International Journal of Nursing, Midwife and Health Related Cases
Vol.6, No.1, pp.20-34, May 2020
Published by ECRTD- UK
Print ISSN: 2397-0758, Online ISSN: 2397-0766

ADHERENCE TO ANTIRETROVIRAL THERAPY AMONG HIV PATIENTS VISITING HIV COUNSELLING CENTRES IN SELECTED HOSPITALS, BENIN CITY, EDO STATE

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ABSTRACT: *The introduction of antiretroviral drugs over the past two decades has helped greatly towards controlling HIV/AIDS infection outcome. However its effectiveness depends largely on adherence to the drug. This study was undertaken to assess adherence to antiretroviral drugs among HIV patients visiting HIV counselling centres in selected hospitals, Benin City, Edo state. The study was carried among 220 HIV patients visiting three selected counselling centre in Benin City using convenient sampling technique and a self-structured questionnaire. Data collected were analysed using descriptive statistics and inferential statistics such as Chi square, multivariate logistic regression and ANOVA were used to test hypothesis at 5% level of significance. Result shows 78(35.9%) have poor knowledge, 60(27.6%)) have moderate, while the remaining 79(36.40) have good knowledge. majority 171(77.7%) have good adherence level. factors are food (2.66±1.03), Unavailability drugs (2.76±0.98), drug toxic effect (2.61±0.88), Stigmatization (2.60±0.96) were found to affect adherence. There was no significant relationship ($p>0.05$) between adherence of socio-demographic characteristics. However significant difference ($p<0.05$) was found in the level of knowledge among HIV patient. Multivariate logistic regression showed that respondents that are 18 – 20 years are ten times (O.R = 10.39; C.I = 1.01-107.10) more likely not to adhere than those above 50years. Also respondents with tertiary education are 19% (O.R. 0.81; C.I. = 0.15 – 4.20) less likely not to adhere than those with no education and Christians are 50% (O.R. = 0.50; C.I. = 0.12-2.05) less likely not to adhere than those with traditions/other religion. Conclusion more awareness campaigns and other interventions are needed to improve and sustain the present level of adherence.*

KEYWORDS: adherence, antiretroviral drug, HIV patients, counselling centres.

INTRODUCTION

Human immunodeficiency virus (HIV) is a lifelong chronic viral infection that attacks a type of white blood cell (CD4 cells) responsible for supporting the immune system in fighting infection (WHO, 2015). Acquired Immunodeficiency Syndrome (AIDS), which is the final stage of HIV, occurs when HIV patients has diminished CD4 cells to such a degree that the

body can no longer successfully fight off infections and disease, ultimately leading to death (WHO, 2015). At the end of 2015, 36.7 million people worldwide were estimated to be living with HIV (WHO, 2016), although global prevalence of HIV is declining, high numbers of new cases continue to be diagnosed each year (UNAIDS, 2015). The introduction of antiretroviral drugs (ARD) over the past two decades has helped greatly towards controlling HIV/AIDS infection outcome. Antiretroviral therapy (ART) involves taking a combination of at least 3 types of antiretroviral. Although the specific combination of antiretroviral is dependent on the individual, an individual receiving ART is likely to be prescribed between 1 to 4 tablets per day (British HIV Association, 2016). Current guidance states that ART should be prescribed to all individuals living with HIV; this is based on recent findings indicating improved outcomes for those who commence treatment immediately following their diagnosis (British HIV Association, 2016).

However, effectiveness of these ART depends largely on its adherent. Non adherence can range from missing a dose to refusal to go for a refill of medications at pharmacy or inability to buy the drugs owing to the cost of high expense of the drug. Studies have shown varying adherence level owing the adverse reactions of effects of taking these ART has reduced the level of adherence to ART by HIV patients. According to Nandini, Grish, padmanabha, pundarikaksha (2019) in South India, a good compliance with 85.26% of study subjects showed >95% compliance and only 2.07% were poorly compliant in adherence to medication. Eyassu, Mothiba and Mbambo-kekana, (2016), in Kwa-Thema clinic in Gauteng province, South Africa, reported that 82.8% adhered to ART while 17.2% did not. With respect to physician assessment, the findings indicate an adherence to ART of 76.9% in comparison with non-adherence of 23.1%.

