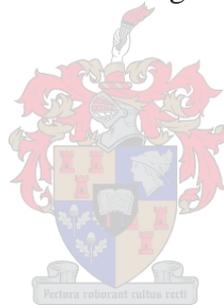


**THE INFLUENCE OF ADEQUATE SOCIAL SUPPORT ON
ADHERENCE TO HIV TREATMENT ON YOUNG ADULT FEMALES
IN A COMMUNITY IN CENTRAL NAMIBIA**

JULIE AMBAYI

Assignment presented in partial fulfilment of the requirements for the degree of
Master of Philosophy (HIV/AIDS Management) at Stellenbosch University



Africa Centre for HIV/AIDS Management
Faculty of Economic and Management Sciences
Supervisor: Mr Gary Eva
December 2011

DECLARATION

By submitting this assignment electronically, I declare that the entirety of the work contained therein is my own, original work, that I am the owner of the copyright thereof, (unless explicitly otherwise stated) and that I have not previously in its entirety or in part submitted it for obtaining any qualification.

Date: 20 November 2011

ABSTRACT

The study sought to establish the influence of adequate social support among young women in the age group 18 to 25 years, on adherence to HIV treatment in a community in Central Namibia. Bearing in mind that HIV comes with different degrees of stigmatisation in different communities, and the differences in how gender and age may affect coping mechanisms in the context of HIV infection, insight was deemed important. The aim of the study was to determine the extent to which social support influenced adherence to anti-retroviral treatment among young adult females infected with HIV, in order to improve adherence to treatment, treatment outcome as well as to provide guidance for effective health education campaigns.

A quantitative research method was used which involved a survey. A written questionnaire with closed ended questions and a set number of responses was used in data collection, administered at selected HIV clinics by selected community counsellors in central Namibia.

Qualitative research methods were also employed using interviews and focus group discussions. Interviews were conducted on selected men on HIV treatment attending the same clinics as the women involved in the questionnaires. In addition, focus group discussions were conducted with the healthcare providers from the selected clinics in central Namibia. The data from quantitative research was analysed using frequencies, averages, means, medians and basic correlations to derive the conclusion. Data from qualitative research methods was analysed using the coding system.

The study showed that availability of adequate social support was uniquely associated with high levels of treatment adherence in young women infected with HIV. These results provide support for the continued psychosocial interventions in the management of HIV among those infected.

OPSOMMING

Die doel van die studie was om die invloed van voldoende sosiale ondersteuning, onder jong vroue in die ouderdomsgroep van 18 tot 25 jaar, te ondersoek op die volgehoue gebruik van MIV behandeling in 'n gemeenskap in sentraal Namibie. Die doel van die studie was om vas te stel tot watter mate sosiale ondersteuning die volgehoue gebruik van anti-retrovirale behandeling beïnvloed, onder jong vroulike volwassenes wie met MIV geïnfecteer is, met die doel om adherence tot behandeling, die uitkoms van behandeling sowel as om leiding te voorsien vir effektiewe gesondheids-opvoedingsveldtogte.

'n Kwantitatiewe navorsingsmetode is gebruik, wat 'n vraelys behels het. 'n Geskrewe vraelys met geslote vrae en 'n vasgestelde aantal antwoorde is tydens data insameling gebruik, wat by geselekteerde MIV klinieke deur geselekteerde gemeenskapsberaders in sentraal Namibie geadministreer is.

Kwalitatiewe navorsingsmetodes is ook gebruik, deur middel van onderhoude en fokusgroep-besprekings. Onderhoude is gevoer met geselekteerde mans wat op MIV behandeling is wat by dieselfde klinieke bywoon as die vroue wat by die vraelyste betrokke is. Fokusgroep-besprekings is gehou met die gesondheidsorg-voorsieners van die geselekteerde klinieke in sentraal Namibie. Die data van kwantitatiewe navorsing is verwerk deur middel van frekwensies, gemiddeldes, mediane en basiese korrelasies om gevolgtrekkings te maak. Data van kwalitatiewe navorsingsmetodes is verwerk met die gebruik van die kodering-stelsel.

Die studie toon dat die beskikbaarheid van voldoende sosiale ondersteuning verbind kan word met hoë vlakke van volgehoue gebruik van behandeling onder jong vroue wie met MIV geïnfecteer is. Die resultate dien as ondersteuning tot die volgehoue psigo-sosiale ingrypings in die bestuur van MIV onder die geïnfecteerdes.

TABLE OF CONTENTS

Chapter 1: Introduction	7
1.1 Background	7
1.2 Research Question	8
1.3 Significance of study	8
1.4 Aim	8
1.5 Objectives	8
Chapter 2: Literature review	10
Chapter 3: Methodology	12
3.1 Introduction	12
3.2 Research Design	12
3.2.1 Qualitative Research	12
3.2.2 Quantitative research	12
3.3 Personal Contact	13
3.4 Inclusion Criteria	13
3.4.1 Questionnaire Participants	13
3.4.2 Focus Group Participants	13
3.4.3 Interview Participants	14
3.5 Sampling Frame	14
3.6 Sampling Method	15
3.7 Data collection	15
3.7.1 Social Support Questionnaire	16
3.7.2 Focus Group Discussion	16
3.7.3 Interviews	17
3.8 Assessing Patients' Adherence to Treatment	18
3.8.1 Self Reported Adherence Method	18
3.8.2 Pharmacy Refills Method	18
3.9 Operationalisation	19
3.9.1 Adherence	19
3.9.2 Adequate Social Support	19
3.10 Data Analysis	19
Chapter 4: Findings	20
Chapter 5: Conclusion	32

Chapter 6: Discussion	33
Chapter 7: Bibliography & Appendix	
Appendices	
Annex 1: Social Support Questionnaire	40
Annex 2: Focus Group Discussion Items	41
Annex 3: Adherence Assessment Questionnaire	41
Annex4: Request to conduct research	44
Tables	
Table 1: Women's Social Support Questionnaire Findings	20
Table 2: Social Support Assessment males Interviews Findings	21
Table 3: Focus Group Discussion Findings	22
Table 4: Self reported Adherence Assessment Findings	23
Table 5: Pharmacy Refill Method	26

Chapter 1: Introduction

1.1 Background

About 39.4 million people are estimated to be living with HIV globally and sub-Saharan Africa has about 25.4 million people living with HIV as of December 2008 (UNAIDS, 2008). Over the past several years, developments in the treatment of HIV/AIDS have dramatically improved the prognosis of infected persons. Highly active anti-retroviral treatment (HAART) causes longer life expectancy, reduction in HIV disease progression and fewer complications related to compromised immune functioning.

Access to anti-retroviral therapy (ART) has improved with increased funding and as a result a large number of infected people are on ART. This availability of ART has greatly improved the survival of people infected with HIV. ART reduces mortality and morbidity by suppression of viral replication, restoration and preservation of immune function as well as prevention of drug resistant strains. The advancements in HIV treatment combined with the increasing number of new HIV infections have resulted in a large and growing cohort of persons with HIV who are living and coping with the multiple stressors that accompany the disease and its treatment (Hogg, 1998). Adherence to ART is critical to the survival of people infected with HIV. A pooled analysis of North American studies reported adherence levels of 55% while in African studies adherence was 77% (Patella, 1998).

