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FACTORS AFFECTING ADHERENCE TO ANTI-RETROVIRAL THERAPY OF PEOPLE LIVING WITH HIV/AIDS IN A TERTIARY HEALTH FACILITY IN SOUTH EASTERN NIGERIA

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Abstract

Human Immunodeficiency Virus (HIV) pandemic has continued to spread. Antiretroviral therapy (ART) is very effective in suppressing HIV replication. Adherence is the strongest patient-enabled predictor of treatment success. This study was carried out to determine the adherence to antiretroviral treatment among people living with HIV/AIDS. This is a descriptive study conducted in Nnamdi Azikiwe University teaching hospital, Nnewi in Anambra state among patients on ARV. All patients aged 19 – 65 years who met the inclusion criteria were recruited. Data was collected with an interviewer administered questionnaire. Adherence was based on patient self-reported drug adherence for the last 3 days prior to the study. A total of 211 respondents were recruited for the study. One hundred and fifty-eight (74.9%) were females 144 (68%) married, 109 (51.7%) had secondary education, 94 (44.5%) partly skilled/unskilled. Of the respondents, 180 (88.7%) reported they had not missed any dose, 10 (4.9%) reported to have missed only one dose, while 3 (1.5%) reported to have missed large number of doses (more than a week) prior to the study. Reasons for missing the drugs included long waiting at the clinic, high transport cost to clinic, increased side effects among others. None of the demographic factors or variables test significantly affected adherence. In conclusion, we observed that adherence was generally good at the study site.

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Introduction

Human immunodeficiency virus (HIV) pandemic has continued to spread in the population, making HIV infection one of the most important public health crises in the world (United Nations Programme on HIV/AIDS, 2008). It is estimated to have claimed more than 36 million lives so far with an estimate of 35.3 (32.1 -38.8) million people living with HIV infection (World Health Organization, 2014). HIV and its attendant infection – Acquired Immune Deficiency Syndrome (AIDS) have a characteristic feature of an infection that lasts a lifetime and also its antiretroviral treatment which once started lasts for a life time too. Highly Active Antiretroviral Therapy (HAART) is a breakthrough in the industrialized world proven to be effective in suppressing HIV replication and transforming the disease into a chronic treatable condition for a significant proportion of people living with HIV and AIDS (PLWHA) with access to this treatment (World Health Organization, 2002; Mannheimer et al., 2005; Tadios & Davey, 2006). A key determinant of successful HAART is drug adherence. Long term adherence to antiretroviral drugs is critical for a sustained response to HIV therapy. Adherence to antiretroviral therapy (ART) is the second strongest predictor of success of HIV/AIDS treatment after CD4 count. (Erah & Arute, 2008).

Adherence describes the patient's behaviour of taking drugs correctly – the right drug, in the right dose, with the right frequency (dose), and at the right time. While non-adherence is the patients inability to take their drugs in the prescribed manner (Frank and Miramontes, 1997). A rate of adherence of approximately 90 – 95% is required to avoid rapid development of drug resistance and treatment failure (Monjok, Smesny, Okokon Mgbere & Essien 2010).

Different studies have been carried out in different locations and among different groups of people to determine adherence (Erah & Arute, 2008; Ugwu & Eneh 2013; Oku, Owoje, Ige & Oyo-Ita, 2013). Oku, Owoje, Ige & Oyo-Ita, 2013; Nwankwo et al. 2014). These studies gave different rates of adherence (from 58% to 95%) among the different study groups. Sustained adherence to treatments constitutes a serious challenge to those receiving these regimens. Lack of adherence to ARV medications hinders PLWHA from attaining their fullest possible physical and mental health. With the knowledge that adherence affects the treatment outcome, the study therefore examined the prevalence and determinants of adherence to antiretroviral therapy among PLWHA attending the anti-retroviral clinic at a tertiary health facility in South Eastern Nigeria. The findings will contribute to knowledge and understanding factors influencing non-adherence to ARVs. It will also be useful in developing interventions to address ARV adherence.

