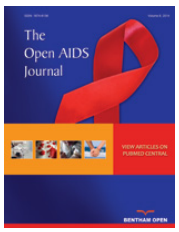

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RESEARCH ARTICLE

Predictors and Barriers Associated with Non-Adherence to ART by People Living with HIV and AIDS in a Selected Local Municipality of Limpopo Province, South Africa

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Abstract:

Introduction:

The partial success of Anti-Retroviral treatment remains a challenge, therefore, contributory factors need to be addressed for treatment success. For instance, issues leading to ART non-adherence, that can be prevented, must be identified and addressed. Prevention of HIV has remained the best approach to controlling the spread of HIV, as there is no definitive cure yet. This study aimed at identifying predictors and barriers associated with ART non-adherence amongst HIV patients attending an adult antiretroviral clinic in Makhado Municipality, Limpopo Province, South Africa

Methods:

A cross-sectional study was conducted with patients who were on antiretroviral treatment, were attending HIV and AIDS clinics, and whose ages ranged from 18 years and above; structured questionnaires were distributed to these respondents.

Results:

A total of 225 respondents participated in the study. There were more female (68%) respondents; most respondents (72%) were unemployed. They travelled more than 15 km to the treatment centers and over half (65%) of the respondents have been on ART treatment for less than five years. The financial cost, the long distance travelled, and forgetfulness were identified as some of the barriers to ART adherence. Respondents mentioned the provision of health education as one of the strategies that might assist in improving adherence.

Conclusion:

Non-adherence to ART poses a significant challenge in the study area. The study concluded that lack of knowledge regarding the urgency of follow-up and financial constraints were contributing to ART non-adherence, therefore, HIV education should form part of the curriculum in the basic education syllabus.

Keywords: Antiretroviral therapy, Barriers, Non-adherence, Predictors, People Living with HIV and AIDS, Anti-Retroviral.

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1. INTRODUCTION

The HIV and AIDS pandemic continues to be a major global public health issue [1]. Non-adherence to antiretroviral treatment (ART) by people living with HIV (PLWHA) remains a critical issue. There are about 37.9 million people (men, women and children) living with HIV and AIDS worldwide. The number of deaths from newly HIV-infected accounted for 1.7 million and AIDS-related deaths amounted to 770 000 in 2018 as compared to 38.4 million PLWHA. In 2021, newly-HIV-infected stood at 1.5 million and AIDS-related deaths were 650 000, globally [2]. Women and girls accounted for 49% of all new infections in 2021, and the number of people accessing antiretroviral therapy stood at 28.9 million in 2021. The overall HIV prevalence in South Africa was 13.7% and the estimated number of PLWHIV was 8.2 million, in 2021. Furthermore, approximately 19.5% of adults aged 15-49 years are HIV positive, in South Africa, although, AIDS-related mortality has declined by 57% among women and girls and by 47% among men and boys since 2010 [2 - 4].

Antiretroviral Therapy [5] is a combination of three or more drugs treating HIV and AIDS, and requires the patient to take the prescribed medication every day; adherence is when a

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patient takes medication, executes behavioral modifications, follows a specific diet, and agrees with the recommendations from a health care provider [6]. Patients need to adhere to their treatment to suppress their viral load as this reduces the risks for secondary transmission and improves the quality of life for most patients with HIV infection [4, 5].

The Joint United Nations Program on HIV/AIDS (UNAIDS) introduced the "95-95-95" strategy with the aim of ending the AIDS epidemic by 2030 - by diagnosing 95% of those with HIV; by putting 95% among the diagnosed on treatment and by suppressing the viral load of 95% of those on treatment [6].

Long-term adherence to medications treating various chronic diseases is limited by behavioral limitations. Studies conducted in Lesotho to evaluate the levels of knowledge of hypertension and its associated medications among hypertensive patients revealed that 52.4% of patients defaulted on appointment dates, while 64.6% had failed to take their medication as prescribed, at least, once. The same study further stated that suboptimal adherence to ARV regimens combined with treatment interruptions continues to limit the effectiveness of HIV programs in reaching epidemic control levels [7 - 10].

