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Research Paper

Factors Associated With Adherence to Antiretroviral Therapy Among People Living With Human Immunodeficiency Virus Infection In Ikenne Local Government Area, Ogun State, Nigeria

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ABSTRACT

Introduction

Human immune deficiency Virus (HIV) and Acquired Immunodeficiency Syndrome (AIDS) are major public health problems. Adherence to Anti-Retroviral Treatment (ART) is a key factor that determines the success or failure of treatment of People Living with HIV/AIDS, being necessary to achieve undetectable viral load, reduce morbidity and mortality, and improve the quality of life of such individuals. This study examined the factors associated with adherence among people living with human immune deficiency virus infection in Ikenne Local Government Area Ogun State, Nigeria.

Setting

Ilishan Remo, Ikenne Remo, Irolu, Ogere and Iperu, in Ikenne Local Government Area of Ogun State, Nigeria.

Methodology

The study adopted a cross-sectional design. Stratified simple random sampling technique was used to select respondents (n=100) from Ilishan Remo, Ikenne Remo, Irolu and Iperu, all in Ikenne Local Government Area of Ogun State, Nigeria, who had been on ART for at least 6 months prior to the study. A semi-structured and pre-tested questionnaire was used to obtain pertinent data from the respondents. Descriptive statistics, Pearson's correlation and Spearman's non-parametric correlation were performed using SPSS version 21, with alpha level of significance fixed at 0.05.

Results

The majority of the respondentswereYorubas which were (n=70; 70%), the females were (n=68; 68%), Christian were (n=71; 71%), those married were (n=75; 75%), and those whohad partners that were HIV positive (n=54; 54 %). Those who had secondary school education were (n=35; 35%) some (n=37; 37%) of the respondents were between the ages of 34-41.In addition, about 46 (46%) of them had been on ART for past 2-5 years.A significant correlation was found between respondents' knowledge on HIV and ART and adherence to ART (R = 0.21; p<0.05), and between respondents' attitude and adherence to ART, Attitude (R = 0.32; p<0.05). Respondent's gender had no significant relationship with the level of ART adherence, Gender (R s = 0.071; p> 0.05). There was an optimal level of adherence to ART among the respondents (n=71; 71%). Family and friends' support were reported as a reminder to taking ART drugs 44 (44%) and lack of stigmatization and discrimination from family and friends' 54 (54%) as factors that will influence ART adherence.

Conclusion

From the results, it was concluded that respondents' had optimal knowledge of HIV and ART, and a good attitude towards ART, impacted adherence positively. Intervention programs such as the revival of ART treatment support groups and effective health education programswill reduce the stigma associated with HIV/AIDS at the community level, and among individuals living with HIV/AIDS.

Keywords: *Knowledge, Attitude, Antiretroviral therapy, Adherence, and People living with HIV/AIDS, Ikenne Local Government Area, Ogun State, Nigeria.*

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I. INTRODUCTION

Human immunodeficiency virus (HIV), which is a retrovirus, is the causative agent of Acquired Immune Deficiency Syndrome (AIDS). The disease HIV/AIDS, remains a global public health challenge (UNAIDS, 2020). Globally, an estimated 38.0 million people were living with HIV in 2019 and out of this figure, an estimated 1.7 million cases were people newly infected with the virus (UNAIDS, 2020). During the same period, about 690,000 people died as a result of AIDS-related illnesses, and cumulatively by 2019, anestimated 75.7 million people worldwide had HIV infection (UNAIDS, 2020).

A majority of the global burden of HIV cases (68% or 22.5 million cases) is in the Sub-Saharan Africa region (UNAIDS, 2010). Nigeria, the most populous nation in the region has the second largest number of HIV cases in the world (NACA, 2017). Among adults aged 15–49 years in Nigeria, the prevalence of HIV infection was estimated at 1.4% (UNAIDS, 2020). The prevalence of HIV was reported to be highest in Nigeria's South-South Zone (5.5%), and lowest in the South-East Zone (1.8%), (NACA, 2015).

The national program on Anti-retroviral Therapy (ART) was initiated by the Federal Government of Nigeria in January 2002 as part of an extended response to care and support for people living with HIV/AIDS (PLWHA). The program began fully with 25 treatment centers across the 6 geopolitical zones of the country, offering a 3-drug ARV combination — 2 Non-Nucleoside Reverse Transcriptase Inhibitor (NNRTI, Lamivudine + Stavudine) and 1 Non- Nucleoside Reverse Transcriptase (NNRT, Nevirapine), and treatment was subsidized at a cost of US$ 10 per month for PLWHA (Idigbe et al. 2005).

