

**INCIDENCE OF HIV-1 IN VERTICALLY INFECTED CHILDREN  
TESTED AT VCTC OF GOVT. GOVERNMENT GENERAL  
HOSPITAL, KRISHNA DISTRICT, ANDHRA PRADESH, INDIA**

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**ABSTRACT**

More than 1,000 children are newly infected with Human Immunodeficiency Virus (HIV) every day because of lack of access to HIV treatment and millions of children every year are indirectly affected by the epidemic according to UNAIDS. The present communication deals with the objective of revealing socio-demographic characteristics, family history and the mode of transmission of HIV children at VCTC (Voluntary Counseling and Testing Center) of Govt. General Hospital, Vijayawada, Andhra Pradesh, India. It is a retrospective cross – sectional record based study from April 2012 to April 2015. Out of 2755 attendees of VCTC, 95 (3%) children were HIV Positive. Of whom 49 (52%) subjects were males and 46 (48%) subjects were females (age, 1-20 years). High

incidence of HIV/AIDS (acquired immunodeficiency syndrome) was found in the age group of 11-15 years with 48 (51%) subjects. Out of 95 children, 88 (93%) children became HIV positive through their HIV positive mothers at the time of their births i.e., through mother to child transmission (MTCT), 6 (6%) children through heterosexual partner and one child through blood transfusion. Appropriate testing, efficient linkages to care and treatment and support for the families and communities that provide the material, social and emotional foundation for a child's development is needed. In the present study, 75% of the children had HIV positive parents who were already died. 6% of the children have HIV positive parents who are still living. 2% of the children had HIV negative parents who are alive. 4% of the children, parents were not HIV positive and died naturally. 5% children have father HIV

positive died and mother HIV positive still living; and rest of the 8% children have father HIV negative alive and mother positive alive. In the present study, 54% children have no siblings, 28% of the children have HIV positive siblings 18% of the children have HIV negative siblings. But out of 95 children, 11 (12%) children died due to HIV infection during the study period. Among these 11 children, 4 are of male and 7 are of female children.

**KEYWORDS:** HIV incidence, mode of transmission, family history, siblings' status, mortality.

## INTRODUCTION

Over 10 million children, currently children under 15 years have lost one or both parents due to AIDS. The total number of children orphaned by the epidemic is forecast to more than double by 2010. Children orphaned by AIDS are at greater risk of malnutrition, illness, abuse, child labor and sexual exploitation than children orphaned by other causes and these factors increase their vulnerability to HIV infection. They also suffer the stigma and discrimination often associated with HIV/AIDS and may be denied of education, work, housing and other basic needs as a result.<sup>[1]</sup>

India has an estimated 202,000 children infected by HIV/AIDS.<sup>[2]</sup> Using a conservative vertical transmission rate of 30%, a new cohort of approximately 56,700 HIV infected infants, is added every year. As of September 2006, the programme has about 45,000 individuals on ART through public, private and NGO supported ART centers. There are 2,300 children, who are currently receiving ART in India however; half of HIV-positive children die undiagnosed before their second birthday.<sup>[3]</sup>

New HIV infections have fallen by 6% since 2010. Worldwide, 2.1 million [1.8 million–2.4 million] people became newly infected with HIV in 2015, down from 2.2 million [2 million–2.5 million] in 2010. New HIV infections among children have declined by 50% since 2010. Worldwide, 150 000 [110 000–190 000] children became newly infected with HIV in 2015, down from 290 000 [250 000–350 000] in 2010.<sup>[4]</sup>

Children have specific needs for growth and development, and of early diagnosis of infection besides needing a strong family support. Orphaned and vulnerable children (OVC), both uninfected and infected added to the complexity of the issue in terms of vulnerability, social security, livelihood, poverty etc. Once HIV infection is confirmed and for the older children,

who have contracted HIV through other routes, the areas of importance include correct diagnosis, nutritional support, immunizations both routine and special vaccines, antiretroviral therapy, prevention and management of opportunistic infections (OIs) and last but not the least, access to appropriate counseling services. There is a need to focus on adolescents and HIV, especially with regard to primary prevention of HIV amongst teens by providing them with the life skills, family life education and right messages on prevention of HIV.

