

Factors Associated with Non-Adherence to Highly Active Antiretroviral Therapy among Children Living with HIV/AIDS from Two Centres in Nigeria - A mixed methods Cross-Sectional Study

Authors: S.A. Olowookere^{1*}; O.A. Oyediji²; O. Ibigbami³; O. Arije⁴; A. Idowu⁵; O. Adekanle⁶; A.I. Olugbenga-Bello⁷; I.A. Ismaila⁸

Affiliations: ¹Department of Community Health, Obafemi Awolowo University, Ile-Ife, Nigeria; ²Department of Paediatrics, LAUTECH Teaching Hospital, Osogbo, Nigeria; ³Department of Mental Health, Obafemi Awolowo University, Ile-Ife, Nigeria; ⁴Institute of Public Health, Obafemi Awolowo University, Ile-Ife, Nigeria; ⁵Department of Community Medicine, Bowen University Teaching Hospital, Ogbomosho, Nigeria; ⁶Department of Medicine, Obafemi Awolowo University, Ile-Ife, Nigeria; ⁷Department of Community Medicine, LAUTECH Teaching Hospital, Ogbomosho, Nigeria; ⁸Department of Medicine, State hospital, Ilesa, Nigeria.

ABSTRACT

BACKGROUND: Highly active antiretroviral therapy (HAART) has changed HIV/AIDS from a deadly disease to a chronic disease. This study sought to assess HAART adherence and the factors associated with non-adherence among HIV positive children in two HIV treatment centres.

METHODS: A prospective cross-sectional study using mixed methods was conducted among caregivers of children living with HIV at two HIV treatment centres in Osogbo, Nigeria. Respondents completed interviewer administered questionnaires on adherence of their children/ward to HAART and the associated factors. In-depth interviews were conducted with selected caregivers that reported non-adherence of their children/ward to HAART. The quantitative data were entered into SPSS version 20 and analyzed using simple and inferential statistics while the qualitative data were analyzed using thematic content analysis.

RESULTS: Sixty-four caregiver-HIV positive children pairs were recruited. Most children were male (64% [95%CI=53.3%-73.3%]); mean age (SD) 6.81 (3.85) years with a range of 1-15 years old. Twelve (19%) had <95% HAART adherence while 16 (25%) ever missed their medication. The factors hindering adherence to HAART include increased age (OR=4.20, 95%CI=1.12-15.87, p=0.034), children from poor homes (OR=3.46, 95%CI=1.07-11.21, p=0.038), mother not being the primary caregiver (OR=3.86 95%CI=1.18-12.61, p=0.025), caregiver with poor knowledge (OR=3.46, 95%CI=1.07-11.21, p=0.038) and negative attitude (OR=3.67 95%CI=1.13-11.96, p=0.031). In-depth interviews revealed that stigma experience and inappropriate status disclosure affect adherence, especially in older children. Modalities to improve drug adherence included appropriate status disclosure, reminder to take medication, and ongoing adherence counseling.

CONCLUSION: Identified factors that are responsible for poor drug adherence must be taken into consideration in order to improve adherence for HIV/AIDS medications.

Keywords: HAART adherence, HIV positive children, Primary Caregiver, Stigma

INTRODUCTION

Since 1986, when the first case of HIV/AIDS was diagnosed in Nigeria, the disease prevalence has increased with all states in Ni-

geria reporting cases despite efforts targeted at controlling the pandemic [1,2]. In 2015 it was estimated that 36.7 million people were living with HIV/AIDS worldwide with 1.8 million being children less than 15 years old. In 2015, 150,000 children were

*Corresponding author: S.A. Olowookere. E-mail: sanuolowookere@yahoo.com; **Potential Conflicts of Interest (Col):** All authors: no potential conflicts of interest disclosed; **Funding:** All authors: no funding was disclosed; **Academic Integrity.** All authors confirm that they have made substantial academic contributions to this manuscript as defined by the ICMJE; **Ethics of human subject participation:** The study was approved by the local Institutional Review Board. Informed consent was sought and gained where applicable; **Originality:** All authors: this manuscript is original has not been published elsewhere;

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reported to be newly infected with HIV [1,3]. These children reside primarily in sub-Saharan Africa. They are primarily infected vertically from their HIV-positive mother during pregnancy, childbirth and breastfeeding [4-7]. Universal testing of all pregnant women occurs in all health facilities nationwide with women found to be HIV positive being enrolled in the prevention of maternal to child transmission of HIV program in designated centres [1,2].

