Original Research Article

Cognitive-behavioural factors associated with adherence to antiretroviral medication among HIV infected patients in Ibadan, Oyo state

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ABSTRACT

Background: The initiation of antiretroviral therapy has brought about a huge transformation in HIV care and it has helped in saving millions of lives since its inception. Nevertheless, non-adherence poses a huge challenge to HIV care as this exposes the patients to opportunistic infections and brings about highly resistant viral strains. Therefore, this study assessed the cognitive-behavioural factors associated with the adherence to antiretroviral medication among HIV infected patients in Ibadan, Oyo State, Nigeria.

Methods: A descriptive cross sectional study design guided by a behavioural theory was employed. Multistage sampling was employed in this study. Purposive sampling was used to select the hospitals and simple random sampling was used to select the respondents. A 42 item semi-structured questionnaire validated at 0.85 Cronbach alpha was used. Data were analysed using descriptive and inferential statistics at $p<0.05$.

Results: The result showed a mean age of 42.11 ± 11.60 years, while 238 (82.6%) of the respondents were female. The study revealed a positive attitudinal disposition of 54% and a negative perception of 51.5%. Optimal antiretroviral medication adherence among the respondents was 189 (65.6%). Attitude and perception showed a statistical correlation towards antiretroviral medication adherence where $p=0.001$ and $p=0.000$ respectively.

Conclusions: Attitude and perception are major cognitive-behavioural factors that predicts antiretroviral medication adherence, hence, health promotion intervention that could modify these factors and improve antiretroviral medication adherence is highly recommended.

Keywords: Adherence, Antiretroviral medication, Attitude, HIV, Perception

INTRODUCTION

Human immunodeficiency virus or acquired immuno-deficiency syndrome (HIV/AIDS) has been documented to be one of the most serious public health challenges because of the recorded rate of morbidity and mortality that has occurred as a result of the disease over the last three decades. Globally, HIV/AIDS has claimed about 32 million lives worldwide. In 2018 an estimated 37.9 million people were living with HIV with a global HIV prevalence of 0.8% among adults.[1-2]

The burden of the global HIV epidemic is lopsided in sub-Saharan Africa accounting for more than 70% of the global burden of infection.[3] The Nigeria HIV/AIDS indicator and impact survey revealed that 1.9 million people are living with HIV infection, this account for about 1.4% of the total population of people living with

HIV/AIDS, with the highest prevalence among females age 35-39 (3.3%) and highest among males age 50-54 years at 2.3%.[4] According to the survey, the south west region has the fourth highest prevalence of HIV (1.2%).[4]

The initiation of antiretroviral therapy (ART) has brought about a huge transformation in the course of the pandemic and it has helped in saving millions of lives since its inception. Sophisticated antiretroviral treatment plan have contributed to this transformation thereby turning HIV infection into a manageable chronic diseases.[5]

The Joint United Nations Programme on HIV/AIDS (UNAIDS) and the World Health Organization (WHO) struggle to bring an end to the HIV/AIDS epidemic by 2030 through the 95-95-95 target. (95% of people living with HIV diagnosed, of whom 95% are on treatment, of whom 95% are virally suppressed). This target is set to be a spin off from the 90-90-90 targets (90% of people living with HIV diagnosed, of whom 90% are on treatment, of whom 90% are virally suppressed) which has been set for 2020.[6]

However, this goal is currently been threatened as adherence to ART remains unsatisfactory across various studies. Furthermore, the global HIV care continuum stands at 79-78-86 (79% of people living with HIV diagnosed, of whom 78% are on treatment, of whom 86% are virally suppressed) corresponding to viral suppression in 53% of people living with HIV.[7] In Nigeria, the prevalence of viral load suppression (VLS) among people living with HIV (PLHIV) age 15-64 years is 44.5%, where the south west region had the third lowest viral load suppression of 43.1%.[4]

As indicated in the literature, a high level of adherence of greater than or equal to 95% is required for antiretroviral medication (ARV) to be effective.[8] This level of adherence is called optimal adherence. Antiretroviral adherence less than 95% is referred to as suboptimal adherence. Optimal adherence prevents the developments of drug resistance viral strains, protect the patients from contracting opportunistic infections and reduce HIV related mortality. Adherence to ARV can also enhance the immunological functions of an infected patients and reduce the symptoms of HIV.[9] Nonetheless, adherence to ARV among HIV infected patients remains substandard and varies between 50% and 80% across different studies and demographics.[10-12]

