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Knowledge and Awareness of HIV/AIDS, Mental Health Problems, and Stigma among HIV/AIDS Children: A Mediation Analysis

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Abstract

Stigma is a significant obstruction, restricting factor, and hurdle in HIV/AIDS prevention and treatment. It has serious psychosocial consequences for HIV/AIDS patients' children. In India, 35% of maximum AIDS cases reported are in the most productive age bracket of 10–21 years, showing the younger population's exposure to the infection. The goal of this study is to determine the stigma associated with HIV/AIDS, as well as HIV/AIDS knowledge and awareness, and mental health problems among HIV/AIDS children. It also intends to investigate the relationship between these variables. Children with HIV/AIDS (n = 90) from Motilal Nehru Hospitals in Allahabad, Uttar Pradesh, India, were included in the study. To achieve the study's goal, descriptive statistics, correlational, and regression analysis, as well as mediation analysis, were used. Correlational analysis reveals that, HIV/AIDS knowledge and awareness are considerably adversely connected with HIV/AIDS related stigma (r [88] = −0.448, p = 0.01), but mental health problems are strongly positively correlated with HIV/AIDS stigma (r [88] = 0.753, P = 0.01). Using hierarchical regression analysis, it was discovered that HIV/AIDS knowledge and awareness contributed 18.8% of the variation in HIV/AIDS stigma, while HIV/AIDS stigma contributed 45.9% of the variance in mental health problems. The results of the mediation analyses support the significance of HIV/AIDS stigma in mediating the affiliation concerning HIV/AIDS knowledge and awareness and mental health problems (r = −0.19, CI: [−0.661]–[−0.038] P = 0.024). These findings add to empirical evidence about psychological predictors and the observable consequences of H/A related stigma.

Keywords: HIV/AIDS children, HIV/AIDS related stigma, Knowledge and awareness about HIV/AIDS, Mental Health Problems

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Introduction

Approximately 37.7 million individuals are now fighting HIV/AIDS, including 1.7 million children (0–14 years) and 6,80,000 people who will suffer from the condition by 2020. Even in India, with a population of 2,10,000 people, this is a socially unacceptable situation.[1] 410,000 persons concerning the ages of 10 and 24 were infected for the first time, with 150,000 of them being adolescents in the middle of the 10 and 19 years.[2] According to statistics, 35% of AIDS diagnoses in India occur in people aged 15–24.

The HIV epidemic has elicited fear, denial, stigma, and prejudice in society since its inception. HIV/AIDS is arguably the world's most stigmatized medical condition.[3,4] In the current worldwide environment, stigma and prejudice associated to HIV disease are two major issues for those alive with HIV/AIDS. Prejudice, negative approaches, and discrimination toward people who are suspected of having HIV are all examples of H/A-related stigma.[5]

Children and adolescents afflicted with HIV/AIDS are affected differently by the disease than adults, and they are more susceptible to stigma and discrimination.

There are ranges of dynamics that contribute to stigma among PLHA, particularly among children and youth of rural areas, one of which may perhaps be a lack of or incorrect information about HIV transmission methods due to social or religious beliefs, a lack of education, or misperceptions of personal risks.[6]

Knowledge and awareness about HIV/AIDS incorporate several aspects of HIV disease such as mode of transmission of disease, symptoms, treatment options, and testing. It is required that people suffering from HIV have at least basic information regarding these aspects, which can help them in managing their disease.

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To discontinue the extent of HIV/AIDS and the stigma that comes with it, people must have a strong understanding of the disease. Many risk behaviors linked to HIV transmission can be avoided if individuals have a solid understanding of the disease. Which are experienced in early ages, that is why this is precisely essential to start the preclusion efforts from the adolescence period. According to professional experts, prevention through education is the best approach to fight HIV/AIDS.[7] Various government and non-government organization worldwide have commenced programs to nurture awareness among people regarding HIV/AIDS. NACO's 'Information Education Communication' (IEC) agenda has included raising AIDS awareness. It is crucial to assess young people's awareness levels as it supports to measure the impact of government and school-based awareness and prevention activities, as well as the need for intervention.[8]

The misconception concerning HIV disease is across the board that is the reason for the assessment of knowledge and awareness levels in HIV-infected children and adolescents. This would help to decide and evaluate the effect of awareness and counteractive action endeavors made by the government and schools and furthermore to measure the requirement for interventions.