Poor ART adherence, at all stages of HIV infection, poses a major challenge globally. Many factors are known to contribute to ART non-adherence, such as - stigma, fear of discrimination, clinical-related factors, personal attitude regarding ART, low level of access to ART, forgetfulness, cultural beliefs, and many more [11, 12]. Despite the decline in HIV-related deaths, about 33% to 38% of HIV-infected adults fail to adhere to ART treatment regimens [13]. Poor adherence leads to increased morbidity and compromises the quality of life in patients with HIV. Non-adherence has emerged as a very significant threat to the long-term success of the HIV/AIDS program in Sub-Saharan Africa [14, 15]; although, there has been some progress in AIDS-related illness, especially in Eastern and Southern Africa, where 53% of the world's people live with HIV [14].

South Africa has the largest public ART program globally, with about 62% of PLWA already initiated into treatment [5]. National and international treatment initiatives have vastly increased in many countries, including South Africa, however, ART non-adherence remains a challenge in countries with limited resources [16]. In South Africa, literature has shown that recently-initiated ART patients are more likely to be non-adherent than those initiated in earlier years [17]. Poor adherence to ART may accelerate the development of drug resistance to HIV, hence, it is essential to identify factors that reduce adherence to ART so that patients would have prolonged viral load suppression and live longer [6]. This motivated this study to identify factors and barriers contributing to low ART non-adherence levels, amongst adults living with HIV and AIDS, in Makhado Municipality.

2. MATERIALS AND METHODS

A purposive cross-sectional study was conducted on Antiretroviral Therapy (ART) users (patients living with HIV) attending follow-up clinics to identify factors contributing to ART non-adherence.

2.1. Study Setting

The study was conducted in the town of Louis Trichardt situated in the proximity of the Soutpansberg Mountain range, in Makhado Local Municipality, Limpopo Province. The area has approximately 516 036 populations with the female gender constituting 54.11% of the population. Makhado Local Municipality forms part of the four local municipalities of the Vhembe District Municipality located in the northern parts of the Limpopo Province. In 2011, the unemployment rate in the Municipality was 36.7%, which was higher than the national rate of 24.3%. The Municipality is served by health-care facilities, such as clinics and visiting points, however, most do not provide a 24-hour service due to a lack of staff and resources (Makhado Local Municipality IDP 2019/2020 - 2021/22). The local spoken languages are Tshivenda and Xitsonga.

2.2. Study Population

The study's population comprised of adult patients, 18 years and above, who have been on ART, who had been under review for at least three years prior to the study, and who consented to participate in the study. These criteria ensured respondents had experience living with ART and undergoing follow-up care.

2.3. Sampling

In this study, non-probability purposive sampling was done to select HIV-positive respondents taking ART at Makhado Memorial Hospital; both male and female patients who met the criteria were purposefully selected for the study. The sample size was calculated using the Raosoft sample size calculator at a margin error of 5%, a confidence level of 95%, a population size of 500, and a response distribution of 50% resulting in a sample size of - n = 218 patients. An additional 10% of the sample, however, was included to make provision for non-response, bringing the total sample size to 240. The study site was the ART center, within the Makhado Memorial Hospital which is located in a semi-rural area, on the outskirts of Makhado Municipality. The site administers ART free to HIV-positive patients who met clinically established eligibility criteria.

2.4. Measurement Instrument

A researcher-developed, structured questionnaire was used as the instrument for data collection after it was validated by experts in the field. General rules on completing the questionnaire and the importance of filling in all questions were written on it; each questionnaire was accompanied by an information sheet explaining the purpose of the study. The questionnaire was divided into three sections: patient-related factors, sociocultural factors, and the healthcare system's factors that will improve adherence to ART; it was self-administered. The questionnaire was prepared in English and translated into Tshivenda and Xitsonga languages by bilingual translators, which were then back-translated by other translators to confirm the accuracy of the translations.