Antiretroviral therapy has been helpful in the global response to the epidemic of HIV/AIDS (Granchi et al., 2012; Williams). Across the world in 2019, 25.4 million people with HIV infection (67%) were accessing antiretroviral therapy, up from 6.4 million in 2009 and by the end of June 2020, the number had risen further to 26.0 million people (UNAIDS, 2020). In addition, by 2019, 85% of pregnant women living with HIV infection had access to ART to prevent the transmission of HIV infection to their babies during pregnancy and childbirth, and to protect their own health. (UNAIDS, 2020).

Sustainable Development Goals (SDG) regarding ART services are as follows: 90% of people living with HIV must know their HIV status, 90% of people who know their status must receive treatment and 90% of people on treatment must a suppressed viral load (UNAIDS, 2011). Antiretroviral treatment increases survival and improves the quality of life of HIV infected patients by reducing a wide range of HIV related morbidities and mortalities (including mortality from opportunistic infections), hence making the patient live longer and healthier (Dalhatu et al. 2016).

According to the World Health Organization (WHO), adherence is the extent to which a person's behavior in taking medication, following a diet, and/or executing lifestyle changes corresponds with agreed recommendations from a health-care provider (WHO, 2003). Antiretroviral treatment adherence as defined by Chaiyachati et al., 2014), is the level to which a person is taking medicines prescribed by a physician and as per medical recommendations in relation to timing, dosing and consistency. For ART to prevent the emergence of resistant strains of HIV, a strict adherence level of ≥95% is recommended (Paterson et al., 2000).

ART must be continued daily once it has been initiated, (World Health Organization, 2010). Family support, friends, and community-based support have been observed to be associated with ART adherence (Bangsberg et al., 2000; Campbell et al., 2010; Mitiku, Abdosh, & Teklemariam, 2013). Patients' knowledge and attitude regarding HIV can negatively or positively affect treatment process. Poor knowledge of HIV has been linked with non-adherence to ART (Langebeek et al., 2014), and withdrawal from care in both high- and low-income settings (Godin et al., 2005; Boateng et al., 2013). Gender, income and level of education are also factors that influence ART adherence (Eyassu et al., 2017; Samuel et al., 2018).

Despite the benefits of good adherence, not all people living with HIV/AIDS (PLWHA) fully adhere to the required treatment level. Failure to attain the required adherence level results in poorer prognosis, higher morbidity, mortality and the development of resistance to ART (Nachega et al., 2011). Once resistance develops, it poses a threat for PLWHA, family, community, healthcare providers and the healthcare system because treating ART resistant HIV strain requires second-line ART regimens which are more expensive and have worst side effects (Chauhan et al., 2019). Therefore, adherence to ART produces successful HIV outcomes to ensure ideal viral and CD4 control and prevention of further complications (WHO/UNAIDS, 2006).

Ensuring adherence to HIV treatment remains challenging for the HIV/AIDS response, mostly in sub-Saharan Africa (Fonsah et al., 2017) Adherence monitoring and evaluation of ART are, essential public health surveillance tools in the prevention of HIV in both developed and developing countries. This study determined the ART adherence level and the factors associated with adherence to anti-retroviral therapy among people living with HIV infection attending ART clinic in a private teaching hospital in in Ikenne Local Government Area (LGA) of Ogun State, southwest Nigeria.

II. METHODOLOGY

The study was conducted at the ART Clinic of the Community Medicine Department of Babcock University Teaching Hospital (BUTH) in Ilisan Remo (Latitude: 6.8932 East and Longitude: 3.7105 North Ikenne LGA, Ogun State, Nigeria. Ikenne LGA has an area of 179 km^2, a population density of 924 people per km^2, and a population of 119,117 people comprising 60,607 male and 58,150 female(NPC, 2006). Ikenne LGA is semi-urban and comprises five major towns namely Iperu Remo, Ilisan Remo, Ogere Remo, Irolu Remo and Ikenne Remo, the headquarters.

Ethical clearance for the study was obtained from the Babcock University Health Research Ethics Committee (BUHREC). All the data collected from the study were fully anonymized to protect the privacy of the participants. The respondents were notified of their right to voluntarily participate in the study or to withdraw from it at any point in time. Due to the COVID-19 pandemic, all the COVID-19 prevention guidelines (such as social distancing, hand washing, use of face mask and hand sanitizer), of the government of the Federal Republic of Nigeria were adhered to.

A descriptive quantitative cross-sectional survey design and precede model were used to identify the predisposing factors (knowledge and attitude), reinforcing factors (family, friends & partner's support), and enabling factors (availability of drugs and accessibility to treatment center) that enhance anti-retroviral treatment compliance in people living with HIV infection in the study area.

The study population comprised male and female HIV-positive patients aged 18-64 years old,who were on Highly Active Anti-Retroviral Therapy (HAART), attending the ART clinic at BUTH and could provide voluntary informed consent. Excluded from the study were individuals less than 18 years of age who had been on ART for less than 3 months before the commencement of the study, HIV+ adolescents who were not registered in BUTH and patients on admission.