Medication adherence refers the ability of a patient to meet the recommended requirements made by the provider with respect to timing of the medication, dosage, and frequency.[13] There are various methods used to measure adherence, namely; counselling, pill count, self-report and pharmacy refill data. Nevertheless, no single method is effective in achieving or guaranteeing 100% adherence and no one is seen as an ultimate standard.[14]

There are three major factors that can influence adherence; patient related factors, patient provider factors and clinical factors.[15-16] However, this study was focused of patient related factors. Patients' attitude and perception are two key patient related and behavioural factors that can influence antiretroviral adherence.[17] Although several studies have been conducted on factors associated with adherence to antiretroviral therapy. Nevertheless, majority of this studies focused on social demographics and socio economic determinants. There is paucity of study that focused on the cognitive-behavioural factors associated with adherence to ARV among HIV infected patients in Ibadan, Oyo state, Nigeria.

This study was further guided by the Health Belief Model (HBM) because it created a better theoretical framework for studying health behavior.[18] The study was also conducted in Ibadan South East LGA which is categorized as one of the urban area in Ibadan where research relating to antiretroviral adherence among HIV infected patients is scarce.

The objectives of this study was to determine the attitude, perception and the level of antiretroviral medication adherence of HIV infected patients in Ibadan, Oyo state.

METHODS

This study was conducted in Ibadan South East Local Government Area (LGA) of Oyo state which is categorised as an urban slum area in Ibadan.[19] This study adopted a descriptive cross sectional study design. A semi-structured questionnaire validated at 0.85 Cronbach alpha was used to collect information form HIV infected patients receiving ARV at Adeoyo Maternity Teaching Hospital (AMTH) and St Mary Catholic Hospital, Eleta (SMCH) both of which are tertiary hospitals providing ARV in the LGA. There were 3,799 patients receiving ARV at AMTH while 1, 151 patients were receiving ARV at SMCH. The period of data collection for this study was six weeks from February, 2020 to March, 2020.

Multistage stage sampling technique was adopted for this study. Purposive sampling was used to select AMTH and SMCH in the first stage while simple random sampling technique was utilized to select the patients that participated in the study for the second stage. Fifty percent 50% (144) of the calculated sample size was used to select respondents that attended the hospital during the period of the study. A total of 319 patients and 1,223 patients attended AMTH and SMCH respectively.

Data obtained from completed questionnaires was coded and analysed using statistical package for social science (SPSS) version 23. The variables were computed and scores were allocated according to the rating scale for each variable. Data analysis was conducted using descriptive statistics (frequency, mean and standard

deviation) and inferential statistics (correlation). The level of significance was set at p<0.05.

Sample size for this study was estimated from the Cochran (1963) formula.

$$n = \frac{(Z_\alpha)^2 P(1-P)}{E^2}$$

P=Self-reported adherence level in a study conducted by Kasumu and Balogun was 78.4%.[11]
E = Degree of accuracy set at 0.05
Z_α=Standardized value of α at 0.05=1.96.

$$n = \frac{1.96^2 \times 0.784(1-0.784)}{0.05^2} = \frac{0.651}{0.0025} = 260.4 \text{ approximated to } 261$$

To adjust for 10% non-response rate

=261+26.1=287.1

The total sample size for this study was 288.

Inclusion criteria

HIV infected patients who are enrolled in the health facility for ARV and the patient must have started ARV for at least two months were included.

Exclusion criteria

Patient who refused to grant a consent for the study and patients who had been on ARV for less than two months were excluded.

RESULTS

Demographic characteristics of respondents

The result showed a mean age of 42.11±11.60. Majority of the respondents 107 (37.2%) falls between the age group 40-49 years and 238 (82.6%) were female. As regards level of education, less than two third of the respondents 114 (39.6%) had secondary education and 91 (31.6%) had primary education. Also, majority of the respondents 217 (75.3%) were married and almost all 245 (85.1%) were traders (Table 1).

Attitudinal disposition of HIV infected patients towards ARV

The attitudinal disposition of respondents showed that more than half 164 (57%) of the respondents had positive attitudinal disposition towards ARV (Table 2). The attitudinal score in this study was not good enough because of the peculiarity of the disease condition. Furthermore, 45 (15.6%) of the respondents were still not convinced that they have HIV, 85 (29.5%) of the respondents were bothered that they would have to keep taking the drug for life and 30 (10.5%) of the respondents

still believed that they have to combine ARV with traditional herbs. Also, 46 (16%) of the respondents still agreed that the prayer of a spiritual leader can keep them well without ARV and 24 (7.7%) of the respondents still agreed that ARV should be taken only when sick (Table 3). There was a statistical significant relationship between the patients' attitudinal disposition and antiretroviral medication adherence. Correlation analysis showed p=0.001.