Most studies on drug adherence have focused on adults taking highly active antiretroviral therapy (HAART) because few infected children survive [8-13]. The introduction of HAART to prevent maternal to child transmission of HIV and treatment of all infected children has markedly reduced the number of HIV positive children as well as improved their quality of life [14-16]. People living with HIV/AIDS require at least 95% HAART adherence level to prevent drug resistance [1,9].

This near perfect adherence to HAART ensures adequate blood drug level with maximal and durable suppression of viral replication which reduces CD4 cells destruction, immunosuppression and slow disease progression [1,11,16]. Previous studies among HIV positive children on HAART have reported differing adherence among their study participants. For instance, Biadgilign et al., 2008 reported 86.9% while Ugwu and Eneh, 2013 reported 76% [1,16].

Aim: This study sought to assess HAART adherence and the factors associated with non-adherence among HIV positive children in two HIV treatment centres.

METHODS

Setting and study design: This prospective cross-sectional study using mixed-methods was conducted in the HIV treatment centres of State Specialist Hospital in Osogbo (SSH) and the LAUTECH Teaching Hospital in Osogbo (LTH), Osun State, Nigeria. The HIV treatment centres receive support from the Osun State government in collaboration with Federal Ministry of Health and international partners. This collaboration enables free comprehensive HIV and AIDS care which includes HIV counselling and testing, prevention of maternal to child transmission (PMTCT), antiretroviral therapy and treatment of opportunistic infections in eligible HIV positive patients. The collaboration also allows for referral of HIV positive clients from all health care facilities in Osun State and beyond [2,18].

Participants: The participants included primary caregivers and their HIV positive children (aged less than 18 years) who had been on HAART for at least one month at the participating hospitals.

Sample size calculation: The required sample size was calculated using the Leslie Kish formula for estimating single proportions [19]. With 95% confidence level with the proportion of HIV positive children predicted to be non-adherent to HAART being 3.1% based on previous results from Ethiopia [16]. This gave a sample size of 46, with a final sample size of 64 caregiver-HIV

positive children pair was estimated for the study to consider for possible non-responders.

Study instruments: Both quantitative and qualitative instruments of data collection were used in this study. These included an interviewer-administered semi-structured questionnaire and an in-depth interview guide which were derived from review of relevant literature on adherence to HAART and factors associated with HAART adherence among HIV positive children. Face validity of the questionnaire and in-depth interview guide were undertaken by the authors to ensure that the questions asked answered the set objectives. The questionnaire and in-depth interview guide were then piloted among primary caregivers with ambiguous questions rephrased or removed. These primary caregivers were not included in the study. The questionnaire and in-depth interview guide were written in English, translated to Yoruba for the non-English speaking population and back translated to English. The lead author and four physicians trained in data collection administered the questionnaire and in-depth interview guide to the participants.

Data collection: The hospital records were obtained for all children receiving HAART in the participating hospitals between March 2016 and April 2018. Names and contact details were extracted from the hospital records and used to contact all caregivers of the children whose records were retrieved. All contacted persons were requested to participate in the research and appointments were made for interviews at their next clinic appointments. Those that did not come on their scheduled appointment day were visited at home by the home visit team who invited them to the clinic where they were subsequently interviewed. All caregivers contacted agreed to be interviewed. Written informed consent was obtained from each respondent and interviews were conducted in a predetermined, convenient place within the hospitals. The study received ethical approval from the Osun State Hospitals Ethics and Research Committee with protocol number SHO/ERC/06/0015.

