



A CROSS-SECTIONAL STUDY OF THE FACTORS INFLUENCING THE ACADEMIC PERFORMANCE OF CHILDREN LIVING WITH HIV (CLHIV) IN INDIA

Paediatrics

Dr. Prateek Shirke	Assistant Professor, Department of Nephrology, Seth GSMC & KEMH, Mumbai, Maharashtra, India.
Dr. Harshada Uchil*	Assistant Professor, Department of Pediatrics, MGM Medical College, Vashi, Navi Mumbai, Maharashtra, India. 400706. *Corresponding Author
Dr. Nikita Shah	Assistant Professor, Department of Pediatrics, LTM Medical College & General Hospital, Sion, Mumbai, Maharashtra, India.
Dr. Yashwant Gabhale	Additional Professor, Programme Director- Pediatric centre of excellence for HIV, Department of Pediatrics, LTM Medical College & General Hospital, Sion, Mumbai, Maharashtra, India
Dr. Radha Ghildiyal	Professor and Head, Department of Pediatrics, LTM Medical College & General Hospital, Sion, Mumbai, Maharashtra, India.

ABSTRACT

Aim: To describe the factors influencing the academic performance of Children Living with HIV (CLHIV) in India. **Materials And Methods:** The study was a cross-sectional study conducted in 100 HIV-infected school-going children over 18 months. Demographic, clinical and social history were noted. The academic performance of children was assessed according to the school grading system. Correlation between various factors influencing academic performance and school grades was analysed statistically. **Results:** The maximum children in the study belonged to the age group of 9-12 years (45%), with the mean age of the study population being 11.53 ± 2.66 years. Male to female ratio was 1.56:1. Maximum students (43%) were in Class 4 to 6, followed by 38% in Class >7 and 19% in Class 1 to 3. Lower socioeconomic class and orphan status were associated with lower grades, which was statistically significant ($p < 0.05$). Tuberculosis showed a significant association with poor academic grades ($p=0.015$). History of repeated school absenteeism was noted in 55% of children, and it was associated with lower grades ($p=0.001$). Lack of interest in studies was found to be associated with lower grades ($p=0.012$). Students belonging to the lower grades (Class 1-3) performed better than higher grades, and the difference was statistically significant ($p=0.001$). No association was noted between academic grades and the Clinical or Immunological staging of HIV. **Conclusion:** The present study revealed the various factors affecting academic performance in CLHIV. Most of these factors are amenable to prevention with adequate implementation of national policies in this regard, better dissemination of knowledge to the general population about the nature of the disease and better social support. This would go a long way in helping the children living with HIV/AIDS to achieve their ultimate growth potential.

KEYWORDS

Academic performance, CLHIV, School Absenteeism

INTRODUCTION:

HIV infection is a global pandemic affecting humanity, with 2.38 million children living with HIV as of 2022 (1). HIV/AIDS not only affects various organ systems of the body but also has a profound effect on the overall well-being of the individual. In children, the early years of rapid growth and development are affected, and consequently, this can have a major influence on the scholastic performance and intelligence of the child.

According to UNICEF (2004), school drop-out rates and absenteeism have increased due to various HIV related phenomena affecting children. Coping with personal illness, caring for family members, the sudden death of a family member, and financial constraints cause children living with HIV/AIDS to drop completely out of school (2,3). In addition, social factors such as discrimination by peers and teachers affect the school attendance, interest in studies and consequently school performance (4).

According to the Dakar Conference for All (2000), 'Education in a world with HIV/AIDS cannot be the same as education in a world without AIDS'. The study stipulates that in many countries today, children and adolescents are growing up amidst multiple challenges exacerbated by the direct or indirect threat of HIV/AIDS infection (5). Children need a supportive environment to thrive, and HIV infection impedes their journey to reach their true potential.

The process of education and learning is the key to social, cultural and political participation. It contributes to personal and community economic empowerment and eventually national development (6). HIV and AIDS represent the largest single threat to this education process.

