An Assessment of the Level of Knowledge of HIV-Infected Patients about Highly Active Antiretroviral Therapy and Waiting Times and Their Influence on Antiretroviral Therapy Adherence at a Primary Healthcare Centre of South Africa

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Abstract: Objectives: The study assessed if the level of knowledge of HIV-infected about HAART and waiting-times in the PHC (primary healthcare) clinic have an influence on antiretroviral adherence. Methods: A descriptive-cross-sectional study was conducted in South Africa. Data collected uses a standardized-questionnaire and face-to-face-exit interviews. Pill-count technique was performed and a value of \( \geq 95\% \) acceptable. Data were analysed using SPSS. Univariate-factors associated with poor-adherence to knowledge about HAART and waiting times were assessed using ANOVA and \( p \leq 0.05 \) considered statistically significant. Key findings: Of 86 enrolled, 63(73.3\%) were females and 23(26.7\%) males, with mean-age (± SD) of 35.6(±9.6) years and on HAART for 35.5(± 31.8) months ranging from 1-137. Of these, 27(31.40\%) and 25(29.07\%) were on WHO stages 2 and 3 respectively. Adherence-rates computed from 32 patients, 23(71.9\%) revealed poor adherence-rates. The level of knowledge about HAART in terms of names of tablets, correct-dose, frequency, adverse-effects had no influence on ARV-adherence \(( p \geq 0.05 )\). Of 23 non-compliant, 10 (40\%) gave the reason of drugs-unavailability, 7(30\%) adverse-effects, 5(20\%) drugs’ complexity, and 1(10\%) too busy to take them. Waiting areas associated with poor ARV-adherence were reception \(( p = 0.028 )\), doctors \(( p = 0.027 )\), while nurse’s station \(( p = 0.29 )\) and pharmacy \(( p = 0.43 )\) revealed acceptable ARV-adherence.

Key words: HIV-infected patients, highly active antiretroviral drugs, adherence, primary health care.

1. Introduction

Medical knowledge around HIV/AIDS has increased significantly over the years and therefore good progress has been made in the treatment of HIV (human immune-deficiency virus) making HIV/AIDS a manageable life-threatening chronic condition using ART (antiretroviral therapy). The treatment of the disease extends beyond knowledge development among the infected with HIV. According to Sanjobo et al. [1], there has to be a partnership between the patients and healthcare providers, with the HIV-infected persons assuming the major responsibility of self-care that will result in adherence and a good clinical outcome. For this reason, in 2005, Kenreigh and Wagner [2] in their literature review, described medication adherence as the extent to which the individual’s behaviour corresponds to the prescribed medical advice of the health care provider. Their review provides an overview on adherence to ARV (antiretroviral) therapy among people infected with HIV by describing the pattern of adherence to treatment. It also includes the consequences of non-adherence to treatment, and the barriers and facilitators of ART adherence.
An Assessment of the Level of Knowledge of HIV-Infected Patients about Highly Active Antiretroviral Therapy and Waiting Times and Their Influence on Antiretroviral Therapy Adherence at A Primary Healthcare Centre of South Africa

According to WHO [3], a patient’s knowledge and beliefs about the disease and treatment can influence adherence. For instance, as investigated and reported in 2013 by Boateng et al. [4], HIV positive women in Ghana with inadequate knowledge were more likely to default ART. Previous studies among HIV patients in treatment facilities in some south-western states of Nigeria have demonstrated good knowledge and positive attitude towards ART [5-6].

Factors potentially associated with non-adherence that patients should be aware of include characteristics related to the antiretroviral regimen (e.g., complexity of therapy, pill burden, food requirements, adverse reactions), a patient’s perception of the treatment, the interference of ART in a patient’s daily life, symptoms of AIDS and level of education, among others [7-10].