The intersection between HIV and mental health is a frequent subject for research. Mental health problems and HIV disease are closely interlinked. Most of the HIV patients start suffering from excessive depression and anxiety, the moment they discover their HIV positive status. HIV infected children's and adolescents may meet much more noteworthy mental health challenges likewise number of them encounter a higher amount of stress because of the parental death, an absence of family and social support; feeling of dependence to bear school expenditures, insecurity of getting food, problem associated with self-perception of body image with hindered development and growth, skin scarring, and delayed sexual maturity. Moreover, H/A stigma and vulnerability to viciousness and substance abuse also contribute to increasing negative mental health problems.[9-12] To examine the following concerns the present study investigated the relationship among H/A stigma, knowledge and awareness about HIV/AIDS and mental health problems in HIV/AIDS children.

Methodology

Objectives

The study's objectives were formulated as follows:

1. To assess (a) HIV/AIDS related stigma, (b) knowledge and awareness about HIV/AIDS, and (c) mental health problems among HIV/AIDS children.
2. To assess the relationship between (a) HIV/AIDS related Stigma, (b) knowledge and awareness about HIV/AIDS, and (c) mental health problems among HIV/AIDS children.

Table 1: Demographic and background characteristics of HIV/AIDS children

Characteristics	*Numbers of children*	*Percentage*
Age range		
Puberty 10–14	62	68.9%
Adolescence 15–18	28	31.1%
Education		
Primary	25	29.0%
Secondary	49	54.7%
Senior Secondary	16	17.2%
Gender		
Boys	53	58.9%
Girls	37	41.1%
Background of family		
Rural	63	70.0%
Urban	27	30.0%
Living status		
Family	65	73.3%
Others	25	21.7%
Duration of ART		
>5 years	17	18.9%
3–4 years	34	37.8%
0–2 years	39	43.3%
Father HIV positive		
Yes	79	87.8%
No	11	12.2%
Mother HIV positive		
Yes	81	90.0%
No	09	10.0%

Hypothesis

1. H_1 Knowledge and awareness about HIV/AIDS would be negatively correlated with (a) HIV/AIDS stigma and (b) mental health problems.
2. H_2 HIV/AIDS stigma would be positively correlated with mental health problems.
3. H_3 HIV/AIDS Stigma would mediate the relationship between (a) knowledge and awareness about HIV/AIDS with (b) mental health problems.

Sample

With the help of the purposive sampling, 90 children infected with HIV (53 boys and 37 girls) were chosen for the research. Mean age of H/A children was 13.98 years. The sample was collected from children enrolled at the ART center of Department of medicine, Moti Lal Nehru Hospital, Allahabad. The inclusion criteria included (a) documented status of HIV/AIDS or On ART, (b) ≤18 years of age, (c) able to speak Hindi language, (d) knowledge about their HIV status, (e) providing informed consent, and (f) voluntarily participating in the study. Exclusion criteria was refusing informed written consent or unwilling to spare time for the study.

Measuring Instruments

Socio-demographic characteristics

The participants' socio-demographic data [Table 1] included their age, gender, and educational qualification, family background, living status, HIV status of both parents, the duration of ART (Antiretroviral treatment).

HIV/AIDS Stigma Questionnaire

HIV/AIDS stigma was assessed using Berger's[13] HIV/AIDS stigma questionnaire (2001). Through translation and back translation method the questionnaire was translated to the Hindi language. The questionnaire consists of 35 items, using a response option ranging from 1 to 5 (strongly disagree to strongly agree). Cronbach alpha for the tool in this study was 0.81. Higher scores indicate greater level of stigma.

AIDS Awareness Questionnaire

AIDS Awareness Questionnaire made by Dr. Madhu Asthana[14] was used for the study. Modes of HIV infection and location of HIV in the body (8 items), Symptoms of AIDS, (4 items), and Testing and protection (8 items) were three major areas of AIDS awareness –. This scale is divided into three sections – Sections I, II and III, related to the above-mentioned areas, respectively. Each item has three alternatives to respond to – yes, no, and? (not known). Each correct response in section 1 is given 1 mark, in section II is given 2 marks and in section III is given 1.5. The respondents have to put a tick mark in the column of appropriate response. Higher score on this questionnaire indicate greater awareness about HIV/AIDS.

