positive patients attending the Bapong CHC aged eighteen years old and above and were on ART for more than thirty days .

3.3. Duration of study

The study was conducted over a period of four months with data collection and analysis conducted in less than a month.

3.4. Sample size

Thirty-seven (37) patients were included in the study out of the 1200 patients attending the Bapong CHC.

3.5. Sampling method

Patients were included in the study by randomly sampling five patient file numbers of the patients attending the ART clinic at the Bapong CHC on a particular day.

3.6. Research instrument

The researcher designed a paper-based self-administered semi-structured questionnaire to collect sociodemographic characteristics data from the study respondents attending the ART clinic at the Bapong CHC that volunteered to participate in the study.

A self-administered questionnaire was preferred for this study because it assumes that words can be documented and ordered in a way that will be understood by all respondents (Bowling, 2009). Besides, it is a good method for general knowledge and in this case collecting data on perceptual and interpretive processes in the participant (Bowling, 2009). However, the disadvantage is that respondents may not all have the same perspective and the same words, term and concepts may not elicit the same responses from different respondents (Bowling, 2009).

A semi-structured questionnaire was used because it led to greater ease of collection of quantitative data for analysis and that it was relatively economical for large samples of people (Bowling, 2009). Its pitfall was noted as pre-coded responses may not sufficiently be comprehensible and not all answers may be easily accommodated which may lead to some respondents being 'forced' to choose inappropriate pre-coded answers that might not fully represent their views (Bowling, 2009). However, care was taken to ensure that this risk was minimised.

The questionnaire was initially piloted on eight individuals and was modified accordingly.

3.7. Compilation of the questionnaire

The basic assumption was made that when using a semi-structured questionnaire, the researcher and respondents share the same theoretical frame of reference and interpret the words, phrases and concepts used the same way (Bowling, 2009). Therefore, care was taken when designing the questionnaire and emphasis was made on the simplicity of the questions and following the basic rules of questionnaire design. Piloting the questionnaire ensured that the question wording, form and order did not negatively affect the types of responses obtained. This was done to minimise the influences and the subsequent biases in the results.

The questionnaire had three main sections. These were:

- Sociodemographic factors
- Health characteristics
- Adherence (self reporting) to ART

3.8. Ethical considerations

Ethical measures were taken in consideration when conducting this study. Necessary permission to conduct this study was sought from the Madibeng health sub-district manager, Mr. Moloji and from the assistant manager in charge of the cluster in which Bapong CHC is located, Ms. Lebogang Mogotsi. Ethical approval was also sought from the Research and Ethics Committee (REC) of the Stellenbosch University. Formulation of the questions was done in an ethical manner. Participation in the study was voluntary after informed consent. Data collection was done with a written informed consent and no identifiers were recorded. Confidentiality and anonymity was maintained. The researcher explained the purpose of the study and the respondents read and signed the consent. The respondents were assured that if they chose to volunteer to be in the study they had a right to withdraw at any time without consequences of any kind. Moreover, they may refuse to answer any questions and still remain in the study without any repercussions of their treatment. It took approximately ten minutes of each participant's time, to complete this questionnaire. The questionnaire was translated into Setswana for those that do not read English. For the respondents that were illiterate, the consent form was read to them before a structured interview using this questionnaire was conducted with them. The questionnaires were completed in the ART clinic and no questionnaires were taken outside the premises of the clinic. Moreover, all documentation was safely stored in a lockable cupboard not accessible to the public. Only the researcher has access to this information. The information shall correctly be destroyed at the end of the project.

Chapter 4- Results and Findings

Descriptive statistics was used for the analysis of the data. As part of the analysis, data was grouped in a systematic manner to indicate the sociodemographic and adherence characteristics of the study respondents in order to establish the sociodemographic factors associated with adherence among HIV/AIDS patients at Bapong CHC in order to make recommendations to improve adherence to ART at Bapong CHC. The computer based SPSS statistical software was used to analyse the data.

The results were analysed and interpreted to support the following objectives of the study

- To assess the sociodemographic characteristics of the HIV/AIDS patients receiving ART at Bapong CHC
- To analyse the adherence to ART among HIV/AIDS patients receiving ART at Bapong CHC
- To identify correlations between sociodemographic characteristics and the adherence to ART among these patients

4.1. Social Demographic Factors

In order to assess the sociodemographic characteristics of the HIV/AIDS patients receiving ART at Bapong CHC, the data was analysed and the findings were as in Table 1 below,

Table 1: Sociodemographic factors

	N=37	%
<i>Gender</i>		
Male	11	29.7
Female	26	70.3
<i>Age</i>		
18-29	8	21.6
30-39	13	35.1
40-49	12	32.4
50 and above	4	10.8
<i>Marital Status</i>		
Never married	17	45.9
Currently married	8	21.6
Cohabiting	7	18.9
Widowed	5	13.5
<i>Highest education</i>		
None	6	16.2
Primary	9	24.3
Secondary	20	54.1
Post-secondary	2	5.4
<i>Residence</i>		
Rural village	33	89.2
Informal settlements	1	2.7
Township	1	2.7
Farm	1	2.7
<i>Employment situation</i>		
Housewife, homemaker	2	5.4
Unemployed	25	67.6
Casual worker	3	8.1
Part time worker	1	2.7