Based on HIV Sentinel Surveillance 2008-09, it is estimated that India has an adult prevalence of 0.31 percent with 23.9 lakh people infected with HIV, of which, 39 percent are female and 3.5% are children.<sup>[5]</sup> In Andhra Pradesh, the Mean HIV prevalence among Antenatal clients (ANC) is >1% in six districts i.e., East Godavari, Guntur and Krishna of coastal Andhra region Kadapa, Karimnagar and Mahbubnagar from other region. The ANC mean positivity in urban and rural areas is 1.09% and 0.70% respectively; out of overall positivity i.e., 0.77% of Andhra Pradesh.<sup>[6]</sup>

However, the HIV positivity showed a declining trend for all the ICTC attendees. In 2012, parent to child transmission of HIV accounted for 3.11% of all the HIV infection in the district. However, the proportion of transmission through heterosexual route remains high 96.17%.<sup>[7]</sup>

Hence, the present investigation was undertaken to know the HIV status, family history, siblings' status and mode of transmission of HIV in children who attended ART centre and VCTC (voluntary counseling and testing centre) of Govt. General Hospital located at Vijayawada of Krishna district, Andhra Pradesh.

## **MATERIALS AND METHODS**

The present study was conducted at VCTC of Govt. General Hospital in Vijayawada, Krishna District situated in coastal Andhra Pradesh. Krishna district is located at 16°10' N latitude and 81°08' E longitude. To investigate the study, permission from Nodal Officer, Senior Pediatrician, authorities of VCTC & ART Centre, Govt. General Hospital, Vijayawada was obtained. For the study of seroprevalence of HIV/AIDS in pediatric subjects, a total of 95 attendees of VCTC from April, 2012 to April 2015 were recruited, who were suggested for regular check up either by volunteers or referred from other institutions.

Information pertaining to the attendees of VCTC was available by questionnaire method regarding variables such as age, gender, family status, siblings' status and mode of transmission. Graphs were drawn and data was analyzed using 'MS Excel 2007'.

## RESULTS

During the study period a total of 2755 people have attended the VCTC among which 95 (3%) cases were HIV positive (Figure 1). Among 95 HIV positive children, 49 subjects (52%) were male and 46 subjects (48%) were female (Figure 2). Among HIV positive children, 2 (2%) subjects are in the age group of 6 months - 5 years and 8 (8%) subjects are in the age group of 6 – 10 years. High incidence of HIV/AIDS was found in 48 (51%) subjects in the age group of 11 - 15 years and is followed by 37 (39%) subjects in 16 – 20 years age group (Table 1).

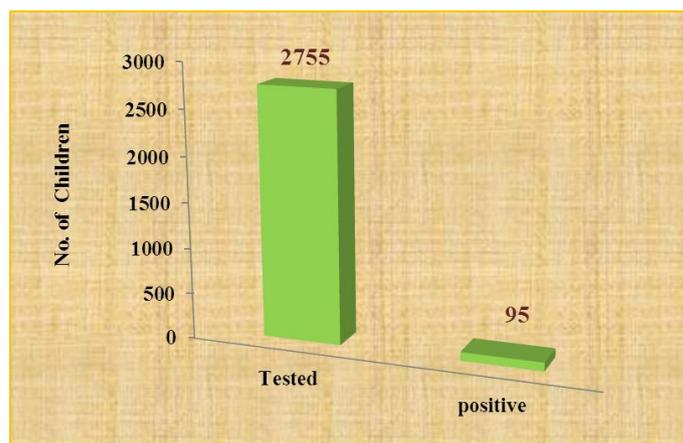


Figure 1: Estimated number of children tested and HIV positive during April, 2012 to April, 2015

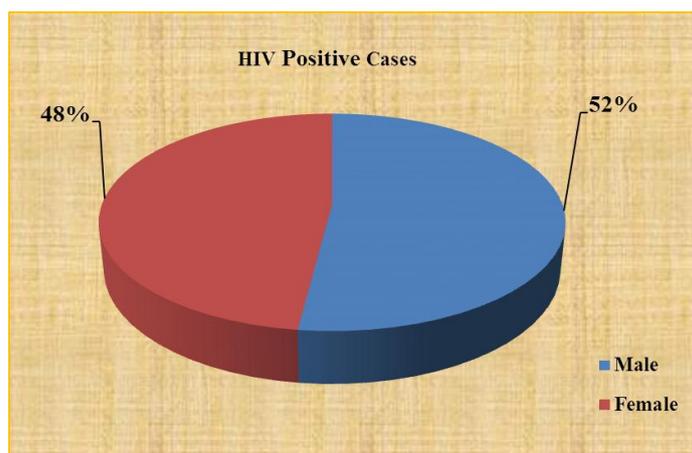


Figure 2: Gender wise distribution of HIV infected children (%) during April, 2012 to April, 2015.

