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ORIGINAL ARTICLE

HIV/ AIDS and Children's Health in Central India

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ABSTRACT

Acquired immunodeficiency syndrome (AIDS) has emerged as one of the most serious public health problems in India .Human Immunodeficiency Virus (HIV) infection is of grave concern in the paediatric population. So, this study aims to study the clinical and epidemiological profile children living with HIV and also attempts to understand association between clinical staging and immunological profile (CD4 count/percentage) in HIV infected children. This cross-sectional study was conducted over a period of 1 year from 2017 to 2018. A total of 235 HIV infected children aged ≤15 years and on antiretroviral therapy were included in the study. All study participants were interviewed and data regarding a clinical profile and socio-demographic variables were obtained using a pre tested,structured questionnaire. Majority (133) of study subjects were males. More number (70) of study subjects had age between 9 to 11 years and mean age was 10.83 ±2.443 years. 73 study subjects were belonging to class III of socioeconomic status. 139study subjects were in WHO clinical stage I and 130 study subjects had CD4 count >500 cell/ µl. Majority of study subjects were asymptomatic at the time of interview. Infection in children is vertical. Tuberculosis is the most common opportunistic infection found followed by Herpes zoster eruptions, Fungal nail infections and respiratory infections. With the disease progresses, CD 4 countdecreased significantly.

Keywords: *HIV, Child, Epidemiological, clinical.*

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INTRODUCTION

India's highly heterogeneous epidemic is largely concentrated in only a few states in the industrialized south and west, and in the north-east area. The four high prevalence states of South India (Andhra Pradesh, Maharashtra, Karnataka, Tamil Nadu) account for 55% of all HIV infections in the country(1).

Burden of paediatric HIV remains a challenge for healthcare workers in developing countries. Dysfunction of immune system and resultant illnesses is more rapid in HIV infected children as compared to adults. HIV affects virtually all the systems of the body and presents with varied clinical manifestations (2). A great majority (85%) of pregnant and breastfeeding women living with HIV also received ART, which not only protects their health, but also ensures prevention of HIV transmission to their new-born (3). Severely immune-compromised HIV patients may develop a variety of opportunistic infections that have a significant impact on their well-being, quality of life, health care costs and their survival. Spectrum of clinical manifestations of HIV infection varies in infants and children in different areas of the world. Knowledge of clinical and epidemiological profile is crucial for clinicians to meet the diagnostic and management challenges presented by HIV infected children in resource poor setting (4). Therefore we conducted this study to investigate clinical and epidemiological profile of children living with HIV.

MATERIAL AND METHODS

This cross-sectional study was conducted in ART of tertiary care centre in central India over a period of 1 year from 2017 to 2018. A total of 235 HIV infected children who fulfill the inclusion criteria of aged ≤15 years, registered at ART Centre, taking antiretroviral therapy and those study subjects whose caregiver given informed consent and with their assent were part of the study. Those who were not willing to

participate were excluded from the study. Brief description was given to the participants about the objective of this study and confidentiality in collection of personal data was assured. A well-structured validated and pre-tested questionnaire was used as a tool to interview and to collect a data regarding a clinical profile and socio-demographic variables.

Sample size: A study conducted by Prakash Poudel et al (5) in Eastern Nepal found the prevalence of most common Presenting symptoms fever was 16.2%, using this prevalence of fever sample size was calculated. Sample size required for the study was calculated by using following formula,

$n = Z^2p\ (1\text{-}p) / (l)^2$

n=Sample Size, Z=Confidence level at 95% (Standard value of 1.96), p= (16.2%) Prevalence, l = Absolute error (0.05) Sample size = 209. Though the sample size estimated to be 209, we had recruited 235 study subjects for study.

Statistical analysis: The data was collected, entered and analyzed using EPI Info 7.1 and SPSS (20). The qualitative data was expressed by percentages and quantitative data was expressed in terms of mean and standard deviations. Chi square test/ Fisher's exact test was applied to observe the differences between proportions. P value <0.05 was considered significant.

RESULTS

Figure 1 shows, distribution of study subjects according to age and gender. Out of total 235 study subjects, majority 133(56.59%) were males. Maximum,70(29.80%) study subjects had age between 9 to 11 years. Over all mean age was 10.83 ±2.443 years, mean age in female was 10.84±2.45years and mean age in males was 10.83±2.45 years. No study subject was found below 5 years of age. Minimum age was 5 years and maximum age was 15 years. (Figure1).