The sample size for the study (n=25) was estimated using the Leslie Kish's formula at 95% confidence interval estimate. To accommodate more participants, and a situation that may arise in which some of the study participants are lost to follow up, relocation or death before the conclusion of the study, the sample size for the study was quadrupled to 100 participants. To ensure adequate representation of the targeted age group of residents, stratified simple random sampling technique was used to select 20 participants each, aged 18-64 years, from each of the 5 towns in Ikenne LGA — Ikenne, Ilishan, Iperu, Irolu and Ogere.

The independent variables in the study were predisposing factors which includes knowledge and attitude, reinforcing factors which includes family support, and enabling factors which include availability of drugs and accessibility to ART center. The dependent variable was adherence to ART. A researcher-developed, well-structured and pre-tested questionnaire was used to gather the following information from the selected study participants:

1. socio demographic information including age, gender, ethnicity, marital status, and educational status;
2. predisposing factors such as knowledge on HIV and ART adherence, and attitude towards adherence to ART among People living with HIV;
3. reinforcing factors such as family and friends support that will enhance adherence to ART among People living with HIV;
4. enabling factors, availability of drugs and accessibility to ART center that will motivate adherence to ART among People living with HIV
5. assess the adherence level to ART among People living with HIV

Descriptive (frequency, percentage mean and standard deviation) and inferential statistics (Pearson's correlation and the nonparametric Spearman's correlation) were performed on the data collected using Statistical Package for Social Sciences (SPSS) version 21.0. Correlation was done to determine the association between the independent and dependent variables, with the alpha level of statistical significance set at 0.05.

III. RESULTS

1. Demographic characteristics of the respondents (n=100)

The socio-demographic profile of the respondents is presented in Table 1. The majority (n=37, 37%) were between the ages of 34-41, and most (n=68, 68%) were female. Around a third of the respondents (n=35, 35% had up to secondary school education, most were traders (n=46, 46%), professed Christians (n=71, 71%),married (n=75, 75%), had partners that were HIV positive (n=54, 54%), and had been on ART treatment for past 2-5 years (Table 1).

Table 1. Demographic Profile of the Respondents (n=100)

Sample Characteristic	Frequency (n)	Percentage (%)	Cumulative Percentage (%)
1. Age category (Years)			
18-25	7	7.0	7.0
26-33	8	8.0	15.0
34-41	37	37.0	52.0
42-49	32	32.0	84.0
50 and above	16	16.0	100.0
2. Gender			
male	32	32.0	32.0
female	68	68.0	100.0
3. Educational level			
No formal education	11	11.0	11.0
Primary	21	21.0	32.0
Secondary	35	35.0	67.0
College/University	33	33.0	100.0
4. Occupation			
Civil servant	9	9.0	
Farmer	14	14.0	23.0
Housewife	3	3.0	26.0
Trader	46	46.0	72.0
Student	7	7.0	79.0
Not employed	9	9.0	88.0
Others	12	12.0	100.0
5. Religion			
Christianity	71	71.0	
Islam	28	28.0	99.0
Others	1	1.0	100.0
6. Marital Status			
Single	16	16.0	16.0
Married	75	75.0	91.0
Divorced	2	2.0	93.0
Separated	3	3.0	96.0
Widowed	4	4.0	100.0
7. Partner's HIV Status			
Positive	54	54.0	44.0
Negative	35	35.0	89.0
Unknown	11	11.0	100.0
8. Ethnicity			
Igbo	20	20.0	20.0
Yoruba	70	70.0	90.0
Hausa	2	2.0	92.0
Others	8	8.0	100.0
9. Years on ART			
3months- 1year	12	12.0	12.0
2years- 5years	46	46.0	58.0
6years- 10years	32	32.0	90.0
11years and above	10	10.0	100.0

2. Predisposing Factors

2.1. Respondents Knowledge on HIV and ART

Only very few 15 (15%) of the respondents believed that HIV is a disease created by God to punish humans. Most (n=75, 75%) of the respondents' knew that HIV is not a disease caused by witchcraft, that HIV is a virus that attacks the immune system (n=81, 81%), and that HIV is preventable (n=85, 85%). A little above half (n=68, 68%) of the respondents' answered all six correct response on the modes of transmission of HIV. Almost half (n=42, 42%) of the respondent believed that HIV is curable. An overwhelming majority of the respondents (n=94, 94%) knew that there is a drug to control HIV infection and that ARTs are a lifelong treatment (n=93, 93%). Most 90 (90%) of the respondents knew that ART drugs reduce the risk of transmission of HIV infection (Table 2).