Full time employment	6	16.2
<i>Main source of household income</i>		
Formal salary	10	27
Casual wages	6	16.2
Contribution by adult members	7	18.9
Government grant	10	27
Grants, donations by private welfare organizations	1	2.7
No income (other than social grants)	3	8.1
<i>Approximate travel distance to clinic</i>		
Missing in system	1	2.7
Less than 10km	10	27
10-20km	21	56.8
20-30km	4	10.8
More than 30km	1	2.7
<i>Frequency of drinking alcohol?</i>		
Weekly, more than 5 drinks	1	2.7
Rarely, occasionally	8	21.6
Never	28	75.7
<i>Support or reminder to take medication</i>		
Missing in system	3	8.1
No support	11	29.7
Spouse	3	8.1
Family member	18	48.6
Friend	2	5.4
<i>Any other illness currently taking medication for?</i>		
Yes	5	13.5
No	32	86.5

There were 26 female (70.3%) and 11 male (29.7%) respondents in this survey. Their median age was 30-39 years old (n=13, 35.1%) and there were 12 respondents who

were 40-49 years old (32.4%). Almost half the respondents (n= 17, 45.9%) were never married and 8 (21.6%) were currently married. The survey, however, did not investigate if they had sexual partners and if their partners were tested for HIV or whether they were on treatment if they were HIV positive.

More than half of the respondents had received a secondary level education (n=20, 54.1%); nine of them (24.3%) had primary level education with only 16.2% (n=6) who did not have any education at all. This shows that most of the respondents (>80%) had some form of education that can be interpreted as good literacy levels.

Considering that Bapong is a rural area, it was in keeping that 89.2% of the respondents residence was a rural village (n=33). Up to 67.6% (n=25) of the respondents were unemployed with only 16.2% (n=6) having full time employment. Only ten of them (27%) had a formal salary as their main source of household income and another ten (27%) received government grants as their source of income.

A small number of the respondents lived less than 10 km to Bapong CHC (n=10, 27%). The median travel distance to the CHC was approximately 10-20 km (n=20, 54.1%). These distances could pose a challenge to achieving good adherence.

A majority (n=28, 75.7%) of the respondents had never drank alcohol. This could be attributed to the fact that they are counselled not to drink if they are on HAART as it is the criteria for treatment eligibility. Despite this, 21.6% (n=8) of the respondents admitted to rarely or occasionally drinking alcohol.

Regarding receiving support or reminder to take medication, almost a third of the recipients (n=11, 29.7%) got support in taking medication or had a reminder to take medication. They either had a spouse (n=3, 8.1%), a family member (n=18, 48%) or a friend (n=2, 5.4%) who supported them in line with the national recommendation of having a treatment buddy as one of the treatment eligibility criteria.

It is worth noting that up to 86.5% (n=32) of the respondents did not have a concurrent illness.

4.2. Health Characteristics

Table 2: Health Characteristics

	n=37	%
<i>Time since HIV diagnosis</i>		
less than or equal to 1 year	12	32.4
1-2 years	3	8.1
2-3 years	6	16.2
more than 3 years ago	16	43.2
<i>Time since starting ART</i>		
less than or equal to 1 year	14	37.8
1-2 years	4	10.8
2-3 years	4	10.8
more than 3 years ago	15	40.5
<i>CD4 count at starting ART</i>		
1 to 49	10	27
50-99	10	27
100-149	7	18.9
150-199	6	16.2
200+	4	10.8

Sixteen (43.2%) of the respondents had been diagnosed HIV positive more than three years ago. Nonetheless, 12 (32.4%) had a diagnosis made within the last year. A majority (n=15) of the respondents had been on treatment for more than three years. The median CD4 cell count at starting ART was 50-99 cell/uL with 54% (n=20) of the recipients having CD counts of less than 100 cells/uL at starting ART.

4.3. Adherence (Self Reporting to ART)

In order to analyse the adherence to ART among HIV/AIDS patients receiving ART at Bapong CHC, the data was analysed and the findings were as follows,

Table 3: Adherence (Self-Reporting to ART)

	N=37	%
<i>Combination ART currently on</i>		
TDF + 3TC + EFV	15	40.5
TDF +3TC + NVP	2	5.4
d4T + 3TC + EFV	8	21.6
d4T + 3TC + NVP	10	27
AZT + 3TC + NVP	1	2.7
Other	1	2.7
<i>Number of times taken ART a day</i>		
Once	15	40.5
Twice	20	54.1
3 times	2	5.4
<i>Number of times taken ART forgotten to take ART in the last 3 days</i>		
Never	31	83.8
1-2 times	6	16.2

The majority of the respondents (n=15, 40.5%) were on the ART combination TDF + 3TC + EFV. Which meant that they took ART once a day (n=15, 40.5%).

Most of the respondents (n=31, 83.8%) at Bapong CHC had reported never missing a dose of ART therefore achieving 100% adherence while only 16.2% (n=6) admitted to missing 1-2 doses in the last three days before the interview.

