

## Original Article

# Predictors of pediatric HIV disclosure among caregivers of HIV positive children attending special treatment clinic in Dalhatu Araf Specialist Hospital, Lafia, Nigeria

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### ABSTRACT

**Background:** HIV-infected children now live longer due to the availability of HIV counseling, testing, and treatment with highly active antiretroviral treatment (HAART). Efforts to help these children to know about the HIV infection and their status are important steps toward long-term disease management. This study was conducted to determine the factors associated with pediatric HIV disclosure among caregivers of children attending Special Treatment Clinic at Dalhatu Araf Specialist Hospital, Lafia. **Methods:** This was a descriptive cross-sectional study conducted among 160 caregivers of children attending the Special Treatment Clinic (STC) at DASH, Lafia, selected by systematic random sampling technique. Interviewer administered structured questionnaire was used to collect data, while bivariate and multivariate analyses were done with the Epi Info version 7. **Results:** Pediatric HIV disclosure rate in this study was 33.8%. The mean age at pediatric HIV disclosure was  $9.85 \pm 1.86$  years. The independent predictors for pediatric HIV disclosure following logistic regression were child's age, 10–14 years (AOR = 4.46; 95%CI 1.47–13.61), child knowledge of caregivers' HIV status (AOR = 51.18; 95%CI 13.40–195.66), and caregivers' age  $\geq 40$  years (AOR = 3.58; 95%CI 1.25–11.74). **Conclusions:** The pediatric HIV disclosure was low in this study due to the caregivers' and their wards' factors. Health care workers need to intensify health education on the benefit of pediatric HIV disclosure at the STC clinic.

**KEYWORDS:** Caregivers, Dalhatu Araf Specialist Hospital, HIV disclosure, pediatric, rate

## INTRODUCTION

The Human Immunodeficiency Virus (HIV) pandemic is one of the most devastating epidemics in recorded history and it continues to be a major public health problem worldwide.<sup>[1,2]</sup> Globally, it is estimated that over 37 million individuals have been infected with HIV of which about two-third live in Sub-Saharan Africa. Children under 15 years of age account for approximately 3.4 million of the people living with HIV and the Acquired Immune Deficiency Syndrome (AIDS), and almost 90% of all HIV-infected children also live in Sub-Saharan Africa.<sup>[3,4]</sup>

The use of antiretroviral medications has reduced mother to child transmission of HIV dramatically worldwide


with a reduction from 640,000 children newly infected in 2004 to 170,000 in 2015.<sup>[5,6]</sup> Nigeria has an estimated 1.9 million people living with HIV and a national prevalence of 1.5% among adults age 15–64 years and 0.2% among children age 0–14 years.<sup>[7,8]</sup> The country accounted for 23% of the world's 160,000 new cases of babies born with HIV in 2016.<sup>[9]</sup> Nasarawa State, North Central Nigeria, has HIV prevalence rate of 1.9%, the ninth highest prevalence of HIV in the country.<sup>[9]</sup>

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Pediatric HIV disclosure has been defined as a child gaining knowledge of his/her HIV status from the caregiver or the health care worker. This may also involve the sharing of caregivers' and other family members' HIV status.<sup>[10,11]</sup> A more stringent definition considers disclosure to have occurred only if there was a confirmation that the terms "HIV" or "AIDS" had been used or specifically mentioned by the child.<sup>[12]</sup> According to the World Health organization, pediatric HIV disclosure can go beyond the immediate family to social disclosure involving a larger circle of family, friends, and others in a social network.<sup>[10]</sup> The American Academy of Paediatrics also advises that the disclosure of HIV infection status to children and adolescents should take into consideration age, psychosocial maturity, complexity of family dynamics, and clinical context.<sup>[13]</sup>

Studies from developing nations showed that the rate of pediatric HIV disclosure remains very low in resource-limited countries despite the growing evidence of the benefits of this public health strategy.<sup>[13-16]</sup> The levels of disclosure vary widely in developing and developed countries from as low as 9% to high as 95%, respectively, with a global average of 29%.<sup>[17]</sup> In Nigeria, the disclosure rate of HIV status has been very low in the general population.<sup>[18]</sup> The pediatric HIV disclosure rate has been between 13.5% and 29%.<sup>[19]</sup>

Clinical reports have indicated positive outcomes associated with disclosure to include the promotion of trust, improved adherence, enhanced access to support services, open family communication, and better long-term health and emotional well-being in children which are critical to a continuum of HIV care.<sup>[19,20]</sup> However, despite the benefits of HIV status disclosure and the significant advances in HIV treatment and care, children continue to be born with HIV infection. Therefore, the disclosure of HIV infection to children remains a vital public health strategy for prevention and control of the HIV infection among this age group.<sup>[21]</sup>

The studies on HIV infection/AIDS disclosure to children are limited in the Nigeria context and, hence, factors determining pediatric HIV disclosure and its processes can only be assumed in the Nigeria context. Therefore, this study identifies the rate and the factors affecting pediatric HIV disclosure among HIV-infected children at the study facility. The findings from this study will help policymakers in this locality to make informed decisions on issues regarding pediatric HIV disclosure.