Methodology

Study site

This is a descriptive study conducted in a tertiary health institution in Nigeria- NnamdiAzikiwe University Teaching Hospital, (NAUTH), Nnewi in Anambra state, in south eastern Nigeria. The hospital which is located in Anambra south zone (one of the three zones of the state), is an ARV centre serving seven local government areas (LGAs)- Nnewi north, Nnewi south, Aguata, Orumba north, Orumba south, Ekwusigo and Ihiala LGAs in the zone. The hospital is one of the referral hospitals in South Eastern Nigeria. The ARV clinic was funded by the Federal Government of Nigeria and is being funded by the Federal Government and the United States President's Emergency Fund for AIDS relief (PEPFAR). Anambra state has a strategic location in the country making it a focal point for trade and transport.

Patient inclusion and exclusion criteria

All patients aged 19 -65 years attending clinic at the study site were included for the study based on voluntary consent, clinical stability, being a PLWHA registered and receiving ARV treatment at the study

site. Exclusion criteria were patients who were clinically unstable, PLWHA not willing to participate and those not on ARV medications.

Sampling Method

Purposive sampling technique was employed due to the nature and population of the study. Participants were recruited during ARV clinic days on Mondays, Wednesdays and Fridays.

Sample population and study instrument

All consenting PLWHA in the study site during the study period were recruited for the study. A total of 211 patients were recruited for the study. The patients were recruited into the study after signing an informed consent form which was written in English and interpreted into the native language for some patients. The survey instrument was a pre-instrument interviewer-administered questionnaire. They were tested and validated. The instrument had 40 items divided into various sections – patients' demographics and factors affecting adherence to ART, groups of agents taken and how often they missed the antiretroviral in the last 3 days using self-reported method of adherence.

Data analysis

The data was cleaned, coded, entered and analysed using the Statistical Package for Social Sciences (SPSS) version 16 for windows. Self-reported dose adherence to all antiretroviral agents were summarized as the number of doses reported to have been missed by the patients with a three days dosage recall. The analysis consisted of basic summaries of patient characteristics and bivariate analysis of the relationship between adherence and various factors. Further analysis using chi-squares was carried out to test the significance of association between adherence and various factors associated with it at 5% level. Summary statistics such as the mean, median, standard deviation, frequencies and percentages was used to summarize variables.

Ethical approval

Ethical approval was sought and gotten from the Ethical Board of the Nnamdi Azikiwe University Teaching Hospital, Nnewi before the commencement of the study.

Results

The demographic characteristics of the respondents are as presented in table 1. The results showed that 158 (74.9%) were females. The mean age was 36.38 ± 8.57 with a range of 20 – 63 years. The median and modal age was 36. Majority of them (68 % = 144) were married, 109 (51.7%) had secondary education. Only 19 (9.0%) were unemployed, with 210 (99.5%) being Christians. Majority (98.6% = 208) were of the Igbo ethnic group and 72 (34. 1%) had been on ART for a period of two years or less.

Table 1. Demographic characteristics of respondents (n = 211)

Variable	No. of respondents (%)
Sex	
Male	53 (25.1)
Female	158 (74.9)
Age (years): Mean	36.38 ±8.57
Mode	36
Median	36
19 – 28	37 (17.5)
29 – 38	96 (45.5)
39 – 48	57 (27.0)
49 – 58	18 (8.5)
59 and above	3 (1.4)
Marital status	
Single	43 (20.4)
Married	144 (68.2)
Widow	21 (10.0)
Separated	1 (0.5)
Divorced	2 (0.9)
Level of education	
No formal education	8 (3.8)
Primary education	62 (29.4)
Secondary education	109 (51.7)
Others	32 (15.2)
Occupation	
Student	16 (7.6)
Partly skilled/unskilled	94 (44.5)
Skilled non-manual/skilled manual	34 (16.1)
Housewife	25 (11.8)
Unemployed	19 (9.0)
Professional	23 (10.9)
Religion	
Traditional	1 (0.5)
Christianity	210 (99.5)
Ethnic group	
Igbo	208 (98.6)
Others	3 (1.4)
How long on ART (years)	
0 – 2	72 (34.1)
> 2 – 4	64 (30.3)
> 4 – 6	56 (26.5)
> 6	19 (9.0)

Table 2 shows the source of information about the ARV centre and the problem that made the different patients start ARV treatment. While 125 (59.8%) heard from health workers, 61 (29.2%) heard from friends/peer group, and only 1 person (0.5%) heard from employer. The problem that made them start ARV treatment ranged from positive HIV test (114 = 54.8%), frequent illness (93 = 44.7%), sever cough (49 = 23.6%) to poor performance at work (13 = 6.2%).