Table 1: Socio-demographic characteristics of respondents (n=288).

Variables	Respondents in the study	
	Frequency (N)	Percentage (%)
Age (in years)		
18-19	13	4.5
20-29	31	10.8
30-39	64	22.2
40-49	107	37.2
50-59	55	19.1
60 and above	18	6.3
Gender		
Male	50	17.4
Female	238	82.6
Religion		
Islam	139	48.3
Christianity	146	50.7
Traditional/Pagan	3	1
Level of education		
None	26	9
Primary	91	31.6
Secondary	114	39.6
Tertiary	57	19.8
Marital status		
Single	30	10.4
Married	217	75.3
Separated	11	3.8
Divorced	17	5.9
Widow	13	4.5
Occupation		
Farmer	9	3.1
Trader	245	85.1
Civil servant	25	8.7
House-wife	8	2.8
Others	1	0.3

Table 2: Categorized attitudinal disposition of respondents (n=288).

Attitude	Respondents in this study	
	Frequency (N)	Percentage (%)
Positive	164	57
Negative	124	46

Table 3: Frequency distribution of attitudinal disposition of respondents (n=288).

Attitudinal disposition towards ARV	Respondents in this study							
	SA	%	A	%	D	%	SD	%
I do not need this drugs because I am not convinced that I have HIV	45	15.6	9	3.1	108	37.5	126	43.8
I am convinced that ARV prolong life	206	71.5	66	22.9	9	3.1	7	2.4
Because there is no cure for HIV, taking the drugs is a waste of time	2	0.7	13	4.5	125	43.4	148	51.4
My drugs are very important to me	235	81.6	43	14.9	1	0.3	9	3.1
You should take ARV only when you feel sick	10	3.5	12	4.2	119	41.3	147	51
Taking ARV for a life time does not bother me	103	35.8	26	9	74	25.7	85	29.5
There is no benefit attending these clinic sessions	30	10.4	11	3.8	99	34.4	148	51.4
My Iman, priest or pastor's prayer can keep me well without ARV	17	5.9	29	10.1	106	36.8	136	47.2
I believe in ARV but you have to combine it with traditional herbs to work	16	5.6	14	4.9	80	27.8	178	61.8

SA-Strongly agree, A-Agree, D-Disagree, SD-Strongly disagree, %-Percentage

Table 4: Categorized perception of respondents (n=288).

Perception	Respondents in this study	
	Frequency (N)	Percentage (%)
Positive	140	48.5
Negative	148	51.5

Perception of HIV infected patients towards ARV

The perception of respondents showed that more than half 148 (51.5%) of the respondents had negative perception towards antiretroviral medication (Table 4). There was a statistical significant relationship between the patients' perception and antiretroviral medication adherence where p=0.000.

Perception was then divided into five sub-constructs using the HBM namely; perceived susceptibility, perceived severity, perceived benefit, perceived barrier and perceived self-efficacy. The result revealed that more than half 159 (55.2%) of the respondents had negative perceived susceptibility towards opportunistic infections, drug resistant HIV and increased viral load (Figure 1). The result further revealed that 208 (72.2%) respondents disagreed that taking ARV regularly could prevent opportunistic infection and 161 (55.9%) disagreed that they cannot develop drug resistant HIV if they don't take their drugs regularly (Table 5). Perceived benefits of respondents toward ARV showed that many respondents 200 (69.5%) had negative perceived benefits towards ARV (Figure 1). Majority of the respondents 214 (74.3%) disagreed that frequent use of medication can increase the longevity of life and 192 (66.7%) disagreed that the quality of life is not dependent on how well the drug is used. Likewise, 114 (39.6%) of the respondents strongly disagreed that consistent use of medication will reduce the viral load (Table 5).

As regards perceived barrier, 149 (51.6%) respondents had a negative perceived barrier towards ARV (Figure 1). Barriers like distance from residence to the clinic and lack of family support stood out in the respondent's responses where 63 (21.9%) agreed that they come from far distance to get to the hospital and 101 (35.1%) agreed that they do not receive support from their family. Also, 94 (32.6%) agreed that work schedule is a major barrier to optimal adherence (Table 5).