## MATERIAL AND METHODS

### Study location

The study was conducted at the Dalhatu Araf specialist Hospital (DASH), a tertiary hospital in Lafia, North

Central Nigeria. It is a 204-bed hospital with a Special Treatment Clinic (STC) for both adults and children living with HIV/AIDS. The STC is run by Medical officers, Resident doctors, and Consultant physicians. Most of the HIV positive children come to the clinic in company of their caregivers. The Pediatric HIV clinic at this facility are done every Wednesday of the week at the time of this study.

### Study design/study participants

This was a hospital-based descriptive cross-sectional study conducted between 11<sup>th</sup> January and 1<sup>st</sup> March, 2017. The study population was all caregivers of pediatric children attending HIV Special Treatment Clinic at Dalhatu Araf Specialist Hospital, Lafia.

For the purpose of this study, we defined a caregiver as the biological mother, biological father, grandmother, grandfather, foster parent, or other relatives who performs primary caregiving functions for the child routinely or on a daily basis. Caregivers of children aged 6 to 14 years attending Pediatric STC at DASH were included in the study while those of acutely ill children were excluded from the study.

The Cochran's formula:  $n = \frac{Z^2 p(1-p)}{d^2}$  was used to

calculate the sample size, the standard normal deviate at 95% confidence interval =  $Z$ , and  $P$  = proportion of caregivers who had ever disclosed the HIV-positive status (13.5%) from the previous study.<sup>[22]</sup> The complimentary probability  $q = (1 - P) = 0.865$ . The degree of precision ( $d$ ) was set at 0.05. With a nonresponse rate of 10%, we obtained an estimated sample size of 160 participants.

Data were collected with a structured pretested interviewer-administered questionnaire adapted from a similar study.<sup>[22]</sup> The questionnaire was administered to caregivers who met the inclusion criteria. The interview took place while these caregivers were waiting for consultation and medication during the weekly Special Treatment Clinic visits. Twenty participants were selected per week for eight weeks to recruit the 160 participants for the study using the systematic sampling technique. Each week the clinic register was obtained and total number of participants who met the inclusion criteria were taken as the sampling frame. The sampling fraction ( $1/k$ ) was obtained, where  $K$  is the sampling interval. We select the first participant for each week by simple random sampling technique (balloting) and thereafter every  $k$ th unit is selected until the sample size for the week was obtained.<sup>[23]</sup> A pre-test was conducted at General Hospital Doma using 10% of the sample size a week before the commencement of actual data

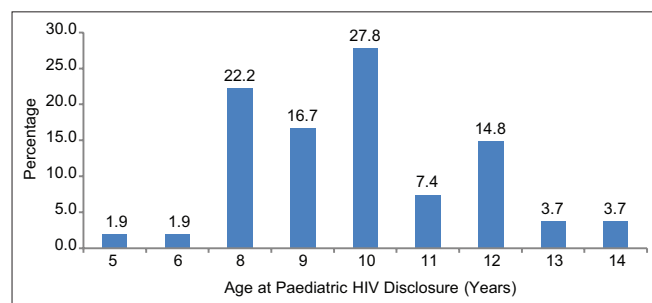
collection. Data cleaning was done the end of each day of data collection to ensure completeness and accuracy.<sup>[24]</sup> The outcome variable is the disclosure of HIV serostatus to the child, while the predictor variables were the child-related sociodemographic factors like age, sex, and level of education, and the caregivers' sociodemographics and relationship with the child.

The data analysis was done using the Epi-info 7. The Data were summarized using frequency tables, percentages, and bar charts for categorical data. Means and standard deviation were used to summarize continuous variables. The Chi-square tests were used to determine the associations between categorical variable. The predictors of the pediatric HIV status disclosure among the caregivers were determined using binary logistic regression analysis. Variables significantly associated with pediatric HIV disclosure were further analyzed using the multivariate logistic regression model. The level of statistical significance was set at  $P \leq 0.05$ .