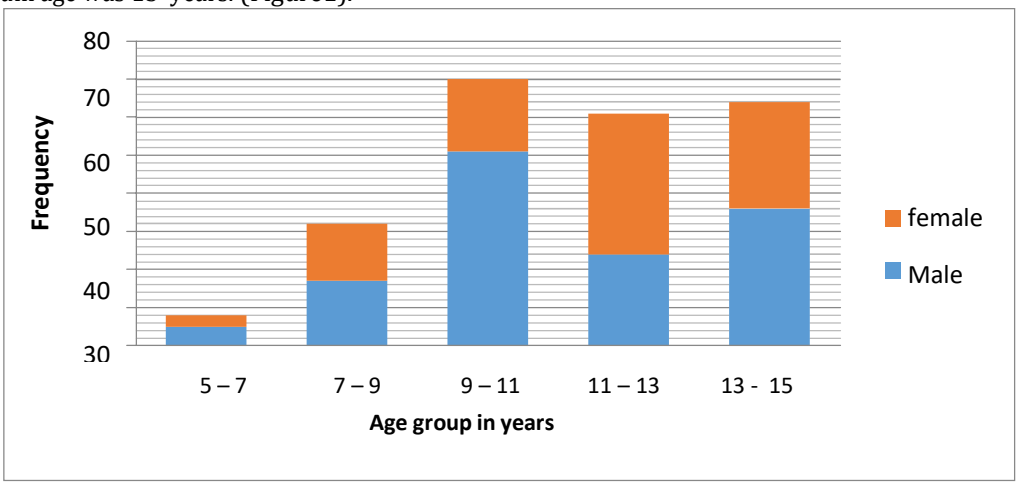

Figure 1 Distribution of study subjects according to age and gender.

The majority of study subjects were Hindus 143(60.90%) followed by Muslim 55(23.40%), Buddhist 36(15.30%)and Sikh 1(0.40%).(6)

At the time of data collection around half of study subject were studied up to primary (I to V) class followed by upper primary (VI to VIII) class i.e. 118(50.2 %) and 97(41.3%) respectively. Very few study subjects were studied up to secondary class, 16 (6.8%) and 4(1.70%) up to pre-primary class.(7)

Figure 2 depicts, the majority of study subject 168(71.50%) belonged to nuclear family. In a nuclear family, 101(60.1%) were males and 67(39.9%) were females. 6 males and 5 females belong to other type of family (broken, separated). vertical transmission was the mode of HIV transmission in all study subjects.

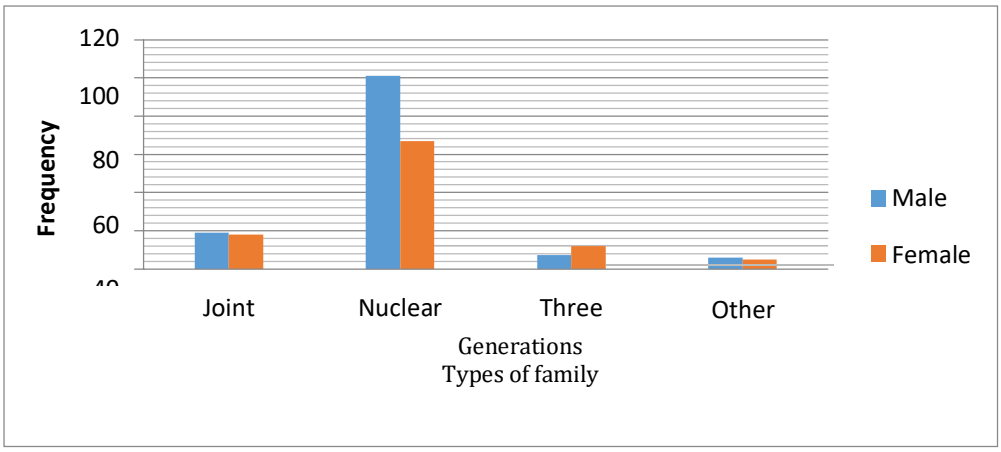

Figure2 Distribution of study subjects according to type of family and gender.

Table 1: Distribution of study subjects according to WHO clinical staging of HIV/AIDS and gender.

WHO clinicalstaging	Gender				Total	
	Male		Female			
	Number	Percentage	Number	Percentage	Number	Percentage
Stage I	87	62.60	52	37.40	139	59.15
Stage II	40	47.60	44	52.40	84	35.74
Stage III	6	50.00	6	50.00	12	5.11
Stage IV	0	0	0	0	0	0
Total	133	56.60	102	43.40	235	100.0

WHO clinical staging(17)

Table 1 shows, Majority, 139(59.15%) of study subjects were in WHO clinical stage I followed by stage II, stage III. In stage I, males were 87(62.6%) and females were 52(37.4%). (Table 1)

Table 2: Distribution of study subjects according to CD4 Count and gender.

