

CHAPTER 5 - DISCUSSION

5.1 Measured adherence

The study found that a high proportion of HIV infected individuals who were receiving antiretroviral therapy in the study site had good adherence to their ART, based on self-report method. The study result, 92.4% of the study population having $\geq 95\%$ adherence compared favourably with results from similar settings in Senegal^[62] and Cape Town area of South Africa^[36], where self-report and pill count was used respectively. The positive and significant association found between reported adherence level and the corresponding plasma viral load makes this study comparable to many other studies which have found an inverse relationship between adherence and virologic outcome. [26, 27, 28, 29, 30] A sensitivity of 97% means that the self-report method of adherence assessment was able to detect up to 97% of those who were ‘truly adherent’ (using virologic suppression as a marker). In other words, 97% of those who were truly adherent to ARVs reported higher adherence. Therefore, a participant who reported higher adherence had a probability of 0.97 of having undetectable viral load. The positive predictive value (PPV) of 68% implies that a participant had a chance of 0.68 of reporting higher adherence given an undetectable viral load.

This study further confirms that self-report as a method of assessing medication adherence is a strong and independent predictor of virologic outcome. It is a relatively cheaper and an interactive method, providing the opportunity to find out why and sometimes how doses were missed. Self-report in this study used an instrument that was considered to be non-judgmental and was administered in a strictly confidential manner

by someone not involved in the day-to-day patient's care in the study clinic, thereby reducing bias in the responses.

The study sought to compare the result from self-reported adherence with that of pill counts. Data from pill counts were not included in the analysis because only 6.5% of the participants returned their leftover pills and the returned pills were erratic. The few returned pills were at variance with the expected number. In nearly all the cases of pills returned, it appeared that participants over-administered their antiretroviral medications, or put in another way, could not account for many of the missing pills. This raises some questions around whether participants do share their pills with some other persons presumably having similar infection and requiring antiretroviral medications. As more households in South Africa are affected by HIV/AIDS, the number of HIV-infected persons requiring treatment has increased.^[48] Access to antiretroviral therapy has been rather limited. Given the need, patient numbers in the public sector are significantly lower than what the demand actually requires.^[6] Though this concern requires further investigations, in a way it suggests sharing of pills with those who could not access treatment.

The characteristics of the sample showed that the majority of the participants were predominantly in their middle age (mean age = 37.8 years and median age = 37 years), which falls within the range 15-49 years of age worst hit by the HIV pandemic in South Africa.^[63] Many participants had attained at least a high school level of education, indicating a high level of literacy in the study population. A wide range of cd4 cell count (2-680) with a mean value of 195 indicates that most of the participants fall within the

biological criteria for receiving ART ^[8] The duration of treatment ranged from 3 to 52 months, indicating that some of the participants had been on ART even before the commencement of the government-provided treatment in first quarter of 2004. The duration of treatment was found to be associated with reported adherence. The higher adherence category of participants has been on treatment longer than the lower adherent ones. This may be due to the fact that ability to understand prescription instructions which promotes adherence increased with time on antiretroviral therapy. ^[46] Perhaps, the longer the time on therapy the better one learns and understand the concepts involved in the treatment. But, in analysis this did not reflect on the effects of knowledge of HIV treatment when controlling for duration of treatment. On the other hand, duration of treatment was not associated with virologic outcome.

5.2 Factors affecting adherence

5.2.1 Barriers to adherence

All study participants were prescribed a triple therapy containing two nucleosidic reverse transcriptase inhibitors (NRTI) e.g. didanosine, Zidovudine, Stavudine, or lamivudine with a protease inhibitor (PI) e.g. lopinavir/ritonavir or a non-nucleosidic reverse transcriptase inhibitor (NNRTI) e.g. efavirenz or nevirapine. Triple therapy of this type has been reported to significantly improve the prognosis of chronic infection caused by HIV. ^[64] The result from this study shows that participants receiving different treatment regimens were different in reporting adherence to antiretroviral medications. This observation could possibly result from the differences in certain characteristics of each medication as perceived by the participants. For example, in the study sample drug side

