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Original Research Article

Influencing Factors of Adherence to Antiretroviral Drugs among People Living with HIV in South-South Nigeria

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Abstract

Background: A major challenge to antiretroviral therapy is poor adherence by the patients due to the multiplicity of drugs involved. For effective outcome of therapy, a 95% adherence is advocated in patients on ARV drugs. ***Objectives*:** Study sought to evaluate the factors that affect the adherence to their prescribed medications by people living with HIV (PLWHIV) in the capital city of Port Harcourt, South-South, Nigeria. ***Methods*:** A descriptive cross sectional study using pretested questionnaire was used to collect information on adherence among HIV adult patients. Socio-demographic factors were evaluated as possible factors associated with adherence. Reasons for missing medications were also obtained and described. ***Results:*** Participants comprised of 109 (31.8%) males and 231 (67.3%) females (mean age 37.3 ± 8.9) years. Study revealed a poor level (58%) of adherence among participants. Patient factors (forgetfulness, personal travels and work schedule), were major reasons given for missing their medications. Others are economic (lack of transport, poverty) and socio-cultural (stigma, spiritual) factors. Social support in the form of treatment supporter was found to be a significant ($p<0.05$) positive influencing factor to adherence by patients as well as disclosure of status to spouse. ***Conclusion:*** Strategies to improve adherence should be focused on the ways to address the negative influencing factors. Improved awareness in terms of counselling, education and orientation of the patients is strongly advocated. Social support systems (family, community, treatment supporter) and societal acceptance of PLWHIV should be put in place to encourage adherence.

Keywords: Adherence, Antiretroviral drugs, HIV, Infection, Non-adherence, South-South Nigeria.

INTRODUCTION

Since the first case of HIV was reported in 1986, HIV has remained a major public health challenge in Nigeria [1]. Even though there is a reduction of national prevalence from 4.1% in 2015 to the current 1.4%, HIV still remains a public health challenge in Nigeria despite the advancement in the area of drug therapy. Nigeria has the highest number of new infections in sub-Saharan Africa and bears the second highest burden of HIV globally after South Africa with an estimated number of about 3.6 million people living with HIV [2]. Current epidemiology data according to zones, shows that the South-South zone of the country have the highest prevalence rate of 3.1% [3]. Rivers State, which is part of South-South zone ranks third in the country with a prevalence rate of 3.8% [3].

The introduction of antiretroviral (ARV) drugs for the treatment of HIV infection changed the whole course of HIV/AIDS disease and management, leading to decreased morbidity and mortality such that many infected people now live for extended period making HIV a chronic disease [4, 5]. Despite this revolution in the life of the HIV persons in reducing morbidity and mortality, there are associated challenges of adherence and adverse drug reactions. The drug treatment for HIV disease is tripartite comprising antiretroviral therapy, management of opportunistic infections or malignancies and symptomatic control. Antiretroviral drugs are usually given as a combination of a minimum of three drugs from different classes so as to prevent resistance. So even in cases where there is no opportunistic infections and malignancies, the combined regimen of the ARV drugs on its own is burdensome to the patients which many times result to poor or non-adherence to the drugs by the patients. Furthermore, there is increased burden of adverse drug reactions due to the multiplicity of drugs taken by these patients as well as the safety profile of the ARV drugs [6].

Adherence as defined by the World Health Organization is the ability of patients to follow

treatment plans, take medications at prescribed times and frequencies and also follow restrictions regarding lifestyles, food and other medications. It is the degree to which a person's behaviour corresponds with agreed recommendations from a health care provider [7, 8]. Medication adherence is crucial for successful treatment, particularly in chronic disease management [9]. Poor adherence to ARVs leads to increased risk of resistance to the drugs. Reports have shown that adherence rates of <80% are associated with detectable viremia in a majority of patients [10]. The recommended adherence rate by the WHO is 95% [11].