4.5. Adherence Calculation

Adherence was calculated as number of pills actually taken in the past three days divided by the number prescribed over the three days. $(A / P) \times 100 = \text{adherence percentage}$, where $A = \text{actual}$; $P = \text{prescribed}$.

The researcher decided to use Gordillo et al (1999) description of good adherence as having more than 90% consumption of the prescribed pills. This meant that 83.8% (n=31) reported never missing a dose of ART, thereby achieving 100% adherence. The 16.2% (n=6) reported missing 1-2 doses in the last three days had their adherence levels as follows,

- 67-83% for those ART twice a day but missed 1-2 doses
- 33-67% for those ART once a day but missed 1-2 doses
- 80-87% for those ART three times a day but missed 1-2 doses

4.6. Sociodemographic characteristics and adherence to ART

Finally, correlations between sociodemographic characteristics and the adherence to ART among these patients were identified. This was done by regrouping the variable and calculating the respondents percent of those that were non-adherent in the groups. The respondents that reported that they had forgotten to take their ART in the last three days prior to the interview were categorised as non-adherent. The findings were as follows.

Table 4: Variables with Percent of Non-adherence

Variable	Groupings	Non			Percent Non-adherent
		Adherent	Adherent	Total	
Gender	Male	1	10	11	9.1
	Female	5	21	26	19.2
Age	<39	4	17	21	19.0
	>40	2	14	16	12.5
Marital status	Never married	2	15	17	11.8
	Married or previously married	4	16	20	20.0
Highest education	None	2	4	6	33.3
	Some	4	27	31	12.9
Residence	Rural/farm	6	28	34	17.6
	Informal/town	0	2	2	0.0
Employment situation	Unemployed	3	24	27	11.1
	Employed	3	7	10	30.0
Main source of household income	Wage based	4	12	16	25.0
	Grant based	2	19	21	9.5
Approximate travel distance to clinic	<10km	1	9	10	10.0
	10-20km	5	16	21	23.8
How often do you drink alcohol?	Occasionally	1	7	8	12.5
	Never	4	24	28	14.3
Do you get support in taking medication or reminder to take medication?	No support	1	10	11	9.1
	Support	5	18	23	21.7
Time since starting	< 1year	4	10	14	28.6

ART	> 1 year	2	21	23	8.7
<hr/>					
CD4 count at starting					
ART	01 to 49	4	6	10	40.0
	50+	2	25	27	7.4
<hr/>					

In this sample of respondents (n=37) at Bapong CHC, 19.2% of females were non-adherent to ART as compared to 9.1% of males. 19% of those that were less than 39 years were non-adherent compared to 12.5% of those that were 40 years or older. Of those that were married or previously married, 20% were non-adherent to ART compared to 11.8% of those that had never married.

Moreover, a third (33.3%) of those that did not have education were non-adherent compared to 12.9% of those that had some education.

Out of the respondents that lived on the farm or in a rural village, 17.6% of them were non-adherent.

30% of those that were employed were non-adherent and only 11.1% of those unemployed were non-adherent. Similarly, a quarter (25%) of the wage based employees and 9.5% of grant-based clients were non-adherent.

Furthermore, 23.8% of respondents that lived 10 to 20km away from the clinic were non-adherent and only 10% of them that lived within 10 km from the hospitals were non-adherent.

The rest of the findings were as follows,

- 14.3% of those that never drank alcohol were non-adherent compared with 12.5% of those that occasionally drank alcohol.
- 21.7% of those that had support were non-adherent compared to 9.1% of those that had no support.
- 28.6% of those that were less than a year on ART were non-adherent compared to 8.7% that were on ART for more than a year.

- 40% of those that had started ART at CD4 count less than 50ml/uL were non-adherent compared to 7.4% of those that had CD4 counts above 50ml/uL at commencement of ART.

Table 5: Variables with odds, p-value and statistical significance

Variable	Groupings	Non		Odds	P-value	Statistical significant
		adherent	Adherent			
Gender	Male	1	10			
	Female	5	21	2.4	0.6	NS
Age	<39	4	17			
	>40	2	14	2.1	0.6	NS
Marital status	Never married	2	15			
	Married or previously married	4	16	1.9	0.6	NS
Highest education	None	2	4			
	Some	4	27	3.4	0.2	NS
Residence	Rural/farm	6	28	All		
	Informal/town	0	2			
Employment situation	Unemployed	3	24			
	Employed	3	7	3.4	0.3	NS
Main source of household income	Wage based	4	12			
	Grant based	2	19	3.2	0.4	NS
Approximate travel distance to clinic	<10km	1	9			
	10-20km	5	16	2.8	0.6	NS
How often do	Occasionally	1	7			

you drink alcohol?	Never	4	24	No diff	No diff	No diff
<hr/>						
Do you get support in taking medication or reminder to take medication?	No support	1	10			
	Support	5	18	No diff	No diff	No diff
<hr/>						
Time since starting art	< 1year	4	10	4.2	0.17	NS
	> 1 year	2	21			
<hr/>						
CD4 count at starting art	01 to 49	4	6			
	50+	2	25	8.33	0.03	S

Ns=Not significant; No diff=No difference; S=Significant

The numbers in this research study were generally too small with only one statistically significant result that was of those whose CD counts were less than 50ml/uL at the start of treatment were more likely to default than those who had higher CD levels (Odds ratio 8.33, p value 0.03 - Fisher exact).