The level of knowledge of the respondents was measured on a 24 point rating scale. The respondents had a score of 18.03±2.94 that translated to a high level of knowledge prevalence on HIV and ART adherence (75%), (Table 3).

Table 2. Respondents level of knowledge on ART and HIV

Variables and Items to be considered	Study respondents (n=100)		
	Frequency (n)	Percentage (%)	Cumulative percentage (%)
1. HIV is a disease caused by God to humans			
Yes	15	15.0	15.0
No	69	69.0	84.0
I don't know	16	16.0	100.0
2. HIV is a disease caused by witchcraft			
Yes	9	9.0	9.0
No	75	75.0	84.0
I don't know	16	16.0	100.0
3. HIV is a virus that attacks the immune system Yes	81	81.0	81.0
No	15	15.0	96.0
I don't know	6	4.0	100.0
4. Is HIV preventable?			
Yes	85	85.0	85.0
No	9	9.0	94.0
I don't know	6	6.0	100.0
5. The following are the modes of transmission of HIV			
Wrong guess	1	1.0	1.0
Any correct 3 responses	1	7.0	8.0
Any correct 4 responses	11	11.0	19.0
Any correct 5 responses	13	13.0	32.0
Any correct 6 responses	68	68.0	100.0
6. Is HIV curable?			
Yes	45	45.0	45.0
No	42	42.0	87.0
I don't know	13	13.0	100.0
7. There is a drug to control HIV			
Yes	94	94.0	94.0
No	4	4.0	98.0
I don't know	2	2.0	100.0
8. The drug is a lifelong treatment			
Yes	93	93.0	93.0
No	2	2.0	95.0
I don't know	5	5.0	100.0
9. **The drug reduces the risk of transmission**			
Yes	90	90.0	90.0
No	7	7.0	97.0
I don't know	3	3.0	100.0

Table 3. The level of knowledge of the respondents

Variables and Items to be considered	Study respondents (n=100)		
	Frequency (n)	Percentage (%)	Cumulative percentage (%)
Yes	28	28.0	28
No	72	72.0	100
Mean score	18.03		
Standard deviation	± 2.94		

2.2. Respondents Attitude towards ART Adherence

About 57 (57%) of the respondents' strongly agreed that ART drugs will suppress their viral load. A little above half 52 (52%) strongly agreed that commitment to ART drugs will make them live longer. Few 12 (12%) of the respondents agreed that traditional herbs are better for the treatment of HIV. Less than half 29 (29%) of the respondents' agreed that they take their ART drugs at any time of the day. Few of the respondents 12 (12%) agreed that they cannot do without drinking alcohol. Almost half 47 (47%) of the respondents strongly disagreed that smoking cannot affect their ART drugs. Majority 78 (78%) of the respondents strongly agreed that eating fruits and vegetables will make them healthy while taking ART drugs (See Table 4)

The attitude of the respondents measured on a 28 point rating scale yielded a mean score of 23.38±2.84 and this translated to an attitude prevalence of 84% (See Table 4). The proportion of the respondents with good attitude was 60% while poor attitude was 40% (See Table 5).

Table 4. Respondents level of attitude towards ART adherence

Variables and Items to be considered	Study respondents (n=100)		
	Frequency (n)	Percentage (%)	Cum. percent (%)
From what I know, the drug will suppress my viral load	**57**	**57.0**	**57.0**
Strongly agree	57	57.0	57.0
Agree	43	43.0	100.0
Disagree	0	0.0	0.0
Strongly disagree	0	0.0	0.0
Undecided	0	0.0	0.0
If I am committed to the ART drugs, I will live longer			
Strongly agree	52	52.0	52.0
Agree	47	47.0	99.0
Disagree	1	1.0	100.0
Strongly disagree	0	0.0	0.0
Undecided	0	0.0	0.0
I believe traditional herbs are better for the treatment of HIV			
Strongly agree	2	2.0	2.0
Agree	12	12.0	14.0
Disagree	47	47.0	61.0
Strongly disagree	37	37.0	98.0
Undecided	2	2.0	100.0
I take my drugs at any time of the day			
Strongly agree	4	4.0	4.0
Agree	29	29.0	33.0
Disagree	42	42.0	75.0
Strongly disagree	24	24.0	99.0
Undecided	1	1.0	100.0
I cannot do without taking alcohol			
Strongly agree	2	2.0	2.0
Agree	12	12.0	14.0
Disagree	52	52.0	66.0
Strongly disagree	34	34.0	100.0
Undecided	0	0.0	100.0
Smoking once in a while will not affect my ART drug			
Strongly agree	2	2.0	2.0
Agree	5	5.0	7.0
Disagree	45	45.0	52.0

Strongly disagree	47	47.0	99.0
Undecided	1	1.0	100.0
Eating fruits and vegetables will make me healthy while taking ARTs			
Strongly agree	78	78.0	78.0
Agree	22	22.0	100.0
Disagree	0	0.0	100.0
Strongly disagree	0	0.0	100.0
Undecided	0	0.0	100