Also Yu, Luo, Chen, Zhulin, Min and Shuiyuan, (2018); reported that 87% (180/207) reported good dosage adherence<87.4 %(181/207) reported good time adherence of which 94.5%(171/181) indicated that the interval between medication was 5mins in the past week. In total 85.5%9177/2070 of the participants were categorized with good adherence and 14.55(30/207) with poor adherence. According to Adeniran, Atilola, Oluwole, Fisher and Odugbemi (2019), in Lagos, Nigeria, reported that about a third (30%; n=90) of respondents were adjudged non-adherent thus leaving about 70% of the respondents to be adherent to their ART medications. Those who were adjudged adherent were significantly younger than the non-adherents (P=0.001). However, Barminas and Yohanna (2018), in Keffi, Nigeria. Show that only 46.7% of their respondents have a high level of medication adherence and there was a statistically significant association between level of spirituality and adherence to ART (χ^2: 5.928, p: 0.015), a higher level of spirituality was associated with better levels of medication adherence. Nigeria has the second highest HIV burden globally after South Africa and only 30% of the PLWHA in Nigeria had access to antiretroviral therapy (UNAIDS, 2017). Though government and non-governmental organisation has made much effort to make these drugs available and accessible to some extent complete adherence to the therapy among the HIV patients is needed to reduce both the spread of the menace as well as reduce its morbidity and mortality. This study was undertaken to assess adherence to antiretroviral drugs among HIV patients visiting HIV counselling centres in selected hospitals, Benin City, Edo state.

Objective of the Study

- To assess the knowledge of the importance of antiretroviral drugs among HIV patients attending HIV counselling centres in Benin City Edo State.

- To assess the level of adherence to antiretroviral drug therapy among HIV patients attending HIV counselling centres in Benin City Edo State.
- To identify the factors influencing the adherence to antiretroviral drug therapy among HIV patients attending HIV counselling centres in Benin City Edo State.

LITERATURE REVIEW

HIV is a lifelong chronic condition. It attacks a type of white blood cell (CD4 cells) responsible for supporting the immune system in fighting infection (WHO, 2015). Acquired Immunodeficiency Syndrome (AIDS), which is the final stage of HIV, occurs when HIV has diminished CD4 cells to such a degree that the body can no longer successfully fight off infections and disease, leading to ultimately death (WHO, 2015). HIV is transmitted through direct contact with bodily fluids, including: blood, breast milk and semen (WHO, 2015). Without treatment HIV infection is likely to develop into AIDS as the immune system gradually wears down. However, advances in ART mean than an ever-decreasing number of people progress to this stage. The risk of HIV progressing to AIDS varies widely between individuals and depends on many factors, including: the age of the individual, the body's ability to defend against HIV, access to high-quality, sanitary healthcare, the presence of other infections, the individual's genetic inheritance resistance to certain strains of HIV, drug-resistant strains of HIV.

HIV treatments are referred interchangeably to as antiretroviral therapy (ART) or highly active antiretroviral therapy. ART involves taking a combination of at least 3 types of antiretroviral drugs. Although the specific combination of antiretroviral is dependent on the individual, an individual receiving ART is likely to be prescribed between 1 to 4 tablets per day (British HIV Association, 2016). Current, guidance states that ART should be prescribed to all individuals living with HIV; this is based on recent findings indicating improved outcomes for those who commence treatment immediately following their diagnosis (British HIV Association, 2016). However adherence plays a major role in success of antiretroviral therapy (ART) since it requires lifelong treatment and is associated with side effects. Decrease in patient compliance attenuates the clinical effectiveness, so in this regard; both patient and the health-care providers face significant challenges with respect to adherence to highly active ART (HAART). Therefore, there is a need to identify the various factors which influence the patient adherence to ensure better outcome (Nandini et al, 2019).

THEORETICAL FRAMEWORK *(The Health Belief Model)*

This psychosocial approach to explain health behaviour was introduced by psychologists Rosenstock, Hockbau, Leventhal and Kegels in the 1950s a deals with value expectancies relating to health. The health belief model suggests that people's belief about health problems, perceived benefits of action and barriers of action and barriers to action and self-efficacy explain engagement in health promoting behaviour. A stimulus must be present in order to trigger the health promoting behaviour (Janz & Becker, 2011).The HBM comprised of several interactive stay beliefs, which collectively affect adherence in a disease like The HBM comprised of several interactive stay beliefs, which collectively affect adherence in a disease like HIV/AIDS.

Perceived threat: Susceptibility and Seriousness of non-adherence to antiretroviral therapy. HIV patients' belief that he or she is susceptible to HIV disease progression which may include factors such as death, increased risk of contracting other infections such as pneumonia, tuberculosis as well as weight loss impaired skin integrity which can result from non-adherent to antiretroviral drugs.