However, there are few published epidemiologic studies that investigated the difficulties reported by patients initiating ARV therapy, and to my knowledge, none have been done in Mthatha area especially on patients knowledge about HAART and waiting times in the different areas of the clinic. According to Veinot and others [11] and Perez et al. [12], patients may feel emotionally unprepared for treatment due to a lack of understanding and/or belief in ART, leading to increased difficulties with everyday treatment management. Therefore, it is crucial to identifying and understanding the difficulties that arise when patients begin to take ARV treatment for this, and will help prevent further episodes of non-adherence and potentially increase long-term adherence with sustainable clinical benefits and improvement in patient quality of life.

The role of the important benefits that ART has brought to HIV-infected patients include: increased survival rates, better quality of life, significant reduction in the incidence of opportunistic infections and lower costs related to ambulatory care and hospitalization [13-15].

Providers’ characteristics and clinical settings that affect patients’ adherence; overall patients’ satisfaction with the level of care has been found to correlate with increased adherence as reported by Altice and others [16]. As stated by Simon and colleagues in 2006 [17] in a metaanalytic review of randomized controlled trials as also investigated by Hawkins and Murphy, the aspects of clinical setting that could positively influence adherence are a friendly and supportive environment, non-judgmental health care providers, convenient appointment schedule and confidentiality in service provision [18].

However other researchers argue that long waiting times, poor staff attitudes, intermittent drug availability and other procedural barriers decrease patients’ adherence to ART and also result in poor clinic attendance [19-20]. Continuous access to health care services and medications by patients also influences treatment adherence [19]. The patient-provider relationship as emphasized by Altice et al. [16] and Gauchet et al. in their studies, is another factor that has been well researched in terms of adherence to ART [20]. The same authors continue to state that a good patient-provider relationship results in patient’s trust and confidence in the provider which in turn influences good adherence [16, 20].

In their literature review, several researchers reported several domains used in different settings to assess patients’ satisfaction or dissatisfaction with clinical services, including ART provision and waiting hours. Such domains include state of infrastructure, attitude and cadre of staff, long waiting times or lack of timeliness of services and clinical communication [5, 21-24].

Other domains as reported in Tanzania by Kagashe and Rwebangila in 2011 [25] in Uganda by Nabbuye-Sekandi and others, [26] and in Nigeria by Olowookere et al. [5] are clients’ perceived technical competence of service provider, accessibility, convenience, incurred cost during each visit and availability of services and prescribed drugs.

Evidence abounds on how these domains have influenced patients’ satisfaction as a measure of
perceived quality of services which they received. For example, Wouters et al. [23] in their investigations on long waiting times at ART sites in South Africa, found out that it was the most important predictor of discontent among HIV patients. Other researchers also reported similar findings where between 43 and 82.5% of patients’ were dissatisfied with ART services because of long waiting times or lack of timeliness of services [25].

In Ethiopia, according to Assefa and Enquselassie in 2011, 84.8% of ART patients were reportedly satisfied with the information exchange process during their encounter with clinicians while the mean score of clinical communication they received was rated as 77.1% [24]. Other researchers in India reported lower mean satisfaction score of 58.8% on information, access and guidance domain [27]. In this same study, other domains which were assessed and scored as user’s satisfaction level and perspective about quality of ART services were interaction with service providers (92.96%), physical facilities (70.85%), and confidentiality, discrimination and grievance redressal (70.31%).

Poor quality of care is one of the most common reasons why clients would not choose to use available health services. For example, Iyaniwura and Yussuf in 2009 found out in their investigation that perceived quality of service was the most important factor which influenced the choice of a facility to receive care [28]. Similarly, a perceived lack of quality of care was associated with a late visit to a health care provider in Kenya as revealed by Van Ejik et al. [29]. From the foregoing, the importance of providing quality ART services which would yield a high general satisfaction level by users and for which they will find most domains of service provision satisfactory cannot be underscored. This is imperative not only to increase the role of public sector in HIV care and treatment and hence the success of ART scaling up activities, but also to consolidate the gains of other key components of HIV and AIDS prevention and control programmes. In view of this, this study was conducted in this ART clinic so that challenging findings could guide us suggest measures which could be used by service providers, health planners and policy makers to improve the overall quality of ART services.

