The pattern of loss to follow-up among HIV–infected clients in a tertiary health facility in North Central Nigeria

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Abstract

Introduction: Loss to follow-up (LTFU) refers to default from clinic visit more than 3 months after last appointment date. LTFU is a hindrance to successful anti-retroviral therapy (ART) and can potentially worsen the burden of anti-retroviral resistance.

Objectives: To identify the prevalence of LTFU and to assess the factors contributing to it.

Method*:* This is a cross-sectional descriptive study of children and adolescents, aged two years to less than eighteen years, seen from 2007–2017 at Dalhatu Araf Specialist Hospital (DASH), Lafia, Nigeria. Patient clinic register and folders were used to retrieve relevant information such as demographic data, clinical signs and appointments. Data was analysed using SPSS version 20. Categorical and continuous variables were reported in percentages and mean with standard deviation.

Results: A total of 450 patients that were initiated in 2007 were recruited for the study. There were 223 (49.6%) males with a male: female ratio of 1:1. Three hundred and forty one (75.8%) patients in this study were under five years old. One hundred and eight (24%) patients were LTFU within the period. There were no significant differences between the median ages and mean weights of males and females in this study. Death did not contribute significantly to LTFU (p = 0.309).

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Conclusions: The prevalence of loss to follow-up was 24% in this study while the death prevalence was 3.8%. Three quarter of subjects in this study were under five years of age.

Introduction

Nigeria currently has the greatest burden of paediatric human immunodeficiency virus (HIV) infection in the world[1]. The Joint United Nations Programme on HIV/AIDS (UNAIDS) 90–90–90 agenda aims at 90% of people knowing their HIV status, 90% of those whose status is known being on antiretroviral therapy (ART) and 90% of those on ART achieving viral suppression by 2020[2]. This agenda is being hindered by issues relating to client retention from loss to follow up (LTFU)[3]. LTFU is a challenge to client retention and is said to occur when a child on 3 monthly visits has defaulted clinic for more than ninety days after the last appointment[3].

A retrospective cohort study among pre-ART adult Nigerians reported a 74.9% LTFU[4]. Another study on ascertaining level of retention among adults on HIV care found 34.9% LTFU among their subjects[5]. A study in Tanzania, one of the few studies among children, reported 34% LTFU[3]. The only Nigerian study on the subject was by Ojeniran *et al.* at the Massey street children Hospital in Lagos and it reported a 16% LFTU prevalence in a 7 year retrospective cohort[6]. This study is aimed at filling this knowledge gap of knowing the extent of LFTU among Nigerian children.

Objectives
General objective
To determine the prevalence and contributors to LTFU among HIV infected children and adolescents attending the ART clinic at the Dalhatu Araf Specialist Hospital (DASH), Lafia, Nigeria.

Specific objectives
1. To determine the prevalence of LTFU among children receiving ART at DASH
2. To assess the death burden among children accessing ART care at DASH

Method

Study design: A cross-sectional descriptive study among children accessing ART care at DASH

Study site: The Special Treatment Clinic of the Paediatric Antiretroviral Clinic, DASH, Lafia, Nigeria. The site is supported by the Institute of Human Virology (IHVN), Nigeria. The clinic operates twice weekly and is run by a Consultant Paediatrician and five residents supported by nurses, pharmacists, laboratory scientists, care and support, monitoring and evaluation officers, adherent counselors and tracking officers etc. Lafia is the capital of Nasarawa State. The state shares boundaries with Benue, Taraba, Plateau, Kaduna, FCT and Kogi states.

Study population: Children, aged 2 years to less than 18 years, attending the Paediatric Antiretroviral Clinic, DASH, Lafia, Nigeria, as at December 2007 had their records studied between this period and December 2017 i.e. December 2007 – November 2017.

Sample size: This was calculated using the formula, $n = \frac{Z^2pq}{d^2}$, where n = sample size calculated, p is the prevalence at 34%[3], q = 1 – p , Z = standard deviate at 95% confidence level = 1.96, d = level of precision at 5%.

$$n = = \frac{1.96^2 \, x0.34x0.66}{.05^2}$$

n = 344.8

450 were recruited for this study.

Sampling technique: Systematic sampling was used to select the 450 subjects from the list of paediatric patients accessing ART care at DASH provided by the medical records monitoring and evaluation officer. A sampling frame was derived by dividing the total number of clients that met the criteria (1,400) by 450, which is the sample size, to get 3. Simple random sampling was then used to pick the first subject, after which every third subject was selected until the sample size of 450 was attained.

Inclusion Criteria: All children, aged 2 years to less than 18 years, attending the Paediatric/ Adolescent ART clinic at DASH within the study period.