Adherence measurement: The degree of non-adherence by individual children was estimated manually by drug pick up at the clinic pharmacy and by caregiver's report. The degree of adherence from the reporting was estimated using the following formula:

Per cent (%) adherence over the previous 7 days = $((\text{Drug dose taken} - \text{drug dose missed}) \times 100) / \text{Drug dose taken}$

From this formula, the level of adherence by individual children was classified into those with <95% adherence and those with ≥95% adherence, with "HAART adherent children" being defined as children with ≥95% adherence level [8,11,16]. HAART adherence level of ≥95% was taken as the cut off as lower adherence level results in drug resistance. HAART adherence of 95% and above has been accepted as the standard worldwide for good drug adherence [1,9].

Administering the questionnaire: Primary caregivers completed an interviewer-administered questionnaire containing questions on socio-demographic characteristics of the caregivers and the children, knowledge and attitude about HIV/AIDS and antiretroviral therapy and factors associated with HAART adherence among the children.

In-depth interviews: Qualitative in-depth interviews were conducted with 16 primary caregivers that reported non-adherence of their children to HAART. The interview was conducted by the lead author using an in-depth interview guide to explore factors associated with non-adherence to HAART among the children.

Data analysis: Quantitative data were entered into a computer, cleaned and statistical analysis was performed using SPSS version 20 (SPSS Inc., Chicago, IL, U.S.A.). The responses to the questions that were related to the respondent's knowledge about HIV/AIDS and antiretroviral therapy (18 items), attitude toward HIV/AIDS and antiretroviral therapy (14 items) were scored. Knowledge and attitude score were computed with '+1' assigned for correct response while '0' was assigned for incorrect response. The mean score was used as cut off with score graded as good or poor knowledge and positive or negative attitude. Primary caregivers earning <1US\$ per day were considered as poor.

Statistical analysis: Tests of significance were conducted using Chi-square test. Bivariate analysis was performed using binary logistic regression to evaluate socio-demographic variables and other variables that are independently associated with HAART adherence. Odd ratio (OR) and 95% confidence interval (CI) were presented and used as measures of the strength of association. Tests were considered statistically significant for a $p < 0.05$.

Qualitative analysis of in-depth interviews: Rapid review of the field notes was done initially to identify major patterns and preliminary themes. Subsequently, all interviews were transcribed verbatim and those not conducted in English language were translated by a paid translator. All transcripts were proofread for accuracy. Earlier identified and new emerging themes and sub-themes were applied to the transcripts using thematic content analysis.

RESULTS

Questionnaire Results

Participants: Sixty-four caregiver-HIV positive children pair were recruited.

Socio-demographic characteristics: Mean age of the children was 6.81 (SD: 3.85) years (range 1-15 years). Most children were male (64%), aged less than 5 years-of-age (45.3%) and have HIV positive mother (61%) (Table 1). Most primary caregivers were their mothers (67.3%), aged less than 34 years-of-age (57%), had secondary education (43.8%), civil servants (45.3%), and lived in urban area (79.7%) (Table 1 and 2).

Non-adherence and associated factors: Twelve (19%) had <95% adherence while 16 (25%) ever missed their medication (Table 3). The majority took more than one dose per day (71.9%). Primary caregiver opinion on improving drug adherence include reminder to take medication (64%) and ongoing adherence counselling (59.4%) (Table 2).