Table 5. Category of respondent's level of attitude towards art adherence

Variables and Items to be considered	Study respondents (n=100)		
	Frequency (n)	Percentage (%)	Cumulative percentage (%)
Poor (16-22)	40	40.0	40.0
Good (23-28)	60	60.0	100
Mean score	23.38		
Standard deviation	± 2.84		

3. Reinforcing Factors

More than half (n=65, 65%) of the respondents had disclosed their HIV status to their partners. Less than half (n=35, 35%) were not satisfied with the support they were getting from their partners concerning their ART treatment. Most (n=83, 83%) of the respondents had not disclosed their HIV status to their friends. Majority (n=82, 82%) reported not satisfied with the support they were getting from their friends concerning their treatment. Almost half (n=49, 49%) of the participants' had not disclosed their status to persons among their family members. Half (n=50, 50%) of the respondents were not satisfied with the support they were getting from their family members concerning their treatment. A little above half (n=54, 54%) of the respondents' chose not to disclose their status to anyone because of the fear of stigmatization and discrimination. Almost half (n=44, 44%) of the respondents reported that their partner, friends, and family members do not help them remember to take their drugs (See Table 6).

The respondents view about the reinforcing factors associated with ART adherence was measured on a 16 point rating scale that returned a mean score of 11.47 ± 2.01. This translated to a prevalence rate of 72% (See Table 7). The category of respondents with poor reinforcing influence was 55% and this majority of the respondents had poor reinforcing influence which meant that stigmatization and discrimination still exists among people living with HIV/AIDS.

Table 6. Respondents reinforcing factors towards ART adherence

Variables and Items to be considered	Study respondents (n=100)		
	Frequency (n)	Percentage (%)	Cum. percent (%)
I have disclosed my status to my partner			
Yes	65	65.0	65.0
No	35	35.0	100.0
I don't know	0	0.0	100.0
I am satisfied with the support I am getting from my partner concerning my treatment			
Yes	64	64.0	64.0
No	35	35.0	99.0
I don't know	1	1.0	100.0
I have disclosed my status to my person(s) among my friends			
Yes	16	16.0	16.0
No	83	83.0	99.0
I don't know	1	1.0	100.0
I am satisfied with the support I am getting from my friends concerning my treatment			
Yes	17	17.0	17.0
No	82	82.0	99.0
I don't know	1	1.0	100.0

I am satisfied with the support I am getting from my family members concerning my treatment			
Yes	50	50.0	50.0
No	50	50.0	50.0
I don't know	0	0.0	100.0
I choose not to disclose my status to anyone for fear of discrimination and stigmatization			
Yes	54	54.0	54.0
No	46	46.0	100.0
I don't know	0	0.0	100.0
My partner, friends, or family members do not help me to remember to take my drugs			
Yes	44	44.0	44.0
No	54	54.0	98.0
I don't know	2	21.0	100.0

Table 7. Category of respondent's reinforcing factor towards ART adherence

Variables and Items to be considered	Study respondents (n=100)		
	Frequency (n)	Percentage (%)	Cumulative percentage (%)
Poor (7-11)	55	55.0	55.0
Good (12-16)	45	45.0	100
Mean score	11.47		
Standard deviation	± 2.01		

4. Enabling factors towards ART adherence

Of the respondents, fifty seven (n=57, 57%) agreed that the ART drugs are always available at any given point in time. Above half 57 (57%) agreed that the distance from their house to the ART clinic is not Far. About a third of the respondents (n=37, 37%) agreed that the timing of the ART clinic is not convenient for them. Slightly more than half of the respondents (n= 57, 57%) agreed that the ART department is together with some other services in the same building. Slightly over half of the respondents (n=58, 58%) of the respondents agreed that the friendly atmosphere of the health workers in the ART Clinic encourages them to take their drugs. Some (n=58, 58%) of the respondents' agreed that paying consultation fee is a normal procedure (Table 8).

The respondents view on the enabling factors associated with ART adherence, measured on a 24 point rating scale showed a mean score of 17.78 ± 1.84. This translated to a prevalence rate of 74% (Table 9). The category of respondents with poor enabling factors to ART adherence was 73%. Hence a majority of the respondents had poor enabling factors associated with ART adherence. Those that had good enabling factors associated with ART adherence were by far fewer (n=27; 27%).