4.7. Results Discussion

The only variable that was statistically significant was that 40% of those that had started ART at CD4 count less than 50ml/uL were non-adherent compared to 7.4% of those that had CD4 counts above 50ml/uL at commencement of ART. This could be due to the slower rate of improvement of health on ARVs when starting with a low CD count.

The rest of the results show that most of the other variables had odd ratios that were higher than 1 but not statistically significant. This was due to the fact the sample size was very small (n=37). It is important to note that, as much as these results are important for Bapong CHC, they however may not be generalisable to the whole population on ART.

Regardless of this, looking at the results from what is happening at Bapong CHC, it is, nonetheless, imperative to note that there was a higher number of females (19.2%) who were non-adherent to ART as compared to 9.1% of males. Literature (Bonolo et al, 2005) showed that the female sex was statistically associated with greater non-adherence than males. Besides, males are more likely to admit to being more adherent to ARVs than females Uzuchukwu et al.(2009).

Regarding age, more respondents that were less than 39 years (19%) were non-adherent compared to the older ones - 40 years or older (12.5%). This could be attributed to the fact that one of the characteristics of good adherence was increase with age (Mehta, Richard, & Graham, 1997).

20% of those that were married or previously married were non-adherent to ART compared to 11.8% of those that never married. It may be assumed that those that unmarried respondents were less likely to report adherence to ARVs (Bonolo et al, 2005; Uzuchukwu et al, 2009).

It can be suggested that being literate could contribute to good adherence as 33.3% of those that did not have education were non-adherent compared to 12.9% of those that had some education.

17.6% of those that lived on the farm or in a rural village were non-adherent and 23.8% of respondents that lived 10 to 20km away from the clinic were non-adherent and only 10% of them that lived within 10 km from the hospitals were non-adherent. This could be attributed to the fact that attributed to the increased distance to the clinic as more than half of the respondents lived far away CHC.

30% of those that were employed were non-adherent while only 11.1% of those unemployed were non-adherent and 25% of the wage based employees and 9.5% of grant-based clients were non-adherent. It is usually expected that those that are non-adherent to ART would be unemployed with lower income (Golin, et al.,2002). However difficulties associated with taking medication within a work environment could contribute to this.

14.3% of those that never drank alcohol were non-adherent compared with 12.5% of those that occasionally drank alcohol. There was not much difference in these findings, when considering the percentages.

21.7% of those that had support were non-adherent compared to 9.1% of those that had no support. The South Africa National Department of health recommendation is that all ART clients need to have treatment buddies to increase adherence. However, in the case of the respondents at Bapong CHC, those had supporters that were less adherent to ART.

As would be expected, 28.6% of those that were less than a year on ART were non-adherent compared to 8.7% that were on ART for more than a year. This expectation could be attributed to the fact that the “newer” patients are more likely to be less experienced on being on ART.

Chapter 5- Recommendations and Conclusion

5.1. Recommendations

After the findings were analysed, the following recommendations were made in order (i) to improve ART adherence, (ii) to calculate the adherence better and (iii) to make improvements on the methodology. The contribution that this research study has made to the body of study was mentioned and the need for future research was highlighted in this section.

5.1.1 Recommendations to improve ART Adherence

Subsequent to the research study findings, the following recommendations were made in order to improve adherence of ART patients receiving ART at Bapong CHC.

The result below was the only one that was statistically significant and can therefore be generalized into the general population. As discussed earlier, 40% of those that had started ART at CD4 count less than 50ml/uL were non-adherent compared to 7.4% of those that had CD4 counts above 50ml/uL at commencement of ART. It is recommended that more counseling be given to patients who start treatment late with low CD counts. They must be told that improvement will not be so obvious and they must persist and get social support for themselves.

However, the rest of the results though not statistically significant due to the small sample size, made interesting discussion when focusing on the importance of the results on the findings that can be confined to Bapong CHC.

Due to the increased number of women that were non-adherent, adherence counselors must examine if women are free to take medication. They need to explore all circumstances including home circumstances and disclosure of their HIV status.

There is a need to make ART treatment “cool” and more appealing to people that are younger than 40 years old. Moreover, disclosure issues need to be explored for those that were married

It is important to explore ways to improve adherence for those that did not have education. There is need to review adherence education in the CHC so that it fully caters for the clients that had no or lower literacy levels. Moreover, it is imperative that the adherence counselors have adequate knowledge of ART for their adherence education.

17.6% of those that lived on the farm or in a rural village were non-adherent. It is also important to give more adherence education to those that did not have full time employment. All the clients need to have good adherence education regardless (i) if they drank alcohol or not, (ii) had support or not (iii) the time of diagnosis or (iv) the time of starting ART treatment.

5.1.2. Recommendations on Adherence Calculation

In the absence of discrete numbering of times, it was difficult to calculate the exact percentage of adherence as opposed to bands. It is therefore recommended that discrete numbers be used instead of bands to get the exact percentage of adherence. This should make the calculations easier.