Adherence is defined as the act of sticking to something with steady devotion and it implies that there is collaborative process that facilitates acceptance and integration of a medication regimen into an individual's daily life (Chesney, 2003). Successful long-term treatment of HIV/AIDS requires at least 95% adherence to ART in order to prevent emergence of drug resistant strains. Adequate adherence to ART has managed to transform HIV infection into a chronic illness increasingly managed in primary care. The barriers to ART adherence resemble barriers to the successful treatment of other chronic diseases. These include regimen complexity, side effects, patient lifestyle factors, social support and patient-provider relationship (Patella, 1998).

Social support networks have been studied extensively in health psychology and have been associated with stress management and to the following coping styles; action

oriented, cognitive, and emotional and avoidant styles (Green, 1993). Both the quality and quantity of social support are considered important. It is considered possible that good social support promotes psychological well being, which in turn promotes good health. Psychological teaching has it that lack of good social support precedes the onset of depression.

Even though the public is now better informed about how unlikely transmission of HIV through casual contact is, many people feel uncomfortable in the presence of someone with a life threatening infectious infection. Therefore it is harder for those with HIV/AIDS, who may feel toxic, to establish and maintain social support networks than it is for persons with other illnesses. Feelings of isolation, alienation and depression have been linked to a lack of social support (Hoffman, 1996). For many, revealing that one is HIV positive involves a double disclosure in which one's sexual orientation or sexual activities are also disclosed (Green, 1989). Therefore, care must be taken when choosing sources of social support. These sources may include friends, relatives, partner and organisation. Blame and fear are barriers in providing social support (Collins, 1994).

Issues of discrimination, oppression and stigmatisation may help to understand the complexity of social support networks in the different population groups of people infected with HIV and this has necessitated the plethora of research on the probable association between social support networking and adherence to anti-retroviral treatment.

1.2 Research question/problem

Does the availability of adequate social support influence adherence to anti-retroviral treatment among young adult females infected with HIV?

1.3 Significance of the study

A significant amount of research has been carried out regarding the importance of social support in relation to adherence to anti-retroviral treatment. However, most of the studies have targeted the relationship between the two variables among men who have sex with men (MSM) or illicit drug users, since these populations represent much stigmatised groups at the fringes of society. But HIV infection comes with different degrees of stigmatisation in different communities. There may also be differences in how the

differences in gender and age may affect coping mechanisms. Insight into this may reveal the different social support needs of the various infected populations. The study seeks to establish the influence of adequate social support, if any, among young women aged 18 to 25 years, on adherence to HIV treatment in a community in central Namibia.

1.4 Aim

To determine the extent to which social support influences adherence to anti-retroviral treatment among young adult females infected with HIV, in order to improve adherence to treatment and treatment outcome as well as to provide guidance for effective health education campaigns.

1.5 Objectives

1. To identify the social support network available to the HIV infected young adult females in the community.
2. To identify the HIV infected young adult females receiving adequate social support and the infected young adult females without access to adequate social support.
3. To identify the anti-retroviral adherence patterns among the identified young adult females.
4. To establish the adherence patterns of those identified to have adequate social support and those without access to adequate social support.
5. To analyse the differences in anti-retroviral treatment adherence patterns between those receiving adequate social support and those without adequate support.
6. To provide guidelines for HIV/AIDS community health campaigns that encourages social support networking if necessary.

Chapter 2: Literature Review

Treatment adherence has become a major task for public health practitioners in HIV antiviral treatment. The possibility of resistance and reappearance of opportunistic infections is a common threat for people living with HIV/AIDS. Many factors have been identified as important variables in adherence, among them social support. Social networks may represent a key factor in the complex issue of adherence (Collins, 1994).

In a study conducted in Tanzania in 2006, (Roura, Busza, Wringe, Mbata, Urassa, and Zaba, 2009), found that, individuals can develop the requisite willingness to sustain strict treatment requirements in a challenging context, but are more likely to do so in a supportive family and community environment. They concluded that effectiveness and sustainability of anti-retroviral roll-out could be strengthened by strategic intervention at different levels, with particular attention to community level factors such as networks influence and support. Vyavaharkar, Moneyham, Tavakoli, Phillips, Murdaugh, and Jackson, (2007) had similar findings in their study on social support, coping and medication adherence among HIV positive women with depression living in rural areas of South Eastern America. In this study Vyavaharkar, et al (2007), concluded that satisfaction with social support and coping focused on managing HIV disease, were the best predictors for adherence to anti-retroviral therapy.

The conclusion that greater social support and positive state of mind related to better adherence, whereas higher depression related to non adherence was reached when a study was conducted on men and women living with HIV in Brazil (Gonzalez, Penedo, Llabre, Duran, and Antoni, 2003). In his findings, Gonzalez noted the link between social support and positive state of mind to which he attributed the increased willingness to adhere to HIV treatment.

In Southwest Ethiopia, a study was conducted to establish the predictors of adherence among the infected persons in that community (Amberbir, Woldemichael, Getachew, Girma and Deribe, 2008). Amberbir and his colleagues found that adherence was common in those who have social support and that these persons with good social support established less signs of depression.

At the 136th APHA annual meeting in October 2008, Du Bois presented his findings on his study on “What HIV positive MSM think is important to treatment adherence.” In his study, he found that MSM had overwhelmingly indicated that psychosocial variables such as depression and social support were the major factors associated with treatment adherence in their population, aside from substance abuse medication side effects (Du Bois, Holland and McKirnan, 2008).

Though many studies seem to collaborate with the findings that relate social support to adherence to anti-retroviral treatment, other researchers have failed to establish the same findings. Andujar-Bella, Toro-Alfonso, Amico and Fisher (2002), carried out a study in Puerto Rico entitled “Social Support and Social Networks: The challenge for adherence to HIV/AIDS anti-retroviral treatment in a sample of patients in Puerto Rico.” They found no apparent relation between adherence and social support among the persons in the population studied. Rather they concluded that the more important factor was the patient’s intentions to adherence to treatment irrespective of the social circumstances. Ryan and Wagner (2003) were in agreement with Andujar Bella, et al. In their study on “Pill taking routinization: A critical factor to understanding episodic medication adherence, they found that there was no significant relationship between levels and types of support fostered and adherence to anti-retroviral therapy. Their conclusion was that the effects of factors such as disclosure, stigma and discrimination complicated the potential for social networking for some HIV positive patients.

The trend of thought seems to be along the lines that social support influences adherence to anti-retroviral treatment, if the majority of studies are taken into consideration. What needs to be further evaluated is whether this relationship is the same for the different age groups and sexes or if there are some populations, by age and sex that may require more or less social support than others. In addition, the importance of social networking in relation to managing HIV and AIDS in hard hit regions such as Sub-Saharan Africa needs to be understood especially in the light of the great cultural variation in this region. This study seeks to establish if a significant relationship exists between social support and adherence to anti-retroviral treatment among young adult females in a population in Central Namibia, as a way of trying to gain deeper insight into the factors that drive the all-important issue of adherence to ART.

Chapter 3: Methodology

3.1 Introduction

This chapter describes the research design and method used. The researcher carried out both quantitative and qualitative research approaches to gain deeper insight into the extent to which social support influences adherence to anti-retroviral treatment among young adult females in the local community. Data was collected from HIV patients on HAART attending the selected clinics as well as from the doctors, nurses and pharmacists involved in these clinics using a questionnaire, interviews and focus group discussions. Quantitative data was analysed using Minitab software and coding was used to analyse the qualitative data.