Conversely, more than half of the respondents 160 (55.6%) had positive perceived severity as regards opportunistic infection, drug resistant HIV and increased viral load (Figure 1). However, 107 (37.2%) agreed that they are not worried about increased viral load and 85 (29.5%) agreed that contracting infections like tuberculosis is not a serious thing (Table 5). Also, more than half 165 (57.3%) of the respondents had positive perceived self-efficacy (Table 4).
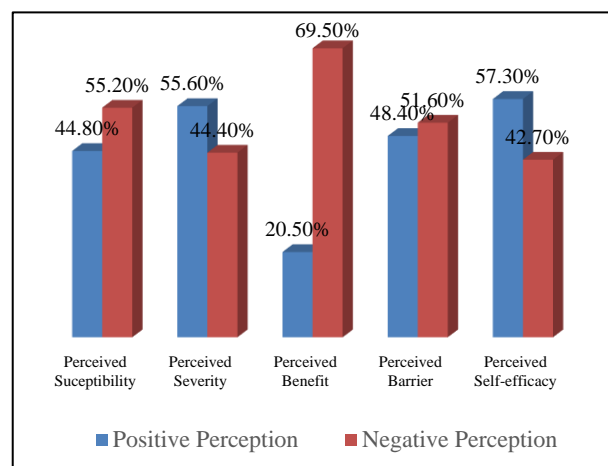

Figure 1: Categorized perception of respondents using HBM.

Table 5: Frequency distribution of respondents' perception towards antiretroviral medication using HBM (n=288).

Perception construct using HBM	Respondents in this study			
	SA (%)	A (%)	D (%)	SD (%)
Perceive susceptibility				
Taking my drug regularly prevents me from contracting opportunistic infections like Tuberculosis.	8 (2.8)	67 (23.3)	208 (72.2)	5 (1.7)
It is not possible to have increased viral load if I miss some doses.	47 (16.3)	125 (43.4)	46 (16.0)	70 (24.3)
If I don't take my drugs regularly, I can develop drug resistance HIV	17 (5.9)	89 (30.9)	161 (55.9)	21 (7.3)
Perceived severity of non-adherence to ARV				
If my viral load increases, I am not worried.	21 (7.3)	107 (37.2)	142 (49.3)	18 (6.3)
Drug resistance HIV can reduce my quality of life.	41 (14.2)	88 (30.6)	122 (42.4)	37 (12.8)
Poorly used medication can increase my chances of dying early.	18 (6.3)	68 (23.6)	192 (66.7)	10 (3.5)
Contracting other infections like tuberculosis is not a serious thing.	32 (11.1)	85 (29.5)	112 (38.9)	59 (20.5)
Perceived benefits				
If I adhere to my treatment, I am less likely to develop drug resistance.	13 (4.5)	71 (24.7)	196 (68.1)	8 (2.8)
Consistent use of my drugs will not reduce my viral load.	56 (19.4)	63 (21.9)	55 (19.1)	114 (39.6)
Frequent use of my medication can make me live longer.	3 (1.0)	69 (24.0)	214 (74.3)	2 (0.7)
My quality of life is dependent on how well I use my drug.	5 (1.7)	86 (29.9)	192 (66.7)	5 (1.7)
Perceived barrier				
ARV drugs sometimes finish in pharmacy.	19 (6.6)	88 (30.6)	171 (59.4)	10 (3.5)
The distance is far from my house to where I refill my drugs	54 (18.8)	63 (21.9)	142 (49.3)	29 (10.1)
I avoid ARV because I don't feel comfortable with the drug reaction.	36 (12.5)	117 (40.6)	101 (35.1)	34 (11.8)
My people do not encourage me to take my drugs.	44 (15.3)	101 (35.1)	71 (24.7)	72 (25.0)
I am always too busy at work to use my drug.	22 (7.6)	94 (32.6)	139 (48.3)	33 (11.5)
I have confidence that ARV is capable of keeping me alive.	212 (73.6)	67 (23.3)	4 (1.4)	5 (1.7)
I can incorporate my treatment into my work schedule.	194 (67.4)	86 (29.9)	4 (1.4)	4 (1.4)
I am able to make out time to go for my clinic visit.	200 (76.4)	63 (21.9)	3 (1.0)	2 (0.7)
I will make sure I and my partner test for HIV to know our status.	180 (62.5)	80 (27.8)	14 (4.9)	14 (4.9)
I am willing to try to follow all the counsel offered to me at the ARV clinic.	226 (78.5)	59 (20.5)	2 (0.7)	1 (0.3)