Perceived barriers: It refers to the individual's belief that the material, physical and psychological cost of adhering to ART outweighs its benefits. These factors may prevent an HIV patient from adhering to prescribed treatment and it includes; cost of ART drugs, level of education, access to ART, fear of Stigma, side effects of the drugs, and fear of taking the drugs for a life time amongst others.

Perceived benefits: This refers to the individual belief that adherence to ART reducing the susceptibility to disease progression which means reduced viral load, reduced risk of opportunistic infections as well improved quality of life.

Cues to action: This refers to factors that HIV patients are exposed to that promote adherence to ART. It includes increased availability to antiretroviral drugs at subsidized rates as well as increased awareness and counselling about HIV/AIDS and its treatment.

MATERIALS AND METHOD

Research design: The researcher uses a cross sectional descriptive survey design in three selected HIV counselling centres; Central hospital, Stella Obasanjo mother and child hospital and St Philomena Catholic Hospitals all in Benin City, Edo State, Nigeria. These hospitals are designated centres for HIV counselling and where client also received antiretroviral drugs in Benin City.

Target Population; the population for this study consisted of HIV patients visiting HIV these centres. The average monthly attendance for six month in these centres are as follow State Specialist Hospital =1800, St.Philomina Hospital= 1200 and Stella Obasanjo Mother and Child Hospital = 960. Total = 3960. (Source: Records of selected hospitals 2019)

Sample size determination

The sample size was calculated using Taro Yamane method shown below

n = $\frac{n}{1+N(d)^2}$ Where, n = Sample size N = Total Population D = Level of degree of confidence

n = $\frac{440}{1+400\ (0.05)^2}$ = $\frac{440}{1+400x2.5x10^{-3}}$ = $\frac{440}{1+1}$ = $\frac{440}{2}$ n = 220.00

Therefore 220 is the sample size. This was distributed proportionately to the three centres as follows; State Specialist Hospital =1800 have 45% of target population and sample size = 99, St.Philomina Hospital= 1200; have 30% target population and of sample size =66, Stella Obasanjo Mother and Child Hospital = 960; have 25% target population and of sample size=55

Sampling Technique; Convenience sampling technique which relies on data collection from population members who are available to participate in study was adopted.

Instrument for data collection: The instrument used for this study was self-structured questionnaire. The questionnaire has five sections. Section A was based on the demographic characteristics, Section B covered questions on knowledge of antiretroviral drugs. Section C' covered questions on level of adherence to antiretroviral drugs. Section D covered the factors influencing their compliance to antiretroviral drugs.

Validity and Reliability: The instrument was validated by expert in public health and measurement and evolution based on face and content validity in line with the research objectives. The questionnaire was pre-tested to ensure its reliability by administering it to HIV patients (10% of the sample size) in similar hospital. Data generated were analysed using split half reliability test and the Cronbach alpha value of 0.88, 0.79. 085 were gotten for section B, C and D respectively.

Method of data collection: With the help of three train research assistants one in each of the three centres the questionnaire were administered after informed consent have been gotten form the respondents. This was during each of their clinic days from 8am to 2pm. The questionnaires were then retrieved immediately upon completion of the questionnaires by the respondents Explanations were made to those respondents who may not fully understand what is required of them during the filing of the questionnaire.

Method of data analysis: Data was analysed using descriptive statistics such as frequencies, percentages and means while hypothesis were tested using Chi square statistics, ANVOVA and multivariate logistic regression at 5% level of significance. Stastical Package for Social sciences (SPSS) version 20.0 was employed in all analysis.

Ethical consideration: ethical clearance certificate with reference number **A732/T/1** was obtained from the ethical and research committee of the Central Hospital Benin City of Ministry of Health Edo State after submitting the protocol to the ethical and research committee. Informed consent was obtained from the participants prior to administering the questionnaires. Confidentiality and anonymity was ensured throughout the execution of the study as participants were not required to disclose personal information on the questionnaire.

RESULTS/FINDINGS

Table 1 shows the socio demographic characteristics of respondents. The highest age 63(29.0%) were between 26-30years. 31(14.3) are in the group 30 – 50, while 7(3.2%) are above 50years. 57 (26.3%) are males, while 160(73.7%) are females. 146(67.3%) of the respondents are single, 46(21.2%) are married, 18(8.3%) are separated/divorced, majority 162(74.7%) are Christians, 38(17.5%) has primary education, 61(28.1%) have secondary school, 109(50.2%) have, tertiary level of education. 41(18.8%) reported they are business executive, 26(12.0%) reported they are trader, 30(13.8%) are self-employed while 49(22.6%). **Table 2** shows that 95.7(44.1%) answered wrongly while 121.3(55.9%) answered correctly questions on importance of antiretroviral drugs. In general 78(35.9%) have poor knowledge, 60(27.6%)) have moderate, while the remaining 79(36.40) have good knowledge.