The study objectives were to assess if the level of knowledge of HIV-infected patients about HAART and their waiting times at the clinic have an influence on ARV therapy adherence in a primary healthcare center in Mthatha, Eastern Cape, and South Africa.

It is hoped that findings from this study will help policy makers and those in charge of new HIV programmes and models in developing policies that will assist them to know whether HIV-infected have good knowledge and positive attitude towards the ART, whether it is lacking or not, which would lead to adherence being sub-optimal. Furthermore, emphasis on good adherence should to be emphasized during adherence sessions. This will help to form strong association between healthcare providers to maintain and strengthen counseling, education, training and information about adherence with a view to overcome the potential barriers of poor adherence, given that non-adherence leading to the development of ARV-resistant HIV is a public health concern.

Furthermore, findings from this study will show whether providers’ characteristics and clinical settings affect patients’ ARV therapy adherence. Long waiting times, intermittent drug availability and other procedural barriers decrease patients’ adherence to ARV and also result in poor clinic attendance and outcome.

2. Materials and Methods

2.1 Context of the Study

This study is a set in Eastern Cape Province, specifically KSD subdistrict that has 4 PHCs. The clinic serves a population of ± 40, 871 people in and around Mthatha city. In this clinic the staff is composed of mainly nurses, one doctor and one part-time pharmacist at that time. As well known Eastern Cape
Province forms part of the nine provinces in South Africa. This province is the most populated, with a lot of unemployed people, poor health infrastructure, staff shortages of all professionals and with a high prevalence of HIV epidemic. This clinic was selected for the study because it is one of the best that was accredited to offer ART services. At the time of the study, they were 2,500 that had been enrolled on ART.

2.2 Design

This was a descriptive, cross-sectional study design conducted in a primary healthcare center in a public sector, that was accredited for ARV roll-out and caring of HIV-infected patients in South Africa. The design was used to assess if HIV-infected knowledge on HAART has an influence on adherence and furthermore if their waiting times in different areas at the clinic could also influence ARV adherence.

2.3 Data Collection and Instrument

Data were collected using a standardized-questionnaire and face-to-face-exit interviews using a convenient sampling method from 86 HIV-infected of whom, 63 (73.3%) were females and 23 (26.7%) males, with mean age (± SD) of 35.6 (± 9.6) years. Prior to data collection the voluntary nature of the study was made clear to the patients plus the purpose of the study was explained to them and a written consent of all participants was obtained. The study population enrolled in the study comprised adult patients of 18 years and above and had been on HAART for 35.5 (± 31.8) months ranging from 1-137 months prior to the study. Of these, 27 (31.40%) and 25 (29.07%) were on WHO stages 2 and 3 respectively.

Pill-count technique was also performed to calculate adherence rates and a value of ≥ 95% acceptable as adherent. At the time of the study, the clinic had recruited 2,500 patients for HAART. Ethical clearance was obtained from the Walter Sisulu University, Faculty of Health Sciences, Scientific and Research Innovation and Ethics Committees. Ethical Clearance issued was 015/012.

Collected data on the questionnaire was properly secured by storing the questionnaires in a locked cabinet, without any names of participants on the questionnaires. Patients were also informed of their rights to withdraw from the study at anytime and also explained that if they withdrew from the study it would not have any effect on them and the care they are receiving from the clinic.

The instrument had questions on demographic variables such age, gender, marital, Salary earned educational and employment status that were obtained from the patients, as well as information on knowledge about HAART and their waiting times in the different areas of the clinic.

2.4 Data Analysis

Data were analysed using a Statistical Package for Social Sciences (SPSS) 22 software. Descriptive statistics consisting of summary statistics (i.e. mean, range) for numerical data and frequencies for categorical data were used. Univariate-factors associated with poor-adherence to knowledge about HAART in terms of names of tablets, correct dose, frequency, adverse effects and waiting times in different areas like reception, nurses, doctors, laboratory and pharmacy were assessed using ANOVA and \( p \leq 0.05 \) is considered statistically significant.