Table 2. Starting of assessing of ARV treatment

Variable	No of respondents (%)
Source of information about the ARV centre	
Friends/peer group	61 (29.2)
Healthcare workers	125 (59.8)
Church leaders	6 (2.9)
Media	3 (1.4)
Employer	1 (0.5)
Others	13 (6.2)
What problem made you start ARV treatment?	
Severe cough	49 (23.6)
Excess weight loss	44 (21.2)
Fatigue	34 (16.3)
Severe diarrhoea	20 (9.6)
Frequent illness	93 (44.7)
Poor performance at work	13 (6.2)
Positive HIV test	114 (54.8)

The respondents responded on the various factors affecting adherence. Majority (205 = 98.6%) agreed that the ARV medication was helping them and 168 (80.0%) responded that they use alarm watches as reminder for their medication. Most mentioned that belief that drugs work (71.8%) and readiness to be well (64.1%) as factors that encourage them to adhere, 157 (76.6%) claimed family support will do so. All the responses are presented in table 3.

Table 3. Factors affecting adherence

Variable	No of respondents (%)
Do you think your medication is helping you?	205 (98.6%)
What type of reminder do you use to adhere to your medication?	
Alarm watches	168 (80.0)
Time for network news	8 (3.8)
Meal time	14 (6.7)
Others	20 (9.5)
What factors encourage you to keep to your medication?	
Belief that drugs works	150 (71.8)
Readiness to be well	134 (64.1)
Severity of the illness	23 (11.0)
Use of reminder	18 (8.6)
Social support of family and friends	36 (17.2)
Teaching and concerns of healthcare providers	30 (14.4)
Others	10 (4.8)
What other factors could encourage you to adhere?	
Support of employer	16 (7.8)
Family support	157 (76.6)
Caring and friendly healthcare providers	33 (16.1)
Availability of drug	59 (28.8)
Affordability of drug	18 (8.8)
Social acceptance	13 (6.3)
Free ARVs	39 (19.0)

It was found out that 97 (46.0%) of the respondents were give three packets of the ARV pills, 85 (40.3%) were given 2 packets and only 6 (2.8%) had more than 3 packets. Most of the drugs were to be taken twice a day: drug 1- 163 (77.3%), drug 2 – 144 (76.6%), and drug 3 – 78 (76.5%). A large number – 180 (88.7%) reported to have 100% adherence with the self-reported 3 days dosage recall, 10 (4.9%) reported to have missed one dose only while 3 (1.5%) reported to have missed large number of doses (more than a week) prior to the study. All these are shown in table 4.

Table 4. Adherence

Variable	No of respondents (%)
How many packets of ARV pills were you given?	
1	23 (10.9)
2	85 (40.3)
3	97 (46.0)
4	2 (0.9)
6	4 (1.9)
How many times per day were you told to take them?	
Drug 1: Once	38 (18.0)
Twice	163 (77.3)
Thrice	10 (4.7)
Drug 2: Once	34 (18.1)
Twice	144 (76.6)
Thrice	10 (5.3)
Drug 3: Once	16 (15.7)
Twice	78 (76.5)
Thrice	8 (7.8)
How many doses were missed in the last three days?	
None	180 (88.7)
1 dose	10 (4.9)
2 doses	6 (3.0)
3 doses	4 (2.0)
Others	3 (1.5)

The reasons adduced for missing the drugs are shown in figure 1. While 7 (30.4%) stated that reasons for missing the drugs were other than those listed, none (0%) answered high cost of drugs, poor provision of services and dietary restrictions as reasons for missing their drugs. The respondents gave different feelings and side effects experienced after taking the drugs. These ranged from making them eat a lot to feeling nothing. These reasons are presented in figure 2.