Ethical approval was obtained from the Ethical Committee of DASH Lafia; permission was also obtained from the officer-in-charge of Special Treatment Clinic. Caregivers also give written informed consent to participate in the study. Participation was voluntary and failure to give consent or opting out of the study did not negatively affect client's management.

## RESULTS

A total of 160 caregivers of children attending the Special Treatment Clinic (STC) in Dalhatu Araf Specialist Hospital Lafia participated in this study. The majority of the respondents were women representing about 78.8% of the clinic attendee. The mean age of respondents was  $38.27 \pm 10.43$  years. The majority of the caregivers were married 103 (64.4%) while 28 (17.5%) were widowed. Eighty-six (53.8%) of the respondents were of the Islamic faith. Most of the respondents had a tertiary level of education followed by those with secondary school level of education. Only 9.4% of the respondents attended the HIV monthly psychosocial group meeting.



**Figure 1:** The age distribution of children who know their HIV status in DASH, Lafia, 2017

**Table 1: Sociodemographic characteristics of caregivers of children attending Special Treatment Clinic at Dalhatu Araf Specialist Hospital, Lafia, 2017 (n =160)**

Variable	Frequency	Percent (%)
Sex		
Male	34	21.3
Female	126	78.8
Age Group (Years)		
20-29	25	15.6
30-39	69	43.1
40-49	39	24.4
50-59	19	11.9
60 +	8	5.0
Marital Status		
Single	19	11.9
Married	103	64.4
Divorced	10	6.3
Widowed	28	17.5
Religion		
Islam	86	53.8
Christian	74	46.3
Attends Psychosocial Groups		
Yes	15	9.4
No	145	90.6
HIV status of caregivers		
Reactive	95	59.4
Not Reactive	49	30.6
Not Tested	16	10.0

**Table 2: Sociodemographic characteristics of the children attending Special Treatment Clinic, DASH, Lafia n=160**

Variable	Frequency	Percent (%)
Sex		
Male	75	46.9
Female	85	53.1
Age (years)		
6-9	84	52.5
10-14	76	47.5
Child attends school		
Yes	144	90
No	16	10
Child class		
Nursery	11	7.6
Primary 1-3	57	39.6
Primary 4-6	52	36.1
Secondary school	24	16.7
Duration on HAART (Years)		
0-5	112	73.1
6-12	43	26.9
Father Living Status		
Alive	108	67.5
Dead	52	32.5
Mother Living Status		
Alive	124	77.5
Dead	36	22.5

About 60% of caregivers were HIV positive [Table 1]. Eighty-eight (55%) of the caregivers in this study were the biological mothers of the HIV positive children.

The majority 88 (53.1%) of the children were girls. The mean age of the children was  $9.47 \pm 5.89$  years. About 144 (90%) of the children attended school with majority 120 (75%) in primary classes. A total

of 112 (73%) of the children were on HAART for  $\leq 5$  years. The mean age at pediatric HIV disclosure was  $9.85 \pm 1.86$  years [Table 2].

The proportion of pediatric HIV disclosure among the respondents was 54 (33.8%). Most of the children were told their HIV status by their mothers 101 (63%). The majority 131 (81.5%) of the caregivers informed the

**Table 3: Bivariate analysis of caregivers' factors influencing pediatric HIV disclosure at DASH, Lafia, 2017. n=160**

Factors	Disclosed (n=54) Number (%)	Nondisclosed (n=106) Number (%)	OR	95% CI	P
Caregiver's gender					
Male	8 (14.8)	26 (24.5)	0.54	0.22-1.28	0.224
Female	46 (85.2)	80 (75.5)			
Caregiver's Religion					
Christianity	34 (63.0)	40 (37.7)	2.81	1.42-5.52	0.004*
Islam	20 (37.0)	66 (62.3)			
Child's biological mother alive					
Yes	46 (85.2)	78 (73.6)	2.06	0.87-4.91	0.144
No	8 (14.8)	28 (26.4)			
Child's biological father alive					
Yes	38 (70.4)	70 (66.0)	1.22	0.60-2.48	0.708
No	16 (29.6)	36 (34.0)			
Caregiver attends HIV psychosocial group					
Yes	9 (16.7)	6 (5.7)	3.33	1.12-9.93	0.049*
No	45 (83.3)	100 (94.3)			
Caregivers' Knowledge of his/her HIV status					
Yes	48 (88.9)	93 (87.7)	1.12	0.40-3.13	0.960
No	6 (11.1)	13 (12.3)			
Caregiver's Age (Yeas)					
$\geq 40$ years	29 (53.7)	37 (34.9)	2.16	1.11-4.22	0.035*
<40 years	25 (46.3)	69 (65.1)			
Caregivers' Occupation					
Unemployed	14 (25.9)	38 (35.8)	0.62	0.30-1.30	0.276
Employed	40 (74.1)	68 (64.2)			