Most of these challenges can be tackled by effective interventions such as the establishment of counselling teams, supportive leadership by the school management, acceptance instead of stigma, early diagnosis and

institution of anti-retroviral therapy and regular follow-ups. Small steps can create a huge impact in improving the academic performance in HIV infected children, thereby allowing them to improve their socioeconomic conditions and quality of life.

The impact of HIV on academic performance has been studied extensively in the African subcontinent, but studies from India in this regard are scarce. This study was undertaken with a motive to assess the impact of HIV/AIDS on scholastic performance, so that appropriate interventions can be taken at the national, social and family front to promote their overall well-being.

MATERIALS AND METHODS:

Aim: To study the academic performance of CLHIV and factors influencing it.

Objective: Correlation of academic performances of CLHIV with various factors like school absenteeism, socioeconomic status, etc.

Inclusion Criteria: HIV diagnosed children as per N.A.C.O. guidelines between the age group 5-15 years, and attending school

Exclusion Criteria:

- 1) Children having any neurological involvement at present.
- 2) Morbidly ill patient
- 3) School dropouts

It was a cross-sectional study conducted in the Pediatric Centre of Excellence for CLHIV in a Tertiary Care Hospital over 18 months after approval from the Institutional Ethics Committee. The sample size was calculated using the SAS 9.2 package. 100 CLHIV, aged between 5 – 15 years, were enrolled in the study. The diagnosis of HIV infection was based on the National guidelines (7). Informed consent (assent, where applicable) was taken.

Demographic details, clinical and socio-economic history, clinical examination and laboratory parameters were noted in the predesigned case proforma. Patients were classified in WHO clinical stage and immunological stage as per NACO guidelines (7). The presence of medical illnesses, including Tuberculosis, was noted. The participants in our study were classified into 3 groups (Class 1-3, Class 4-6, Class 7-10) on the basis of standards in order to describe the academic performance in each of the groups.

Attendance was evaluated as per the annual school report card. The academic performance of the child was assessed according to the school grading system. Grades secured by the participant in the past completed academic year (A1/A2/B1/B2/C1/C2) were noted. Patient-related, school-related and socio-economic factors likely to affect academic performance were noted. Patient-related factors that were assessed included frequent school absenteeism due to any cause (illness, hospital admissions, death of a family member), compliance with ART and participation in extra-curricular activities. Compliance with ART was assessed by patient and family interview as well as from medical records in the HIV centre. Socio-economic factors studied included socio-economic status, orphan status, parental disharmony and domestic violence. School-related factors that were evaluated included teasing by peers, abuse or discrimination by teachers and interest in studies. The presence or absence of these factors was recorded in the predesigned case record form.

The impact of various factors on the school grades was analysed statistically. Data was analysed using SPSS V 15.0 (Statistical Package for Social Sciences, Version 15.0) statistical package. Data were given as Mean $\pm$ SD for quantitative data and Number (Percentage) for qualitative data. Chi-square test or Fisher Exact Probability tests were used to compare percentages between 2 or more groups. All statistical tests were 2-tailed. The level of Significance (α) was taken as $p=0.05$.

RESULTS:

Maximum children in the study belonged to the age group of 9-12 years (45%), with the mean age of the study population being 11.53 ± 2.66 years. Male to female ratio was 1.56:1. Maximum students (43%) were in Class 4 to 6, followed by 38% in Class >7 and 19% in Class 1 to 3. Majority of the children belonged to WHO clinical stage 1 (67%) and Immunological stage 1 (81%).