2.5 Ethical Considerations

Ethical clearance was granted by the Walter Sisulu University, Faculty of Health Sciences Research Innovation and Scientific and Research Ethics Committees (Ethics Number: 015/012). Thereafter, permission was granted by the Eastern Cape Province Department of Health, then KSD district manager, then the clinic manager. Because the researchers were collecting data from sensitive patients, they had to be protected in terms of their dignity and rights. They were told that the information collected was kept confidential. The purpose of the study was well
explained to the participants through the patient information sheet. Voluntary participation was encouraged and was told they could withdraw from the study at any time if they were not comfortable. After that they were given a written consent to sign with all the details of the study and were told this was optional. The researchers also ensured the participants that after data collection all questionnaires were stored on a locked place and electronic data were saved in a password-protected device to which only the principal investigator had access. No names of participants and hospital were disclosed.

3. Results

A total of 86 HIV-infected enrolled in the study, of which 63 (73.3%) were females and 23 (26.7%) males, with mean age (± SD) of 35.6 (± 9.6) years and had been on HAART for 35.5 (± 31.8) months ranging from 1-137 months. Adherence-rate computed from 32 patients revealed 23 (71.9%) having poor adherence-rate. 

Socio-demographics

Gender distribution (n = 86)

Of the 86 recruited patients, of these 63 (73.3%) were females and 23 (26.7%) males with mean age (± SD) of 35.6 (± 9.6) years and were enrolled on HAART for 35.5 (± 31.8) months. As seen in Table 1, of the 32 (37.2%) patients that were computed, 25 (29.1%) were females and 18 (20.9%) males. Of these 7 (77.8%) females were reported adherent as opposed to 2 (22.2%) males adherent. There was no univariate association between age of patients and adherence rate ($p = 0.56$).

Age in Years (Patients)

The age range of patients interviewed was from 34 to ≥ 45 years old. This is the key age group of adults that represented the majority of patients. Of those below 34 years 44.4% were adherent, while 39.1% were not adherent to ARV treatment. This shows that there are higher HIV infection rates among young and working class women especially those aged between 20 and 49 years compared to young men. There was no univariate association between age of the patients and adherence rate for $p = 0.56$.

<table>
<thead>
<tr>
<th>Demographic of Interest</th>
<th>Acceptable adherence rate ≥ 95% N%</th>
<th>Poor adherence rate ≤ 95% N%</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td></td>
<td></td>
<td>0.56</td>
</tr>
<tr>
<td>34</td>
<td>4 (44.4)</td>
<td>9 (39.1)</td>
<td></td>
</tr>
<tr>
<td>35-44</td>
<td>3 (33.3)</td>
<td>8 (34.8)</td>
<td></td>
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<tr>
<td>≥ 45</td>
<td>(22.2)</td>
<td>6 (26.1)</td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td></td>
<td></td>
<td>0.66</td>
</tr>
<tr>
<td>Female</td>
<td>7 (77.8)</td>
<td>18 (78.3)</td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>2 (22.2)</td>
<td>16 (21.7)</td>
<td></td>
</tr>
<tr>
<td>Marital Status</td>
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<td>0.68</td>
</tr>
<tr>
<td>Married</td>
<td>3 (33.3)</td>
<td>5 (21.7)</td>
<td></td>
</tr>
<tr>
<td>Single</td>
<td>6 (16.7)</td>
<td>15 (65.2)</td>
<td></td>
</tr>
<tr>
<td>Divorced</td>
<td>0 (33.3)</td>
<td>1 (4.3)</td>
<td></td>
</tr>
<tr>
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<td>3 (8.7)</td>
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</tr>
<tr>
<td>Educational Level</td>
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<td></td>
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</tr>
<tr>
<td>Primary</td>
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<td>4 (17.4)</td>
<td></td>
</tr>
<tr>
<td>Secondary</td>
<td>7 (87.5)</td>
<td>18 (78.3)</td>
<td></td>
</tr>
<tr>
<td>Tertiary</td>
<td>1 (12.5)</td>
<td>1 (4.3)</td>
<td></td>
</tr>
</tbody>
</table>
**Marital Status**

As demonstrated in Table 1, the majority of respondents 21 (24.4%) were singles, while 8 (9.30%) were married. Of the singles, 66.7% were adherent as compared to 65.2% that were non-adherent. Whereas among the married ones 33.3% were adherent, 21.7% were non-adherent. There was no univariate association between marital status of the patients and adherence rate for $p = 0.66$.