effects resulted in missing doses (4.9%) and sometimes stopping medications (3.8%). Also taking drugs that require special instructions e.g. taking on empty stomach or waiting for sometime in between different drug administrations was also found to influence adherence report. More so, there was a positive correlation between prescribed regimens and the report of having experienced drug side effects and taking medications that require dietary instructions, respectively. Among the prescribed ARVs didanosine, efavirenz and kaletra are known for their dietary instructions. Didanosine requires to be taken on empty stomach, not within 1 hour of indinavir (not found in any prescriptions) or 2 hours of ritonavir; efavirenz is to be taken on empty stomach before going to sleep and kaletra is to be taken with food. Though these instructions are by no means simple to understand, participants' report of taking such medications did not really correspond with their regimens. Up to 60% of the study sample who was taking medications with dietary/special instructions was not aware of such instructions. At this point, it is difficult to say whether they ever received such instructions or they did but forgot. But, as observed in the clinic, patients were seen to be instructed on their medications when they come to the clinic. However, the consequences of not knowing which medications require special caution may impact negatively on the administration of medications. The two consequences of drug side effects as examined: missing doses and stopping medications did not result from prescribed regimens. This may be because most of the participants (69.2%) who reported having experienced drug side effects also reported to have had no consequences of such side effects. In other words, they had side effects minor enough not to cause panic. There is practically none of the prescribed antiretrovirals that is devoid of side effects ranging from nausea, vomiting, diarrhoea, abdominal pain, headaches, skin rash, fever, fatigue (e.g. didanosine, stavudine, lamivudine, zidovudine, nevirapine and

lopinavir/ritonavir (as kaletra)) to vivid dreams, anxiety and dizziness (efavirenz). It is also important to note that the two regimens (stavudine + lamivudine + lopinavir/ritonavir and stavudine + didanosine + lopinavir/ritonavir) were never received by participants who stopped taking medications as a result of drug side effects. The majority of the participants who reported the consequences of drug side effects were receiving regimens containing efavirenz and nevirapine respectively. There was a documented case of missing several doses in one week due to induced psychosis of efavirenz. Side effects from ARVs have been widely reported. In a study of 505 patients receiving antiretrovirals in which 35% (177/505) discontinued treatment after missing several doses, two-thirds did so because of nausea and vomiting from ritonavir^[2].

Of the reasons reported for missing at least a dose only forgetting to take medications was associated with lower adherence. In several settings, forgetting medication doses is often encountered in poor adherence, and this is not limited to any particular geographic or ethnic group. For example, in a study of Chinese patients on antiretroviral therapy, forgetting to take medication doses as prescribed was among other factors associated with lower adherence^[65]. Other reasons such as difficulty of taking medications in public, difficulty of swallowing pills, lack of money to make follow-up visits did not account for reported lower adherence. However, these factors have been reported to be significantly associated with poor adherence to ARVs. Ferguson et al found that poor adherence to antiretrovirals was inherent among individuals who did not want to be seen taking medications in public places, and were uncomfortable for others to know that the medicines were taken for HIV/AIDS. ^[19]

Missing clinic appointments was associated with reporting lower adherence in the study population. The reasons reported (forgetfulness, lack of money for transport to clinic and other such as tight routines) for missing such appointments were not associated with reported adherence. The non-existence of such associations may speak to the fact that economic variables such as earning money did not also predict adherence in this population.

In this study, no significant associations were evident between reported adherence and socio-demographic characteristics studied. Some other studies, though few have reported associations between adherence to ARVs and age, ^[35, 36] as well as gender. ^[66]

5.2.2 HIV treatment knowledge and adherence

In this study some of the HIV-related knowledge correlated with adherence. Patients who do not have adequate knowledge relating to HIV treatment were less likely to report a high level of adherence to antiretroviral therapy. As pointed out in this study, these were participants who reported to have never heard of treatment adherence, viral load and cd4 cell counts. Also, there was a higher odd of reporting lower adherence when participants incorrectly say ‘it is true that drugs cure HIV’; when participants did not know that antiretroviral treatment cannot be stopped when one feels better in the course of treatment, and fails to know that HIV treatment is a lifelong commitment.