Table 1: Socio-demographic characteristics of the children

Variable	Frequency	%
CHILDREN		
AGE GROUP (YEARS)		
1-5	29	45.3
6-10	23	35.9
>10	12	18.8
CHILDREN GENDER		
Male	41	64.1
Female	23	35.9
CHILDREN LEVEL OF EDUCATION		
None	8	12.5
Primary	41	64.1
Secondary	15	23.4
PRIMARY CAREGIVERS		
Mother	43	67.3
Sister	9	14.1
Father	4	6.2
Grandparent	4	6.2
Step mother	3	4.7
None relative	1	1.5
CAREGIVERS' AGE (YEARS)		
18-34	36	57
≥35	28	43
CAREGIVERS' LEVEL OF EDUCATION		
None	3	4.7
Primary	10	15.6
Secondary	28	43.8
Tertiary	23	35.9
CAREGIVERS' OCCUPATION		
None	4	6.2
Trader	13	20.3
Civil servant	29	45.3
Teaching	11	17.2
Nurse	3	4.7
Artisan	4	6.2
PLACE OF RESIDENCE		
Urban	51	79.7
Rural	13	20.3
TRAVELLING MINUTES FROM HOME TO CLINIC		
<30	32	50
30-60	21	32.8
>60	11	17.2
INCOME (US\$ per day)		
<1	29	45.3
≥1	35	54.7

Table 2: Socio-demographic characteristics of the primary caregivers of children.

MOTHERS' HIV STATUS	Frequency	%
Positive	39	61
Negative	14	21.8
Not known	11	17.2
MOTHERS' HEALTH STATUS		
Mother alive and well	30	46.9
Mother alive but ill	13	20.3
Mother dead	21	32.8

The reasons for non-adherence to HAART among HIV positive children were caregiver factors which included forgetting to give drug to child (68.8%) while child factor included a child who had slept (37.5%) (Table 4).

Association with HAART adherence: Children whose primary caregiver reported ever missing their medication include children >10 years (50% vs. 19.2%, $p=0.027$), were poor (37.9% vs. 14.3%, $p=0.043$), have other caregivers (42.9% vs. 16.3%, $p=0.021$), care-

Table 3: HAART adherence, non-adherence reasons and opinion on improving drug adherence.

LEVEL OF ADHERENCE	FREQUENCY (N=64)	%
<95%	12	18.8
≥95%	52	81.2
Ever missed		
Ever missed	16	25
Never missed	48	75
DOSE/DAY		
1	18	28.1
≥2	46	71.9
DOSE FREQUENCY		
Daily	15	23.4
Twice daily	59	76.6
DURATION/MONTH		
1-4	32	50
5-8	15	23.4
>8	17	26.6
OPINION ON IMPROVING DRUG ADHERENCE (n=64) *		
Reminder to take medication	41	64.1
Ongoing counseling	38	59.4
Belonging to a support group (yes)	34	53.1
Managing side effects	26	40.6
HIV status disclosure to family/friends (yes)	24	37.5

*multiple response

giver had poor knowledge (41% vs. 16.7%, $p=0.033$) and negative attitude (40% vs. 15.4%, $p=0.027$) to HIV/AIDS (Table 3). The fac-

Table 4: Reasons the HIV positive children missed HAART

CAREGIVER FACTORS	N=16	%
Forgot to give drug to child	11	68.8
Forgot drug dose and timing	9	56.3
Feel sad having to give child drug always	8	50
Blame self for child illness	8	50
Inability to pay for transport	7	43.8
Lived far away	5	31.3
Fear of side-effects	4	25
Caregiver fell ill	3	18.8
Felt drug are not needed	2	12.5
Do not want others to notice child taking drugs	2	12.5
Took child for spiritual/native treatment	2	12.5
Shared drugs with child	2	12.5
Busy work schedule	2	12.5
CHILD FACTORS		
Child slept	6	37.5
Child vomited drugs	4	25
Child does not like taking drugs	4	25
Child is well hence drug no longer necessary	2	12.5
Drugs had sour taste	2	12.5
FACILITY FACTORS		
Workers strike	5	31.3
Stock out	4	25
Waiting time too long	3	18.8
Facility too far away	3	18.8
Health workers not supportive	1	6.3

tors significantly associated with non-adherence to HAART include being an older child (OR=4.20, 95%CI=1.12-15.87, $p=0.034$), children from poor homes (OR=3.67, 95%CI=1.10-12.27, $p=0.035$), mother not the primary caregiver (OR=3.86 95%CI=1.18-12.61, $p=0.025$), caregiver with poor knowledge (OR=3.46, 95%CI=1.07-11.21, $p=0.038$) and negative attitude (OR=3.67 95%CI=1.13-11.96, $p=0.031$) (Table 5).