3.2 Research Design

3.2.1 Qualitative Research

Qualitative research is a type of investigation that seeks answers to a question, systematically uses a pre-defined set of procedures to answer the question, collects evidence and produces findings that are applicable beyond the immediate boundaries of the study (Denzin & Lincoln, 2000). It is especially effective in obtaining culturally specific information about the values, opinions, behaviours and social contexts of particular populations.

In this study, qualitative data was obtained by engaging in focus group discussions involving doctors, nurses and pharmacists who form the HIV clinic teams. A focus group discussion is a group discussion of 6 to 12 persons guided by a facilitator, during which group members talk freely and spontaneously about a topic (Powell & Simple, 1996). It serves to obtain in-depth information on concepts, perceptions and ideas of a group and is used to complement other research methods.

In our focus group discussions, there were three separate group discussions, each derived from the chosen HIV clinics and were made up of 6 to 10 persons. The researcher was the facilitator in each group discussion whose main function was to encourage participants to express their views without allowing to be drawn as an expert. The

discussion sessions lasted between one and one and a half hour each. For the items discussed see Annex 2 in appendices.

3.2.2 Quantitative Research

Quantitative research study is one that collects some type of numerical data to answer a given research question (Christensen, 2007). The aim is to determine the relationship between one thing, the independent variable, and another, the dependent variable or outcome variable in a population (Hopkins, 2000). In this study, social support is the independent variable and adherence to HIV treatment is the dependent or outcome variable. Quantitative research designs are either descriptive (subjects usually measured once) or experimental (subjects measured before and after a treatment). This study is descriptive in nature and helps establish association between the variables rather than causality.

3.3 Personal Contact

The researcher was personally involved in the collection of the data. There was direct contact with the respondents in the focus group discussions. This made it easy to gain insight into the perspective of the respondents and made the analysis of the data easier. The researcher also maintained regular personal contact with the community counsellors who were involved in administering the questionnaire and interviews. The community counsellors selected are well versed in the English language, which is the medium of communication of the researcher. They are also well versed in the local languages used by the respondents of the questionnaire and interviews. Regular contact helped maintain focus and monitor progress as well as address problems as they were encountered.

The researcher personally explained the purpose of the study to the directly accessible population in the focus group and went through the questionnaire with the community counsellors to ensure a common understanding. The latter strived to maintain common understanding among the three community counsellors who administered interviews to the respondents.

3.4 Inclusion Criteria

3.4.1. Questionnaire Participants

Participants had to be between the ages 18-25 years; must have tested positive to HIV; must have been on anti-retroviral treatment for at least six months; must be female.

The target population were found in the Anti-Retroviral (ARV) clinic of the local hospital, where they were followed up regularly from the time they started treatment. A total of fifty two participants were included in the study. The participants had to be able and willing to take part in the questionnaire and were required to give consent to participate in the questionnaire.

3.4.2. Focus Group Participants

Participants in the focus group discussions had to include doctors, nurses and pharmacists directly involved in the care of the HIV positive patients selected for the research. This group included staff from the HIV clinics selected as well as those from the wards that took care of HIV infected patients who were admitted to hospital. These professionals had opportunities to assess the social support networks of the HIV infected patients as well as their degree of adherence to HIV specific treatment. Participants had to be willing to take part in the focus group discussions and were required to give consent by signing the consent forms provided.

3.4.3. Interview Participants

Participants were HIV infected men of different age groups who had been on HAART for at least six months. The participants were drawn from the clinics selected for the research. The men had to be willing to talk about their experiences with HIV/AIDS, its treatment and their social support networks and how these affected their adherence to treatment. They were requested to give consent by signing the forms provided after the aim of the study was explained to them by the community counsellors. They were interviewed using questions based on the questionnaire for the women although their responses were more flexible.

3.5 Sampling Frame

The sample of patients was drawn from HIV clinics in Central Namibia. Otjiwarongo Hospital HIV clinic has a total of 2500 patients on treatment. Of these about 90 are women between the ages of 19 and 25 years who fitted the inclusion criteria for the questionnaire. There were 750 men above the age of 18 years who qualified for the inclusion criteria for the interviews.

Otavi Clinic, which is situated 120 kilometres from Otjiwarongo, had 1200 patients on HAART. Of these, 42 women fitted the inclusion criteria for the questionnaire and 250 men the inclusion criteria for the interviews.

Participants were drawn from the patients who attended the doctors' clinics on Mondays, Wednesdays and Fridays until the sample sizes were large enough.

Six doctors were involved in the care of the HIV patients both at Otjiwarongo Hospital and Otavi Clinic. All six had been working at the health facilities for at least one year. Two pharmacists were involved in providing pharmaceutical services for HIV patients at the two health facilities and both had been working at the facilities for at least two years. Twenty four nurses were directly involved in the care of HIV patients at the two health facilities and all had been working there for at least six months. All the members of the team meet monthly for their scheduled meetings. The researcher took the opportunity of attending one of these meetings, at which the purpose of the study was explained to all the members present and members were invited to take part in the focus group discussion.

3.6 Sampling Method

Simple random sampling was used to obtain a sample for the survey, which ensured limited selection bias. This method is easy to apply with the anticipated small sample.

3.7 Data Collection

The study used three methods of data collection, which were, questionnaires, focus group discussions and semi-structured interviews. These were used to collect data from men and women on HIV treatment as well as from doctors, nurses and pharmacists directly involved in the care of HIV patients at the selected health facilities.

3.7.1. Questionnaire

A questionnaire is useful for its reliability and flexibility and that it ensures objectivity (Seliger & Shohamy, 1989). It is a cheap tool that can be administered easily. The questionnaire was administered on the HIV positive women who qualified for the inclusion criteria to assess and measure the quality of the social support they were receiving since they started on HIV treatment. The Likert scale was used in which a set of attitude statements were presented and participants were required to express their degree of agreement or disagreement on a five point scale. Each degree of agreement or disagreement was given a numerical value from one to five (see Annex 1 in appendix).

Questionnaires that were completed were collected and analysed according to item responses summed to create a score for group items. The women who participated in the questionnaire were from Otjiwarongo and Otavi HIV clinics, both in central Namibia. The same community counsellors were used to administer the questionnaires at both the health facilities.

The researcher met with the community counsellors once each week and this was used to resolve any problems, challenges or issues that arose while the counsellors were administering the questionnaires. This helped maintain uniformity in the administration of the questionnaires.

All questionnaires were left anonymous to maintain anonymity and confidentiality.

3.7.2 Focus Group Discussions

A focus group discussion is a group discussion of approximately 6 to 12 people guided by a facilitator, during which group members talk freely and spontaneously about a topic (Powell and Simple, 1996). It serves to obtain in-depth information on concepts, perceptions and ideas of a group. It is used to complement other modes of data collection in research.

The questions and discussions in the researcher's focus group discussions were intended to assess the perceptions of health care workers on degree of influence of social support on adherence to HIV treatment among the patients they were caring for. The study aimed

to tap into the experience of these health care workers who represented 'experts' in the care of HIV patients on HAART.