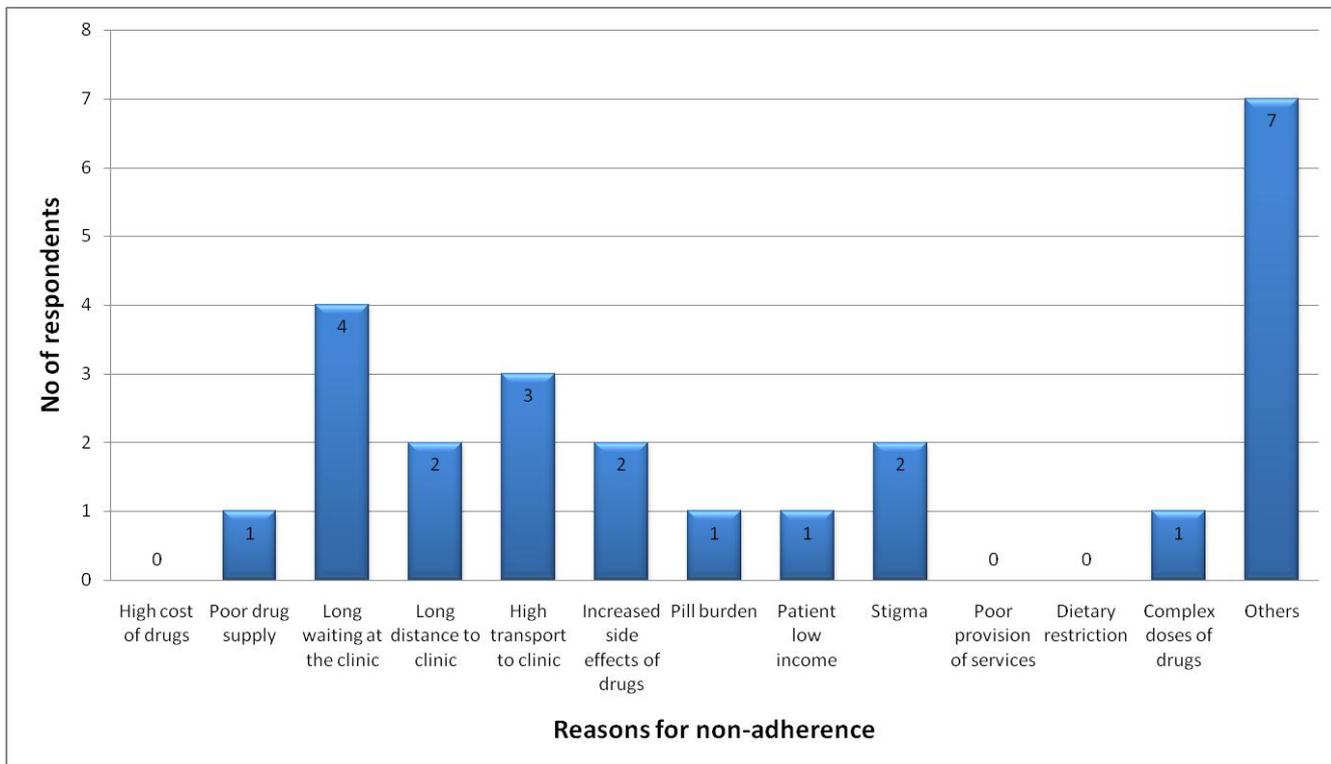


Figure 1.Reasons for non-adherence

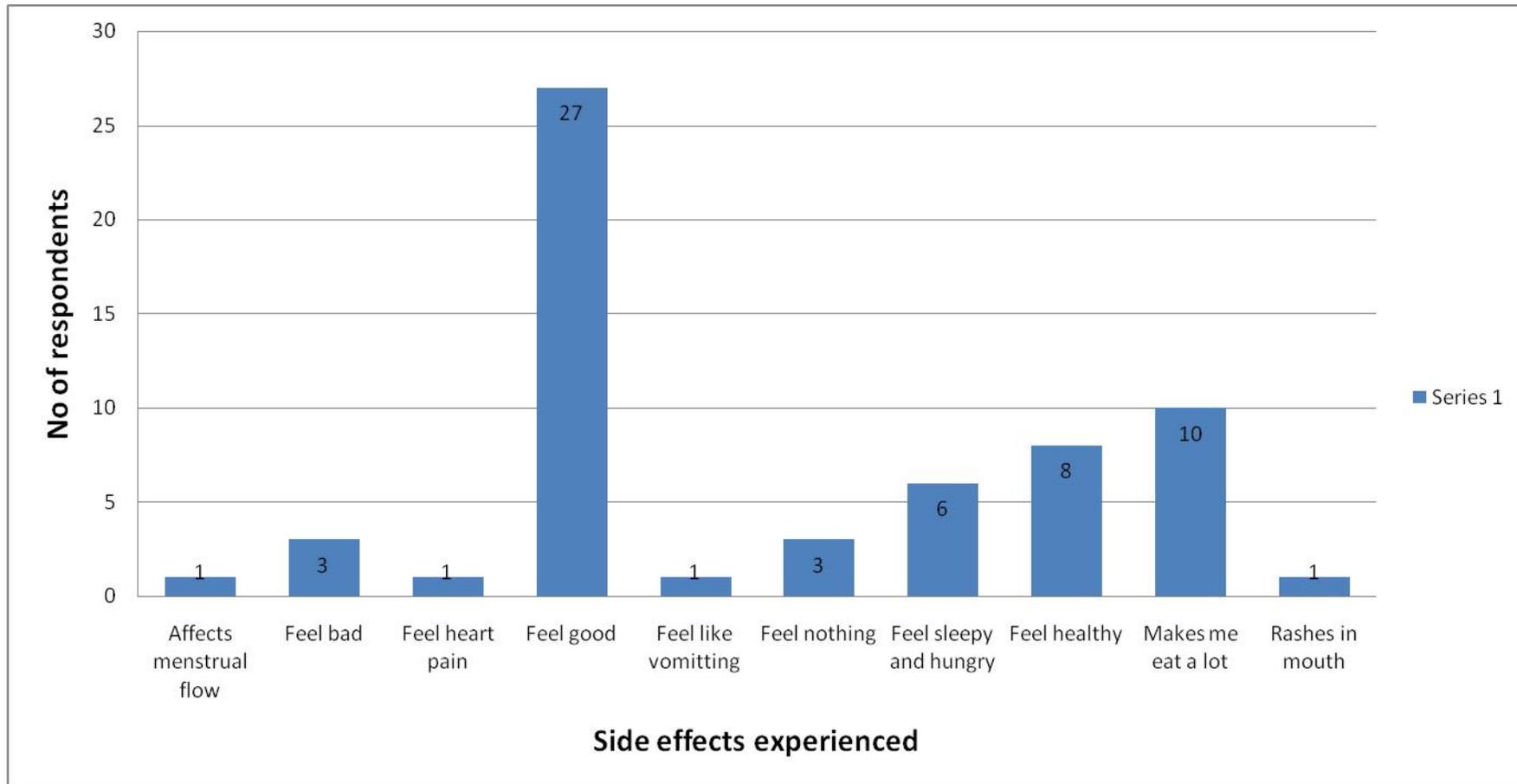


Figure 2. Feelings and side effects experienced after taking the drugs

Chi-square analysis using the demographics and factors like duration of treatment, source of information about ARV centre, use of reminders was done and none was significant at p value of 5%. This is presented in table 5.

Table 5. Chi square of demographics and adherence

Variables	X ²	P-value ^a
Age	2.799	0.592
Sex	0.642	0.423
Marital status	5.223	0.265
Highest educational level	5.548	0.136
Occupation	4.857	0.434
Duration of treatment	5.122	0.163
Source of information	7.853	0.165
Use of reminders	2.119	0.548
Packets of ARV pills given at clinic	1.510	0.825

Discussion

HIV/AIDS management requires a strict adherence to the treatment regimen for treatment success. This study shows an age distribution of the respondents ranging from 19 to 63 years with the 29 – 38 years age group being the highest with a mean age of 36.38 years \pm 8.57 and a mode and median age of 36. This can be related to the study of Chijoke *et al.* with a mean age of 35.04 years in Port Harcourt (Chijoke, Osaro, Adebayo & Chris, 2006) and that of Bello in Ilorin with a mean age of 37.04 and showing that youths between the ages of 16 and 40 years are most vulnerable to HIV infection (Bello, 2011).