In-depth interview Results

Participants: Sixteen primary caregivers with children that ever missed their drugs had one in-depth interview that explored factors responsible for non-adherence to HAART. Eleven of these primary caregivers were the mothers, four were sisters and one none relative of the children. Each interview lasted approximately 45 minutes.

Context of HIV status of child: With respect to the circumstance under which her child acquired HIV status, a 27-year-old HIV positive mother said: "I learnt of my HIV status at delivery when I was rushed here because the baby was not coming out. My son's status was determined as positive when his blood was taken to Ile-Ife. Since, then we have been on treatment here". An HIV negative mother said that her daughter was raped by a neighbour at

Table 5: Association between socio-demographic variables, other variables and HAART adherence

Variable	HAART adherence		Test statistic χ^2 ; df; p-value	OR, (CI) and p-value
	Ever missed (%)	Never missed (%)		
CHILD AGE (YEARS)				
1-10	10 (19.2)	42 (80.8)	4.923; 1; 0.027	4.20 (1.12-15.9), 0.034
>10	6 (50)	6 (50)		1
CHILD GENDER				
Male	12 (29.3)	29 (70.7)	1.109; 1; 0.292	1.966 (0.55-7.01), 0.297
Female	4 (17.4)	19 (82.6)		1
INCOME (US\$ PER DAY)				
<1	11 (37.9)	18 (62.1)	4.729; 1; 0.043	3.67 (1.10-12.27), 0.035
≥1	5 (14.3)	30 (85.7)		1
PRIMARY CAREGIVER				
Mother	7 (16.3)	36 (83.7)	5.316; 1; 0.021	1
*Others	9 (42.9)	12 (57.1)		3.86 (1.18-12.61), 0.025
KNOWLEDGE ABOUT HIV/AIDS AND HAART				
Good	7 (16.7)	35 (83.3)	4.525; 1; 0.033	1
Poor	9 (41)	13 (59)		3.46 (1.07-11.21), 0.038
ATTITUDE TOWARDS HIV/AIDS AND HAART				
Positive	6 (15.4)	33 (84.6)	4.923; 1; 0.027	1
Negative	10 (40)	15 (60)		3.67 (1.13-11.96), 0.031

the age of 6 years. However, her status was not known until three years afterwards when the daughter was treated for tuberculosis and then screened for HIV. For a 30-year-old HIV negative mother, her son had sickle cell disease and had received blood transfusion several times in the past.

Context of non-adherence to HAART: Stigma experience was a major reason for poor drug adherence. For instance, a mother stated: *“My 13-year-old son had to leave school when he was noticed to be taking his drugs by his school mate who reported him to the school authority that decided to expel him because of his HIV status. Although he is back in another school, he has been poorly adherent since that episode”*.

Stigma experience: The experience and impact of stigma had another impact with a 32-year-old mother who said the following about her son: *“When I had him, I was sent back to my family because I was accused of bringing HIV to (my husband’s) family. Till date my husband has refused to take care of us.”* Furthermore, a 26-year-old HIV positive mother stated: *“I am afraid to get somebody to care for my child when I am not around because the person will know our status and might tell people about it. This had led to my child missing his drugs especially since he started schooling”*. Another stigma related story is as narrated by a 34-year-old HIV positive mother who said: *“I lost my job when I fell ill and my husband left me. I went back to the village and have to beg to raise transport money to the clinic”*.

Drug preparations and storage: The condition the drugs are kept could affect its function. When asked on how she keeps the drug, 32-year-old HIV positive mother said: *“I am afraid people will identify the drug label, so, I normally transfer our drug to another bottle which has no label. I hid the drug where nobody will find it”*. A health worker stated: *“We usually pick the packets all over the hospital environment after the clinic despite the provision of dustbins. We continue to appeal to our clients to keep the drug well so that they can remain healthy. They are afraid people will stigmatize them if they see them with the drug”*.