**Table 1: Distribution of HIV Positivity according to Age and Gender during April, 2012 to April, 2015.**

Age	Male		Female		Total	
	No.	%	No.	%	No.	%
6 months – 5 years	1	2	1	2	2	2
6 – 10 years	2	4	6	13	8	8
11 – 15 years	<b>28</b>	<b>57</b>	<b>20</b>	<b>44</b>	<b>48</b>	<b>51</b>
16 – 20 years	18	37	19	41	37	39
<b>Total</b>	<b>49</b>	<b>100</b>	<b>46</b>	<b>100</b>	<b>95</b>	<b>100</b>

All HIV infected children responded to the question on the pattern of risk behavior followed. Of the total 49 male subjects; 46 (94%) male children had transmission from their mother (MTCT) and 3 (6%) male children had transmission from heterosexual partner. Among 46 female subjects; 42 (91%) children had transmission from mother during birth (MTCT), one (2%) child had transmission through blood transfusion and three female children (7%) got infected by heterosexual partner i.e., through their husband. Thus, out of 95 children, 88 (93%) children became HIV positive through their HIV positive mothers at the time of their births i.e., through mother to child transmission (MTCT), 6 (6%) children through heterosexual partner and one child (1%) through blood transfusion (Table 2).

**Table 2: Distribution of the factors influencing mode of transmission of HIV during April, 2012 to April, 2015**

Risk Factor	HIV Positive Children					
	Male		Female		Total	
	No.	%	No.	%	No.	%
Heterosexual Partner	3	6	3	7	6	6
MTCT	46	94	42	91	88	<b>93</b>
Blood Transfusion	0	0	1	2	1	1
<b>Total</b>	<b>49</b>	<b>100</b>	<b>46</b>	<b>100</b>	<b>95</b>	<b>100</b>

In the present study 75% of the children have HIV positive parents who were already died. 6% of the children have HIV positive parents who are still living. 2% of the children have HIV negative parents who are alive. For 4% of the children, parents were not HIV positive and died naturally which is evident in the case of positive subjects who were contaminated through heterosexual partner horizontally. 5% children have father HIV positive died and mother HIV positive still living; and rest of the 8% children have father HIV negative alive and mother positive alive which has happened in the case of husband abandoned families, mothers longevity expanded due to the great achievement of ART therapy. Due to this

therapy now a day's HIV/AIDS became chronic and manageable disease like cancer and diabetes (Table 3).

In the present study, 54% of the children have no siblings because their parents having known of their HIV status and took the decision of canceling the next conception. For 28% of the children, siblings' HIV status is positive but siblings' HIV status is negative for 18% of the subjects. Moreover these study subjects' elder siblings were HIV negative and younger siblings were HIV positive which states that before the random publicity of the importance of HIV initial checkup during the first trimester of the pregnancy these younger siblings became victims of the infection and due to the delay in ART initiation. These subjects' elder and younger siblings miserable death situation faced by these tender hearts, incidents of death of their parents and siblings death imposed a unforgettable mark in their life along with the stigmatized and discriminated words of their paternal, maternal relatives and neighbours. The paediatric subjects with HIV positive siblings unable to digest their siblings' death during the course of time and depressed occasionally (Table 3).

**Table 3: Family history of HIV positive children during April, 2012 to April, 2015.**

Parental HIV Status	Male		Female		Total	
	No.	%	No.	%	No.	%
Both Parents +ve & Died	38	78	33	72	71	<b>75</b>
Both Parents +ve & Alive	1	2	5	11	6	6
Both Parents -ve & Died	3	6	1	2	4	4
Both Parents -ve & Alive	0	0	2	4	2	2
Father +ve & Died Mother +ve & Alive	3	6	2	4	5	5
Father -ve & Alive Mother +ve & Died	4	8	3	7	7	8
Total	49	100	46	100	95	100
Siblings' HIV Status	Male		Female		Total	
	No.	%	No.	%	No.	%
Having no siblings	28	57	23	50	51	54
Having HIV +ve siblings	13	27	14	30	27	<b>28</b>
Having HIV -ve siblings	8	16	9	20	17	18
<b>Total</b>	<b>49</b>	<b>100</b>	<b>46</b>	<b>100</b>	<b>95</b>	<b>100</b>