2.5. Data Collection Method

The data were obtained from the respondents by the principal investigators and the research assistants at the study site. The principal investigators and the research assistants visited the respondents at the ART clinic of the selected hospital in accordance with appointment dates. Before data collection, the principal investigators explained the purpose, benefits, and associated risks of the study to all respondents. Consenting respondents were asked to sign the informed consent form and presented with the questionnaire to complete on their own. For those who cannot read or write and those who prefer the questions to be read to them, the principal investigator and the research assistants read the questions and completed the questionnaires for them. All the questionnaires were completed on-site to reduce non-response; respondents were assisted when they needed clarity.

2.6. Data Management and Analysis

The completed questionnaires were collected and the responses were captured, edited, cleaned, and coded by the researcher. Data were captured on a Microsoft word excel spreadsheet and transferred to a Statistical Package for Social Sciences (SPSS) version 25.0 software program. Each questionnaire was coded, and all sections were checked thoroughly during data analysis. Missing data were checked with the data collection forms and questionnaires. A statistician assisted in the process of analyzing data. The collected data was treated confidentially and was kept under lock and key; it will be discarded at the end of the retention period of 5 years. Graphs and tables were used to present and interpret the analysed data.

2.7. Ethical Considerations

Ethical approval for this study was obtained from the University of Venda Ethics Committee (approval number: SHS/18/PH/14/1211). On obtaining approval from the University of Venda Ethics Committee, the researcher sought permission from the Limpopo Provincial Department of Health and the Vhembe District Department of Health. Managements permissions were also obtained from the clinic and hospital (study site) - hospital managers or CEOs. Written informed consents were obtained from all respondents following the tenets of the Declaration of Helsinki for research involving human subjects. Confidentiality for the respondents was maintained by removing their names from the questionnaires. Respondents were also informed that their participation was entirely voluntary and that they were free to withdraw if they felt uncomfortable.

3. RESULTS

Out of the 240 respondents who agreed to participate in the study, 225 completed the questionnaire, giving a response rate of 95.6%. Most of the respondents in this study were females (68%); 9.8% were respondents aged between 18-24 years (Table **1**). The majority (61%) of the respondents had reached the secondary level in their studies, with only 4.9% not having any formal education. More than half (64%) of the respondents belonged to the Christian religion. Most respondents (72%) were unemployed; (63.6%) of respondents travelled 15 km and more to the treatment centers. About (65%) of the study respondents have been on ARV treatment for a period of less than five years; (81%) respondents felt bad when they were diagnosed with HIV and AIDs (Table **2**) and 74%, did not want other people to know that they had contracted HIV and AIDS. More than half (65%) of the respondents disagreed that there are benefits in taking ARV treatment for the rest of their lives. About 62% believed that using ARV drugs can shorten their life span and (59%) believed prayers can cure AIDs and HIV.

Table 1. Socio-demographic characteristics (n(Nkatingi,2020)).

	Variable	Characteristics	Frequency	Percentage
1	Gender	Male	72	32
		Female	153	68
2	Age in years	18-24	22	9.8
		25-35	82	36.4
		36-45	70	31.1
		46-59	51	22.7
3	Highest educational level	No formal education	15	6.7
		Primary education	69	30.6
		Secondary education	130	57.8
		Tertiary education	11	4.9
4	Religion	Christianity	146	64.8%
		African Religion	77	34.2%
5	Employment status	Employed	56	24.9
		Unemployed	164	72.9
		Self -employed	05	2.2
6	How long have you been taking ARV treatment(in years)	1-5 years	147	65.3%
		Six years and above	78	34.7%
7	Distance to the treatment center	Less than 15km	195	36.4%
		More than 15km	143	63.6%

About 146 (65%) respondents miss their ARV medication doses more than once-per-week while 79 (31%) had never missed their dose (Table **3**). Non-adherence in the current study was defined as - missing a dose or doses of ARVs; not taking the ARV medication for a day or days; and taking the ARVs at the wrong time per week. Respondents who had a compliance rate of less than one hundred percent were further asked to give reasons for their non-adherence to the ART medication. Adherence rates were defined as *good* if they ranged between 95% and 100%, and anything less than 95%, as *poor* or *inadequate*. Lack of understanding of the need for chronic medication, 34 (23%), followed by financial cost and long distance to the clinic 21% (30) and religious beliefs of 24(16%) were the most commonly specified reasons for non-adherence to ARV medication regimen; only 8(6%) of the respondents, however, mentioned any side effects from taking ARV.