HIV disclosure and drug adherence: Appropriate disclosure contributes to good adherence to medication. All the children were not aware of their status before missing therapy. However, they reportedly became adherent to their drugs once told by the adherence counsellor. For instance, a mother said: *“My 11-year-old daughter is aware of her status. She was told by the adherence counsellor at the age of nine years when she was refusing to take the drug...she now takes her drugs as scheduled”*.

Another mother who is HIV positive said that she was having problems with her daughter’s drug adherence until the adherence counsellor advised her to tell her daughter why she needed to take the drugs. She was further advised to time her own taking of the medications with that of her daughter to allow her to monitor the child’s adherence. A 38-year-old HIV negative caregiver (none relative) counselled that: *“If the drug adherence must improve, it is advisable for the child to be aware of his*

or her HIV status. So, when we use reminder to take medication such as setting an alarm clock, the child will accept to take the drug as scheduled”.

Age and drug adherence: However, a 36-year-old HIV negative guardian felt that it was easier to give a younger child the drug than an older child because the older child would ask more questions and demand answers. She said: *“Some of the questions are not easy to answer”*.

Side-effects and drug adherence: Some mothers reported side-effects of drugs as reason for non-adherence. A 30-year-old mother said: *“My son reacted to the drug but once this is reported and the offending drug was identified and changed by the doctor, the adherence became good as before”*.

Transition between medication formulation: One of the reasons for non-adherence reported by a participant was changing of the medication formulation from syrup to tablets. According to a 23-year-old mother said: *“My daughter missed the drug when her drugs were changed to tablets when she gets older. She kept vomiting the drugs until the syrup was given to her about one week later”*.

Health facility related factors: Health workers industrial action: Another respondent stated that the only time she and her daughter missed their drug was during a health workers’ strike action. However, it was because she was not aware that she could access drugs during the period under a special arrangement.

Long waiting time and health worker’s attitude: Waiting time in the health facility plays a key role in adherence. A civil servant who had not disclosed at work that her child and her were on treatment said she missed several appointments because coming to the clinic often meant she wouldn’t go to work that day. However, the adherence counsellor was able to intervene for her to receive fast-tracked services after finding out the reason she had been missing her appointments.

With respect to attitude of health workers, a 34-year-old HIV positive mother said: *“Proper adherence counselling with the caregiver and the child over time will improve adherence if the counsellor is friendly. The health care workers especially the Doctors are very friendly to us and attend to us even when they are on strike”*.

Similarly, another respondent said: *“The clinic should be made more child-friendly by providing a place within the clinic where children can watch child-oriented programmes on television and play with themselves. This will make the disease more bearable...”*.

Another respondent stated: *“Making the clinic more adolescent friendly will increase clinic attendance and encourage adherence among our older children and adolescents”*. An HIV positive mother said: *“More people living with HIV can be trained and employed as counsellors in the clinic, this will reduce the time we spend in the clinic and get more people living with HIV employed”*.

DISCUSSION

This study sought to assess antiretroviral drug adherence and factors associated with non-adherence to HAART among HIV positive children. This study reported that less than one-fifth were non-adherent to HAART. The high HAART adherence level reported could partly be due to the observation that most primary caregivers were their mothers who were also HIV positive and on HAART. The availability of the drugs ensure that these caregivers are healthy enough to take care of their HIV positive children.

Also, some HIV positive children had caregivers who were not their biological mothers. The biological mothers died at birth leaving their children infected with HIV/AIDS. Their care becomes an extra burden to the primary caregivers showing that every effort must be geared towards PMTCT to ensure all HIV positive pregnant women are diagnosed early, kept alive and well with HAART [20-22].

The study reported that the HIV status of some children were known after their mothers were either very ill or had died. This could have been prevented if HIV counselling and testing especially self-testing are available and accessible to these mothers which ensure that those found positive can be enrolled into treatment, care and support [22,23].