Exclusion Criteria: Children whose records are not found and those with incomplete records having fulfilled the inclusion criteria

Recruitment procedure: The paediatric antiretroviral clinic records of patients were used to recruit subjects that met the criteria. Their folders were then retrieved from the hospital medical records to get their respective biodata. In this clinic ART was commenced in children only when they

were confirmed to be HIV-infected. Confirmation of HIV infection among children less than 18 months old required two positive results from HIV DNA through polymerase chain reaction (PCR) which was done by sending Dried Blood Spot (DBS) sample to Jos University Teaching Hospital (JUTH). On the other hand, children aged 18 months and above were diagnosed using a double rapid HIV antibody test with Determine and STAT-PAK in a serial algorithm and confirmed with a third kit "Unigold", when there was a stalemate. Interviewer administered questionnaire was used to record the biodata and other possible risks identified and recorded in the Proforma.

Ethical issues: Ethics Approval was obtained from the Hospital Research Ethics Committee (REC) of DASH. The information obtained from the participant records and folders was treated with strict confidentiality and was stored as code in a pass worded computer, the raw data being stored and locked up in a well secured locker.

Data analysis: Data were entered into a Microsoft Excel sheet with the variables coded before transferring into a statistical package for social sciences (SPSS) version 20. Categorical variables were presented with tables of frequency distribution. Mean and standard deviation as well as median and inter-quartile range of continuous variables were calculated. The association between two categorical variables was calculated using Chi square. The significant p value was p <0.05.

Results

Demographic characteristics of the population

Of the 450 participants recruited for this study, 49.6% were male with a male: female ratio of 1:1. Children under the age of five years accounted for more than three-quarter of the study population (Table 1).

Table I
Demographic characteristics of the population (n=450)

Characteristic	Frequency (%)
Sex	
Male	223 (49.6)
Female	227 (50.4)
Age (years)	
< 5	341 (75.8)
5-10	65 (14.4)
>10	44 (09.8)

Distribution of mean/ median age and weight across gender

There was no significant difference between the median age and mean weight for males and females as shown in Table 2.

Table 2
Distribution of median age and mean weight across gender

Age (months)	Median (IQR)	p-value
Male	23.0 (12.0-48.0)	0.504
Female	24.0 (12.0–42.5)	
Weight (kg)	**Mean ±SD**	**p-value**
Male	14.37 ± 8.42	0.843
Female	14.07 ± 9.16	

Distribution of patient retention in care
One hundred and eight (24%) patients were LTFU in this study. Although there are 62 (57.4%) males LTFU compared to 46 (42.6%) females, this difference was not significant (p = 0.309). More than two-third of our clients remained in care after a decade. This is shown in Table 3.

Table 3: *Distribution of patients' retention in care*

Characteristic	Male	Female	Total	Chi square	p-value
Lost to follow up - n (%)	62 (57.4)	46 (42.6)	108 (24.0)	1.035	0.309
Death - n (%)	10 (58.8)	07 (41.2)	17 (03.8)	-	-
Retention in care - n (%)	151 (46.5)	174 (53.5)	325 (72.2)	-	-
Total - n (%)	223 (49.6)	227 (50.4)	450 (100.0)	-	-

Discussion
There were more children under the age of five years recruited in this study. The median age of females was higher than that of males whereas the mean weight of males was higher than that of females. Percentage of children LTFU was 24%, which is less than the 37.6% reported by Massavon *et al* in a larger multi-centre study in Uganda[7]. Ojwang and colleagues also reported 57% among the adult population in Kenya[8]. The difference in sample size and location may account for the disparity. The finding in this study is also lower compared to the 36% reported by Chandiwana *et al*[9] among South African children. Even though the median age in the study (21.5 months) is comparable to the 23 months in the present study, the longer years of follow up (10 years) in this study compared with the 3.3 years as well as the lower sample size of 135 compared with 450 in the present study could explain the difference. The finding in this study is higher than the 8.4% reported in a study by Kranzer *et al*[10] in Zimbabwe. Similarly, Saka *et al*[11] in Togo found a lower prevalence of 7.3%. The disparity with our study may be due to the variation in retention time which is ten years in the current study. The finding here is also more than the 17.2% reported by Saumu et al[12] in Kenya. The difference in median age (about 2 years compared with 10 years in the Kenya study) may explain the observed disparity. The later study also used a smaller sample size (261) compared to the current study. Difference in the study population may also explain the difference noticed.

Deaths recorded in this study was 3.8% which is lower than the 5.3% reported in Uganda[7]. It is lower than the 5.9% reported in Nigeria across the six geo-political zones among the adults[13]. Similarly, it is even much lower than the 10.2% reported in South-Eastern Nigeria among adult patients which may be responsible for the contrast noticed[14]. The possibility of differential care that is largely in favour of children may also be a factor.

Some of the patient's LTFU in the current study might have died without the awareness of the tracking team. A study in Makurdi among children however found as high as 10.9% deaths in their cohorts[15]. Most of their patients were older than five years with a median age of 5.6 years compared to the two years in the present study.

Approximately 72.2% of our clients remained in care after ten years on treatment. This is lower than the 89.7% and 80.9% reported in Makurdi among children 0 -15 years after six months and twelve months respectively[15]. This suggests that patient retention in care reduces with increasing years of follow up, probably due to apathy, death or relocation.

Conclusions
The prevalence of loss to follow-up was 24% in this study while the death prevalence was 3.8%. Three quarter of subjects in this study were under five years of age.

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