5.1.3. Recommendations on methodology

It is recommended that

- The questionnaire be lengthened so that there are more variables to explore such as more factors that affect adherence to ART
- Open questions be included so that there is a qualitative aspect in the research which would give more insight to the reasons why certain answers were given
- The study should be conducted for the all ART clinics in the Madibeng sub-district

- The Madibeng sub-district leadership should share these findings with all the ART clinics in the sub-district that maps out the next course of action

5.1.4. Contribution of the study

Despite the limitations of this study, the researcher has contributed to the knowledge regarding the sociodemographic factors that affect ART adherence in the Bapong CHC. It has also contributed to the body of knowledge in South Africa.

5.1.5. Future Research

It is recommended that the future research is needed,

- With a larger samples because the sample was small and some findings were not of statistical significance
- A qualitative research at a later stage that will involve all the ART clinics in Madibeng sub-district
- To examine the positive versus negative impact of ART adherence

5.2. Conclusion

All in all, it is important to achieve good ART adherence (>90%) so that there is no resistance to treatment achieved by HIV. The findings of this research study will aid Bapong CHC and even the rest of the sub-district in their response to the HIV epidemic and improving the outcomes of health. This will be achieved by developing future strategies according to the recommendations to improve adherence through informed adherence counselling and education through this empirical evidence.

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Appendices

Appendix 1: Consent To Participate In Research



UNIVERSITEIT • STELLENBOSCH • UNIVERSITY
jou kennisvennoot • your knowledge partner

STELLENBOSCH UNIVERSITY

CONSENT TO PARTICIPATE IN RESEARCH

Sociodemographic factors associated with adherence to ART among HIV patients receiving free ARVs at Bapong community health centre (CHC)

You are asked to participate in a research study conducted by Almakio Phiri, a student from the Africa Centre for HIV and AIDS and the Management Sciences Faculty at Stellenbosch University. You were selected as a possible participant in this study because you are among HIV patients receiving free ARVs at Bapong CHC.

1. PURPOSE OF THE STUDY

The purpose of the research is to determine the sociodemographic factors associated with adherence to antiretroviral therapy (ART) among HIV patients receiving free antiretroviral s (ARVS) at Bapong CHC.

2. PROCEDURES

If you volunteer to participate in this study, we would ask you to complete a questionnaire about sociodemographic factors that affect ART adherence at Bapong CHC. A structured interview using this questionnaire will be conducted with those that are illiterate. This will take approximately 10 minutes of your time at the end of the visit to the CHC.

3. POTENTIAL RISKS AND DISCOMFORTS

There will be no potential risks. You may also refuse to answer any questions you don't want to answer that cause you any discomfort and still remain in the study. This study is merely to assess the many factors that contribute to non-adherence and that no judgment will be made on your commitment or competency. You will be referred to a counsellor or nurse counsellor should you need one.

4. POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

This study will benefit the clinic as it will help to predict which patients would be more adherent to treatment than others. Therefore, it will help increase the support given to the patients that fall in the poor adherent category. All in all, it will be possible to formulate strategies to improve adherence at this clinic. It is foreseen that no potential risks will be encountered. However, should you experience discomfort during the research process, and would like to talk about your feelings, please inform the researcher who will refer you to an appropriate counsellor. Your responses to the questionnaire (e.g. non-adherence) will in no way affect your rights to further treatment at the health centre.

5. PAYMENT FOR PARTICIPATION

There will be no payment for participation. This is a voluntary exercise.

6. CONFIDENTIALITY

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission or as required by law. Confidentiality will be maintained by means of anonymity and all documentation will be kept in a closed location not accessible by the public. Only the researcher will have access to this information.

7. PARTICIPATION AND WITHDRAWAL

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without consequences of any kind. You may also refuse to answer any questions you don't want to answer and still remain in the study.

The investigator may withdraw you from this research if circumstances arise which warrant doing so.

8. IDENTIFICATION OF INVESTIGATORS

If you have any questions or concerns about the research, please feel free to contact Almakio Phiri at mobile number: 0828004954, email: almakio@yahoo.com or Dr Greg Munro on +44.1273.718900 or email: greg@sybaweb.co.za

9. RIGHTS OF RESEARCH SUBJECTS

You may withdraw your consent at any time and discontinue participation without penalty. You are not waiving any legal claims, rights or remedies because of your participation in this research study. If you have questions regarding your rights as a research subject, contact Ms Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] at the Division for Research Development, Stellenbosch University.

SIGNATURE OF RESEARCH SUBJECT OR LEGAL REPRESENTATIVE

The information above was described to me.....by Almakio Phiri in English. A translator.....was asked to explain in my own language sections that I could not understand. I am in command of this language..... and where necessary it was satisfactorily translated to me.

I.....was given the opportunity to ask questions and these questions were answered to my satisfaction. I am aware that the results of the study will anonymously be processed into a study report and that at any stage I can withdraw my consent and participation in the study.

I hereby consent voluntarily to participate in this study. I have been given a copy of this form.

Name of Subject/Participant

Name of Legal Representative (if applicable)

Signature of Subject/Participant or Legal Representative

Date

SIGNATURE OF INVESTIGATOR

I declare that I explained the information given in this document to _____ [He/she] was encouraged and given ample time to ask me any questions. This conversation was conducted in *English*.