Poor adherence has been attributed to many factors like patient-related factors (forgetfulness, inconvenient dosing and pill burden, side effects of the drugs; finance/economic factors such as poverty, insecurity, socio-cultural factors (stigma and discrimination); inability to disclose status, weak health systems such as drug stock outs, strike action by health workers and poor services especially in developing countries [12-17]. These factors however differ from country to country or with different societies. Poor adherence to therapies increases health costs and poor health outcomes while on the other hand, patients' safety is enhanced with improved adherence [8]. The present study was designed to evaluate the factors that affect the adherence to their prescribed ARV drugs by people living with HIV (PLWHIV) in the capital city of Port Harcourt, Rivers State, Nigeria as well as determine the reasons for non-adherence.

MATERIALS AND METHODS

Study design and area

A prospective–descriptive study was carried out between March-May 2017 to evaluate factors that influence adherence among HIV patients that attend the antiretroviral clinic (ARV) in the University of Port Harcourt Teaching Hospital (UPTH). The hospital has about 800-bedded capacity and serves as a referral centre being the largest hospital in the Niger Delta region. Many of the HIV patients that attend the clinic come from different parts of the region to fill their prescriptions.

Port Harcourt is the capital city of Rivers State in the Niger Delta region and is very rich in the nation's oil and gas resources which attracts many migrant and international workforce with commercial workers following the camp [18]. Rivers State, which is part of South-South zone ranks third in the country with a prevalence rate of 3.8% which is higher than the national prevalence of 1.4% [3].

Before initiating therapy, patients were normally counselled by different persons which include physicians, pharmacists, nurses and social workers/counsellors to enable them understand the disease and the importance of adhering to their treatment. A pretested 25-point questionnaire form was used as the tool for the study. Based on calculated sample size, 350 questionnaires were distributed to persons attending the adult antiretroviral (ARV) clinic in the University of Port Harcourt Teaching Hospital (UPTH). Patients were recruited consecutively on clinic days until the calculated sample size was obtained.

Inclusion Criteria

Patients were recruited if they met the following eligibility criteria: 18 years and above, registered and receiving highly active antiretroviral treatment (HAART) from the ARV adult clinic for a period > 6 months and willingness to provide informed consent. Participating respondents were patients on fixed dose combination of various HAART regimens consisting of different combinations of any of the following drugs: TDF: Tenofovir; FTC: Emtricitabine; 3TC: Lamivudine; DTG: Dolutegravir; NVP: Nevirapine; EFV: Efavirenz; LPV/r: Lopinavir/ritonavir; ATV/r: Ritonavir boosted Atazanavir; AZT: Zidovudine. Dosage frequency of the drugs are either once or twice daily.

Exclusion Criteria

Patients below 18 years; those who have been on ARV drugs for less than six months, pregnant women and patients unwilling to participate in the study.

Using the pretested structured questionnaire, information obtained include: knowledge of ARV drugs, disclosure of their status, reasons for non-adherence, challenges to non-adherence and its implications, social and family support, financial challenges, access to the hospital and availability of the medications to the participants. Additional information obtained was the demographic status of the patients ranging from age, sex, education, marital as well as employment status. Participants were asked to give reasons for non-adherence to their medications.

Data obtained were entered into excel spreadsheet and transferred to SPSS version 21 for analysis. Association between factors and adherence or non-adherence were analysed and confounding factors were noted. A confidence interval of 95% was used and p-values < 0.05 was considered significant.

Ethical Consideration

Prior to the study, ethical approval was obtained from the Ethics Committee of the University of Port Harcourt Teaching Hospital after thorough screening and review of the study proposal which included information on the study as well as consent form to be signed voluntarily by the participants.

RESULTS

Out of a total of 350 questionnaires administered, 343 (98%) were retrieved. Demographic information showed the respondents were made up of 109 (31.8%) males and 231 (67.3%) females, 3 persons did not indicate their gender. Participants were aged between 18 and 70 years (mean age 37.3 ± 8.9), with the age range of 31-40 years being the highest (39.3%) while the least was among those above 60 years (1.2%). Other demographic information include marital status with more (46.1%) of the participants married compared to single or divorced (Table-1). Majority (49.9%) of the respondents had secondary education, 12.2% had primary education, 31.2% had tertiary education, and only 3% had no formal education. Analysis of the occupation of the respondents showed traders and business men/women had the highest number (30.9%), unemployed persons accounted for 24.5% while self- employed and civil servants accounted for 21% and 14.3% respectively (Table-1). The respondents were on HAART fixed-dose combination drugs.