About 146 respondents were classified as being non-adherent; these further identified strategies might improve their treatment adherence. These strategies were – being given education on the importance of taking ARV treatment (82%); health-care professionals providing pre-appointment reminders (by phone, text, or email) (80); ART clinics operating on weekends and holidays (76%); while (39%) of respondents revealed forming support groups with other HIV patients (Table **4**).

Table 2. Respondents' attitudes and beliefs toward ARV treatment (n=225) (Nkatingi,2020).

Statement	Agree Freq.	Agree %	Disagree Freq.	Disagree %
I felt very bad at the time I was diagnosed with HIV and AIDs	182	81%	43	19%
There are benefits to taking ARV treatment for life	79	31%	146	64.9%
I don't want people to know my HIV status	167	74%	58	26%
I believe that using ARV drugs can shorten my lifespan	140	62%	85	38%
I believe that prayer can cure AIDs	133	59%	92	41%

Table 3. Patient s' Practice regarding ART Adherence (N=225) (Nkatingi,2020).

Variable	Frequency	
Ever missed your ARV medication yes	n	%
No	146	65%
No. of days patients did not take (n=146)		
Less than 1 week	92	63%
1-2 weeks	42	28.70%
2-4 weeks	10	6.80%
More than 1 month	2	1.40%
Reasons for not taking the treatment (n=146)		
Lack of understanding of the need for chronic therapy/lack of knowledge	34	23%
The financial cost and long distance to the clinic	30	21%
Religious and traditional beliefs	24	16%
Poor relationship between health care providers and the patient	20	14%
Stigma	18	12%
Forgetfulness	12	8%
Side effects	8	6%

Table 4. Strategies to improve ART adherence (n=146) (Nkatingi,2020).

Statement	Frequency n	%
Pre-appointment reminder (by phone, text, or email)		
Yes	116	80%
No	30	20%
More education regarding HIV and AIDS		
Yes	120	82%
No	26	18%
ART clinics should operate on weekends and holidays		
Yes	111	76%
No	35	24%

(Table 4) contd.....

Statement	Frequency n %	
Forming support groups with other HIV-positive members		
Yes	44	30%
No	102	70%

4. DISCUSSION

The study attempted to assess the level of ARV drug adherence and its associated factors in patients attending the ARV clinic attached to Makhado Memorial Hospital. It was observed during data collection that, at every ARV clinic appointment day, women were more than men. The reason might be that women are more likely to take an HIV test, and initiate and adhere to ARV treatment than males; another reason might be that women, normally, access healthcare facilities more than males. Studies have reported that males have low utilization of HIV services because of poor health-seeking behavior attributed to prevailing norms of gender masculinity and stigma. Our study concurs with several African studies findings conducted by different authors, who reported that more females participated in similar studies as compared to males [18 - 22]. The current study also revealed that respondents between the ages of 25 and 35 years were in the majority; this might be because this age group is more sexually active than the rest of the age groups. Similarly, Chukwujekwu *et al.* [23], reported that there were more respondents (50.3%) whose ages ranged from 25 to 34 years in the study. A study conducted by Muraa*et al.* [24], however, mentioned that the majority 108 (34.6%) of the respondents were aged between 39-48 years. Other studies' results, however, show that female respondents have a higher incidence of non-adherence as compared to males. Some authors maintain that patients whose age is less than 30 years had a higher incidence of ARV non-adherence as compared to those aged between 30 to 44years [18, 20].