This study reported that some mothers of these children were HIV negative. Some children could have contracted the infection from unscreened blood transfusions, female circumcision and rape. Studies have shown that HIV transmission could result from harmful cultural practices, unsafe blood transfusion and rape [22-25]. Hence, efforts to reduce or even stop these antisocial and cultural practices will help in reducing new HIV infections in the general population.

Forgetfulness was the major caregiver reason for non-adherence among these children. Previous studies on drug adherence have reported forgetfulness as a major factor to good adherence [1,9,21]. Most caregivers suggested that reminders and ongoing adherence counselling will be needed to reduce forgetfulness and improve drug adherence.

Also, some caregivers reportedly remove the drug labels or transfer the drugs to another container after they have collected the drugs from the pharmacy because of fear of stigma. This practice could affect drug potency as the drugs were not being kept as required. Studies have shown that fear of stigma and discrimination hinder HAART adherence [22-26].

Other caregiver factors reported in this study such as sadness and blaming self for child’s status need further evaluation to identify and treat depression. Also, the challenge of geographic distance from clinic and the inability to pay for transport will require funding for transport. Financial empowerment of the caregivers will reduce their poverty level which will enable the child to feed properly and reduce delays or failure in accessing health services when needed [27-29]. Financial empowerment could also improve the family health-seeking behavior [30,31]. An ill caregiver may result in non-adherence from the child and will require both

the caregiver and the child to pursue treatment. Home visits and follow up appointments should be recommended to facilitate primary and secondary prevention.

This study reported that treatment support was not acceptable to some caregivers because of stigma, while other caregivers found treatment support useful in improving HAART adherence as reported in previous studies [27-29]. The most common child factor reported in this study was having a sleeping child during the dosing time. Other factors such as the child vomiting or not liking the drugs suggest that the caregivers need guidance on how to give these children the drugs and should consider pursuing ongoing adherence counselling [24,25].

This study reported facility factors such as workers strike, out of stock of the medications, long waiting time and poor health worker cooperation with caregivers. Previous adherence studies have reported similar findings with various suggestions on how best to tackle them [20,23]. However, these facility-based factors could be resolved at the facility level.

This present study shows that non-adherent children include those who have poor caregivers or those whose caregivers have poor knowledge or negative attitude towards HIV/AIDS. Also, non-adherence to HAART were reported among older children and adolescents. These findings are consistent with reports from previous studies on HAART adherence [15,20,31]. Poor adherence in older children and adolescents may be attributed to disclosure issues as they are more likely to inquire for reasons why they should take medications, especially when they are not apparently ill. Also, peer pressure could play a role as they might not want their friends to know their health status [12,13,22,29]. The Teen Clubs Program in some African countries have helped to retain adolescents living with HIV in HIV care and treatment as the program addresses some of the most critical challenges facing adolescents living with HIV. These include loss to follow up resulting in default on treatment, poor adherence, and stigmatization [32-34]. Hence, these issues could be tackled if the health workers are well

trained on adherence counselling and status disclosure. In addition, healthy people living with HIV/AIDS and receiving HAART in the clinics could be trained as adherence counsellors who can thereafter be employed by the clinic, thereby, improving their socio-economic status. Peer educators could also be trained to provide these services to the older children and adolescents in the clinics.

Strengths and limitations: In this study, HAART adherence assessment was manual and based on self-report hence, prone to recall bias. This was minimised by informing the participants on the study purpose to encourage true reporting. The study findings could help policy makers in making policies targeting improvement in drug adherence of HIV positive children on HAART.

CONCLUSION

In conclusion, non-adherence to HAART is a problem among HIV positive children. Reasons hindering adherence ranged from caregiver and children factors to health facility factors. Reminders, ongoing adherence counselling, tackling stigma and disclosure issues will improve HAART adherence among HIV positive children. Also, healthy clients receiving HAART could be trained as adherence counsellors and peer educators who can thereafter be employed by the clinic, thereby, improving their socio-economic status and reducing non-adherence to HAART among children and adolescents.

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