CD4 Count cell/ µl*(CD4%)	Gender				Total	
	Male		Female			
	Number	Percentage	Number	Percentage	Number	Percentage
≥500 (≥26%)	80	61.50	50	38.50	130	55.32
200-499 (14 -25%)	52	50.50	51	49.50	103	43.83
<200 (<14%)	1	50.0	1	50.0	2	0.85
Total	133	56.60	102	43.40	235	100.0

*CD4 count and CD4% were taken as per CDC guideline (18).

Table 2 reveals, 130(55.32%) of study subjects had CD4 count >500 cell/ µl and 103(43.83%) study subjects had CD4 count 200-499 cell/ µl . Only 2 study subjects had <200 cell/ µl (14%). (Table 2)

Table 3: Distribution of study subjects according to morbidities.

Sr.no	Morbidities	Number (N =235)	Percentage
1	Asymptomatic	218	92.76
1	Pulmonary tuberculosis	5	2.12
2	Herpes zoster eruptions	4	1.70
3	Fungal nail infections	3	1.27
4	Recurrent respiratory infections (ARI)	3	1.27
5	Candidiasis	2	0.85
6	Seborrhoric dermatitis	1	0.42

Table 3 shows, the majority of study subjects were asymptomatic at the time of interview and 17(7.23%) of study subjects were presented with different morbidities. (Table 3)

Table 4: Distribution of study subjects according to CD 4 counts and WHO clinical staging of HIV/AIDS

WHO clinicalstaging	CD 4 count cells/mm^2						df	P value
	<200		200-499		>500			
	Number	%	Number	%	Number	%		
Stage I (n=139)	0	0	12	8.6	127	91.4	1	0.0000001@
Stage II (n=84)	0	0	81	96.4	3	3.6	1	0.0000001@
Stage III (n=84)	2	16.7	10	83.3	0	0	1	0.00008#
Stage IV (n=0)	0	0	0	0	0	0		-

@ Chi square test with Yates correction, # fisher's exact test

Table 4 reveals, maximum, 127(91.7%) of study subjects from stage I, had CD 4 counts >500 cells/µl^2. Majority 81(94.6%) of study subjects from stage II had CD 4 count between 200-499 cells/µl^2. We found statistically significant association between CD 4 count and WHO clinical staging of HIV/AIDS. (Table 4)

DISCUSSION

Approximately similar results were seen by Kumar SKK et al(1) and Verma D et al (2), who reported that 60% males 40% female and 62.7% males 37.3% females respectively. Majority of studies Ramaswamy S et al (8) , Jadhav V M *et al* (9), Verma D *et al*, Kumar SKK *et al*, Mahesh V et al (10) and Thakor et al (11) reported that males were more than females.

Mahesh V et al found same result of mean age as ours, while Jadhav V M et al and Kumar SKK et al found mean age of study subjects as 7.08 ± 3.48 years and 4.4 ± 2.3 years respectively which was slightly lower than our study.

P Poudel *et al* (5)and P. K. Kapavarapu *et al* (12) found same results to our finding that, all children acquiredinfection vertically.

Prakash Poudel et al (5) reported approximately similar finding to our study,16 (41.0%) children presented with WHO clinical stage I, 13 (33.3%) and 3(7.7%) in WHO clinical stages II and III respectively. While, 7 (17.9%) children presented in WHO clinical stages IV but none of study subject in our study belong to stage IV. Verma D etal (2) and Shet et al (13) reported higher present of children belong to stage III and IV i.e. 71% and 315respectively and lower study subjects in stage I and II.

Butler *et al* (14) observed that maximum 280(71%) of study subjects had CD4 count ≥25% which was higher than our study finding while, 77(19%) of study subjects had CD4 count 15%–24% which was less than half of our study finding and 29(7%) study subjects had CD4 count <15% which was higher to our finding. Here, 9(2%) study subjects had missing/unknown data about CD4%.A study conducted by Mahesh V et al (10) found almost similar finding to our study.

Similarly a study by Verma d et al (2) noted, CD4 percentage and CD4 count declined with deterioration in the WHO clinical stages of HIV infection. Raghuvanshi VL et al (15) also noted strong association between the clinicaland the immunological staging of HIV in children, i.e. with worsening CD4 status, clinical stage of the child's infection advanced.

Swetha *et al* (16), Kumar SKK et al (1) and Jadhav VM et al (9) observed that pulmonary tuberculosis were the commonest opportunistic infection seen in study subjects and which was similar to our study.

CONCLUSIONS

Predominantly HIV transmission in children is vertical. Tuberculosis is the most common opportunistic infection found followed by Herpes zoster eruptions, Fungal nail infections and respiratory infections. With the diseaseprogresses, CD 4 count decreased significantly.