Table 3 shows that the respondents have good level of adherence, except for items on "I always adhere to clinic schedules for prescription refills" (2.31±1.13) and "I start taking my medication, when it gets worse" which reported poor adherence 2.30±1.11)

Figure 1 shows the level of adherence to ART. It reveals that majority 171(77.7%) have good adherence level while only 49(22.3%) have poor adherence.

Table 4 shows that most of the factors are food (2.66±1.03), Unavailability drugs (2.76±0.98), drug toxic effect (2.61±0.88), Stigmatization (2.60±0.96). Others are work, lack of education, forgetfulness distance and lack of encouragement which have average mean of greater than 2.5

Table 5 shows that there is no significant relationship between ($p>0.05$) level of adherence to antiretroviral drug therapy and sociodemogprahic characteristics

Table 6: The multivariate logistic regression showed that respondents that are 18 – 20 years are ten times (O.R = 10.39; C.I = 1.01-107.10) more likely not to adhere than those above 50years. This implies that the higher the age the better the adherence to ART. Males are about twice (O.R=1.69; C.I=0.76-3.76) more likely not to adhere than females. Singles are 67% (O.R = 0.43; C.I = 0.006-3.09) less likely not to adhere than those that are widowed, Respondents from Central Hospital are 27% (O.R=1.28; C.I.=0.52-3.15) more likely not to adhere than those from St. Philomena. Respondents from Stella Obasanjo are 21%(O.R.=1.21; C.I.=0.48-3.09) more likely not to adhere than those from St. Philomena. Respondents with tertiary education are 19% (O.R. 0.81; C.I. = 0.15 – 4.20) less likely not to adhere than those with none. Civil servants are four times (O.R = 3.92; C.I.=1.07-14.30) more likely not to adhere than those with other occupation Business executives are twice (O.R. = 1.97; C.I. = 0.57 – 6.76) more likely not to adhere than those with other occupation, Christians are 50% (O.R. = 0.50; C.I. = 0.12-2.05) less likely not to adhere than those with traditions/other religion, Islams are 14% (O.R=0.26; C.I. = 0.26 – 5.01) more likely not to adhere than those traditions/others.

Table 7 shows that there is no significant difference ($p>0.05$) between the HIV counselling centres and the level of adherence of patients to antiretroviral drug therapy. It also show that there is significant difference ($p<0.05$) in the level of knowledge among HIV patient visiting three counselling centre. The Scheffe [a b] post hoc analysis show that the differences arise from central hospital which shows a significantly lower level of knowledge than patients in Stella Obasanjo and St. Philomena. However there were no significant differences in the mean knowledge of HIV patients in Stella Obasanjo and St. Philomena

DISCUSSION OF FINDINGS

Findings from the study reveal that a good number of the respondents 139(64.0%) moderate to good knowledge of the importance of antiretroviral drugs. This finding is similar to that reported by Raberahona, Lidamahasolo, Andriamamonijisoa, (2019) in Antananarivo Madagascar which revealed that most of the participant 87.6% exhibited good knowledge about ART drugs. Also supporting this finding is Kasumu and Mobolanle (2014) in Lagos Nigeria who showed that about 83.1% of the respondents had good knowledge about ART. Findings of Eyassu, Mothiba and Mbambo-kekana, (2016) in Qaubeng province in South Africa reported that 81.4% knew that ART reduced the viral load and prevented progression to AIDS also

collaborated the findings of this present study. Similar findings were also reported by Kahema, Mgabo, Emidi, Sigalla and Kajeguka, (2018) in Nyamagana-Mwanza, Northern Tanzania which show that 202(98.1%) participants had a good knowledge score on ART. It is good to note that HIV patients are becoming knowledgeable of the therapy necessary to promote their health and prevent further spread of the diseases as noted in this study as well as previous studies. However, though the level of knowledge shown by the respondents in this present study is good, however it is far lower than those reported by previous study as reported in this study. This call for concern among health care workers especially nurses at the grassroots. There is need to in intensify awareness campaign and educating the HIV patient on the importance of the antiretroviral therapy. Because when the value or importance of something is not known abuse became inevitable as in many cases where some of these patient ignorantly skip their medication or even not present themselves to the clinic as at when due.