Table 8. Respondents enabling factors towards ART adherence

Variables and Items to be considered	Study respondents (n=100)			
	Frequency (n)	Percentage (%)	Cum. percent (%)	
The drugs are always available at any given time				
Strongly agree	40	40.0	40.0	
Agree	57	57.0	97.0	
Disagree	1	1.0	98.0	
Strongly disagree	1	1.0	99.0	
Undecided	1	1.0	100.0	
The distance from my house to the ART clinic is not far				
Strongly agree	21	21.0	21.0	
Agree	57	57.0	78.0	
Disagree	20	20.0	98.0	
Strongly disagree	1	1.0	99.0	

Undecided	1	1.0	100.0
The timing of the ART clinic is not convenient for me			
Strongly agree	11	11.0	11.0
Agree	37	37.0	48.0
Disagree	42	42.0	90.0
Strongly disagree	9	9.0	99.0
Undecided	1	1.0	100
The ART department is together with some other services in the same building			
Strongly agree	10	10.0	10.0
Agree	57	57.0	67.0
Disagree	28	28.0	95.0
Strongly disagree	4	4.0	99.0
Undecided	1	1.0	100.0
The friendly atmosphere of the health workers encourages me to take my drug			
Strongly agree	33	33.0	33.0
Agree	58	58.0	91.0
Disagree	9	9.0	100.0
Strongly disagree	0	0.0	100.0
Undecided	0	0.0	100.0
Paying for consultation fee is a normal procedure			
Strongly agree	21	21.0	21.0
Agree	58	58.0	79.0
Disagree	20	20.0	99.0
Strongly disagree	1	1.0	100.0
Undecided	0	0.0	100.0

Table 9. Category of respondent's enabling factors towards ART adherence

Variables and Items to be considered	**Study respondents (n=100)**		
	Frequency (n)	**Percentage (%)**	**Cumulative percentage (%)**
Poor (13-18)	73	73.0	73.0
Good (19-24)	27	27.0	100.0
Mean score	17.78		
Standard deviation	± 1.84		

5. ART Adherence Level

Majority 71 (71%) of the respondents had optimal ART adherence level of ≥95% (missed ≤ 3 doses per month), few (n=6, 6%) of the respondents had fair ART adherence of 85-94% (missed 4-8 doses per month) and 23 (23%) of the respondents had poor ART adherence of <85% (missed ≥ 9 doses per month), (Figure 1).

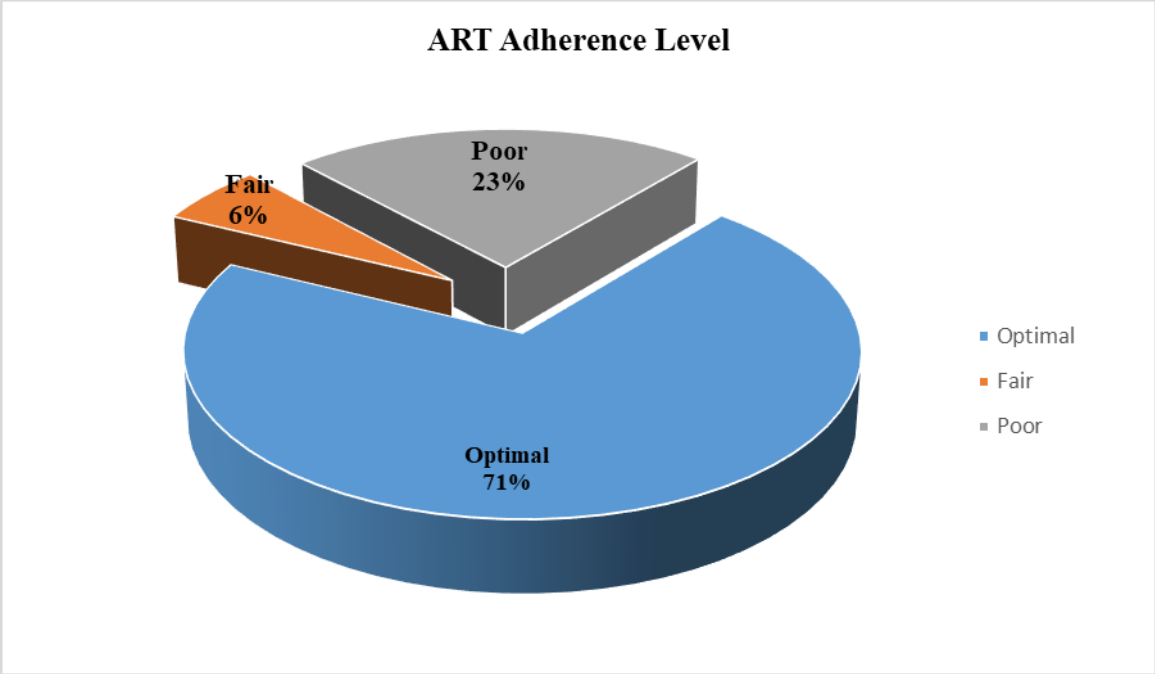

Figure 1. Respondents' ART Adherence Level

Relationship between respondents' knowledge and adherence to ART, attitude and adherence to ART, andgender and adherence level to ART

The result of the Pearson correlation revealed: a significant correlation between respondents' knowledge and adherence to ART ($R= 0.21$; $p<0.05$); a significant correlation between respondents' attitude and adherence to ART. Attitude ($R= 0.32$; $p<0.05$); and no significant correlation between respondents gender and adherence to ART Gender ($r_s = -0.071$; $p> 0.05$), (Table 10).