Signature of Investigator

Date

Appendix 2: Sociodemographic Factors Associated with ART Adherence Questionnaire

Sociodemographic Factors Associated with ART Adherence Questionnaire

Instruction: Circle your answer according to the desired response

Sociodemographic factors

1. Sex

- Male Female

2. Age in years

- 18–29 30–39 40–49 50 and above

3. Marital status

- Never married Currently married Cohabiting
 Divorced/separated Widowed

4. Highest education

- None Primary Secondary Post-secondary

5. Residence

- Rural village Informal settlements Suburb Township
 Farm

6. Employment situation

- Housewife, home maker Unemployed Casual worker
 Part time worker Full time employment Pensioner, student, disabled

7. Main source of household income

- Formal salary Casual wages Contribution by adult members

- Government grant
- Grants/donations by private welfare organizations
- No income (other than social grant)

8. Approximate travel distance to clinic

- Less than 10 Kms
- 10 – 20 Kms
- 20 – 30 Kms
- More than 30 Kms

9. How often do you drink alcohol?

- Daily, more than 3 drinks
- Daily, less than 3 drinks
- Weekly, more than 5 drinks
- Rarely/occasionally
- Never

10. Do you get support in taking medication or reminder to take medication?

- No Support
- Spouse
- Family Member
- Friend

11. Do you have any other illness that you are currently taking medication for?

- Yes
- No

If yes specify

Health Characteristics

1. Time since HIV diagnosis

- Less than or equal to 1 year (2010) (2008)
- 1–2 years (2009)
- 2–3 years
- More than 3 years ago (1997-2007)

2. Time since starting ART

- Less than or equal to 1 year (2010) (2008)
- 1–2 years (2009)
- 2–3 years
- More than 3 years ago (1997-2007)

3. CD4 count (cells/uL) at starting ART

Appendix 3: Tswana Consent To Participate In Research

MMADIKOLE WA STELLENBOSCH

Tetla ya go tsaya karolo mo dipatlisong

Mabaka a diphetogo mo matshelong a batho, a a tsamaelanang le tiragatso ya go fiwa ga diritibatsi ntle le tuelo mo balwetsing ba HIV kwa kokelwaneng ya Bapong Community Health Centre (CHC)

O kopiwa go tsaya karolo mo dipatlisong tse di dirwang ke Almakio Phiri, moithuti mo lekalaneng la Africa Centre, le le mo lefapheng la Botsamaisi jwa tsa Boranyane mo mmadikole wa Stellenbosch, le itebagantseng le mogare wa HIV le bolwetse jwa AIDS. O tlhophilwe o le mongwe wa balwetsi ba ba fiwang diritibatsi tsa mogare wa HIV ntle le tuelo kwa Bapong CHC.

1. Se dipatlisiso di leng ka ga sone

Maikaelelo a dipatlisiso tse, ke go sekaseka mabaka a diphetogo mo matshelong a batho a a amanngwang le tiragatso ya go tsaya diritibatsi (ART) mo balwetsing ba HIV ntle le tuelo epe kwa kokelwaneng ya Bapong CHC.

2. Tsamaiso e e salwang morago

Fa o ithaopa go tsaya karolo mo dipatlisong tse, o kopiwa go araba dipotso ka ga mabaka a diphetogo mo matshelong a batho, a a amang le go tsewa ga diritibatsi tsa mogare wa HIV kwa kokelwaneng ya Bapong CHC. Go tlaa dirwa potsolotso ka molomo mo go ba ba sa itseng go bala le go kwala. Potsolotso e tlaa tsaya metsotso e le metlhamo fela fa o etetse kokelwana ya Bapong CHC.

3. Tse di ka tsenyang mo mathateng le dingwe tse di tlhobaetsang

Ga go solofelwe sepe se se ka go tsenyang mo mathateng ape. Gape o ka nna wa gana go araba dipotso dipotso tse di sa go tseyeng sentle mme o tswelole o ntse o motsaya- karolo mo dipatlisong. Dipatlisiso tse, di direlwa go sekaseka mabaka a mantsi a a kgoreletsang go sala morago ditaelo tsa go tsaya diritibatsi tsa mogare wa HIV mme go sa belaelwe boikanyego kana bokgoni jwa gago. O tlaa rulaganyediwa go bona modiri wa tsa bogakolodi kana mooki wa mogakolodi fa o tihoka thuso ya go sidilwa maikutlo.

4. Mosola wa dipatlisiso tse, mo batsaya-karolo le mo sechabeng ka kakaretso

Dipatlisiso tse, di tlaa thusa kokelwana go lemoga go sa le gale gore ke bafe balwetsi ba ba tlaa tsepamang mo kalafing ya diritibatsi tsa mogare wa HIV go gaisa ba bangwe. Ka jalo, kokelwana e tlaa oketsa maiteko a go thusa balwetsi ba ba sa kgoneng go tsaya diritibatsi tsa mogare wa HIV sentle. Segolo go tsotlhe, go tlaa kgoneng go tswa ka ditsela tsa go tokafatsa methale ya go tsepama ga balwetsi mo go tseyeng diritibatsi mo kokelwaneng. Ga go bonale go ka nna le mathata ape. Le fa go ntse jalo, fa o ikutiwa o tshwenyegile ka nako ya potsolotso mme o eletsa go bua maikutlo a gago, o ka itsise mmotsolotsi yo o tlaa go rulaganyetsang go bona modiri wa tsa bogakolodi yo o sidilang maikutlo.