Findings from the study also show that majority 171(77.7%) have good adherence level. This might not be far from the fact that the respondents reported good knowledge of the therapy. Supporting this findings is Nandini and Qrish (2019) in India who reported that majority of the 85% their respondents showed >95% adherence and only about 2.07% were poorly adherent to medication. Similarly, Eyassu, Mothiba and Mbambo-kekana, (2016) in South Africa reported that 82.2% adhered to their ART, more also Yu, Luo, Chen, Zhulin, Min and Shuiyuan, (2018) in China, reported a total of 85.5% of the participants had a good adherence. Ibekwe (2014), Benin City Nigeria, results of 88.3% adherence to antiretroviral therapy was also in line with the present study. There is a similar trend like that of knowledge in this present study that these-part the high level of adherence it is not as high as that reported in previous study. This is a pointer to the fact that much is still needed to be done to scale down the prevalence of HIV which according to Adebowale (2019), stands at 1.9% among adult in Edo State and in a South- South Zone of Nigeria which Edo State belong a prevalence of 3.1% (Adeyinka, Olakunde, Oladimeji & Ezeanolue, 2019).

Furthermore, factors such as food (2.66±1.03), Unavailability drugs (2.76±0.98), drug toxic effect (2.61±0.88), Stigmatization (2.60±0.96). Others are work, lack of education were reported as hindering adherence to antiretroviral drug in the present study. Supporting these findings were Bukenya, Mayanja, Nakamanya, Muhumuza and Seeley J (2019) in Uganda reported that the poor adherence to antiretroviral drugs was as a result of travel for work and believing GOD can heal them were the major reasons for their non-adherence. Eyassu, Mothiba and Mbambo-kekana, (2016) in South Africa reported that respondents complained of too many pills, travel and migration to other places, side effects of drugs, economic related problems and social stigma were the reasons for non-adherence to ART. Though the government has done much in aspect of availability of the drugs reducing stigmatization, much is needed to be done in area of provision of food. It will be very difficult to take these antiretroviral drugs on an empty stomach as that will increase its toxicity and other adverse effect associated with it. In addition dietary counselling should also be provided in the various centres on how to get rich food items from locally available sources without spending much.
Hypothesis showed that there is no significant relationship ($p>0.05$) between the level of adherence to antiretroviral drugs and social demographic data. Significant difference was not also found ($F=2.480$; $p>0.05$) in the level of adherence to antiretroviral drug therapy among the respondents in the various centres. However significant difference was found ($F=11.717$; $p<0.05$) in the level of knowledge among HIV patients visiting the three HIV counselling centres. Multivariate logistic regression showed that respondents that are 18 – 20 years are ten

times (O.R = 10.39; C.I = 1.01-107.10) more likely not to adhere than those above 50years. This implies that the older people are more likely to adhere to ART than the younger ones. Also respondents with tertiary education are 19% (O.R. 0.81; C.I. = 0.15 – 4.20) less likely not to adhere than those with none. Business executives are twice (O.R. = 1.97; C.I. = 0.57 – 6.76) more likely not to adhere than those with lower occupation and Christians are 50% (O.R. = 0.50; C.I. = 0.12-2.05) less likely not to adhere than those with traditions/other religion. These finding were supported by that of Usman, Shehu, Ajumobi, Gidado, Balogun. …et al (2019), in Kano state, Nigeria who reported that formal education (adjusted odds ratio [aor] = 3.03, 95% ci = 1.5-6.0) and income above minimum wage, (aor = 2.38, 95% ci = 1.06-4.76) were independently associated with non-adherence. One might think that people with formal education and high socioeconomic status may have higher adherence to ART than other who are illiterate and low socioeconomic status. However this is far from reality as observed in the past and present study, this might be due the various logical philosophical ideologies held by these elite groups. Also the profession of faith and religious dogmatism by some Christians which at times may be at variance with medical science could have resulted to some of them not been adherent compare to others. This call for more concerted effort by health workers to focus on these categories of people so as to continuously improve their level of adherence through counseling. Some form of reminders like use of telephone can be adopted to address forgetfulness.

IMPLICATION FOR PRACTICE

Nurses and midwives constitute a large proportion of the among the health care team, with constant interaction and presence among the patients. Therefore they stand a greater chance of influencing positively the attitude of the patients. Their all-around presence in the health care setting can be utilized as an opportunity to sensitize these patients and inculcates in them the need to diligently and consciously adhere to their medication as prescribed. Also nurses could provide their professional advice to the government on the concerns of these patients especially in those areas where which served as treat to adherence with ART as noted in this study. Health care professional especially nurses should continuously and consciously berth interventional programme that is gear toward improvement of adherence for all categories of people. This can range from counseling session to sending reminders to address forgetfulness.