The discussions were carried out on two separate occasions within a two week period with half of the workers who had consented in order to avoid disruption of services. In each group discussion, nurses, doctors and pharmacist were all represented. In-depth discussions were held allowing for wide ranging view points to be given. The discussions lasted between one and one and a half hour each. Participants met in the offices where meetings are usually held and the atmosphere was free and cordial. All participants were familiar with each other and with the researcher. The researcher served mainly as the facilitator and not an expert and allowed participants to address each other freely. Participants' views were recorded by use of a tape recorder as well as by writing down brief notes. The issues discussed were based on questions prepared by the researcher prior to the meeting (see Annex 2 in appendix). This allowed for greater in-depth exploration of the influence of social support based on the practical experience of those present. The various types of social support available in the communities identified were elicited and their levels of benefit debated.

Limitations of Focus Group Discussions

- Maintaining control of the group so that the discussion remained focused on the aim of the study.

- Minority opinions may not have been freely expressed.

- Inequality of professional levels may have resulted in the lower levels feeling intimidated by the higher levels resulting in prohibiting the former from freely expressing their opinions.

3.7.3 Interviews

Semi-structured interviews were conducted with HIV infected patients who had been on treatment for at least six months. The patients were derived from the same clinics identified for the study. The questions for the interviews were based on those in the questionnaire (see Annex 1). The interviews were administered by the same community counsellors used to administer the questionnaire. The aim of the interviews was to

determine the degree of social support the men were receiving and how this influenced their adherence to treatment for HIV. This served to widen the insight into the influence of social support in the adherence patterns of persons taking HIV medicines.

Before the interviews, the men were informed about the aim of the interview and they were required to give their consent by signing the consent forms provided. A total of 25 men were interviewed on different clinic days, namely Tuesdays and Thursdays over a four week period.

This method of research allowed for interaction between the interviewer and the participants. Most of the respondents were familiar with the community counsellors involved. Data could be collected quickly yet allowing the participants to delve deeper into the issues that arose. To minimise inconveniencing the participants, interviews were conducted during the time patients were waiting to see the doctor, a time which patients usually sit without doing anything.

3.8 Assessing Patients' Adherence to Treatment

3.8.1 Self reported adherence method

A questionnaire was designed based on the Adult AIDS Clinic Trials Group (AACTG) adherence instrument (See Annex 3 in appendices). This consists of 5 questions that assessed adherence from the previous 1-4 days, within the past week prior to the interview

The questionnaire was administered by the community counsellors together with the other questionnaire or interviews and provided any easy way to gain information into the adherence history of the patient. However the method is limited by the risk of exaggeration as patients will likely say what the researcher expects to hear which may not necessarily be the truth.

3.8.2 Pharmacy Refills Method

All the patients carried patient booklets where entries were made each time the patient was seen by the doctor or collected their medications from the pharmacy. Each entry was accompanied by a hospital or pharmacy stamp. In addition all the patients used the same

pharmacy most of the time to collect their medications. Perusal of the booklets was conducted by the researcher while the patients were undertaking the questionnaires or the interviews.

The limitation of the method was that it was time consuming and required a high degree of concentration but was a reliable method of assessing patient adherence to treatment.

3.9 Operationalisation

3.9.1 Adherence

Adherence in this study refers to the act of following and taking anti-retroviral medications at the prescribed doses and times daily without fail. Persons were considered to have unacceptably low adherence, and hence be considered significantly non-adherent if they miss more than one dose per week. Adherence was measured using persons' self report on the number of doses they missed per week, use of pharmacy refill tracking since the community uses only one pharmacy outlet as well as use of the biological marker, CD4 count, from the person's hospital records, with permission.

3.9.2 Adequate social support

In the study this was counted as at least one person that the infected person could relate to at a personal level, and to whom the participant had disclosed her HIV status. This person had to be easily accessible physically or electronically. The person could be a family member, friend, co-worker, neighbour, health worker or fellow patient who has adjusted to his treatment.

3.10.0 Data analysis

Data analysis was done using information acquired from the questionnaires, interviews and focus group discussions. Triangulation was employed to increase credibility and validity of the results by using different research methods. Analysis was based on the use of themes and categories from the answers in the questionnaire. The data was analysed using frequencies, averages, means, medians and basic correlations to derive the conclusion of whether there was a significant causal relationship between social support and adherence to anti-retroviral treatment in our target population.

Chapter 4: Findings**Table 1 - Women's Social Support Questionnaire Findings**

Total number of participants – 52

Whether participants feel family or friends:	Not at all	Slightly	Somewhat	A Lot	A Great Degree
Do not let them dwell on upsetting thoughts	1 (2%)	1 (2%)	10 (19%)	10 (19%)	30 (57%)
Give them advice on how to handle their problems	0 (0%)	1 (2%)	7 (13%)	13 (25%)	31 (59%)
Keep tabs on them	3 (6%)	4 (7%)	13 (25%)	8 (15%)	24 (46%)
Tell them to feel proud of themselves	5 (10%)	6 (12%)	18 (34%)	13 (25%)	10 (19%)
Make sure they take care of themselves	0 (0%)	2 (4%)	7 (13%)	10 (19%)	33 (64%)
Make sure they take their medications	0 (0%)	2 (4%)	8 (15%)	34 (66%)	8 (15%)
Let them know they have their support	2 (4%)	2 (4%)	11 (21%)	25 (48%)	12 (23%)
Make it easy for them to talk about anything they think is important about their health	4 (7%)	8 (15%)	12 (23%)	20 (38%)	8 (15%)
Are available to talk anytime	6 (12%)	3 (6%)	13 (25%)	14 (27%)	16 (30%)
Show interest in how their health is doing	1 (2%)	3 (6%)	4 (7%)	16 (31%)	28 (54%)
Make sure they get the things they need	1 (2%)	1 (2%)	7 (13%)	35 (67%)	8 (15%)
Are available when they need help	0 (0%)	1 (2%)	1 (2%)	10 (19%)	40 (77%)

Table 2 - Social Support Assessment Males Interview Findings

Total number of participants - 30

Whether participants feel family or friends:	Not at all	Slightly	Somewhat	A Lot	A Great Degree
Do not let them dwell on upsetting thoughts	1(3%)	1(3%)	6(20%)	10(33%)	12(40%)
Give them advice on how to handle their problems	1(3%)	1(3%)	3(10%)	19(63%)	6(20%)
Keep tabs on them	0(0%)	4(13%)	5(17%)	9(30%)	12(40%)
Tell them to feel proud of themselves	3(10%)	5(17%)	5(17%)	12(40%)	5(17%)
Make sure they take care of themselves	1(3%)	1(3%)	2(7%)	12(40%)	14(47%)
Make sure they take their medications	2(7%)	2(7%)	8(26%)	9(30%)	9(30%)
Let them know they have their support	3(10%)	2(7%)	6(20%)	11(37%)	8(26%)
Make it easy for them to talk about anything they think is important about their health	1(3%)	4(13%)	10(33%)	9(30%)	6(20%)
Are available to talk anytime	1(3%)	2(7%)	9(30%)	9(30%)	9(30%)
Show interest in how their health is doing	0(0%)	1(3%)	2(7%)	20(67%)	7(23%)
Make sure they get the things they need	1(3%)	1(3%)	6(20%)	12(40%)	10(33%)
Are available when they need help	0(0%)	1(3%)	5(17%)	4(13%)	20(67%)