Findings on patients' attitudes and beliefs, revealed that most of the study respondents had a negative attitudes toward ARV medication as most of them did not want to disclose their status to their family members, friends, and community members, and taking ART treatment would do this. This might be because about eight percent of the respondents feared the stigma attached to HIV and AIDS leading them to ART non-adherence. Nkatingi [18] and Modipane [25] concurred with our findings that most patients did not want to be seen receiving ART medication at their nearest clinic due to fear of stigma by neighbors and friends. Such patients prefer distant clinics where there is less chance of being recognized. Similar results were reported by Kebede, Zeleke, Asemahagn, and Fritz [26] in an Ethiopian study that, a small portion of the low reporting rate of HIV status to sexual partners is different from the high rate of disclosure to family, and friends, and community members. Okoli and Cleary [27] also state that HIV and AIDS in Nigeria remain stigmatized because infected people are perceived as people who have lived a non-standard lifestyle. Our study findings differ from those of Kasumu and Balogun [20] who narrated that 98% of their participants showed a positive attitude towards ART. This discrepancy may be explained by the fact that ART may have a positive influence on disclosure if patients are counselled every time they visit their ART clinic.

In the current study, more than sixty percent of the respondents did not adhere to their ART treatment while (35%) were associated with behaviour relevant to HIV and AIDS adherence. One hundred and forty-six participants revealed they had missed their medication more than once a week. We assessed ART medication adherence using a self-report measure that asked about the number of days, the respondents had adhered to treatment. Sixty-five percent of the respondents were non-adherent to their ART regimens, and thirty-five percent were classified as a hundred percent adherent. Lack of understanding of the need for chronic therapy was cited as the strongest barrier leading to ART non-adherence; this was followed by financial cost, long distance to be travelled to the clinic, and religious and traditional beliefs. Others cited the poor relationship between health-care providers and the patient, stigma, forgetfulness, and side effects from the medications, as other contributory factors to non-adherence.

Additionally, poor understanding by the patients was shown as leading to ART non-adherent; this was supported by (65%) of patients. Patients fail to understand that ART is a lifelong treatment and that an HIV-positive patient on ART can live a normal everyday healthy life, like any HIV-negative person, hence, respondents did not know they should attend ART clinics, regularly. The current study concurs with other studies conducted elsewhere around the globe, where patients revealed that they decided to stop coming for their ART treatment because they felt physically healthy and felt that medical treatment was no longer necessary for them [18, 25, 28, 29].

Some patients mentioned financial challenges as one of the contributory factors that deter them from taking their ART medication. Financial challenges arose because respondents - lack money for transport, as they had to travel long distances to the clinic since they stayed more than 15km away from the ART clinic, and most were unemployed. Ankomah, *et al*. [30] in Ghana confirmed that healthcare providers indicated that financial constraints were a significant barrier preventing patients from accessing treatment as they could not afford money for transport. Similar results were reported by Opio *et al.* [31], who reported that transportation costs due to long distances to the health-care facilities were a significant challenge for most patients on ARV treatment and were the primary causes of ART non-adherence.

Other respondents in this study, stopped taking ART medication because it was conflicting with their religious and traditional beliefs; these respondents still believe that religious and traditional beliefs and practices can cure HIV. Such patients assumed that HIV is caused by witchcraft or evil spirits as reported in the study by Nkatingi [18], thus, they consulted traditional healers and religious prophets for prayers and cleansing. This group of respondents believe using

traditional herbs, holy water and engaging in certain practices and activities would permanently cure their condition. Due to these solid religious and traditional beliefs, such respondents drop out of care to seek healing from traditional and faith healers. Kasumu and Balogun [20] similarly explain that patients adhere to ART differently because of their differences in culture, as culture has been shown to have a strong influence on behaviour, hence, ART adherence. Arrey, *et al.,* [32] also explicate that patients with strong faith, believe that God can heal illnesses in different ways; their participants' perceived ART as God's way of healing them through the wisdom of care providers, hence, religion is seen as an added motivation; when taking ART.

In the current study, respondents mentioned that they stopped going to their follow-up appointment because of the negative behavior shown by some of the healthcare providers. Support from healthcare practitioners boosts patients' self-esteem, however, healthcare providers such as nurses, pharmacists, and physicians, in this study, were reported by the respondents, as not giving them enough support when it comes to taking their medication. Similar findings have been reported by other researchers, that the majority of patients complain of negative treatment from clinic staff [23, 32, 33]. Global studies have indicated that satisfaction with the healthcare providers is directly related to improved treatment adherence in patients suffering from HIV and AIDS [20]. Patients contend that doctors and nurses did not have the patience nor exhibit a welcoming attitude towards them, and this prompted them to stop going for their ART medication.