5. Tuelo ya motsaya-karolo

Ga go tuelo ya go tsaya karolo. Potsolotso e, ke boithaopo.

6. Sephiri

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Dikitso tsotlhe tse di tlaa amogelwang mo dipatlisisong tse, di go ama, e tlaa nna sephiri mme di ka ntshediwa ntle fela ka tetla ya gago kana ka taolo ya semolao. Go tsegetsatsa sephiri sa dipatlisiso tse, maina a batsaya-karolo ga a na go bolelwa le mekwalo yotlhe e tlaa bewa kwa lefelong le le sireletsegileng kwa sechaba se ka se keng sa e bona. Mmatlisisi ke ene fela a tlaa itseng dikgang tse.

7. Go tsaya karolo le go ikgogela morago

O ka itlhophele go tsaya karolo kgotsa wa gana. Fa o ithaopile go tseenelela potsolotso, o gololesegile go ikgogela morago nako nngwe le nngwe go sena mathata ape. Gape o ka gana go araba dipotso dingwe mme o tswellele ka go tsaya karolo. Mmatlisisi o ka go ntsha mo dipatlisisong fa mabaka a mo patika go dira jalo.

8. Itshupo ya badira-dipatlisiso

Fa o na le dipotso kgotsa ditlhabaelo ka dipatlisiso, tswee-tswee gololesega go ikgolaganya le Almaiko Phiri ka nomore ya mogala ya 0828004954, aterese ya enthanete ya almaiko@yahoo.com kgotsa ngaka Greg Munro mo mogaleng wa +44.1273.718900 ka email: greg@sybaweb.co.za

9. Ditshwanelo tsa batsaya-karolo

O ka ikgogela morago kana wa senya tumalano le babatlisisi nako nngwe le nngwe ntle le makgwere ape. Go ikgogela morago ga go rontshe ditshwanelo dipe tse di ka fa molaong kana ditshwanelo tsa kalafi ka ntlha ya go tsaya karolo mo dipatlisisong. Fa o na le dipotso mabapi le ditshwanelo tsa gago o le motsaya-karolo mo dipatlisisong tse ikgolaganye le Mme Maléne Fouché [mfouche@sun.ac.za; 021 808 4622] kwa lekalangeng la Division for Research Development, Stellenbosch University.

Setlanyo sa motsaya- karolo kgotsa moemedi wa gagwe wa semolao

Nna _____ ke tihaloseditswe mokwalo kitsiso o o fa godimo o o mo puong ya Sekgoa. Moranodi _____ o kopilwe go ntihalosetsaka puo ya me dikarolo tse ke sa ditlhaloganyeng. Ke tihaloganyanya puo ya _____ mme fa go tihokegang teng ke ne ke ranoelwa gore ke tihaloganyane.

Nna _____ ke ne ka fiwa sebaka sa go botsa dipotso mme dipotso tseo di ne tsa arabiwa mo go nkgotsofaditseng. Ke tihaloganyanya gore maduo a dipatlisiso a tla nna a a akaretsang mme a ntshiwe e le pego le gore ka nako efe fela ke ka fetogela tetla e ke e fileng kana ka ikgogela morago mo go tseyeng karolo mo dipatlisisong.

Ke fa tetla kwa ntle ga patiko epe go taya karolo mo dipatlisisong tse. Ke filwe moriti wa fomo e.

Leina la motsaya-karolo

Leina la moemedi wa semolao

Kgweri

Setlanyo sa mmatlisisi

Ke ikana gore ke tihalosiditse _____ kitsiso yotlhe e e mo pampiring. O ne a rotloediwa le go fiwa nako e telele go mpoetsa dipotso dingwe le dingwe. Puisano ya rona e ne e dirwa ka Sekgoa.

Setlanyo sa mmatlisisi

Kgweri

Translated by Marang Mutuwa
checked and verified by T. Leseledi

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Appendix 4: Tswana Sociodemographic Factors Associated with ART Adherence Questionnaire

Mabaka a dipalo tsa batho a a tsamaelanang le go sala morago melawana ya go tsaya kgotsa go nwa diritibatsi tsa mogare wa HIV

Ditaelo : Agelela karabo e e leng yone

DITSETLA TSA DIPALO TSA BATHO

1. **Bong**

Monna mosadi

2. **Dingwaga**

18–29 30–39 40–49 50 le go feta

3. **Seemo sa nyalo**

Ga ke is eke nyale/nyalwe Ke nyetse/nyetswe Ke na le molekane/tsala
 Ke kgaoganye le monna/mosadi/re aroganye motholagadi/moswagadi

4. **Ke fitheletse dithuto**

Dipe sekole se se botlana sekole se segolwane go feta sekole se segolwane

5. **Bonno**

motse selegae maipaafela toropo motse-setoropo polase

6. **Pereko**

Ke tlhokomela lelapa Ga ke bereke Ke bereka fa ke bonye tiro Ke bereka bontlha bongwe jwa letsatsi Ke bereka tsatsi lotlhe Ke mogodi, ke tsena sekole, ke na le bogole