Table 3 - Focus Group Discussion Findings

Participants: 3 Doctors, 2 Pharmacists and 12 Nurses

Total number of participants 17

Statement	Responses
Participants' understanding of social support	All (100%) had good basic understanding of what social support is.
Who constitutes social support in the local community?	Family -100% of participants agreed Friends -80% of participants agreed Church colleagues -50% of participants Neighbours -50% of participants agreed Workmates -25% of workmates agreed
Whether there is need for health workers to enquire about patients' social support	Yes -100% of participants No -0% of participants
Whether participants find that patients relate to the concept of social support	Yes -40% No -40% Undecided -20%
Whether participants find that there is a relationship between social support and adherence to HIV treatment among their patients	Yes -90% Unsure -10%
Whether participants have observed any change in adherence patterns in those patients whose social support system had changed	Definitely -50% To some degree -30% Unsure -20% Not at all -0%
Whether participants feel there is any need for social support in the treatment of HIV	Definitely -40% To a large degree -25% To some degree -25% Not at all -0% Unsure -10%

Table 4 - Self Reported Adherence Assessment Questionnaire

Respondents -52 patients from the social support questionnaire

-30 patients from the social support interview

Statement	Participants responses
Number of doses missed:	
Previous day- 1 dose	Males 1 (3%) Females 0 (0%)
-More than 1 dose	Males 0 (0%) Females 0 (0%)
-None	Males 29 (97%) Females 52 (100%)
Two days before	
-1 dose	Males 3 (10%) Females 2 (4%)
-More than I dose	Males 0 (0%) Females 0 (0%)
-None	Males 26 (87%) Females 50 (96%)
Three days before	
-1 dose	Males 0 (0%) Females 0 (0%)
-More than 1 dose	Males 1 (3%) Females 0 (0%)
-None	Males 30 (100%) Females 52 (100%)
Four days before	
-1 dose	Males 2 (7%) Females 3 (6%)
-More than 1 dose	Males 1 (3%)

	Females 2 (4%)
-None	Males 27 (90%) Females 47 (90%)
Number of days participants missed taking all their doses in the previous four days	
-None	Males 28 (93%) Females 50 (96%)
-1 day	Males 1 (3%) Females 2 (4%)
-2 days	Males 1 (3%) Females 0 (0%)
-3 days	Males 0 (0%) Females 0 (0%)
-4 days	Males 0 (0%) Females 0 (0%)
How closely patients followed their specific medication schedules over the previous four days	
-Never	Males 0 (0%) Females 0 (0%)
-Some of time	Males 2 (7%) Females 7 (13%)
-About half of the time	Males 8 (26%) Females 10 (19%)
-Most of the time	Males 15 (50%) Females 25 (48%)
-All the time	Males 5 (16%) Females 10 (19%)
Whether participants missed any of their medications the previous Saturday or Sunday	
-Yes	Males 8 (26%) Females 3 (6%)
-No	Males 22 (73%)

	Females 49 (94%)
When was the last time that participants missed any of their doses	
-Within the previous week	Males 4 (13%) Females 5 (10%)
-1 to 2 weeks before	Males 6 (20%) Females 8 (15%)
-2 to 4 weeks before	Males 16 (53%) Females 22 (42%)
-1 to 3 months before	Males 2 (6%) Females 3 (6%)
-More than 3 months before	Males 2 (6%) Females 9 (17%)
-Never skip doses	Males 1 (3%) Females 5 (10%)

Table 5 - Adherence Assessment: Pharmacy refill method

All the patients on HAART are required to visit the pharmacy every month for refilling their medications.

Each visit is noted in the patient's record card using the official pharmacy stamp. Perusal of the record cards of 30 male participants and the 52 female participants yielded findings shown in Table 5 below.

Statement	Participant Findings	Response
Participants who failed to visit the pharmacy for refill of medication		
-2 months before	Males 1 (3%) Females 1 (2%)	
-3 months before	Males 2 (6%) Females 3 (6%)	
-4 months before	Males 1 (3%) Females 2 (4%)	
-More than 5 months before	Males 3 (10%) Females 6 (11%)	
-Never missed refill visits	Males 3 (10%) Females 6 (11%)	
-Never missed refill visits	Males 23 (77%) Females 40 (77%)	

A total of 82 patients and 17 health professionals participated in the study. Fifty two women participated in the social support questionnaire and thirty men participated in the interviews. The focus group participants included 3 doctors, 2 pharmacists and 12 nurses.

At least 74.6% of the young women reported that they had substantial amount of support from their family and friends (Table 1). An average degree of social support was reported by 16.3% of the young women, while 6.3% reported poor social support from their family and friends (Table 1).

Among the male patient respondents, 69.8% reported substantial social support, while 17.7% had an average degree of support and 9% reported poor social support from family and friends (Table 2).

Self-reported adherence to HAART showed an average of 95.7% adherence over the previous four day period among the female respondents, and an average of 93.4% adherence among the male respondents (Table 4). At least 92% of the male respondents had missed a dose in the preceding 3 months, while 73% of the female respondents had missed a dose in the same period (Table 4).

Pharmacy refill records of both the female and the male respondents showed that about 77% of the female respondents and 77% of the male respondents had never missed any pharmacy refill appointments (Table 5). At least 9% of the male respondents and 7% of the female respondents had missed a pharmacy appointment at least once in the preceding 3 months (Table 5).

The focus group discussions with the health care professionals showed that 90% of them had observed some relationship between the patients' social support network and their adherence to HAART, while 10% of them reported to be unsure of any such relationship. At least 80% of the professionals had noted some changes in adherence patterns among patients whose social support systems had changed (Table 3). About 20% of the professionals were unsure (Table 3). At least 90% of the professionals felt that there is need for social support strengthening in the treatment of HIV, while 10% of them were unsure (Table 3).

Social support results

The results of social support among the participants were broken down according to the different types of social support as given by Vyavahakar et al (2007). The types identified totalled four and are emotional support, which is shown through expressions of confidence and encouragement, listening and empathising; informational support, which is in the form of giving advice or in gathering and sharing information; tangible support, which involves taking on responsibilities for someone else so that they can deal with a problem or help somebody manage a problem they are experiencing; and instrumental support which involves helping with a problem.

Among the female participants, 60% indicated that they were satisfied with the emotional support they were getting, 21.5% believed their emotional support was about average, while 13.6% felt their emotional support was unsatisfactory (Table 1). Informational support was felt to be adequate by 84% of the female participants, while 13% of these participants felt their informational support was just average and 2% believed it to be unsatisfactory. Tangible support was felt to be satisfactory by 67% of the female participants, while 13.6% of these participants felt their tangible support to be average and 5.2% of them believed their tangible support was unsatisfactory (Table 1).

In comparison, among the male participants, 65.5% felt the emotional support they were receiving was satisfactory, 21% thought it was average, while 13.5% felt their emotional support was unsatisfactory (Table 2). Informational support was believed to be satisfactory by 83% of the male participants, while 10% of these participants felt their informational support to be average and 6% felt theirs was unsatisfactory (Table 2). Tangible support was felt to be satisfactory by 74% of the male participants; while 17.5% believed it to be average and 8.5% felt their tangible support was unsatisfactory (Table 2).