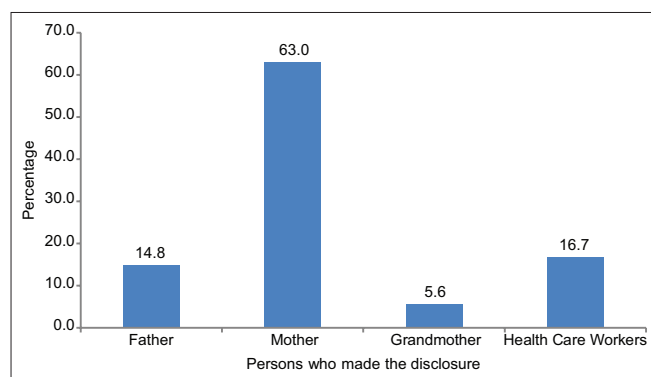
**Table 4: Child factors influencing pediatric HIV disclosure in disclosed and nondisclosed children at DASH, Lafia, 2017**

Factors	Disclosed (n=54) Number (%)	Nondisclosed (n=106) Number (%)	OR	95% CI	P
Sex					
Female	37 (68.5)	48 (45.3)	2.62	1.32-5.24	0.009*
Male	17 (31.5)	58 (54.7)			
Age (years)					
10-14 years	41 (75.9)	35 (33.0)	6.40	3.04-13.46	<0.0001*
6-9 years	13 (24.1)	71 (67.0)			
Schooling status					
Yes	52 (96.3)	92 (86.8)	3.40	0.87-18.09	0.106
No	2 (3.7)	14 (13.2)			
Duration on HAART (years)					
6-12 years	21 (38.9)	22 (21.8)	2.28	1.11-4.71	0.038*
0-5 years	33 (61.1)	79 (78.2)			
Child know caregiver's HIV status					
Yes	38 (70.4)	4 (3.8)	60.56	19.04-192.66	<0.0001*
No	16 (29.6)	102 (96.2)			

**Table 5: Multivariate analysis of factors associated with HIV positive status disclosure among HIV positive in DASH, Lafia, 2017**

Factor	Crude OR 95%CI	P	Adjusted OR 95%CI	P
Caregiver attends HIV psychosocial group				
Yes/No	3.33 (1.12-9.93)	0.049	2.43 (0.33-17.86)	0.384
Child's age (years)				
10-14 years/6-9 years	6.40 (3.04-13.46)	<0.001	4.46 (1.47-13.61)	0.009*
Child's Sex				
Girls/Boys	2.62 (1.32-5.76)	0.009	1.64 (0.58-4.64)	0.346
Duration of child on HAART (Years)				
6-12 years/0-5 years	2.28 (1.11-4.71)	0.038	1.00 (0.27-3.71)	0.989
Child know caregivers' HIV status				
Yes/No	60.56 (19.04-192.66)	<0.001	51.18 (13.40-195.66)	<0.001*
Caregiver's age				
≥40 years/<40 years	2.16 (1.11-4.23)	<0.001	3.55 (1.19-10.65)	0.024*
Caregivers Religion				
Islam/Christianity	2.81 (1.42-5.52)	0.004	2.75 (0.97-7.82)	0.057

\*Statistically significant value



**Figure 2:** The distribution of persons responsible for disclosure of HIV status to infected children in DASH, Lafia, 2017

children about their HIV status to improve the child's adherence to treatment, while 53 (33.3%) believe it is the child rights to know his/her status. The odds of a child knowing his/her pediatric HIV status was about 3.3 times higher in children whose caregivers attend HIV psychosocial group compared to those children whose caregivers do not attend (cOR: 3.3,95CI 1.1–9.9). The odds of a child knowing his/her HIV status was about two times higher in children whose caregivers were forty years and above (≥40). Children of Christians caregivers have about three times higher odds of knowing their HIV serostatus (cOR = 2.8; 95%CI 1.42–5.52) compared to children whose caregivers were non-Christians [Table 3].