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REFERENCES

1. K. K. Santhosh Kumar, Narayanappa D, D. RM, K. JK. (2018). Clinical spectrum of paediatric HIV infection in a

tertiary care centrein South India. Int J Contemp Pediatr [Internet]. 5(4):1348.
2. Verma D, Acharya AS, Bachani D, Seth A. (2017). Clinico-Social and Immunological Profile of Antiretroviral Naïve Children Living With HIV In Tertiary Care Hospital, Delhi. SAARC J Tuberc Lung Dis HIV/AIDS [Internet]. ;13(1):32. Available from: http://www.nepjol.info/index.php/SAARCTB/article/view/16926
3. HIV/AIDS [Internet]. [cited 2021 Jan 4]. Available from: https://www.who.int/news-room/fact-sheets/detail/hiv-aids
4. WHO. (2018). Regional Framework for the Triple Elimination of Mother-to-child Transmission of HIV , Hepatitis B and Syphilis in Asia and the Pacific 2018 – 2030 (Draft).
5. Poudel P, Pokharel R, Chitlangia M, Chaudhary S. (2014). Profile of HIV infected children: A hospital based study at Eastern Nepal. Asian Pacific J Trop Dis. 4(3):169–75.
6. Religion Data - Population of Hindu / Muslim / Sikh / Christian - Census 2011 India [Internet]. [cited 2018 Nov 26].Available from: https://www.census2011.co.in/religion.php
7. Government Of India. (2014). Ministry Of Human Resource Development. Department Of Higher Education. Indian Standard Classification of Education. New Delhi.
8. Ramaswamy S, Thandavarayan M, Thirumalaikumarasamy S, Sureshkumar A. (2017). A study on clinical profile of paediatric HIV infection in the age group of 18 months to 12 years and its correlation with CD4 count. Int J Contemp Pediatr. 4(4):1232–5.
9. Jadhav VM, Gabhale YR, Lala MM, Shah ND, Manglani MV. (2017). A study of clinical spectrum of opportunistic infections in HIV infected children and its correlation with CD4 count and anti-retroviral therapy. Int J Contemp Pediatr |.4(4):1485– 90.
10. Mahesh V, Bant DD, Bathija G V. (2013). Clinical and psychosocial profile of HIV orphans in Northern Karnataka – a longitudinal study. Glob J Med PUBLIC Heal. 2(3):1–6.
11. Nilesh T, Gadhavi RN, Pradip D, Ushma B, Samir B, Nisarg P. (2015). Sociodemographic profile and health status of children living with HIV-AIDS attached to an NGO (ADHAR) of Ahmedabad city. Int J Med Sci Public Heal. ;4(6):773–6.
12. Kapavarapu PK, Bari O, Perumpil M, Duggan C, Dinakar C, Krishnamurthy S, et al. (2012). Growth patterns and anaemia status ofHIV-infected children living in an institutional facility in India. Trop Med Int Heal.17(8):962–71.
13. Shet A, Mehta S, Rajagopalan N, Dinakar C, Ramesh E, Samuel NM, et al. Anemia and growth failure among HIV-infected children in India: a retrospective analysis. BMC Pediatr [Internet]. 2009;9(37):37. Available from: http://www.scopus. com/inward/record.url?eid=2-s2.0-67650069154&partnerID=tZOtx3y1
14. Butler AM, Williams PL, Howland LC, Storm D, Hutton N. Impact of Disclosure of HIV Infection on Health-Related Quality of Life Among Children and Adolescents With HIV Infection. 2009;123(3).
15. VL Raghuvanshi, R Kamal, T Husain, K Katoch RD. A Study on profile of HIV infection in Children and its correlation with their CD4 count . V L Raghubanshi, Raj Kamal, T Hussain, K Katoch, R Dayal Asian J Paed Prac july-sep2015 [Internet]. AsianJ Paed Prac july-sep2015. 2015 [cited 2018 Dec 9]. p. 1–12.
16. Swetha GK, Hemalatha R, Prasad U V, Murali V, Damayanti K, Bhaskar V. Health & nutritional status of HIV infected children in Hyderabad, India. Indian J Med Res Suppl [Internet]. 2015 Jan [cited 2018 Oct 6];141(JAN 2015):46–54. Availablefrom:
17. World Health Organization.(2016). Consolidated Guidelines on the Use of Antiretroviral Drugs for Treating and Preventing HIVInfection, 2nd edition.
18. The Centers for Disease Control and Prevention. Terms, Definitions, and Calculations | Surveillance Overview | StatisticsCenter| HIV/AIDS|CDC[Internet].[cited2018Nov26].Availablefrom: https://www.cdc. gov/hiv/statistics /surveillance/terms.html