The result showed a greater percentage of the study population were females. This may correlate with the fact that a greater number of female populations are being affected by HIV/AIDS in the study and can be seen in other studies (Erah & Arute 2008; Oku , Owoje, Ige & Oyo-Ita 2013; Nwankwo et al.,2014; Bello, 2011; Ogundahunsi , Daniel & Oladapo 2008)

On the level of adherence, I was found in this study to be generally good among the study group as 88.7% was found to be 100% adherent with the self-reported adherence for the study period. Only 1.5% was found to have missed their drugs for periods exceeding one week prior to the study. This is comparable to the study of Iroha *et al* among HIV infected children at a tertiary hospital in Nigeria where 86% of the children were adherent (Iroha , Esezobor , Ezeaka , Temiye and Akinsulie, 2010). This is higher than the study of Ogundahunsi *et al* where 79.2% of the patients achieved optimal adherence level of \geq 95% in Sagamu (Ogundahunsi , Daniel & Oladapo (2008), and that of Erah and Arute that reported 58.1% \pm 2.4% in Benin City (Erah & Arute 2008)and very much higher than that of Nwankwo *et al* that reported only 13.21% that never missed a dose in Enugu (Nwankwo et al., 2014).

Reason given for non-adherence included long waiting at the clinic, high transport cost to the clinic, stigma, long distance to the clinic, and increased side effects to the drugs. This is not totally consistent with the previous studies which cited side effects of medication, level of education (Erah & Arute 2008), wanting to avoid side effects, simply forgot, fasting, being away from home (Nwankwo et al., (2014). as reasons for non-adherence.

On relationship of demographic factors and other variables, none was found to be significant to adherence. This can be same as those from previous that found no association with the demographic factors (Monjok, Smesny, Okokon , Mgbere , & Essien, 2010; Iroha , Esezobor, Ezeaka , Temiye & Akinsulie , 2010).

The study of Oku *et al.* found obtaining free treatment at ART clinic as a significant predictor of adherence to treatment (Oku, Owoje Ige & Oyo-Ita 2013). Although some of the respondents gave the different feelings they had, more of the respondents reported that they feel good and healthy after taking the drugs. Some of the factors opined that could encourage adherence were support of the family and employer, availability and affordability of drugs, caring and friendly healthcare provider.

This study has several limitations. First, the study made use of self-reported adherence. Some patients may have over-estimated adherence as patients may not accurately remember their medication intake over a long time or may have exaggerated their drug intake during the study to impress the interviewer or avoid criticism. Also, adherence was assessed only on basis of missing doses and did not take into consideration issues of correct dosage at the correct time and the dietary restrictions. Finally, self-reported adherence could not be corroborated with viral loads and CD4 counts because of financial and logistic constraints of frequent laboratory monitoring.

Conclusion

The study revealed high prevalence of adherence to ARV medication by the patients. This implies that efforts made by the clinic to ensure patient adherence to ARV medication as disclosed by the participants was successful. Adherence to ARV medication has important implications for the treatment success of these patients. The highest prevalence for factor encouraging adherence to ARV medication was family support. The highest prevalence for factors that discouraged non-adherence was high cost of transportation to the clinic facility. This implies that efforts to encourage full adherence to ARV medication also needs to be personalized. In addition more ARV centres need to be opened to enable patients have easy access to medication and treatment. Considering that adherence are the greatest patient-enabled predictor of treatment success there is need for more aggressive sensitization on patients and their caregivers on good adherence to ARV medication. PLWHA need to be consistently reminded that strict adherence to highly active antiretroviral therapy is paramount for survival for PLWHA in view of the chronicity of their condition.

A good follow up programmes could boost up adherence, implying that health workers involve in the care and management of these patient should not stop at administration of ARV medication but also follow up with its adherence. With much psychosocial support and encouragement from health workers and their family members, a reasonably high level of about 90% as envisioned by the World Health Organization would be met.

Conflict of interest

There is no conflict of interest.

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