**Educational Level**

As depicted in the table, all higher number of respondents 25 (29.86%) had secondary level of education. Of these, 7 (87.5%) had acceptable adherence rate, while 4 (17.4%) had poor adherence rate. There was no univariate association between educational level and adherence rate for $p = 0.36$.

**Employment Status**

Table 1 shows that about 21 (24.4%), of all patients that were interviewed showed that they were unemployed while 10 (11.63%) were employed. Of the unemployed patients 6 (66.7%) were adherent while 15 (68.2%) were non-adherent. Those that were employed 5 (5.81%) earned a salary of R 2,000-4,000 per month. Findings from this study showed that there was no association between employment status and adherence rate with a $p = 0.63$.

**Salary Earned**

Of the patients that were interviewed, the majority earned between R 2,000-4,000 per month with all 4 (57.1%) that earned less than R 2000 being non-adherent and only 1 (33.3%) who earned R 4,000 having acceptable adherence rate. There was a univariate association between the amount of money earned per month and adherence rate giving a $p$ value of 0.04.

**Adherence Level**

Eighty-six HIV-infected patients were recruited for this study, of these 63 (73.3%) were females and 23 (26.7%) males with mean age (± SD) of 35.6 (± 9.6) years and were enrolled on HAART for 35.5 (± 31.8) months. Of the 32 patients that were computed, 25 (29.1%) were females and 18 (20.9%) males. Of these 7 (77.8%) were reported adherent as opposed to 2 (22.2%) males adherent.

**Time on ART**

The respondents had been enrolled on HAART for 35.5 (± 31.8) months ranging from 1–137 months with mean age (± SD) of 35.6 (± 9.6) years. The majority of patients 14 (16.3%) had been on ART for a period of 12–36 months and of these 3 (33.3%) were adherent to their treatment while 11 (47.8%) were not. There was no univariate association between time on ART and adherence rate for $p = 0.76$ which was none significant.

**WHO Staging**

The majority of the patients 14 (16.3%) were classified in the HIV stage 3 based on WHO staging. All 14 (63.6%) patients in WHO stage 3 were none complaint. There was an association between WHO-staging 2 and 3 and adherent rate that was statistically significant ($\chi^2 = 12.09, p = 0.007$).

**Level of Knowledge on HAART**

The level of knowledge about HAART was that of 86 participants that responded in terms of: names of tablets, correct dose, when to take their tablets; and knowing their adverse effects had no influence on ARV adherence rate ($p \geq 0.05$). Of the 23 patients that were non-compliant: 10 (40%) gave the reason that drugs were not available, 7 (30%) complained of adverse effects, 5 (20%) said drugs were too many and 1 (10%) said was too busy to take the tablets.

**The Waiting Times in Different Areas of the Clinic**

The average time spent in each area was that: the mean waiting time (minutes) at reception was 55.9 ± 46.9 ranging from 2-210, Nurses station: 44.8 ± 39.4 ranging from 2-180, to see a doctor: 84 ± 90.6 ranging from 3-300, Laboratory: 83.3 ± 83 ranging from 30-180; and to collect drugs from the pharmacy: 30.1 ± 25.6 ranging from 2-120 minutes.

The waiting areas associated with poor ARV adherence were: at reception ($p = 0.03$), doctors with ($p = 0.03$), while waiting areas at nurse’s station ($p = 0.29$) and pharmacy ($p = 0.43$) were not associated.
with poor ARV adherence.