Having knowledge of opportunistic infection did not predict higher adherence. This may be that infections outside of HIV which does not require antiretroviral treatment may not attract much interest of the patient towards learning more. Studies have shown that HIV–

related knowledge of participants is a precondition for adherence to antiretroviral therapy^[9].

5.2.3 Patient-provider relationship

Overall, a sense of good relationship between the participants and their providers did reflect in adherence report. Provider speaking the preferred language of communication of participants, not being too busy to listen to a patient and rendering assistance when necessary were all the findings of the study that aided participants who reported higher adherence relative to those that reported lower adherence. The interaction of factors of language has been known to enhance adherence in that a common language of understanding improves quality of medical regimen explanation, offers patients the opportunity to ask questions, and creates the forum for providers to elicit patient feedback. In some situations where an interpreter was used, some patients felt uncomfortable for things they would have to tell the doctor and that other people don't have to know. Some patients have trouble understanding the written instructions for their medications because such instructions were in a different language which was not his preference. ^[38]

5.2.4 Social Support for HIV infected patients

Disclosure of HIV status to a partner, a family member, or a co-worker was not significantly associated with reported adherence to antiretroviral treatment. But such relationship became significant when participants who reported to have disclosed to both partner and a family member were compared with those who disclosed to partner only. While the study did not explore further on the reason for this difference, one may suggest

that disclosure to more than one person at the same time offers patients an alternative source of receiving help from at least one of the persons to whom he has disclosed. The result also demonstrated that family support would increase the likelihood of patients maintaining higher levels of adherence. This agrees with a study which noted that secretive HIV infected persons had below optimal adherence compared to those who disclosed to family members.^[34] In that study, patients were reminded of medication dosing time and other supportive measures that ensured an optimal adherence to antiretroviral therapy. A recent study in South Africa has shown that the bulk (82% i.e. 306/374) of the household caregiving is provided by immediate family members (e.g. mother, son, daughter, nephew, niece, aunt, grandmother, etc), and that formal caregivers servers (e.g. home-based care programmes, hospital, etc) serve more as a complement to the household caregivers than a substitute, because the latter spend more time per week assisting the sick person than the formal.^[48] All other supports including those from partner, co-worker and AIDS support organisations did not seem to explain the observed difference between the higher and lower adherence categories of the participants. Also, the study results showed that all the participants benefited equally from information on HIV treatment provided by the facility or other sources irrespective of the method used in patient education.

5.2.5. Limitations of the Study

This study like any other cross-sectional studies cannot establish causality, and is therefore limited to providing an association between adherence to antiretroviral therapy of the participants and the factors explored.

The study result wholly depended on the extent of truth in the participants' response and the accuracy of the laboratory methods used to determine the plasma viral load of the participants. Studies have reported that the self-report method failed to detect 20-35% of non-adherent individuals. However, this drawback was minimized by the significant association between self-reported levels of adherence and viral load, as found by some other studies^[18, 22, 67].

A further limitation of this study was that it set out to utilize a second method of adherence measurement viz pill counts, but failed, due to insufficient data.

The scope of this study did not allow for exploring the details of the reasons reported to be responsible for missing antiretroviral doses. For example, it will be nice to know why while patients forget missing doses; could it be lack of use of reminder systems among other possible reasons. Furthermore, certain factors that may impact on adherence to antiretroviral treatment were not included in this study. Harzke et al cite Chesney M study in which factors including psychological distress (e.g. depression or depressed mood) substance use, and co morbidity and other medications prescribed for the participants were associated with adherence.^[68]