Table 1: Demographic Data

Age Groups (in years)	No. of students (n=100)
5 to 8	15 (15%)
9 to 12	45 (45%)
12 to 15	40 (40%)
Gender	No. of students
Males	61 (61%)
Females	39 (39%)
Class Groups	No. of students
1 to 3	19 (19%)
4 to 6	43 (43%)
> 7	38 (38%)
Socioeconomic status	No. of students
Lower middle	61 (61%)
Upper lower	39 (39%)
Clinical Stage	No. of students
1	67 (67%)
2	0
3	19 (19%)
4	14 (14%)
Immunological Stage (based on CD4 count)	No. of students
1 >500 units	81 (81%)
2 350-499	7 (7%)
3 200-349	5 (5%)
4 <200 or <15%	7 (7%)

Table 2: Distribution Of Factors Affecting Academic Performance

A. Medical Illness in the study population (n=100)	
Associated Medical Illness	No. of students
Tuberculosis	50 (50%)
Respiratory System	18 (18%)
Gastro-intestinal system	08 (8%)
Other illnesses	10 (10%)

No associated illness	14 (14%)	
B. Distribution of patient-related factors (n=100)		
Factor	Yes	No
School absenteeism	55 (55%)	45 (45%)
Compliance to ART	100 (100%)	0 (0%)
Extra-curricular activities	100 (100%)	0 (0%)
C. Distribution of social factors (n=100)		
Factor	Yes	No
Orphan	50 (50%)	50 (50%)
Single	41	
Double	09	
Parenteral disharmony	1 (1%)	99 (99%)
Domestic violence	0	100(100%)
D. Distribution of school-related factors (n=100)		
Factor	Yes	No
Interest in studies	97 (97%)	3 (3%)
Teasing by peers	0 (0%)	100 (100%)
Abuse by teacher	0 (0%)	100 (100%)

Table 3: Correlation Of Socioeconomic Class & Medical Illness With Academic Performance (Grades)

A. Correlation of Socioeconomic Class with Grades			
Grade	Lower Middle Class	Upper Lower Class	Total
A1	12 (75%)	4 (25%)	16
A2	15 (79%)	4 (21%)	19
B1	11 (48%)	12 (52%)	23
B2	19 (73.1%)	7 (26.9%)	26
C1	4 (33.3%)	8 (66.7%)	12
C2	0 (0%)	4 (100%)	4
Total	61 (61%)	39 (39%)	100
B. Correlation of Medical Illness with Grades			
Grade	Tuberculosis	Respiratory System Illness	Gastrointestinal System Illness
A1	3	2	2
A2	3	5	5
B1	9	4	1
B2	19	5	0
C1	11	2	0
C2	3	0	0
Total	50	18	8

Lower socioeconomic class showed a statistically significant association with poorer grades ($p=0.003$) (Table 3-A). 50% children in the study had associated Tuberculosis. Children co-infected with Tuberculosis had lower grades than those uninfected with TB, and this was statistically significant ($p=0.015$) (Table 3-B). It was observed that students belonging to lower school classes (1-3) showed better grades as compared to the other classes. This association was found to be statistically significant ($p=0.001$).

Table 4: Correlation Of Patient-related, Social & School-related Factors With Academic Performance (Grades)

A. Patient-related factors			
Grade	School Absenteeism Present	Compliance to ART	Participation in extra-curricular activities
A1	6 (37.5%)	16 (100%)	16 (100%)
A2	4 (22.2%)	18 (100%)	18 (100%)
B1	8 (36.4%)	22 (100%)	22 (100%)
B2	20 (76.9%)	26 (100%)	26 (100%)
C1	11 (91.7%)	12 (100%)	12 (100%)
C2	4 (100%)	6 (100%)	6 (100%)
Total	53	100	100
A. Social factors & School-related factors			
Grade	Orphan status		Interest in studies Present
	Single Orphan	Double Orphan	
A1	4 (100%)	0 (0%)	17 (100%)
A2	3 (100%)	0 (0%)	18 (100%)
B1	10 (91%)	1 (9%)	22 (100%)
B2	15 (83.3%)	3 (16.7%)	26 (100%)
C1	7 (63.6%)	4 (36.4%)	11 (91.7%)
C2	2 (66.7%)	1 (33.3%)	3 (75%)
Total	41 (82%)	9 (18%)	97

Amongst patient-related factors, we noted that 53% of children had frequent school absenteeism. It was noted that school absenteeism had a significant association with low school grades. ($p=0.001$). All children in the study participated in extra-curricular activities, and all were compliant with ART.