4. Discussion

The study evaluated if the level of knowledge of HIV-infected patients about HAART and their waiting times have an influence on antiretroviral therapy adherence in a primary healthcare center. They was no significant difference observed between the patients according to age, gender, educational level, employment status with adherence rate ($p > 0.05$) as observed in Table 1.

Nevertheless there was a univariate association between the amount of money patients earned per month and adherence rate giving a $p$ value of 0.043 that is statistically significant. So this could be attributed to low level of education coupled with unemployment status and unaffordability of transport money to come to the clinics for their medications.

Findings from the socio-demographic characteristics revealed that the average age of respondents in this study was 35.6 ($\pm$ 9.6) years. This coincided with the age in the study by Kasumu and Balogum in 2014 in South West Nigeria [30]. The same results were obtained by Potchoo et al. [31] that when it came to gender, it was observed that women were more than the men. Also in other African studies done by the same authors, results among adult HIV patients in clinic settings in Togo also had higher proportions of female respondents and similar average age were reported.

The findings from this study are also supported by previous studies in South Africa carried out by El-Khatib et al., which revealed that in South Africa, just over 51% (27.08 million) of the population were females and the ratio of new female infections to male for those aged 15-49 was 1.5 by 2013 [32]. These findings were also confirmed by Statistics South Africa in 2013 [33].

Results from this study revealed that 7 (30%) of the patients complained of adverse effects and this could lead to ART defaulting. According to WHO, a patient’s knowledge and beliefs about the disease and treatment can influence adherence [3]. For instance, as investigated by Boateng and colleagues in 2014, HIV positive women in Ghana with inadequate knowledge were more likely to default ART [4]. Previous studies among HIV patients in treatment facilities in some south-western states of Nigeria have demonstrated good knowledge and positive attitude towards ART [34-36].

A study done by Selente et al. [37] identified side effects of ART medications as significant barriers to good adherence, with half of the patients (52.3%) having reported signs and symptoms of adverse reactions to their treatment. However no further analysis was done to identify these factors as being significantly related to non-adherence. This was a limitation of this study since both non-adherence and the adherence group reported having trouble with side effects. Nevertheless, it would seem to be a priority that ART programs where possible, increase the availability of regimens with fewer adverse reactions.

Findings from this study indicated that 5 (20%) of patients who were non compliant said that drugs were too many and 1(10%) said was too busy to take the tablets. As stated by Kasumu and Balogun [30] in their study on patients’ knowledge and attitude on ART adherence, there is a crucial need for healthcare workers to educate the patients emphasizing on 100% adherence during counseling sessions to improve low adherence. There is also a need for encouragement and social support from family members and friends for the patients to take their medications. Patients should be educated to have a positive attitude towards ART. HIV control programs should increase awareness about HIV not being a death sentence because of the use of ART.

Results of the mean waiting times (minutes) at different areas of the clinic revealed that for patients to see the doctor it took 84 ± 90.6 ranging from 3-300 (the longest) followed by at reception 55.9 ± 46.9 ranging from 2-210. These waiting areas associated with poor ARV adherence with a $p$ of 0.028 that was statistically significant at reception, and a $p$ of 0.027 at the doctor
(See Table 2). The long waiting hours at the reception and doctor indicates human resource shortages for example at that time of the study there was one doctor and one receptionist. These were factors highlighted by the patients who complained about long waiting times at the clinics.

Then at nurses’ station, the waiting period was 44.8 ± 39.4 ranging from 2-180, then at the Laboratory: 83.3 ± 83 ranging from 30-180; and to collect drugs from the pharmacy: 30.1 ± 25.6 ranging from 2-120 minutes (the shortest). These results were confirmed by a study done by Mohammed and others in 2005, in Rural