According to these findings, it appears as if both the female and male participants enjoyed about the same levels of emotional and informational support, while the males received more tangible support than the females. However, more statistical analyses would be required to determine if this difference is significant, and if so, further studies to determine the significance of this in the management of HIV among the female HIV patients.

Health care professionals insight

All health care professionals had a basic understanding of what social support is, though few showed knowledge of the types of social support.

The professionals believed family constituted the bulk of social support in the community, followed by friends, then church colleagues, neighbours and then work-mates (Table 3).

All the professionals felt there was need to enquire about the patients' social support

system and most had met with patients' treatment supporters as was required by treatment protocol. However, none of them had delved deeper into the patients' support networks as this was believed to be the domain of the social workers. None of the social workers had been available to take part in the focus group discussion. Most of the information the health care workers had about the social support network of patients was derived from reports of the patients themselves, their treatment supporters or from social workers' reports, which were far apart and few (Table 3).

All health care workers involved, engaged in informational support to the patients whenever the patients presented for follow up treatment or fell ill and needed treatment.

About 90% of the professionals involved admitted that they had noticed some relationship between social support and how well patients adhered to treatment, though they could not quantify the degree of this relationship (Table 3). The remaining 10% were unsure of the presence of any such relationship, though they did not rule it out altogether.

About 65% of the professionals felt that there was need for stronger social support in the management of HIV both from the community and from among the health care professionals. About 25% felt not so strongly about the need for social support arguing that adherence to treatment was mostly dependant on individual will-power and their perceptions of the disease rather than from any input from family and friends.

Treatment adherence results

Results from Table 4 showed that 100% of the female participants had not missed any of their ARV doses in the preceding 24 hours, while 4% had missed at least one dose in the preceding 48 hours. The reported complete adherence to treatment in the previous 4 days averaged 96.5% among the female participants (Table 4). About 13% of the female participants admitted to following their specific treatment schedules some of the time, over the preceding 4 days, while 19% said they followed the treatment schedules about half the time, 48% followed the schedules most of the time and 19% all of the time (Table 4). This pointed to how well patients complied with the agreed treatment times as well as to any feeding instructions. About 94% of the female patients had no problems with remembering to take their medications during the preceding weekend compared to

73% of the male patients.

Male patients on the other hand, showed that 3% had missed at least one dose in the preceding 24 hours, while 10% had missed at least one dose, 48 hours before (Table 4). These figures are higher than those for the female patients in the same period of time. On average, adherence to treatment among the male participants was 93.5% compared to that of the females of 96.5%. The reasons given for the difference included pressure of work and forgetfulness when out socialising with friends, especially in the evenings.

About 7% of the male participants managed to adhere to treatment schedules some of the time, 26% of the participants adhered about half the time, 48% most of the time and 16% of the participants, all of the time (Table 4). These figures are similar to those of the female participants. During the preceding weekend, 26% of the male participants failed to take some of their treatment doses, leaving about 73% managing. Reasons given for this were mostly to do with the increased time for socialising and drinking with friends during the weekends leading to treatment interruptions (Table 4).

During the time all the participants were on ARV treatment, 10% of the females admitted to never skipping doses, compared to 3% among the males (Table 4). About 17% of the female participants had last missed a dose more than three months prior compared with 6% of the males. This implies that the female participants were fairing better on treatment adherence than the males though more sophisticated statistical analyses are required to determine if the difference is significant.

The largest proportion of participants, both males and females, had last missed a dose in the period 2 to 4 weeks prior to the interviews. During this period, 42% of the female participants were noted, while 53% of the male participants were also observed (Table 4). Reasons for this could be related to the fact that patients are followed up once monthly and this period could be associated to complacency among the patients. However further studies may need to be carried out to determine the real causes of this finding and its relevance in the treatment and management of HIV in general.

The pharmacy refill method was also used to determine adherence patterns among the male and female participants. Table 5 showed the pharmacy refill patterns of the study

participants. Among the female participants, 2% had failed to show up for refill in the preceding two months, while 3% of the males had failed to show up in the same period. Four months prior to the study, 4% of the females had failed to show up for refill, compared to 3% among the males (Table 5).

Pharmacy records showed that 77% of the female participants and 77% of the male participants never missed refill visits to the pharmacy. Although these results may be construed to mean very good adherence among the participants, caution needs to be taken in view of the fact that collecting medications from the pharmacy does not automatically translate to ingestion of the medications. On the other hand, if patients visit a different pharmacy in another area, to collect medications, this will not reflect in the system, as the systems are not linked. Further studies that involve more complex methods of measuring adherence need to be conducted in order to acquire a more comprehensive picture regarding this issue. However, based on the results of Table 5, both male and female participants feel equally motivated to visit the pharmacy regularly to collect their ARV medication. This compares positively with the findings of the social support levels among the participants. This is despite the feeling among the focus group participants of professionals who were of the opinion that adherence among male patients was significantly less than that among female patients, though a consensus could not be reached about how well this related to social support systems within the community.

Chapter 5: Discussion

A study conducted in Kwa-Zulu Natal showed social support scores on the medical outcomes of those on HAART were moderate among the study participants (Ncama, McInerney, Bhengu, Corless, Windland, Nicholas, and Davis, 2008). The study, however, suggested that a supportive social network is essential for those living with HIV/AIDS.

The social support literature refers to major functions of support that serve to bolster health, such as control and mastery, self acceptance and esteem, and social interaction (Albrecht & Adelman, 1987; Uchino, 2004), and references social psychological theories on social exchange, social comparison, self esteem and personal control (Wills, 1982). However, the precise mechanisms of support that affect health outcomes and behaviours, especially adherence to medical regimens, have not been adequately conceptualised or empirically examined (DiMatteo & DiNicola, 1982; Uchino, 2004). Notable exceptions in the area of HIV include Gonzalez et al. (2004), who focused on the mediators of depression and positive states of mind, and others who proposed a stress and coping model of anti-retroviral adherence (Weaver, Llabre, Lechner, Penedo and Scheiderman, 2005).

A cognitive affective framework, is another model that stresses functional over structural aspects of social support, that is, it assumes that perceptions of received support are more important than the size or density of one's social network (Bartlett, 2002). This model presumes the effects of social support are not direct or buffering, but are mediated by cognitive and affective variables. Appraisal support, in the form of encouragement, feedback and affirming statements, as well as modelling from supportive others, is thought to increase one's self efficacy to adhere, which is related to anti-retroviral adherence (Gifford, 2000; Johnson, Dilworth and Taylor, 2003) in accordance with Bandura's (1997) social learning theory.

Emotional support, or listening, caring and empathic companionship, is seen as decreasing negative affect (Veiel & Baumann, 1992), perhaps by encouraging adaptive coping or increasing self esteem. Depressive symptomatology is one of the most consistent predictors of non-adherence (Chesney et al., 2000; Treisman, Angelino and

Hutton, 2001), perhaps because depressed patients lack the physical and mental energy and sustained motivational level to maintain high levels of adherence (Tucker, Orlando, Burnam, Sherbourne, Kung, and Gifford, 2004). They may be more prone to cognitive impairment or forgetfulness which can impede adherence.