General Health Questionnaire- 12

Mental health problems was assessed with a 12-items scale[15] rated on a four-point scale. The alpha-coefficient ranges from 0.75

to 0.84. This result develops the conclusion that lower the score-better the overall mental health.

Results

The obtained results are being presented in three sections:

Section I present the demographic and family characteristics of HIV/AIDS children. Section II presents the assessment table of all studied variables on the basis of descriptive statistics and Section III presents correlation of coefficient between predictor and criterion variables and hierarchical regression analysis which was performed to know how much % age of variances was significantly contributed by the predictor on the criterion variables.

Section One - Demographic and Background Characteristics

Table 1.

Section Two - Results Related to Descriptive Statistics for the Studied Variables

A thorough description of the data using the descriptive statistics of mean, standard deviation and the range of scores for studied variables ($n = 90$) are presented in Table 2.

Overall, HIV infected children in this study reported high level of H/A related stigma. The mean score for the H/A Stigma was 145.75 (possible range of 35–175). Participants mean score on knowledge and awareness about HIV/AIDS is 11.06 with (possible score range of 0–26), which shows less awareness among them regarding different aspects of HIV/AIDS. The mean score of mental health problems was 32.34 (score range from 12–48). This considered as an indicator of higher mental health problems which was observed in children living with HIV.

Section Three - Results Related to Correlation Analysis and Hierarchical Regression

Table 3 shows the correlational analysis that HIV/AIDS stigma was significantly adversely interrelated with K/A about HIV/AIDS (r [88] = −0.448, $P < 0.01$) and significantly positively correlated with mental health problems (r [88] = 0.753, $P < 0.001$). The results demonstrate that K/A about HIV/AIDS was significantly negatively correlated with mental health problems (r [88] = −0.417, $P < 0.01$).

The results of hierarchical regression analyses with knowledge and awareness about HIV/AIDS as predictors and mental health problems, and HIV/AIDS related stigma as criterion are illustrated in [Table 4]. It is quite apparent from the findings that after controlling the effect of demographic variables, knowledge, and awareness about HIV/AIDS significantly contributed 21.9% of the variance (F change = 25.535, $P < 0.001$) in mental health problems. The negative beta values, ($\beta = -0.474$, $P < 0.001$) indicate that the knowledge and awareness about HIV/AIDS decrease the level of mental health problems among HIV/AIDS children.

The results of hierarchical regression analyses [Table 5] predicting HIV/AIDS related stigma from K/A about HIV/AIDS depicts that after controlling the effect of demographic variables, knowledge and awareness about HIV/AIDS significantly contributed 18.8% (F change = 15.728, $P < 0.001$) of the variance in HIV/AIDS-related Stigma. The negative beta values, ($\beta = -0.440$, $P < 0.001$ shows that the K/A about HIV/AIDS caused a decrease in the level of HIV/AIDS stigma. Thus, results indicate that the knowledge and awareness about HIV/AIDS negatively predicted HIV/AIDS Stigma.

The results of hierarchical regression analyses [Table 5] suggest that after controlling the effect of demographic variables, HIV/AIDS Stigma significantly contributed to 45.9 % of the variance (F change = 81.408 $P < 0.001$) in mental health problems. The positive beta values ($\beta = 0.746$ $P < 0.001$) however indicate that the HIV/AIDS Stigma amplified the level of mental health problems which indicate that as the score on HIV/AIDS stigma increases, score on mental health problems also increases.

Mediation Analysis

Mediational role of H/A Stigma in K/A about HIV/AIDS - Mental health problems relationship.