Table 10. Relationship between respondents' knowledge and adherence to ART

Variables and Items to be considered	Study respondents (n=100)		
	R	r_s	P value
Respondents' knowledge and adherence to ART	0.21	-	0.034
respondents' attitude and adherence to ART	0.032	-	0.001
Respondents gender and adherence level to ART	-	0.071	0.485

IV. DISCUSSION AND CONCLUSION

1. Sociodemographic Characteristics of the Respondents

The findings of this result revealed that most 68 (68%) of the respondents were female. Some 35 (35%) had only secondary school education. 46 (46%) of the respondents were traders. Majority of the respondents' were Christians 71 (71%). Most 75 (75%) of the respondents are married. Majority of the respondents70 (70%) are Yoruba's'. The result of this study supports the findings of Abayomi, Olanrewaju, &Gbadebo (2017), where a higher proportion of the respondents were female, married and had secondary school as the highest levels of education attained. Result showed also that over 90% were of the Christian faith. These findings are also similar to results from other works done on adherence (Kasumu, Balogun, 2014; Potchoo, Tchamdja, Balogou, Pitche, Guissou, et al.; Talam, Gatongi, Rotich, Kimaiyo, 2008).

2. Predisposing Factors associated with Adherence to ART

2.1. Knowledge

The findings from the study showed that 15 (15%) of the respondents believed that HIV is a disease caused by God to humans. Majority 75 (75%) of the respondents' knew that HIV is not a disease caused by witchcraft. This result is lower compared to the result gotten from the study conducted by James et al. (2018) where majority of the respondents said HIV is due to curse 39.0% and others thought it was due to witchcraft 31.8%.

Result also revealed that 81 (81%) of the respondents' know that HIV is a virus that attacks the immune system. The result from this study is higher compared to the result gotten from the study of James et al.

(2018) where few respondents knew what HIV infection is 27.9%. Almost half (42%) of the respondent reported that HIV is curable. This result supports the findings of James et al., (2018), where 45.5% said HIV is curable. Furthermore, the result revealed that 72 (72%) of the respondents have a good knowledge of HIV and ART adherence while 28 (28%) have poor knowledge. This result confirms the study of IdindiliJullu, Mugusi and Tanner (2012) where patients with good knowledge of HIV-prevention scored 68.3% and the result of Kahema, Mgabo, Emidi, Sigalla, and Kajeguka, (2018) where respondents scored 98.1%.

2.2. Attitude

Result of this study showed that 99% of the respondents' agreed and strongly agreed that ART drugs will suppress their viral load and 99% of the respondents' strongly agreed that commitment to ART drugs will make them live longer. This result collaborates with the result gotten from the study of Tsega, Srikanth, and Shewamene (2015) where 97% of the respondents agreed and strongly agreed that the use of ART is essential to enhance quality of life. 12% of the respondents agreed that traditional herbs are better for the treatment of HIV. Less than half (29%) of the respondents' agreed that they take their ART drugs at any time of the day. Few of the respondents (12%) agreed that they cannot do without drinking alcohol. This result is lower compared to the result gotten from Tsega, Srikanth, and Shewamene (2015) where 22.5% of the respondents' were active substance users including the use of alcohol. Almost half (47%) of the respondents strongly disagreed that smoking cannot affect their ART drugs. Majority (78%) of the respondents strongly agreed that eating fruits and vegetables will make them healthy while taking ART drugs. Result further showed that 60% of the respondents' have a good attitude towards ART adherence and 40% have a poor attitude towards ART adherence.