Among the social factors studied, we noted that 50% of the participants were orphans. 41% children in the study were single orphans, while 9% were double orphans. Orphan status was associated with lower academic grades ($p=0.001$). No statistically significant difference was noted in the academic performance of single orphans compared with double orphans. 1 case of parental disharmony was reported, and no cases of domestic violence were reported. No association of these factors with academic performance was noted in this study.

None of the participants reported teasing by peers or abuse by a teacher. Hence, these factors were not found to be associated with academic performance. 97% of participants were interested in studies. Lack of interest in studies was associated with poorer academic performance, and the difference was statistically significant ($p=0.012$).

DISCUSSION:

HIV/AIDS has a substantial negative impact on school performance and behaviour. For children living with HIV, school functioning is an important concern as it establishes a sense of normalcy and belonging. It is paramount in the development of self-esteem and social skills. School functioning includes academic achievement, school attendance and social relationships at school (8,9,10). This study is one of the few studies conducted in India to understand the factors affecting academic performance in Children living with HIV.

Age distribution similar to our study was noted in the study by Joshi et al, who studied emotional and behavioural disturbances in school going HIV positive children (11).

The difference in the academic performance between younger and older children was found to be statistically significant, with the older children faring poorly as compared to the younger ones. The burden of disease and morbidity is higher as age advances, thereby contributing to poor academic performance. Also, older children are more aware of the disease and its implications, hence, they may face a sense of low self-esteem and depression, which adversely affects scholastic performance.

Lower socio-economic class was associated with poorer grades as compared to the upper socio-economic class. Asiimwe, who studied the effects of HIV/AIDS on children's schooling in Uganda, found that schooling among these children is particularly affected by the general poverty levels. They stated that lower incomes, limited access to health facilities and quality education, and poor nutritional standards contribute to school absenteeism and poor academic performance (12). Tuberculosis afflicted 50 % of the children and had a significant association with poor grades. CLHIV are a known risk group for Tuberculosis, and despite advances in medicine, TB-HIV Co-infection remains one of the important clinical challenges affecting children (13,14). Mishra et al in their study compared the quality of life between TB-infected and uninfected people living with HIV. Their findings emphasised the challenges faced by these patients in various aspects of their lives and the need for comprehensive support strategies (15).

Frequent school absenteeism was attributed to hospital admissions, other illnesses requiring treatment at home, visits to ART centres and side effects of ART. In a study done on pre-school children by Wangui in Kenya, 28% of HIV affected children frequently absented themselves from school for medical attention or care. Another 26% dropped out of school due to various reasons (16). School absenteeism plays a significant determining role in academic performance in both HIV infected and uninfected children. Our study demonstrated a significant association between low school grades and absenteeism.

Our study did not derive a significant association between compliance with ART or participation in extra-curricular activities and academic performance. The association between extra-curricular activities and academic performance was demonstrated by Moriana et al, who found that the group involved in extra-curricular activities yielded better academic performances (17).

Social factors are significant in determining the academic output of a

child. In our study, it was noted that orphans performed poorly as compared to non-orphans. Similar findings were elucidated in the 2009 Chinese study by Xiaoming et al (18), where they noted that significantly fewer orphans reported that they scored "mostly A's or B's". Their study also included teacher rating scales, where they found that orphans were rated significantly lower than comparison children on school competency scales (frustration tolerance, assertive social skills, task orientation and peer social skills). Monasch and Boerma in 2004 demonstrated that double orphans were more likely to be disadvantaged in school attendance compared with single orphans (19).