Figure 1 provides the findings of a series of multiple regression analyses used to evaluate each aspect of the proposed mediation model. First, it was found that knowledge and awareness about HIV/AIDS were negatively associated with mental health problems ($\beta = -0.48$, t [88] = −5.06, $P < 0.001$). Further, it was found that knowledge and awareness about HIV/AIDS were negatively associated with H/A stigma ($\beta = -0.44$, t [88] = −4.87, $P < 0.001$). Lastly, results indicated that the mediator HIV/AIDS-related stigma was positively associated with mental health problems ($\beta = 0.74$, t [88] = 8.85 $P < 0.001$). Because both the a and b paths were significant, the bootstrapping method with bias-corrected confidence estimates was used to test mediation analyses.[16,17] The indirect effects' 95% confidence interval was calculated using 1000 bootstrape resamples in the study.[18] Results of the mediation analyses confirm the partial mediating role of HIV/AIDS-related stigma in the relation between K/A about HIV/AIDS and mental health problems ($\beta = -0.19$, CI: −0.661 to −0.038 $P = 0.024$). In addition, results indicated that direct effect of K/A about HIV/AIDS on mental health problems became less-significant with a beta coefficient of ($\beta = -0.19$, $P = 0.02$) when controlling for HIV/AIDS-related stigma. K/A about HIV/AIDS were associated with approximately 0.28 points lower in mental health problems scores as mediated by HIV/AIDS-related stigma. However [Table 6], sobel test value ($Z = 3.97$, $P < 0.001$) is greater than 1.96 therefore the significance of the mediation effect was confirmed. Hence, the mediation is considered as partial as knowledge and awareness still had a significant relationship with mental health problems.

Table 2: Descriptive statistics for the studied variables

Variables	*N*	*Range*	*Minimum*	*Maximum*	*Mean*	*SD*
HIV/AIDS related Stigma	90	175	108.00	169.00	145.75	15.34
K/A about HIV/AIDS	90	26	4.00	19.00	11.06	3.91
Mental health Problems	90	48	20.00	46.00	32.34	7.25

Discussion

The participants' mean score on HIV/AIDS knowledge and awareness is 11.06 (with a possible score range of 0–26), indicating that they are less informed of many aspects of HIV/AIDS. Three dimensions of knowledge and awareness regarding HIV were assessed the mode of transmission, symptoms of HIV/AIDS, and method of treatment and protection related information. These finding was held by the earlier research conducted by Pramanik *et al.*[19] Saad *et al.*[20] Saad *et al.*[21] Rangsima *et al.*[22] They claimed that mostly children have at least heard about the disease. However; they were vague and inappropriate in their understanding of how it is transmitted.

The current study confirmed that HIV/AIDS stigma is negatively correlated with knowledge and awareness about HIV and positively correlated with mental health problems using correlational analysis. According to hierarchical regression analysis, HIV/AIDS stigma exacerbated mental health concerns.

The mediation study found that HIV/AIDS stigma acted as a mediating variable, which mediate the association amid K/A about HIV/AIDS and mental health problems. It means that when HIV/AIDS stigma is introduced to a relationship, knowledge, and awareness of HIV/AIDS, as well as mental health issues, decreases even more. These outcomes of the study support the assumptions that knowledge and awareness about HIV/AIDS are associated with a lower risk of mental illness, These findings are supported by the previous studies Jones *et al.*[23] and Nelsen *et al.*[24] stated that the association obtained between HIV knowledge and health effects suggests that knowledge and awareness regarding disease is an essential component in achieving optimal health whereas, HIV/AIDS stigma is associated with a higher risk of mental illness and further K/A about HIV/AIDS negatively predict HIV/AIDS stigma.

In this study, children reported low knowledge and awareness about HIV disease. They had numerous misconception and false information regarding modes of HIV transmission, their symptoms, testing and other aspects they think that HIV can be spread through mosquito bite or by sharing personal items even most of the children do not know about the term "HIV positive" and "HIV negative". Due to lack of awareness and knowledge regarding disease they had developed misconceptions about modes of transmission. They think that if someone will touch them or eat with them it may cause HIV to other person that is why they try to keep themselves away from others and literally avoid sharing about their HIV status to others. Thus present study findings suggested that lack of knowledge and awareness about disease increases fear and HIV stigma among HIV children. Thus education, imparting knowledge program related to awareness is a key factor to reduce HIV stigma among children. The previous researches were also found to be consistent with our findings.[6] In their findings observed that misleading beliefs, cultural attitudes, and a lack of information often contribute to H/A Stigma amongst HIV-positive children and adolescents.[25] Education and support are the most effective methods for helping HIV-positive children and adolescents grow up to be mentally healthy adults.