Table-1: Demographic statistics of participants

Variables	Frequency	Percentage
Age		
≤ 20	15	4.4
21-30	77	22.4
31-40	135	39.3
41-50	84	24.5
51-60	26	7.6
≥ 60	4	1.2
Unknown	2	0.6
Sex		
Male	109	31.8
Female	231	67.3
Unknown	3	0.9
Marital Status		
Married	158	46.1
Single	128	37.3
Divorced	24	7
Widowed	19	5.5
Separated	13	3.8
Unknown	1	0.3
Educational level		
No formal education	13	3.8
Primary education	42	12.2
Secondary education	171	49.9
Tertiary education	107	31.2
Unknown	10	2.9
Occupation		
Trading/Business	106	30.9
Civil servant	49	14.3
Self employed	72	21
Unemployed	84	24.5
Others	18	5.2
Unknown	14	4.1

Less than half of the 343 respondents: 139 (40.5%) knew the drugs they were taking while 175 (51.0%) did not know, 29 (8.5%) persons did not indicate. Analysing duration the respondents have been on their drugs, I94 (56.6%) of the respondents have been on ART between 1-6 years, 66 (19.2%) for more than 7 years while 71 (20.7%) have been on ART for less than one year while 12 (3.5%) of the respondents could not tell the duration they have been on the drugs.

Evaluation of the knowledge of the drugs by the respondents indicated that 64.1% knew that the drugs do not cure, while 18.7% believe the drugs cure, 13.1% indicated they did not know. There were varied answers to the knowledge of specific function of the drugs with only 35.3% of the respondents aware that the HAART reduces viral load. Other answers obtained in response to the implications of non-adherence are shown in Table-2.

Table-2: Knowledge of HIV drugs

Do HIV drugs cure?	
Yes	64 918.7)
No	220 (64.1)
Don't know	45 (13.1)
No response	14 (4.1)
Can you stop HIV drugs once you start?	
Yes	34 (9.9)
No	261 (76.1)
Don't know	17 (5.0)
No response	31 (9.0)
What do HIV drugs do to the body?	
Reduce viral load	121 (35.3)
Makes you grow fat	22 (6.4)
Reduces risk of transmission	35 (10.2)
Don't know	3 (0.9)
Makes you stop falling sick	1 (0.3)
Can be used to treat other illness in the body	1 (0.3)
No response	160 (46.6)
What are the implications of non-adherence?	
My doctors will be angry	15 (4.4)
The drugs may no longer work	13 (3.8)
I will become sick again	35 (10.2)
I will not get cured	8 (2.3)
Virus will become resistance	51 (14.9)
My viral load will increase	53 (15.5)
Pharmacy may no longer give me drugs	2 (0.6)
I may need to change my drugs	7 (2.0)
I might die from the disease	9 (2.6)
I will loose weight	1 (0.3)
No response	148 (43.1)

Only 198 (58%) of respondents reported that they have never missed their drugs while 42% admitted to have missed their drugs at one time or the other. Statistical analysis showed some influencing factors on adherence to be significant. Social support in the form of treatment supporter was found to be an important influencing factor to adherence by patients. This factor was found to have significant ($p < 0.05$) influence on adherence to treatment by the respondents, with 75.3% of persons acknowledging a positive influence to adherence through the help of their treatment supporter. On the contrary, in persons without treatment supporter, over 90% of the respondents have missed their medications one time or the other. Treatment supporters comprised mostly of spouse (50%), with others as family relations, friend, pastor, community volunteer and persons living positively with the virus.

Respondents admitted to disclosure of their HIV status in this order: spouse (48%), family member/sibling (32%), sexual Partner (6%), pastor (8%), friend (3%) and medical personnel (3%). Analysis of the results showed that disclosure to spouse had a significant positive influence ($p<0.05$), however, disclosure to other persons did not have any significant influence on adherence ($p >0.06$).