The modal age at pediatric HIV disclosure was 10 years [Figure 1]. The children aged 10–14 years have about six times higher odds of knowing their HIV status compared to children who are in the aged group (6–9 years) (cOR = 6.4; 95%CI 3.0–13.5). The

girl child had higher odds of knowing their HIV status compared to the boys (cOR = 2.62; 95%CI 1.32–5.24). The duration on HAART was significantly associated with pediatric HIV disclosure; children who had been on HAART for ≤6 years have about two times higher odds of knowing their HIV status compared to children who are on HAART for less than 6 years (cOR = 2.28 95%CI 1.11–4.71). The mother caregivers were responsible for most (63%) of the pediatric disclosure [Figure 2]. Child's knowledge of the caregivers' HIV status was significantly associated with pediatric HIV disclosure. The children who knew their caregivers' HIV status had about 61 times higher odds of knowing their own HIV positive status than children who did not know their caregivers' HIV status [Table 4].

Multiple logistic regression further showed that the children of caregivers who were 40 years and above had four times higher odds of knowing their HIV status compared to children whose caregivers are less than 40 years of age AOR 3.55 (1.19-10.65) [Table 5].

## DISCUSSION

The rate of pediatric HIV disclosure found in this study was much higher than the 13.5% disclosure rate that was found in Ibadan in 2001. The observed difference could be as a result of increased awareness on the benefit of disclosure to caregivers and the passage of the anti-stigmatization law by the Nigerian government in 2015.<sup>[25]</sup> However, the findings of this study were similar to the outcome of studies conducted in Ethiopia and Tanzania with the pediatric HIV disclosure rate of 33.3%, and 32.6%, respectively,<sup>[26,27]</sup> but lower than the report from north India (43%)<sup>[28]</sup> and United

State (70%).<sup>[29]</sup> This observed difference could be as a result of perceived societal stigmatization toward people living with HIV/AIDS in sub-Saharan Africa.<sup>[30]</sup> The sex of the child was also significantly associated with pediatric HIV disclosure in this survey. This is different from the findings from the previous studies with no statistically significant association between pediatric HIV disclosure and child sex.<sup>[31,32]</sup>

The child age and duration on HAART were predictors of HIV disclosure by the caregivers in this study. Children who had been HAART for >6 years have two times higher odds of knowing their HIV status compared to children who are on HAART for <6 years. This was similar to the reports from Ethiopia and Uganda.<sup>[31,32]</sup> This finding could be associated with probing questions from children who were most likely asymptomatic but were asked to take their ARV drugs and attend the HIV clinic. The significant association between the child knowledge of caregivers' HIV status and pediatric HIV disclosure was similar to the outcome of a Rwanda study. Most of the children get to know about the caregivers' HIV status either from the health care provider and/or the caregivers during the process of pediatric HIV disclosure.<sup>[33]</sup>

The caregivers' age in this study was also significantly associated with pediatric HIV disclosure. This is in agreement with results of a study conducted in Tanzania, in which children whose caregivers were forty years and above have about six times higher odds of knowing their HIV status compared to those children whose caregivers are less than 40 years of age.<sup>[27]</sup> This contrasts with similar studies conducted in Thailand<sup>[34]</sup> and South Africa.<sup>[35]</sup> where Caregivers' age was not found to be statistically significant between children who knew their HIV status and those who do not. We also reported a higher odds of pediatric HIV disclosure among children of Christian caregivers. Ethiopia researchers have also found out that children whose caregivers are orthodox Christians have higher odds of knowing their HIV status compared to the children whose caregivers were not orthodox Christians.<sup>[3]</sup>

This study has some limitations. We did not collect child-related data directly from the children and, therefore, we can only present issues as a reaction to disclosure from the perspective of the caregivers. Data collection from the patient in the hospital setting by health care providers was also liable to interviewers' bias.

## CONCLUSIONS

The rate of pediatric HIV disclosure in this study was slightly similar to findings from other African nations but lower than some findings from other continents. The

caregivers' factors such as monthly attendance at the HIV psychosocial group meetings, age, and religious beliefs, and child factors, such as child age, duration on HAART, and knowledge caregivers' HIV status positively predict the pediatric HIV disclosure.

These findings have implications for caregivers of children living with HIV and health care workers working in a pediatric HIV clinic in a developing country like Nigeria. Hence, we recommend that health care workers need to educate pediatric caregivers on the need and benefit of pediatric HIV disclosure. There is also a need to mobilize the caregivers in this setting to attend the monthly psychosocial meetings.

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## Conflicts of interest

There are no conflicts of interest.

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