

HIV Infection among Children aged two years to less than eighteen years admitted to the Emergency Pediatric Unit in a Tertiary Health facility in Lafia North-Central Nigeria

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ABSTRACT

BACKGROUND: Human Immunodeficiency virus (HIV) is a retrovirus that impairs the immune system by attacking the body's natural defense from infections and diseases. Pediatric HIV continue to be a major public health problem despite the global decline in its seroprevalence rates. The decline in the incidence of new HIV infections is particularly lower in children with a 52% reduction in the last ten years. This is attributed to a wider coverage in the use of antiretroviral therapy (ART) and the prevention of mother to child transmission of HIV (PMTCT) programs. Several programs designed at curtailing mother to child transmission of HIV are yielding positive result. This is not unexpected since most of the HIV infections among children were acquired via maternal to child transmission. With this, the study sets out to determine the prevalence of new HIV infection among patients admitted to the Emergency Pediatrics Unit (EPU) using the provider-initiated testing and counseling approach.

METHODS: A prospective cross-sectional descriptive study was conducted at the mini laboratory attached to the EPU of the Dalhatu Araf Specialist Hospital Lafia Nasarawa State between 1st August 2017 to 31st July 2018. Using non-probability sampling, categorical variables were analyzed as frequencies and percentages. The association between categorical variables were analyzed using chi square.

RESULTS: A total of 964 children ranging in age from two to less than eighteen years were screened. The total number of males was 550 (57.1%) while females was 414 (42.9%) with a male to female ratio of 1.3:1. Five (0.5%) children were newly diagnosed with HIV of the 964 children tested for the infection.

CONCLUSION: The incidence of HIV infection among children admitted into our Emergency Pediatric Unit was 0.5%, comparable to some earlier reports.

Key words (MeSH): Emergency; Health Facility; HIV; Infection; Lafia; Tertiary.

INTRODUCTION

Human Immunodeficiency virus (HIV) is a retrovirus that impairs the immune system by attacking the body's natural defense from infections and diseases [1]. It is a global epidemics but the greatest burden is in sub-Saharan Africa [2]. Nigeria is second only to South Africa in the global disease burden of HIV [3]. Pediatric HIV is a major public health problem despite the global decline in its seroprevalence rates [4, 5]. The decline in the incidence of new HIV infections is particularly lower in children with a 52% reduction in the last ten years [6]. This can be attributed to a wider coverage in the use of antiretroviral therapy (ART) and the

prevention of mother to child transmission of HIV (PMTCT) programs [6]. The successes recorded can be further enhanced if the present coverage of 22% is improved upon and the 95% donor driven is reversed [7].

Most of the HIV infection among children is via maternal to child transmission of the diseases [8]. Efforts are in place to halt this ugly trend in line with the United Nations Program on HIV and

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AIDS vision 90 – 90 – 90, which is to ensure that 90% of people know their HIV status, 90% of those with HIV are enrolled on treatment and that 90% of those on treatment are virally suppressed [9].

Using the Provider Initiated Testing and Counseling (PITC) approach, Ogunbosi et al [10] in 2011 reported a 10% prevalence of new HIV infections in Ibadan Nigeria. Several programs designed at curtailing mother to child transmission of HIV are yielding positive results [11, 12]. Bello et al [13] in Lafia in a retrospective study over three years reported a 2.7% prevalence of HIV among children delivered through the PMTCT programs. With this modest achievement in mind at curtailing the predominant means of acquiring HIV among children. This study set out to determine the prevalence of new HIV infection among patients admitted to the EPU using the PITC approach.

AIM AND OBJECTIVE

General Objective: To determine the prevalence of HIV infection among children aged 2 years to less than 18 years that are newly admitted to the Emergency Pediatric Unit (EPU).

METHODOLOGY

Study Design: A prospective cross-sectional descriptive study.

Study Site:

The study was conducted at the mini laboratory attached to the Emergency Paediatric Unit of the Dalhatu Araf Specialist Hospital Lafia Nasarawa State between 1st August 2017 to 31st July 2018.

Study Population: Children aged two years to less than eighteen years who presented and were admitted to the EPU of the Dalhatu Araf Specialist Hospital DASH Lafia. Lafia is the capital of Nasarawa State, major tribes of the people are Kanbari, Eggon, Hausa and Gwandara. The major occupation is Farming and Trading.

Sampling Technique: Purposive sampling technique was used. All children whose parents / care-givers consented and whose HIV status was hitherto unknown were screened ± confirmed.

Inclusion Criteria

All children aged two years to less than eighteen years admitted into EPU with their HIV status previously unknown and whose parents consented to be part of the study.

Exclusion Criteria

Known HIV- infected children and those that declined by withholding consent and or assent.

Ethical Approval

Ethical clearance was sought and obtained from the Dalhatu Araf Specialist Hospital Ethics Review Committee. Patient records were kept with utmost confidentiality. Those that tested positive were enrolled and commenced on ART after post-test and received adherence counselling.

Subject Recruitment

All children aged 2 years to less than 18 years admitted to EPU and whose HIV status were unknown were approached and

recruited for the study based on the provider-initiated testing and counselling (PITC).

Diagnosis of HIV was made by serial antibody testing using the Rapid Kit (Determine[®], Stat Pak[®] or Unigold[®]) sequentially. A negative test result from the Determine[®] kit (the preferred because of its sensitivity) indicates that the patient is HIV negative. A positive Determine[®] test result was confirmed with either the Stat Pak[®] or Unigold[®]. A discordance of results was confirmed with a third kit as a tie-breaker [14].