Demographic factors were also found to be among influencing factors of significance. Marital and educational status have significant influence ($p<0.05$) on adherence with married persons being more adherent to their medications compared to single or separated (81.2% vs 3.4% vs 30%) respectively. Respondents with tertiary education showed higher level of adherence with 84.6% in this category adhering to their drugs as prescribed. The test of relationship shows that educational attainment influences the level of adherence by respondents ($p<0.05$).

Influence of age on adherence was significant ($p<0.05$) but dependent on age range. Respondents in the age range of 31-40 reported highest adherence (83.2%) followed by 41-50 (60%), while the age range 21-30 and 51-60 had very low adherence of 18.4% and 10% respectively. On gender influence, there was a close relationship between the numbers of those who have in one time or the other missed their prescription between the males and females. Hence, from the test of relationship obtained ($p=0.323$), it can be concluded that gender does not have a significant influence on their adherence to treatment.

On the impact of duration of HIV treatment, the analysis showed varied results as follows: with patients who had been on medication for 4-6 years demonstrating the highest rate of adherence (84%). This was closely followed by those that had been on medication for a period above 9 years (78.9%), others are 1-3 years (26.9%) and 7-9 years (23.8%).

Responding to questions on personal reasons for missing their drugs, responses were classified under five different categories according to a study in South Africa [17], and based on WHO, 2003 [8] classification (Table-3).

Table-3: Categories of reasons for missing medications

Variable	Responses (343)
Patient factors	221 (64.5)
Economic factors	41 (12)
Socio-cultural factors	31 (9)
Drug-related factors	19 (5.5)
Health system factors	19 (5.5)
Others	12 (3.5)
A. Patient Factors N= 221	
Forgetfulness	90 (40.7)
Tight work schedule	47 (21.3)
Travelled out of town	45 (20.3)
Drugs got finished	24 (10.8)
Too ill to take drugs	7 (3.2)
No longer feeling sick	5 (2.3)
Suspicious of treatment	2 (0.9)
Tired of taking drugs	1 (0.5)
B. Economic Factors N=41	
Lack of transport	31 (75.6)
No food to eat	10 (24.4)
C. Socio-cultural factors N=31	
Spiritual healing	20
Stigma	6
Sharing drugs	3
Taking native drugs	2
D. Health System factors N= 19	
Strike in the hospital	13
Poor attitude of workers	6
E. Drug-related Factors N=19	
Fear of side effects	15
Too many drugs	4
F. Others	12 (3.5)

DISCUSSION

Adherence to medication is a very important factor in patient's management particularly among people living with HIV. To achieve maximal viral suppression, an adherence of 95% is required [19]. The study reported an adherence of 58%, which is an improvement from the 49.2% obtained from the same centre in an earlier study [20]. The increase in adherence could be as result of reduced pill burden which was a major factor in the earlier study compared to the fixed dose combination that is obtained in present study. The 58% adherence level reported in present study is very low compared to the recommended level by WHO [11, 19], and it is even lower than 70.4% obtained in an Indian study [21]. Adherence levels <80% have been associated with detectable viremia in many patients [10]. Poor adherence is very closely related to poor treatment outcome and can lead to cross resistance to other antiretroviral drugs which can invariably complicate treatment of HIV infection [22].

Many factors have been attributed to the poor adherence of patients to their therapy and these factors could be patient-related, drug-related such as side effects of the drugs, inconvenient dosing and pill burden [10]. Other factors include belief systems, socio-cultural behaviours such as fear of stigma and discrimination, economic factors such as poverty and insecurity, inability to disclose the status, weak health facility management such as drug stock outs and strike action by health workers [23, 24, 13, and 12]. The present study has also established some of these factors to be influential on patients' non-adherence.