7. **Bontsi jwa madi mo lapeng a tswa kae**

A pereko A pereko ya nakwana Ke fiwa ke bagolo
 Thuso ya Puso mpho ya madi ka makgotla a a ikemetseng a a tlhokomelang batho
 Ga ke amogele tuelo epe (ntle le tuelo ya puso)

8. **Sekgele go ya kokelwaneng (go kalwa ka dikhilometara)**

kwa tlase ga lesome (10 Kms) magareng ga 10 – 20 magareng ga 20 – 30
 tse di fetang masome a mararo (30 Kms)

9. **O nwa bojalwa ga kae?**

malatsi otlhe, dino tse di fetang boraro malatsi otlhe dino tse kwa tlase ga boraro
 Dino tse di fetang botlhano mo bekeng Nako nngwe ga ke nwe bojalwa

10. **A go na le yoo go tlhokomelang gore o nwa melemo/a go na le yoo go gakololang go nwa melemo**

Ga gona motlhokomedi Monna/mosadi wa me Wa lesika Tsala

11. **A o na le bolwetse bongwe gape jo o bo nwelang melemo**

Ee Nnyaa

Fa karabo e le ee fa godimo, tthalosa

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Mokgwa wa botsogo

1. O lemogile leng gore o na le mogaer wa HIV

- selekanyo sa ngwaga kgotsa kwa tlase ga ngwaga (2010) ngwaga go ya go tse pedi (2009)
 ngwaga go ya go tse tharo (2008) go feta ngwaga tse tharo tse di fitileng (1997-2007)

2. O simolotse leng diritibatsi tsa mogare wa HIV

- selekanyo sa ngwaga kgotsa kwa tlase ga ngwaga (2010) ngwaga go ya go tse pedi (2009)
 ngwaga go ya go tse tharo (2008) go feta ngwaga tse tharo tse di fitileng (1997-2007)

4. Selekanyo sa masole a mmele fa o simolola go nwa diritibatsi tsa mogare wa HIV

- 1-49 50-99 100-149 150-199 200 +

(Tsetla e e tlaa tladiwa ke motlhotlhomisi)

Pego ka sebele ya diritibatsi tsa mogare wa HIV

1. O nwa diritibatsi dife tsa mogare wa HIV?

(_____)+(_____)+(_____)

2. KWALA FA TLASE DIRITIBATSI TSE O DINWANG MO NAKONG YA GOMPIENO

Leina la pilisi

palo ya dipilisi tse o di nwang ka letsatsi

- i. _____
ii. _____
iii. _____
iv. _____

3. Go ya ka taolo ya ngaka wa gago, o tshwanetse go nwa diritibatsi ga kae ka letsatsi?

- gangwe gabedi gararo go feta gararo

4. Mo malatsing a mararo a a fitileng, o lebetse go nwa melemo ya gago ya mogare wa HIV ga kae?

- ga ke ise ke le bale gangwe go fitlha gabedi gabedi go fitlha ga tlhano
 go feta ga tlhano

Kc go lebogela go tlatsa potsolotso e.


Translated by Marang

Checked and verified by Tirelo Keretedi

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ST.

Appendix 5: Letter of Permission to Conduct the Study

	health Department of Health North West Province REPUBLIC OF SOUTH AFRICA	P/BAG X 5084 BRITS MADIBENG 0250	Tel: (012) 2522356 Fax: (012) 252 3460 imoloi@nwpg.gov.za
MADIBENG SUB-DISTRICT MANAGER			
			08 December 2011

Dr Almakio Phiri
Management Sciences for Health

Dear Doctor.

PERMISSION TO CONDUCT A STUDY IN MADIBENG(BAPONG HEALTH CENTRE)

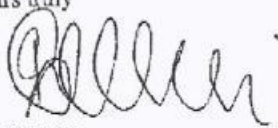
This serves to confirm that the management of the Sub District is giving your permission to conduct the study in the Bapong Health Centre in line with your earlier request.

This letter therefore serves to authorize you to have access to the health centre in which the staff is expected to welcome and assist you in the exercise. This has already been discussed with the relevant cluster manager who will in turn do the same with the facility manager.


A copy of this letter will be send to all the stakeholders including the clinic to facilitate efficient conduct of the study.

I hope you find this in order.

Yours truly



IM MOLOI
SUB DISTRICT MANAGER


Healthy Living for All



health
Department of
Health
North West Province
REPUBLIC OF SOUTH AFRICA

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Tel: (012) 2522355
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imcib@nwpg.gov.za

MADIBENG SUB-DISTRICT

08 December 2011

Dr Almakio Phiri
Management Sciences for Health

Dear Doctor.

PERMISSION TO CONDUCT A STUDY IN BAPONG HEALTH CENTRE

This letter therefore serves to authorize you to have access to the health centre in which the staff is expected to welcome and assist you in the exercise. The letter comes as a result of the approval granted by the Sub District manager

I trust you will find this in order.

Yours truly

KS LESITO
ASSISTANT /CUSTER MANAGER :PHC



Healthy Living for All