Funding of Research: The researchers provided the funds necessary for the study

Data Collection

A dedicated register was open to obtain the bio data and to document the results. The data presented were obtained over a one-year period from 1st August 2017 to 31st July 2018 at the EPU mini laboratory.

Data Analysis

Data was analysed using SPSS version 20. Result was presented in tables and or graph. Categorical variables were presents as frequencies and percentages while continuous variables were described in mean and standard deviation. Association between two categorical variables were done using chi square while that between two or more continuous variables were done using student t test and ANOVA respectively. Significant p was value < 0.05.

Outcome

Human immunodeficiency virus infection status

RESULTS

A total of nine hundred and sixty-four children aged two years to less than eighteen years were screened, and the number of males was 550 (57.1%) while the females was 414 (42.9%) with a male to female ratio of 1.3:1.

Demographic characteristics of the study population

Of the nine hundred and sixty-four children admitted and tested, children under – five years of age accounted for 680 (70.5%) which is more than two – thirds of the admissions. Among the children under – five years of age, males were 388 (57.1%) with a male to female ratio of 1.3:1 (Table I)

Categorization of HIV status by age groups: Five (0.5%) children were newly diagnosed with HIV of the 964 children tested for the infection. Although three of the five newly diagnosed children were under – five, there is no statistically significant difference noted $p = 0.443$. Equal numbers of children were infected with HIV within the age groups 5 – 10 years and greater than 10 years to less than 18 years (Table II).

Categorization of HIV status by gender: There is no significant difference in the gender of infected children $p = 1.000$ (Table III). One hundred and eighteen (10.9%) children (surrogate decision

makers) declined to be tested of a total number of 1082 children admitted within the period. Nine hundred and sixty four (89.1%) children were tested for the infection.

Table I: Demographic characteristics of the study population

Age groups	Male n (%)	Female n (%)	Total N (%)
Under 5	388 (57.1)	292 (42.9)	680 (70.5)
5 – 10	103 (55.4)	83 (44.6)	186 (19.3)
Over 10	59 (60.2)	39 (39.8)	98 (10.2)
Total	550 (57.1)	414 (42.9)	964 (100.0)

n (N) is frequency

Table II: Categorization of HIV status by age groups

Age group	HIV Positive n (%)	HIV Negative n (%)	Total N (%)	χ^2	p value
Under 5	3 (0.4)	677 (99.6)	680 (100)	1.628	0.443
5 – 10	1 (0.5)	185 (99.5)	186 (100)		
Above 10	1 (1.0)	97 (99.0)	98 (100)		
Total	5 (0.5)	959 (99.5)	964 (100)		

χ^2 is the Pearson's chi square, p value is significant at value <0.05

Table III: Categorization of HIV status by gender

Gender	Male n (%)	Female n (%)	Total N (%)	χ^2	p value
HIV Positive	3 (60)	2 (40)	5 (100)	0.000	1.000
HIV Negative	547 (57.1)	412 (42.9)	959 (100)		

1. χ^2 is the Pearson's chi square, p value is significant at value <0.05.

DISCUSSION

The incidence of HIV infection among children aged two to less than eighteen years admitted to the emergency pediatrics unit of this hospital and whose statuses were previously unknown was 0.5%, this is similar to the 0.4% reported by Awofala and Ogundele [3] in 2018, the similarity in the study time frame may explain the comparison of the findings. This is also comparable to Pufall et al [15] in Zimbabwe who reported 2.2% in a study conducted between 2009 to 2011.

Our result is lower than the 17.3% reported by Nosek et al [16] in Malawi in 2014, the difference may be due our study population which were new patients whose HIV status were previously unknown compared to the study in Malawi that was done among all children admitted with either unknown or known and already

enrolled into HIV care. The geographical difference may also explain the disparity in findings.

It is also lower than the finding by Obiagwu et al [5] in Kano who reported 13.8% prevalence. The difference may be attributed to the use of a smaller sample size of 160, as well as the inclusion of children less than two years old. In addition, Ogunbosi et al [10] in Ibadan reported 10% prevalence in 2011 among all children admitted below the age of 15 years. Ejiofor and Ofomata [17] also reported 10% at Awka Nigeria in 2009 over three years and included all HIV infected children (recent and non-recent diagnosis) that were admitted.

The low incidence in this study may be explained by the exclusion from this study, children whose HIV status were already known and probably in ART care. This is in line with the 90 – 90 90 agenda

of ensuring that at least 90% of people know their HIV status, 90% of those that are HIV infected are on anti-retroviral therapy and 90% of those on treatment should be virally suppressed. The increase uptake of ART among children as well as the successes of the prevention of mother to child transmission of HIV may also be a plausible reason [11, 13]. Similarly, 118 children or their decision makers (10.9% of the total admissions within the period) that declined HIV testing might be people who already know their statuses and decided not to offer themselves for the test for fear of possible stigmatization, this may also explain the low prevalence recorded.

The current study found no significance difference in the gender, ditto for the age groups of the HIV infected children. This is similar to earlier reports across the country [5, 10, 13, 17].

CONCLUSION

This study suggests a decline in the acquisition of new HIV infection among children aged two years to less than eighteen years. Also, no significant difference in the gender or age groups of HIV infected children. Efforts at sustaining and at the same time improving on the gains of PMTCT should be encouraged and intensified upon. For the positive results from PMTCT is a possible explanation for the finding of this study and is therefore advocated.

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