CONCLUSION

The study reveal good knowledge of the importance of ART as well as good adherence level however considering the rapid spread of HIV and the financial and economic burden of the infection it is necessary that the level of adherence to ART by HIV patients should be constantly be assessed and the factors affecting adherence evaluated to aid further health planning towards continues improved with subsequent reduction in the prevalence rate, morbidity and mortality arising from the complication of HIV..

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Table 1: **Socio-demographic characteristics of respondents**

Variables	Attributes	Frequency	Percentage
Age	18 - 20years	58	26.7
	21 - 25	58	26.7
	26 – 30	63	29.0
	30 – 50	31	14.3
	Above 50	7	3.2
Sex	Male	57	26.3
	Female	160	73.7
Marital Status	Single	146	67.3
	Married	46	21.2
	Separated/Divorced	18	8.3
	Widow	7	3.2
Religion	Christian	162	74.7
	Islam	35	16.1
	Traditions	19	8.8
	Others	1	0.5
HIV Counseling centre/hospital	Central	113	52.1
	Stella Obasanjo	52	24.0
	St Philomena	52	24.0
Level of Education	Primary	38	17.5
	Secondary	61	28.1
	Tertiary	109	50.2
	None	9	4.1
Occupation	Business executive	41	18.9
	Civil Servant	41	18.9
	Trader	26	12.0
	Self-employed	30	13.8
	Unemployed	30	13.8
	Others	49	22.6
Do you have any dependants (adult and children)	Yes	80	36.9
	No	137	63.1
If yes, how many lives with you	0	137	63.1
	1	8	3.7
	2	37	17.1
	3	16	7.4
	4 and above	19	8.8
Do you smoke	Yes	56	25.8
	No	161	74.2
Do you Drink Alcohol	Yes	81	37.3
	No	136	62.7

Table 2: level of knowledge of the importance of antiretroviral drugs

Knowledge items	**Wrong Response**	**Correct Response**
1. What are ART drugs used for? (a). to fight aids (b). To reduce pain (c). To worsen illness	105(48.4)	112(51.6)
2. ART can prevent. (a). mother to child transmission of HIV (PMTCT) (b). Stigmatization (c). Death.	116(53.5)	101(46.5)
3. Percentage of ART adherence required: (a) 95-100 (b). Less than 95% (c). Below 50%	115(53.0)	102(47.0)
4. Missing ART can lead to (a). Disease progression (b) reduced side effects of ART (c). less stigmatization	105(48.4)	112(51.6)
5. Missing doses of ART can lead to (a). Increased risk of transmitting the infection true sex. (b) .Has no effect on the individual (c). Promotes the health of HIV patients.	109(50.2)	108(49.8))
6. Taking HIV drugs causes. (a). Has positive effects on health (b) worsening of the disease (c) increased spending.	51(23.5)	166(76.5)
7. Regular intake of ART does which of the following. (a). Reduces frequent sickness (b). Increases the feeling of side effects. (c). wastes ones precious time.	67(30.9))	150(69.1)
8. The antiretroviral drugs do more harm than good: (a) YES, (b) NO (c). Don't know	124(57.1)	93(42.9)
9. ART drugs are taken for a lifetime to (a). Improve one's quality of life (b). To consume money (c). Doesn't know.	68(31.3)	149(68.7)
10. Adherence to HIV drugs does which of these (a). Reduces the spread of HIV (b). Removes HIV from the body (c). Increases sickness.	97(44.7)	120(55.3)
Total	**95.7(44.1%)**	**121.3(55.9%)**
Summary of classification of level knowledge responses	**Score range**	**F(%)**
Poor	0 – 49.9	78(35.9)
Moderate	50 – 69.9	60(27.6)
Good	70 – 100	79(36.4)

Each correct answers has a score of 10

International Journal of Nursing, Midwife and Health Related Cases
Vol.6, No.1, pp.20-34, May 2020
Published by ECRTD- UK
Print ISSN: 2397-0758, Online ISSN: 2397-0766