## DISCUSSION

The present investigation reveals the incidence of HIV as 3% among 2755 children visiting VCTC, Govt. General Hospital, Vijayawada, Krishna district, Andhra Pradesh during April, 2012 to April, 2015. More than two decades, since the discovery of the human immunodeficiency virus (HIV), the etiological agent of AIDS continues to expand its extent

of incidence. As per the previous studies, the total number of people living with HIV in India is very high as much as 2.5 millions, including an estimated 0.09 million HIV patients.<sup>[8]</sup> But in a study of HIV-related disease in 4480 hospitalized children Abidjan, Cote d'Ivoire, HIV seroprevalence was 8.2%.<sup>[9]</sup> Thus the prevalence of HIV in paediatric population decreased over the period of time.

In our study, out of 95 (3%) HIV infected children, males were 52% and females were 48% which correlates with the work of Anita Shet *et al.*<sup>[10]</sup> i.e., males were 57% and females were 43% out of 248 children aged between 1 to 12 years. And in our study majority (51%) of the children with HIV belong to 11-15 years age group.

Mother to child transmission (MTCT) of HIV is a field of health care that dramatically demonstrates the inequality between the global north and the global south. The best available official data indicate that “more than 90% of children living with HIV acquired the virus during pregnancy, birth or breastfeeding forms of HIV transmission that can be prevented.”<sup>[11]</sup> Perinatal transmission is the most common mode of acquiring HIV in the population and is responsible for about 67% to 87% of HIV infection. The clinical features of HIV infection in children are different from those in adults (d'Arminio Monfote *et al.*, 1992).<sup>[12]</sup> Similarly in the present study, the children aged between 2 – 20 years are infected perinatally i. e., 93% through mother to child transmission (MTCT). This is supported by the study of Jackson *et al.*<sup>[13]</sup> that the epidemiology and the burden of disease vary greatly across regions and nearly 90% of the almost half a million children who yearly become infected with HIV through their mothers live in Sub-Saharan Africa. Also supported by the studies reported by Adejuyigbe *et al.*<sup>[14]</sup> and Oniyangi *et al.*<sup>[15]</sup> that MTCT accounting for 93.3% of infection and indicates the need to intensify efforts to get MTCT service to the large numbers of Nigerian women needing it. Transmission via blood transfusion and possible sexual route was also observed in the present study with 1% and 6% respectively. Similarly very low percentage of transmission through blood transfusion and sexual route was observed in the studies made by peer researchers.<sup>[16,14,15,17]</sup> Thus our study revealed that MTCT preventive measures were not used in majority of cases during pregnancy.

With the current knowledge and technology, most cases of postnatal MTCT are preventable through antiretroviral drugs and modifications in infant feeding practices. During the last decade an increasing number of HIV-infected women gained access to antiretroviral treatment or prophylaxis effectively reducing transmission during pregnancy and birth,<sup>[17]</sup> but

the transmission of HIV through breastfeeding has remained a challenge in contexts where breastfeeding is normative and vital to infant survival. Breast feeding transmission has in fact come to contribute to an increasing part of the total MTCT in the region.<sup>[11]</sup>

According to the present study 75% children have become orphans by losing both of the parents who are HIV positives. This is supported by the study of Shelton<sup>[18]</sup> that, an estimated 80,000 to 125,000 American children and youth will lose their mothers to AIDS by the end of century and worldwide, 40 million children will be orphaned by the next 10 years.

In the present study, for many children (54%) do not have siblings, for some of the children (28%) siblings' HIV status is positive but siblings' HIV status is negative for 18% of the subjects. The pediatric subjects having HIV positive siblings, unable to digest their sibling's death during the course of time and depressed occasionally. It is also observed that the social, psychological and legal implications for the children who survive are immense. Many of their parents are likely to have had a series of preexisting and longstanding stressors such as poverty, substance abuse and violence; so these children suffer not only from widespread anxieties about future loses. They feel sorrowful that who will care for them if all the family members die and about their own health. However, it is the pervasive threat of death and fear of being left alone that constitutes chronic trauma for child survivors of HIV infection.<sup>[19]</sup>

## CONCLUSION

Our study highlights the incidence of HIV through MTCT, hence emphasis the need to continually expand efforts to prevent MTCT of HIV, early diagnosis of infection and improved care of pediatric patients. The Government should inculcate the righteous decision to access the testing of every pregnant woman and make her to take the drugs that can prevent mother to child transmission, if she is HIV positive.

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