SA-Strongly agree; A-Agree; D-Disagree; SD-Strongly disagree, %-Percentage
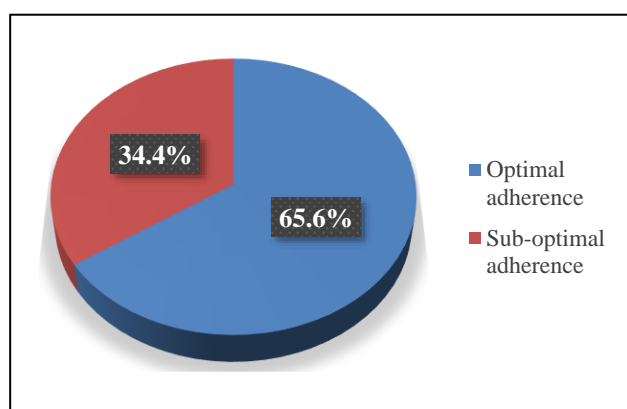
Figure 2: Self-reported antiretroviral medication adherence.

Level of self-reported antiretroviral medication adherence among HIV infected patients.

Medication adherence was measured categorized into two namely; Optimal and suboptimal. Optimal adherence was measure at >95% of adherence to antiretroviral medication while suboptimal was measured at <95%. The result revealed that 189 (65.6%) had optimal medication adherence (Figure 2).

DISCUSSION

The attitudinal disposition of respondents reported in this study showed that a more than half 164 (57%) of the respondents had positive attitudinal disposition towards antiretroviral medication. The attitudinal disposition of the respondents in this study was not good enough because of the peculiarity of the disease condition. In this study, 45 (15.6%) of the respondents still aren't convinced that they have HIV and 30 (10.5%) of the respondents still believe that they have to combine ARV with traditional herbs. This result was consistent with the study carried out by Raberahona et al where despite the fact that 75.6% of the respondents had positive attitude towards antiretroviral therapy, 10.7% were convinced that other methods of treatment is more effective for treatment than ART and 42.7% of the respondents thought that the use of ART is shameful.[20]

Also, Kasumu et al reported that 98.1% of their respondents had good attitude towards ART. Whereas 36.8% expressed negative opinion towards adherence such as "feeling forced to take the ART drug.[11] Ololookere et al also reported that majority of their respondents (73.9%) had a positive attitude towards antiretroviral.[21] However, Over 34% of the respondents in their study thought that taking antiretroviral drugs for their lifetime would lead to fatigue and 22.6% reported that they felt that it was shameful to be on ARV.

In this study, more than half 148 (51.5%) of the respondents had negative perception towards antiretroviral medication and perception towards antiretroviral medication showed a statistical significant relationship to medication adherence. This result contradict that of Raberahona et al where the perception level of the participant in their study was good.[20]

The result of this study further revealed that more than half 159 (55.2%) of the respondents had negative perceived susceptibility, 200 (69.5%) had negative perceived benefits and 149 (51.6%) had negative perceived barrier. More than half of the respondents 160 (55.6%) had positive perceived severity 160 (55.6%) and 165 (57.3%) has positive perceived self-efficacy. Ololookere et al supported the result of this study as they reported that the perception of the respondents in their study varied according to each item.[21] As regards perceived barrier, their study revealed that 66.7% had not yet disclosed their HIV status to anyone, 34.0% reported that they felt upset when they had to be seen in the antiretroviral clinic, and 52.5% would have liked to avoid visiting a clinic because of their concern that their HIV status would become public knowledge.

Furthermore, lack of family support and distance to health facility was identified as a barrier in this study. Ankrah, et al corroborate this result in their study where they identified perceived stigmatization due to disclosure and insufficient money as a barrier in their study.[22] Also, in a research carried out by Agustin et al there was a statistical difference in the relationship between perceived benefit, perceived barrier and perceived self-efficacy in respect to adherence to antiretroviral therapy.[23]

The result of this study showed that 189 (65.6%) of the respondents had optimal medication. This result was in line with the research carried out by Kasumu et al where the level of self-reported adherence was 78.4%.[11] Also, Afiog et al and Afe et al further supported this findings where the level of self-reported adherence was 50.4% and 42% respectively.[10,24]

CONCLUSION

Optimal adherence to antiretroviral medication is essential in HIV care. This study has shown that the attitudinal disposition and perception of HIV infected patient are predictors of antiretroviral medication adherence. This study also presented a self-reported adherence level of 65.6% which does not meet up with the 90-90-90 goal set for the year 2020. Therefore appropriate health promotion intervention from researcher, non-governmental organizations and other stakeholders is recommended to raise the level of antiretroviral medication adherence among HIV infected patients.

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