Table 3: Level of adherence to antiretroviral drugs

Items	Never	Sometimes	Rarely	Always	X	St.D	Remark
Ever missed your ART because of side effects.	153(70.5)	43(19.8)	12(5.5)	9(4.1)	3.57	±0.78	Good
Ever missed your ART because of excessive drugs.	93(42.9)	100(46.1)	12(5.5)	12(5.5)	3.26	±0.80	Good
Ever had difficulty taking ART at the exact time.	55(25.3)	110(50.7)	39(18.0)	13(6.0)	2.95	±0.82	Good
Ever missed your ART for any reason	51(23.5)	85(39.2)	65(30.0)	16(7.4)	2.79	±0.89	Good
I always adheres to clinic schedules for prescription refills	43(19.8)	53(24.4)	50(23.0)	71(32.7)	2.31	±1.13	Poor
I take medications only when you feel ill.	47(21.7)	70(32.3)	50(23.0)	50(23.0)	2.53	±1.07	Good
I take medications only when pressured by people.	63(29.0)	59(27.2)	56(25.8)	39(18.0)	2.67	±1.08	Good
I always forget to take your medications.	48(22.1)	63(29.0)	64(29.5)	42(19.4)	2.54	±1.04	Good
I start taking my medication, when it gets worst.	46(21.2)	39(18.0)	67(30.9)	65(30.0)	2.30	±1.11	Poor

Mean cut off 2.5 > 2.5 is good adherence <2.5 is poor adherence

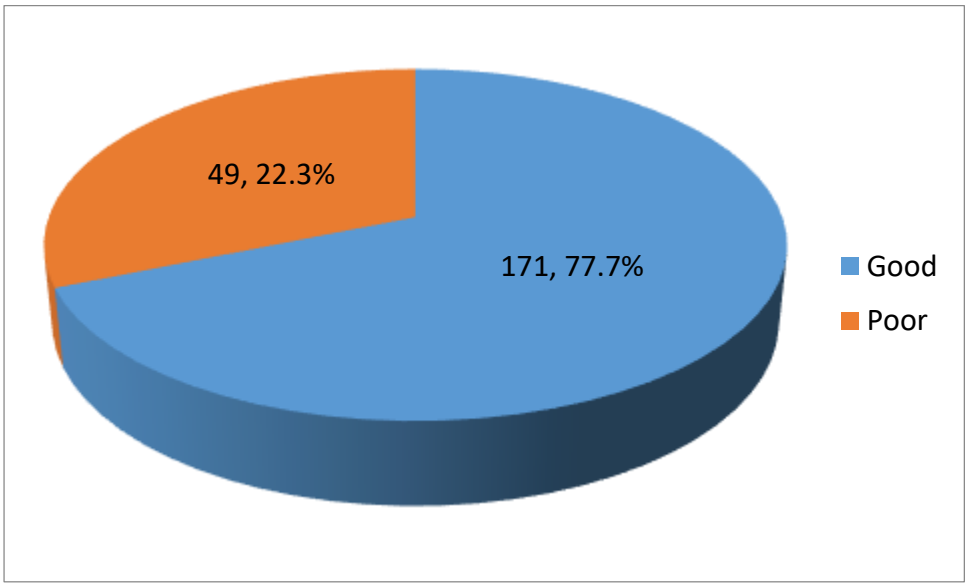

Figure 1: Level of adherence to ART

Table 4: Factors affecting adherence to antiretroviral therapy

Items	SD	D	A	SA	X	St.D	Remark
Counselling	44(20.3)	100(46.1)	50(23.0)	23(10.6)	2.24	0.90	Not factor
Lack of Encouragement	10(4.6)	74(34.1)	108(49.8)	25(11.5)	2.68	0.74	factor
Finance	25(11.5)	97(44.7)	72(33.2)	23(10.6)	2.43	0.83	Not factor
Travel distance	12(5.5)	37(17.1)	119(54.8)	49(22.6)	2.94	0.79	factor
Forgetfulness	16(7.4)	54(24.9)	80(36.9)	67(30.9)	2.91	0.92	factor
Lack of Education	13(6.0)	38(17.5)	87(40.1)	79(36.4)	3.07	0.88	factor
Adherence to clinic schedules	30(13.8)	90(41.5)	79(36.4)	18(8.3)	2.39	0.83	Not factor
Busyness at work	24(11.1)	65(30.0)	101(46.5)	27(12.4)	2.60	0.84	factor
Stigmatization	26(12.0)	83(38.2)	60(27.6)	48(22.1)	2.60	0.96	factor
Drug toxic effects	23(10.6)	73(33.6)	87(40.1)	34(15.7)	2.61	0.88	factor
Lack of Faith	35(16.1)	79(36.4)	65(30.0)	38(17.5)	2.49	0.96	Not factor
Unavailability drugs	27(12.4)	56(25.8)	77(35.5)	57(26.3)	2.76	0.98	factor
Lack of Food	33(15.2)	64(29.5)	63(29.0)	57(26.3)	2.66	1.03	factor

Mean cut off 2.5; below 2.5 is not a factor while 2.5 and above is a factor.