Informational support, in the form of provision of facts, advice and guidance about HIV disease, ART regimens and adherence strategies, is seen as capable of bolstering ART knowledge and adherence (Eldred, Wu, Chaisson, and Moore, 1998). The knowledge that ART is effective and that poor adherence may promote viral resistance and treatment failure has been shown to affect patients' ability to adhere to their medications (Wagner, Remien and Carballo-Diequez, 2002). Less adherent patients in HIV clinical trials were less sure of the link between non adherence and the development of resistance, than other patients (Chesney et al., 2002), and many patients have reported inadequate knowledge as a main barrier (Roberts, 2000).

Spiritual support, in the form of encouraging spiritual coping, praying with an individual, or suggesting there is a sacred purpose or larger meaning in life, has been hypothesised to bolster adherence to treatment. This aspect of social support was not dealt with in our study and presents a prospective area for future studies, as no studies could be found with substantive results, in the literature. This type of support could potentially be incorporated into some ART programs in parts of the world that are strongly religious, to enhance adherence, if found to be significant.

Our study did not control for the presence of medication side effects and their effect on adherence. The participants were on different medication regimens and in addition, the varying complexity of the regimens was not controlled for. Further studies will be required which control for confounding factors such as these. Prospective and longitudinal observation of side effects and adherence following initiation of treatment may be necessary to disentangle the relationship between the presence of side effects and adherence to ART medication.

In addition to theory building, our findings have implications for intervention development and clinical practice. The findings suggest that the social support received from an affirming other, an information enhancing relationship and an empathic listener,

is associated with improved medication adherence. As a result, adherence may be improved through future efforts to improve individuals' access to social support, whether by encouraging them when safe and appropriate to confide in a partner or close friend, or by facilitating their relationships with their peers who are on similar medication regimens. Interventions designed to increase the social support available to individuals are needed to explore the feasibility and efficacy of manipulating support provided to enhance adherence.

In addition, our findings may suggest that enhancing social support may improve adherence. Bandura (1997), suggested that individual self efficacy is based on four sources of information, that is, one's own previous experiences, watching others perform a given behaviour, verbal persuasion and emotional persuasion. Any of these might be targeted to enhance self efficacy to adhere to treatment.

With respect to negative affect, our findings support a psychological assessment prior to initiation of therapy and during maintenance treatment so that strategies for treating depression and anxiety and minimising stress can be incorporated into the care plan before adherence is negatively impacted. Given the lingering stigma surrounding HIV/AIDS, even in high prevalence countries such as Namibia, social support may be especially important for persons on ART.

Health professionals who took part in the study showed a strong inclination towards the positive effects of social support on patients' adherence patterns. Further studies on a larger scale are required to validate these findings, with the prospect of incorporating advocating for increased social support among HIV patients and during community or national health campaigns.

Future research is needed to validate this preliminary study, perhaps on a larger and demographically different sample. Only with a sound theoretical study can the pervasive problem of medication adherence among individuals with chronic illnesses such as HIV/AIDS be understood and effective interventions then be devised to assist them

Chapter 6: Conclusion

Levels of adherence to HAART are reasonably high among both the female and male respondents in the study and this appears to follow the similarly high levels of social support among the respondents. This may point to a relationship between social support and adherence to HAART in this population and that a supportive social environment may be critical in the successful treatment of those living with HIV/AIDS. However further studies are required that incorporate larger numbers of respondents and that can show the precise types of social support that have a relationship with adherence to HAART, if any.

The researcher managed to determine the social network support network available to young adult females in the communities in central Namibia as being mainly from family, friends, church colleagues and neighbours and that most patients on anti-retroviral treatment have some form of social support and do not face the infection and its treatment in isolation. Patterns of adherence to retro-viral treatment were determined to be significantly high without much difference between men and women in the community.

If the results of this study can be replicated on a large scale, the results could be utilised to formulate community health campaigns that encourage social networking in other communities or nations suffering from the scourge of the HIV/AIDS pandemic.

Chapter 7: Bibliography

Albrecht, T.L., & Adelman, M.B. (1987). *Communicating Social Support*. Newbury Park, CA: Sage.

Amberbir, A., Woldemichael, K., Getachew, S., Girma, B., Deribe, K. (2008) Predictors of adherence to anti-retroviral therapy among HIV infected persons: A perspective study in Southwest Ethiopia, *BMC Public Health* 30 (8) 265

Andujar-Bello, I., Toro-Alfonso, J., Amico, R., Fisher, J.D. (2002) Social support and social networks: The challenge for adherence to HIV/AIDS antiviral treatment in a sample of patients in Puerto – Rica, *International Conference on AIDS 2002 July 7- 12*.

Bandura, A. (1997). Self efficacy: Towards a unifying theory of behavioural change. *Psychological Review*, (84): 191-215.

Bartlett, J.A. (2002). Addressing the challenges of adherence. *Journal of Acquired Immune Deficiency Syndromes*, 29(Suppl.1), S2-S10.

Collins, R, L (1994) Social support provision to HIV infected gay men. *Journal of Applied Social Psychology*, 24 (20): 1848-1869

Chesney M (2003). Adherence to HAART regimens, *AIDS patient care, STDs*; 17 (4): 169-177

Chesney, M. Et al. (2000). Self reported adherence to anti-retroviral medications among participants in HIV Clinical Trials: The AACTG Adherence Instruments. *AIDS CARE* 12 (3): 255-66

Christensen, L.B. (2007) *Experimental Methodology*, Tenth Edition. Pearson International Edition. Boston, MA: Allyn and Bacon

Cohen, S. & Syme, S.L. (1985). *Social Support and health*, Orlando, FL: Academic Press.

Collins, R. (1994). *Four Sociological Traditions*, Revised Edition. Cambridgebooks.

Denzin, N.K. & Lincoln, Y.S. (2000) *Introduction: The discipline and practice of qualitative research*. Thousand Oaks: Sage.

DiMatteo, M.R. & DiNicola, D.D. (1982). Achieving patient compliance: The psychology of the medical practitioner's role. New York: Pergamon Press.

Du Bois, S.N., Holland, C.M., McKirnan, D. (2008). What HIV positive MSM think is important to treatment adherence? A content analysis, *136th APHA Annual Meeting (October 25-29 2008)*

Eldred, L.J., Wu, A.N., Chaisson, R.E., Moore, R.D. (1998). Adherence to anti-retroviral and pneumocystis prophylaxis in HIV disease. *Journal of Acquired Immune Deficiency Syndromes and Human Virology*, 18, 117-125.

Gifford, A.L. (2000). Predictors of self reported adherence and plasma HIV concentrations in patients on multidrug anti-retroviral regimen. *Journal of Acquired Immune Deficiency Syndromes*, 23, 386-395.

Green, G (1993). Social support and HIV. *AIDS Care*, (5): 87-104

Green, J. (1989). Post test counselling. In J Green and A. McCreaner, (Eds) *Counselling in HIV Infection and AIDS*, (pp. 21-31). Cambridge, MA: Blackwell Scientific Publications

Gonzalez, J.S., Penedo, F.J., Llabre, M.M., Duran, R.E., Antoni, M.H. (2003). Social support, positive state of mind and HIV treatment adherence in men and women living with HIV/AIDS. www.cat.inist.fr

Hogg, R. (1998). Improved survival among HIV infected individuals following initiation of anti-retroviral therapy. *JAMA* 279 (6): 450-456

Hoffman, M. A. (1996). *Counselling clients with HIV disease: Assessment, intervention and prevention*, New York N.Y: Guilford Press

Hopkins, W.G. (2000) Quantitative Research Design. *Sportscience*, 4 (1): 16-18

Johnson, M.O., Dilworth, S.E., Taylor, J.M. (2003). Theory guided, empirically supported avenues for intervention on HIV medication non adherence: Findings from the Healthy Living Project. *AIDS Patient Care and STDs*, 17, 645-656.