Parental disharmony and domestic violence are other important social factors that affect scholastic performance. However, the present study did not derive any significant association with these factors. Educational attainment is affected in children who witness disharmony between parents and domestic violence. They also face struggles with self-esteem and forming relationships (20).

None of the children in our study reported teasing by peers or abuse by a teacher. This is largely due to HIV non-disclosure. However, even in countries where the teachers and peers are aware of the diagnosis, as demonstrated in the Kenyan study done by Wangui et al (16), all of the parent respondents stated that they had not received any complaints from their children regarding negative attitudes of the teachers and classmates. This was the result of the high professional standards maintained by the teachers. Many studies demonstrate that peer teasing and abuse by teachers have a significant impact on the academic performance of a child. Victimisation and stigmatisation of both the infected and affected are rampant among both teachers and their classmates. In the study done by Kamau et al in Kenya, they noticed that fellow pupils had stigmatising attitudes, which resulted in poor peer trust and peer relations. This led to the development of internal stigma, which included social isolation and withdrawal, loneliness, crying, attention and recognition-behaviour (21).

Interest in studies was another school-related factor that determined school grades. 97% of students claimed that they were interested in studies. Our study showed a statistically significant association between interest in studies and scholastic performance. In an HIV infected child, interest in studies is affected by many medical and social factors. These factors, such as repeated medical illnesses, lack of a stable family environment and low self-esteem, may cause waning interest in studies. The study done by Kpolovie et al, who studied the role of interest in learning and attitude towards school, revealed an overwhelming preponderance of data-based evidence that students' interest in learning and attitude towards school predicted academic performance (22).

Policy interventions are needed at both the national and school levels to prevent and mitigate the likely adverse impacts of HIV on the education sector. The present study revealed the various factors affecting academic performance in HIV-infected children. Most of these factors are amenable to prevention with adequate implementation of national policies in this regard, better dissemination of knowledge to the general population about the nature of the disease and its implications and adequate social support. This would go a long way in helping the children living with HIV/AIDS to achieve their ultimate growth potential.

Study Limitations:

This study is limited by a small sample size, with most of the children belonging to lower socio-economic strata. These factors could have an additional impact on academic performance. However, the identification of these factors and the significant impact exerted on Children living with HIV makes it crucial to address these factors. More studies are needed in this regard to deepen our understanding of this important issue.

CONCLUSION:

CLHIV, just like other children, should get ample support and opportunities for overall development. It is important to identify and address the factors impeding academic performance in these children. Most of these factors can be tackled if the effective implementation of national policies is ensured.

Acknowledgements:

The authors would like to express their gratitude to NACO, MDACS,

Dean (LTMMC & LTMGH, Sion) and Department of Pediatrics (LTMMC and LTMGH, Sion) for permission to conduct the study and providing necessary facilities to carry out the work. The authors would also like to thank the parents, children, nurses and staff members who made the study possible.

Declarations:

Ethics Clearance: Ethical clearance was obtained from the Institutional Ethics Committee

Conflict Of Interest: There is no conflict of interest in the above-mentioned article and all the authors have equally contributed to data collection as well as in writing the manuscript. The authors have no competing interests to declare that are relevant to the content of this article.

Funding: No funds, grants, or other support were received.

Consent: Written informed consent was taken from all the participants

REFERENCES:

- UNAIDS. The Path That Ends AIDS: UNAIDS Global AIDS Update 2023 [Internet]. [www.unaids.org. 2023. Available from: https://www.unaids.org/en/resources/documents/2023/global-aids-update-2023](https://www.unaids.org/en/resources/documents/2023/global-aids-update-2023)
- The State of the World's Children 2004 [Internet]. Available from: <https://www.unicef.org/media/84796/file/SOWC-2004.pdf>
- United Nations Children's Fund (UNICEF). Towards an AIDS-Free Generation – Children and AIDS: Sixth Stocktaking Report. Reports [Internet]. 2013;83. Available from: http://www.unaids.org/en/media/unaids/contentassets/documents/unaidspublication/2013/201311129_stocktaking_report_children_aids_en.pdf
- Logie C, James TW, Loutfy M. Associations Between HIV-Related Stigma, Racial Discrimination, Gender Discrimination, and Depression Among HIV-Positive African, Caribbean, and Black Women in Ontario, Canada. *AIDS Patient Care and STDs*. 2013 Feb;27(2):114–22.
- UNESCO. The Dakar Framework for Action: Education for All: Meeting our Collective commitments. Dakar Senegal. 2000;(April):29.
- Desmond C, Michael K, Gow J. The hidden battle: HIV/AIDS in the household and community. *South African J Int Aff*. 2000;7(2):39–58.
- National Guidelines for HIV Care and Treatment, 2021 Available at: https://naco.gov.in/sites/default/files/National_Guidelines_for_HIV_Care_and_Treatment_2021.pdf
- Rehm RS, Franck LS. Long-term goals and normalization strategies of children and families affected by HIV/AIDS. *ANS Adv Nurs Sci*. 2000; 23(1):69–82.
- Dick BD, Riddell RP. Cognitive and school functioning in children and adolescents with chronic pain: a critical review. *Pain Res Manag*. 2010;15.
- Allison MA, Attisha E. The link between school attendance and good health. *Pediatrics*. 2019;143(2).
- Joshi D, Tiwari MK, Kannan V, Dalal SS, Mathai SS. Emotional and behavioral disturbances in school going HIV positive children attending HIV clinic. *Med J Armed Forces India*. 2017;73 (1):18–22.
- Asimwe JB. The effects of HIV/AIDS on children's schooling in Uganda. *African Popul Conf*. 2007
- Basu Roy R, Whittaker E, Seddon JA, Kampmann B. Tuberculosis susceptibility and protection in children. *Lancet Infect Dis* 2019; 19:e96–e108. Available at: doi:10.1016/S1473-3099(18)30157-96.
- Martinez L, Cords O, Horsburgh CR, et al. The risk of tuberculosis in children after close exposure: a systematic review and individual-participant meta-analysis. *Lancet* 2020; 395:973–84.
- Mishra RK, Garg AP, Arya TS. Quality of life and psycho-social well-being in individuals with HIV-TB Co-infection: Insights from a cross-sectional study in India. *Indian J of Applied Research*. 13(9):3–5.
- Wangui GP, Mwaniki B, Kibui A, Gichuhi L, Kahiga R. Effect of HIV/AIDS on academic performance of pre-school children in Kijabe location, Kiambu county, Kenya. *Journal of Advanced Scientific Research and Innovation*. 3(6):2–10.
- Moriana J, Alós F, Alcalá R, Pino MJ, Herruzo J, Ruiz R. Extra-curricular activities and academic performance in secondary students. *Electron J Res Educ Psychol*. 2006;4(8):35–46.
- Tu X, Lv Y, Li X, Fang X, Zhao G, Lin X, et al. School performance and school behaviour of children affected by acquired immune deficiency syndrome (AIDS) in China. *Vulnerable Children and Youth Studies*. 2009;4(3):199–209.
- Monasch R, Boerma JT. Orphanhood and childcare patterns in sub-Saharan Africa. *AIDS*. 2004;18(2):S55–65.
- Byrne D, Taylor B. Children at risk from domestic violence and their educational attainment: Perspectives of education welfare officers, social workers and teachers. *Child Care Pract*. 2007;13(3):185–201.
- Kamau, M.N. AIDS Stigma and Discrimination in Public Schools: A Case Study of HIV-Positive Children in Kenya, The National AIDS Control Council, Nairobi, 2012.
- James KP, Igbo JA, Okoto T. Academic Achievement Prediction: Role of Interest in Learning and Attitude towards School. *Int J Humanit Soc Sci Educ*. 2014;1(11):73–100