Few respondents, (8%), in the current study admitted that they stopped taking ARVs due to forgetfulness. This fact, however, is inconsistent with the point made by Kasumu and Balogun [20] that the percentage of forgetfulness as the barrier to ART adherence is low (12%) because most patients use a reminder system. It was established in this study, that there was no association between ART non-adherence and side effects as only a handful of patients (6%) wanted to quit taking ART medication because of this. Fonsah *et al.* [34], found that side effects of some ART drugs were associated with an increased risk of non-adherence; Asmare *et al.* [35], also reported that patients felt that some drugs were toxic to them, hence, to avoid this they stopped taking the treatment. This is an indication that for some patients, side effects are a barrier to treatment adherence. Amico *et al.* [36], and Ankomah, *et al.* [37], reported varying findings illustrating that fear of side effects was a significant barrier that prevented patients from adhering to ART medications.

In the current study, most patients wanted to be assisted to be compliant by someone reminding them about taking their medication and going for their follow-up clinic visits. This shows a need, therefore, for community healthcare workers to support patients by reminding them about their follow-ups; these can be in the form of electronic reminders - emails, WhatsApp, and short messages via cell phones. Respondents also recommended that joining support groups could motivate higher compliance with treatment. The point that ART clinics should operate on weekends and on holidays was stressed, arising no doubt from the fact that the ART clinics in this study setting do not open on such occasions. Several studies concurred with our study that patients would appreciate receiving information and education regarding HIV and ART as comprehensive knowledge on these would help patients to fully understand the urgency of adhering to ART [32, 25, 38 - 40].

5. LIMITATIONS

The study used purposive sampling which means that the findings of this study have limited applicability. In addition, the sample size was relatively small because the respondents were only recruited from the study site, therefore the findings of this study cannot be generalized, especially to patients with different demographic characteristics, and there was no risk of biases with regard to the selection of respondents. The reasons for low CD4 cell count and virological failure were not explored in this study,and the level of non-adherence was measured using patient self-reporting; this may have resulted in under-reporting of overall adherence, as some respondents may have been non-adherent prior to the four weeks of the current data collection, alternatively, more adherent in the past two weeks.

CONCLUSION

The current study results confirm that patients living with HIV and AIDS still show significant number of ART non-adherent in relation to their treatment; in other words, they are not complying with their ART treatment as expected. The patients indicated a lack of understanding of the urgency of maintaining regular treatment, which is worrisome. Furthermore, the financial constraint was cited as another predictor of LTFU in this study as patients indicated that they needed money for transport as their ART clinic is situated far from their residential areas.

People living with HIV and AIDS suggested the following strategies that might assist them in improving their adherence with ART - being given more education on HIV and AIDS and on the urgency of regular treatment; forming support groups with people living with HIV and AIDS and providing more sites for access to ART.

AUTHORS' CONTRIBUTIONS

NBN conceptualized and refined the study idea, developed the data collection tools, collected, and analysed data, while SET and NBN drafted, read, and approved the final manuscript.

LIST OF ABBREVIATIONS

HIV	=	Human Immunodeficiency Virus
AIDS	=	Acquired Immunodeficiency Syndrome
ART	=	Antiretroviral Therapy

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

Ethical approval for this study was obtained from the University of Venda Ethics Committee (approval number: SHS/18/PH/14/1211).

HUMAN AND ANIMAL RIGHTS

No animals were used in this research. All procedures performed in studies involving human participants were in accordance with the ethical standards of institutional and/or research committees and with the 1975 Declaration of Helsinki, as revised in 2013.

CONSENT FOR PUBLICATION

Written consent was obtained from all participants.

AVAILABILITY OF DATA AND MATERIALS

The data and supportive information are available within the article.

FUNDING

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CONFLICT OF INTEREST

The authors declare no conflict of interest financial or otherwise.

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Declared none.

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