Table 5: Relationship between the level of adherence to antiretroviral drug therapy and social demographic data.

Socio-demograhpicVariables	Level of adherence			
	Poor	Good	χ^2	P
Age				
18 - 20years	36(62.1)	22(37.9)	3.361	0.499
21 - 25	39(67.2)	19(32.8)		
26 – 30	44(69.8)	19(30.2)		
30 – 50	25(80.6)	6(19.4)		
Above 50	5(71.4)	2(28.6)		
Sex				
Male	36(63.2)	21(36.8)	1.089	0.297
Female	113(70.6)	47(29.4)		
Marital Status				
Single	104(71.2)	42(28.8)		
Married	31(67.4)	15(32.6)	3.421	0.331
Separated/Divorced	9(50.0)	9(50.0)		
Widow	5(71.4)	2(28.6)		
Religion				
Christian	115(71.0)	47(29.0)	2.352	0.503
Islam	21(60.0)	14(40.0)		
Traditions	12(63.2)	7(36.8)		
Others	1(100.0)	0(0.0)		

HIV Counselling centre/hospital				
Central	76(67.3)	37(32.7)	0.262	0.877
Stella Obasanjo	36(69.2)	16(30.8)		
St Philomena	37(71.2)	15(28.8)		
Level of Education				
Primary	22(57.9)	16(42.1)	2.861	0.414
Secondary	45(73.8)	16(26.2)		
Tertiary	76(69.7)	33(30.3)		
None	6(66.7)	3(33.3)		
Occupation				
Business executive	27(65.9)	14(34.1)	3.153	0.676
Civil Servant	28(68.3)	13(31.7)		
Trader	17(65.4)	9(34.6)		
Self-employed	21(70.0)	9(30.0)		
Unemployed	18(60.0)	12(40.0)		
Others	38(77.6)	11(22.4)		

Table 6: Multivariate logistic regression association demographic variables with level of adherence

	P	OR	95% C.I. for OR
Age			
18 - 20years	0.049	10.39	1.01-107.10
21 - 25	0.113	6.14	0.65-58.00
26 – 30	0.732	1.45	0.18-11.93
30 – 50	0.665	0.61	0.06-5.88
Above 50		1.00	
Sex			
Male	0.199	1.69	0.76-3.76
Female		1.00	
Marital Status			-
Single	0.403	0.43	0.06-3.09
Married	0.657	0.63	0.08-4.95
Separated/Divorced	0.584	1.79	0.22-14.25
Widow		1.00	
HIV Counselling centre/hospital			-
Central	0.591	1.28	0.52-3.15
Stella Obasanjo	0.687	1.21	0.48-3.09
St Philomena		1.00	
Level of Education			-
Primary	0.311	2.59	0.41-16.32
Secondary	0.591	0.62	0.11-3.57

Tertiary	0.798	0.81	0.15-4.20
None		1.00	
Occupation			-
Business executive	0.281	1.97	0.57-6.76
Civil Servant	0.039	3.92	1.07-14.30
Trader	0.284	2.01	0.56-7.24
Self-employed	0.528	1.42	0.48-4.24
Unemployed	0.248	1.88	0.64-5.48
Others		1.00	
Religion			-
Christian	0.334	0.50	0.12-2.05
Islam	0.858	1.14	0.26-5.01
Traditions/Others		1.00	
Constant	0.252	0.17	

Table 7: differences in level of adherence/differences in the level of knowledge among the respondents in the centers

Difference between HIV counselling centres and the level of adherence of patients to antiretroviral drug therapy.				
HIV Counselling centre/hospital	Mean	Std. Deviation	F	P
Central	2.31	0.53	2.480	0.086
Stella Obasanjo	2.16	0.62		
St Philomena	2.11	0.68		
Total	2.23	0.59		
Difference between the levels of knowledge among HIV patients visiting the three counselling centres.				
HIV Counselling centre/hospital	Mean	Std. Deviation	F	P
Central	47.79^{a}	24.04	11.717	<0.001
Stella Obasanjo	67.12^{b}	30.70		
St Philomena	62.31^{b}	25.94		

Means with different superscript is statistically significant @ p<0.05