The positive influence of social support as evidenced by spouse, family, friends acting as treatment supporters on adherence observed from our study has been reported in other studies [25, 21, 26]. Community support or organizations as well as persons living positively with the virus also accounted for positive influences of adherence. The negative influence of socio-cultural aspects as reported in present study include rejection as a result of stigma, where persons living with HIV are not well integrated in the community. This has been reported in a previous study in South Africa [27]. Social and community support will minimize this feeling of rejection and thereby empower the PLWHIV to adhere to their medication. In relation to this is the importance of disclosure especially to the spouses. Fear of disclosure has been a major limitation to adherence [28, 29]. Results of positive significant influence of disclosure to spouse is in consonance with previous studies [30, 31].

Education as an important influence that encourages adherence has been reported in many studies with people of higher education being more adherent to their medications [32, 33]. The present study is in consonance with these reports establishing higher education as a positive influence for better adherence. However, a South African study among pregnant women on HIV treatment reported that women with lower level of education were more likely to report complete adherence when compared to those with tertiary education [34].

Gender influence was found to be insignificant in the present study. There are varied results of gender influence with some studies reporting women to be more adherent [35, 21], while in other studies males have been reported to be more adherent [36, 37].

The present study has shown the reasons for non-adherence as admitted by the study participants to be majorly patient-related accounting for 64.5% of the reasons. Among these factors, forgetfulness was the greatest reason given, followed by work schedule and personal travels, being tired of taking the drugs and also too ill to take the drugs (Table-3). An earlier study by Maduka and Tobin-West [38] which was targeted at non-adherent patients in the same Centre, established being away from home as major reason for non-adherence as against forgetfulness that was obtained in the present study. Previous study in South Eastern Nigeria reported forgetfulness as a major factor responsible for non-adherence [39]. This was equally identified in studies from South Africa and Ethiopia [17, 40]. In an Indonesian study, forgetfulness was responsible for 67% of non-adherence among urban population of HIV-patients [25].

Economic factors were shown to be another important factor. Even though the medications were made available free to the patients, the respondents were required to go to the hospitals to collect them. The lack funds constituted a constraint to achieving this as some could not afford the transport cost to go for the drugs as was observed in a similar study in South-Eastern Nigeria and other parts of Africa [39, 17]. While transport cost was a hindrance to some, for others, their financial constraint meant no food to eat and as such they could not take their medications. These factors were also established among HIV-positive subjects pregnant women in Eastern Cape of South Africa [17, 34].

Fear of adverse effects of the drugs was identified as a hindrance to adherence as was reported in the South Eastern study [39] as well as taking many drugs. The pill burden has always been a challenge to adherence as reported in many studies [10, 34].

An important factor mentioned is the weak health system which manifested in the present study as out of stock syndrome, strike action leading to closure of clinics and poor attitude of hospital workers. These are very recurring reasons in many developing countries and have played major role in reducing adherence [20, 39, 34]. Addressing these issues will help strengthen the health systems and will go a long way in improving adherence among these patients.

Socio-cultural factors such as religious beliefs of spiritual healing or cleansing, fear of perceived stigma, not willing to disclose their status for fear of being rejected were also among reasons given for non-adherence as observed in previous studies [17, 21].

CONCLUSION

The study reveals patient factors (primarily forgetfulness) as the main reasons for missing their medications. Other negative influencing factors are lower education level, lack of disclosure, social stigma and lack of treatment supporters. Poor adherence to ARV drugs constitutes a deterrent to efficient therapy leading to poor health outcomes, increased health care costs and generally increases greater burden on public health. Strategies to improve adherence should be focused on the ways to address the negative influencing factors. A combination of many strategies should be employed to achieve this. A major point of importance is education, counselling and orientation of the patients. A well-informed patient will be more committed to adhere to his medication knowing that non-adherence could result to poor outcome of his/her treatment. Positive behavioural changes by patients should be encouraged to enable improved adherence. Social support systems (family, community and treatment supporter) should be put in place to encourage adherence and societal acceptance of PLWHIV will help to reduce the stigma syndrome. Strengthening the weak health system in terms of reduced stock out of drugs, improved training and welfare of personnel and healthcare practitioners will all work together to improve adherence.

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