Mermin J. (2008). Mortality in HIV infected Ugandan adults receiving ART and survival of their HIV uninfected children: A prospective cohort study. *Lancet* 2008, 371 (9614)

752-59

Ncama, B.P., McInerney, P.A., Bhengu, B.R., Corless, I.B., Wintland, D.J., Nicholas, P.K. (2008) Social Support and medication adherence in HIV disease in Kwa Zulu Natal, *International Journal of Nursing Studies* 45(12):1757-63

Patella F.J. (1998) Declining morbidity and mortality among patients with advanced HIV infections, *New England Journal of Medicine* 338 (13): 853- 860

Powell, R.A.; & Simple, H.M. (1996) Methodology Matter V: Focus Groups. *International Journal for Quality in Health Care* 8 (5): 499-509

Roberts, K.J. (2000). Barriers to and facilitators of HIV positive patients' adherence to anti-retroviral treatment regimens. *AIDS Patient Care and STDs* 14,155-168.

Ryan and Wagner (2003) Pill taking routinization: A critical factor to understanding episodic medication adherence, *AIDS Care* 15: 795-806

Roura M., Busza, J., Wringe, A., Mbata, D., Urassa, M., Zaba, B. (2009). Barriers to sustaining Anti-Retroviral Treatment in Kisesa, Tanzania: A follow up study to understand Attrition from the Anti-Retroviral Program. *AIDS Patient Care and STDs* 23 (3); 203-210

Seliger, H. W, & Shohamy, E (1989) *Second language Research Methods* Oxford: Oxford University Press. Pp94-96

Treisman, G.J. G.J., Angelino A.F., Hutton, H.E. (2001). Psychiatric issues in the management of patients with HIV infection. *JAMA*, 286, 2857-2864.

Tucker, J.S., Orlando, M., Burnam, M.A., Sherbourne, C.D., Kung, F.Y., Gifford, A.L. (2004). Psychosocial mediators of anti-retroviral non adherence in HIV positive adults with substance use and mental health problems. *Health Psychology*, 23, 363-370.

Uchino, B.N. (2004). Social support and physical health: Understanding the health consequences of relationships. New Haven, CT: Yale University Press.

UNAIDS (2008). UNAIDS Annual Report 2008: Towards Universal Access. http://data.unaids.org/pub/Report/2009/jc1736_2008_annual_report_en.pdf

Veiel, H.O. & Baumann, U. (1992). The meaning and measurement of social support.

New York: Hemisphere Publication Services.

Vyavaharkar M, et al. (2007). Social Support, coping and medication adherence among HIV positive women with depression living in rural areas of South Eastern USA, *AIDS Patient Care and STDs*, 21 (9): 667-680 doi: 10, 1089/apc. 2006. 0131

Wagner, G.J., Remien, R.H. (2002). Correlates of adherence to combination anti-retroviral therapy among members of HIV positive mixed status couples. *AIDS Care*, 14, 105-109.

Weaver, K. E., Llabre, M., Lechner, S., Penedo, F.J., Scheiderman, N. (2005). A stress and coping model of medication adherence and viral load in HIV positive men and women on HAART. *Health Psychology*, 24, 385-392.

Willis, T.A. (1982). *Basic Processes in Helping relationships*. New York: Academic Press.

APPENDIX**ANNEX 1: Social support questionnaire****RESPONSES**

- 1 Not at all**
- 2 Slightly**
- 3 Somewhat**
- 4 A lot**
- 5 A Great Degree**

Do you feel that your family or friends:

- 1. Do not let you dwell on upsetting thoughts? **1 2 3 4 5**
- 2. Give you advice on how to handle your problems? **1 2 3 4 5**
- 3. Keep tabs on you? **1 2 3 4 5**
- 4. Tell you to feel proud of yourself? **1 2 3 4 5**
- 5. Make sure you take care of yourself? **1 2 3 4 5**
- 6. Make sure you take your medications? **1 2 3 4 5**
- 7. Let you know you have their support? **1 2 3 4 5**
- 8. Make it easy for you to talk about anything you think is important about your health? **1 2 3 4 5**

9. Are available to talk anytime? 1 2 3 4 5
10. Show interest in how your health is doing? 1 2 3 4 5
11. Make sure you get the things you need? 1 2 3 4 5
12. Are available when you need help? 1 2 3 4 5

ANNEX 2: Focus Group Discussion Items

1. What do you understand by social support?
2. Who constitutes social support?
3. Do you think there is need to enquire about patients' social support network?
4. Do you find that patients relate to the concept of social support?
5. Do you find that there is a relationship between social support and adherence to HIV treatment among your patients?
6. Have you observed any change in adherence patterns in those whose social support system has changed?
7. Do you feel there is any need for social support in the treatment of HIV?

ANNEX 3: Adherence Assessment Questionnaire

If you do not wish to answer a question, please draw a line through it.

Thank you for helping in this important study.

Question 1: Over the past four days if you only took a portion of a dose on one or more of these days, please report the doses as missed.

How many doses did you miss?

Yesterdaydoses

Two days agodoses

Three days agodoses

Four days agodoses

Question 2: During the past four days on how many days have you missed taking all your doses?

None

One day

Two days

Three days

Four days

Question 3: Most anti HIV medications need to be taken on a schedule such as “2 times per day” or “3 times per day” or “every 8 hours”. How closely did you follow your specific schedule over the past four days?

Never

Some of the time

About half of the time

Most of the time

All of the time

Question 4: Some people find that they forget to take their pills on weekend days. Did you miss any of your HIV medication last Saturday or Sunday?

Yes

No

Question 5: When was the last time you missed any of your medication?

Within the past week

1-2 weeks ago

2-4 weeks ago

1-3 months ago

More than three months ago

Never skip medications

Thank you very much for completing this questionnaire.

ANNEX 4: Request to conduct research

To: The Regional Medical Director

Otjozondjupa Regional Office

Otjiwarongo

1st August 2010

Re: Request for permission to conduct a research at Otjiwarongo Hospital and Otavi Health Centre

Dear Sir

My name is Dr Julie Ambayi and I am studying for an MPhil HIV/AIDS with the University of Stellenbosch, South Africa. I need to carry out a research as part of my thesis entitled “The influence of adequate social support on adherence to HIV treatment on young adult females in a community in Central Namibia”.

I would like to request for access to 30 male and 52 female HIV patients on HAART to take part in interviews and questionnaires respectively. They will undertake the interviews and questionnaires individually under the guidance of willing local community counsellors. In addition, I would like to request that I be allowed to access their health record cards to ascertain their level of adherence to HIV treatment.

I would also like to request your permission to engage doctors, pharmacists and nurses involved in running the ARV clinics at the selected health facilities in order to gain further insight for my research.

Please be assured that all information given to me will be kept confidential and will be used only for the purposes of the research.

Thank you in advance for allowing this research to be conducted within your region.

Yours Sincerely

Dr Julie Ambayi