<table>
<thead>
<tr>
<th>Factors of Interest</th>
<th>Acceptable adherence rate ≥ 95%</th>
<th>Poor adherence rate ≤ 95%</th>
<th>p-value</th>
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<td>Reception</td>
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<td>N%</td>
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</tr>
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<tr>
<td>31-60</td>
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<td>8 (55)</td>
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</tr>
<tr>
<td>61-120</td>
<td>4 (44.4)</td>
<td>3 (15)</td>
<td></td>
</tr>
<tr>
<td>≥ 120</td>
<td>2 (22.2)</td>
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</tr>
<tr>
<td>Nurses</td>
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</tr>
<tr>
<td>30</td>
<td>2 (22.2)</td>
<td>12 (57.1)</td>
<td></td>
</tr>
<tr>
<td>31-60</td>
<td>5 (55.6)</td>
<td>7 (9.5)</td>
<td></td>
</tr>
<tr>
<td>61-120</td>
<td>2 (22.2)</td>
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<tr>
<td>≥ 120</td>
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<tr>
<td>Doctors</td>
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</tr>
<tr>
<td>&lt; 30</td>
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<td>12 (57.1)</td>
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<tr>
<td>31-60</td>
<td>1 (16.7)</td>
<td>2 (9.5)</td>
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<td>61-120</td>
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<td>1 (4.5)</td>
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</tr>
</tbody>
</table>

Table 1 (cont) Univariate associations between demographics of patients and poor adherence to HAART in HIV-infected (N = 86).

<table>
<thead>
<tr>
<th>Factors of Interest</th>
<th>Acceptable adherence rate ≥ 95%</th>
<th>Poor adherence rate ≤ 95%</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Employment Status</td>
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<td>N%</td>
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<td>Unemployed</td>
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<tr>
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</tr>
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<td>2000-4000</td>
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<tr>
<td>4000</td>
<td>1 (33.3)</td>
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<td>WHO Stage</td>
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</tr>
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<td>2</td>
<td>1 (20.0)</td>
<td>5 (22.7)</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>0 (0.0)</td>
<td>14 (23.6)</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>1 (20.0)</td>
<td>2 (9.1)</td>
<td></td>
</tr>
</tbody>
</table>
Louisiana that the majority of their patients surveyed indicated that they had to wait for at least one hour before being attended to [38].

Furthermore results from this study are comparable to a previous study carried out by Wouters and colleagues, which identified lack of human resources as being a causal factor for long waiting times and unavailability of drugs in the clinics [21]. As revealed in this study that 10 (40%) of the non-adherent patients gave the reason that drugs were not available.

5. Limitations of the Study

One of the limitations the researchers encountered was that the study was done in only one PHC in King Sabata Dalidaybo (KSD) sub-district, in the Eastern Cape Province where the HIV-infected do receive their care and treatment. Therefore findings of this study cannot be generalized to all clinics within the sub-district since the contexts are different. The sample used is not representative of the different settings as stratified convenient sampling was used.

6. Recommendation

It is therefore recommended that the results of this study be analysed and incorporated into the service planning process of the department and the departmental policy makers integrate the learning opportunities from patient feedback into their quality improvement plans. This, together with a successful down-referral system where a large population of stable ART patients at treatment-initiation sites could be down-referred, will increase capacity and will also reduce long waiting times, and save the patient’s money. A regular monitoring and evaluation plan is also recommended. It would be better to involve another clinic to evaluate the knowledge of HIV and HAART.

7. Conclusions

This study assessed if HIV-infected knowledge on HAART and their waiting times in the different areas of the clinic had any influence on ARV therapy adherence. Findings from the study showed that good knowledge and positive attitude towards the ART is lacking, leading to adherence being sub-optimal. Therefore further emphasis on good adherence should be emphasized during adherence sessions. There should be a strong association between health care providers to maintain and strengthen counseling, education, training and information about adherence with a view to overcome the potential barriers of poor adherence, given the fact that non-adherence leading to the development of ARV-resistant HIV is a public health concern.

Findings from this study further showed that service providers’ characteristics and clinical settings affect patients’ ARV therapy adherence. Long waiting times, intermittent drug availability and other procedural barriers decrease patients’ adherence to ARV therapy and this results in poor clinic attendance and outcome.

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