3. Reinforcing Factors Associated with Adherence to ART

Findings from this study revealed that 65% of the respondents have disclosed their HIV status to their partners, 50% of the respondents have disclosed their HIV status to their family members and (83%) of the respondents have not disclosed their HIV status to their friends. The researcher suggests that the reason for the 65% disclosure of spouse HIV status may be because 54% of the respondents HIV status of their spouse are positive. Result from this study also showed that 64%, 50% and 17% of the respondents are satisfied with the support they are getting from their partners, family and friends concerning their ART treatment. This result supports the finding of Mitiku, Abdosh, and Teklemariam, (2013) where 47.3% of the respondents had family support while only 14.2% had support from friends and community. Result from this study also showed majority of the respondents (54.0%) choose not to disclose their status because of the fear that arise from stigmatization and discrimination among peers. This result supports the findings of the study done by Abera, Fenti, Tesfaye, and Balcha, (2015) which revealed that 36.65% of the respondents havefear of stigma and discriminationin the society. Result from this study also showed that majority of the respondents are not satisfied with the support they are getting from their friends (82%) and family (50%). The result of this study is a higher compared to the result of Abera, Fenti, Tesfaye, and Balcha, (2015) where 14.03% of the respondents' complain about the blame and rejection of families and friends.A little above half (54%) of the respondents' choose not to disclose their status to anyone because of the fear of stigmatization and discrimination. Lastly, result showed that almost half (55%) of the respondents reported that their partner, friends, and family members help them remember to take their drugs. This result is lower compared to the result of Mwangi, Wanzala, and Karanja, (2014) where majority of the respondents (68.7%) received support such as encouragement or reminder to take their medication.

4. Enabling Factors that Motivated Adherence to ART

Findings from this study revealed that most (57%) of the respondents agreed that the drugs are always available at any given point in time. The result differs from the findings of by Tsega, Srikanth, and Shewamene (2015) where 13.4% was accounted for unavailability of ART among patients. Studies in Yirgalem Hospital, Gondar, and Harari in Ethiopia and in South Africa and Guatemala also showed similar reports (Habtamu, Tekabe, Zelalem 2013;Tessema, Biadglegne, Mulu, Getachew, Emmrich, and Sack 2010; Campbell, Ruano,Samayoa, and EstradoMuy, 2010).

Above half (57%) of the respondents' agreed that the distance from their house to the ART clinic is not Far. 37% of the respondents' agreed that the timing of the ART clinic is not convenient for them. Most of (57%) respondents agreed that the ART department is together with some other services in the same building. Majority (58%) of the respondents agreed that the friendly atmosphere of the health workers encourages them to take their drugs. This result does not support the findings of Chirambo, Valeta, Kamanga and Nyondo-Mipando (2019) which shows that some clients defaulted from ART treatment due to the unfriendly relationship with health workers. The study of this result showed that 58% of the respondents' agreed that paying consultation fee is a normal procedure. This result is not in line with the study of Chirambo, Valeta, Kamanga and Nyondo-Mipando (2019) where result showed that lack of finance negatively affected adherence to ART. Lastly, reasons

given by non-adherent patients, 74 (29.2%), included lack of money to purchase ARV drugs 66.2% and long distance to the hospital, 28.4% (Salami, Fadeyi, Ogunmodede, and Desalu, 2010).

5.0 Adherence Level of ART Use

Findings from this study revealed that 71% of the respondents had optimal or excellent ART adherence level of ≥95%, 6% had fair ART adherence of 85-94% and 23% of the respondents had poor ART adherence of <85%. This result supports the findings of Salami, Fadeyi, Ogunmodede, and Desalu, (2010) conducted in Ilorin, Nigeria where (70.8%) of the respondents were adherent to medications. This result is slightly different from the result of the study of Abayomi, Olanrewaju, and Gbadebo (2017) in Nigeria where result showed that about 42% of the HIV positive respondents had an excellent level of adherence (≥ 95% adherence), 49% had fair adherence level (85-94% adherence) while 8% had poor level of adherence (<85%).

V. CONCLUSION AND RECOMMENDATIONS

Conclusion

From the findings, it can be concluded that respondents' have an optimal knowledge of HIV and ART adherence and a good attitude towards ART adherence. Findings also showed that respondents' have a poor reinforcing factor which can be associated with stigmatization and discrimination that arise from being HIV positive when status are being revealed to family and friends and to some extent, this may perhaps affect the adherence level of ART. Furthermore, the findings of this study revealed an optimal adherence level of ART. Lastly result of the hypothesis test showed that there is a significant correlation between respondents' knowledge and adherence to ART, and Spearman's nonparametric correlation showed that there is no significant correlation between respondents' gender and adherence to ART.

Recommendations

Based on the findings of the study, the following are therefore recommended;

1. The Department of Community Medicine, Babcock University Teaching Hospital, should organize an intervention program to reduce stigma so as to increase adherence to ART, both at community level and among people living with HIV/AIDS.
2. The ART Clinic should come up with strategies to increase disclosure of HIV status of the clients to treatment supporters, who in turn supports clients to adhere to ART
3. The ART Clinic should revive ART treatment support groups which are composed of people living with HIV to support each other through joint sharing of experiences in overcoming challenges of ART adherence.
4. Effective Health education program should be conducted by health professionals where Individuals who have overcome stigma and with experience in ART adherence can be invited to speak with patients and to share with other patients their success stories in adhering to ART among those challenged in adhering to ART.
5. Health care workers and HIV control program implementers need to continually emphasize and support optimal adherence.

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