HIV/AIDS related stigma mediated the link amid knowledge and awareness about HIV/AIDS and mental health problems. It suggests that H/A stigma transmits the indirect effects of knowledge and awareness about HIV/AIDS on mental health problems. It implies that when HIV/AIDS related stigma is added to the association concerning knowledge and awareness and mental health problems, the previous relationship further reduces. Knowledge and awareness about HIV/AIDS are significantly negatively associated with HIV/AIDS related stigma and H/A stigma is positively linked to mental health problems. The mediating role of H/A related stigma between K/A about HIV/AIDS and mental health problems is rationally acceptable. This is attributed to the factors that misconception regarding disease arises mental health problems among children. HIV stigma also act as a stimulating factor to further promote mental health problems among children. Thus accumulative HIV knowledge is just not sufficient for combating with mental health issues of HIV children. HIV-related stigmatization reduction strategies are also required as an important component in HIV prevention approaches. A research done in China backs up these findings where[26] studied the mediating role of HIV stigma on quality of life and reported similar results.

Table 3: Summary of correlation analysis between predictor and criterion variables

	HIV/AIDS-related Stigma HIV/AIDS	*K/A about HIV/AIDS*	*Mental Health Problems*
HIV/AIDS-related Stigma	-	−0.448**	0.753***
K/A about HIV/AIDS		_	−0.417**

**$P < 0.01$ level; ***$P < 0.001$

Table 4: Summary of Hierarchical regression analysis with K/A about HIV/AIDS as predictor and mental health problems and HIV/AIDS related Stigma as criterion

Control Variables	*Mental health problems*		*HIV/AIDS related Stigma*	
	Step 1	*Step 2*	*Step 1*	*Step 2*
Control variables				
Age	0.199	0.001	0.162	0.042
Gender	0.085	0.013	−0.029	0.072
Education	0.059	0.022	−0.097	−0.059
Background	0.027	0.033	−0.082	−0.087
Duration of ART	0.075	0.101	−0.079	−0.006
Living with	0.032	0.096	−0.074	−0.139
Predictor variable				
Knowledge and awareness about HIV/AIDS		−0.474***		0.440***
R	0.281	0.546	0.255	0.464
R2	0.079	0.298	0.065	0.215
R2 change	0.079	0.219	0.065	0.188
ΔR2	0.012	0.238	−0.003	0.215
F change	1.187	25.535***	0.961	15.728***

***$P < 0.001$ level

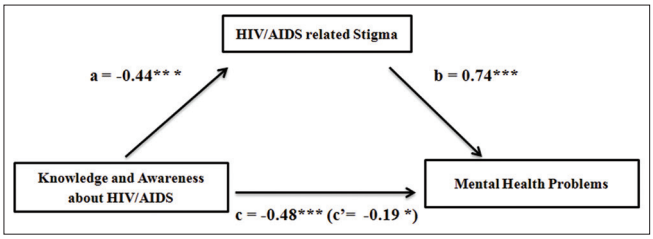

Figure 1: Indirect effect of knowledge and awareness about HIV/AIDS on mental health problems through HIV/AIDS-related Stigma.

Table 5: Summary of hierarchical regression analysis with HIV/AIDS-related stigma as predictor and mental health problems as criterion

Control Variables	*Mental health problems*	
	Step 1	*Step2*
Control variables		
Age	0.199	–0.054
Gender	0.085	0.023
Education	0.059	0.025
Background	0.027	–0.004
Duration of ART	0.075	–0.010
Living with	0.032	0.062
Predictor variable		
HIV/AIDS-related stigma		0.746***
R	0.281	0.733
R2	0.079	0.538
R2 Change	0.079	0.459
Δ R2	0.012	0.498
F-ratio	1.187	81.408***

****P* < 0.001 level

Table 6: Sobel test measuring the significance of mediating effect of HIV/AIDS related Stigma on prediction of mental health problems by knowledge and awareness about HIV/AIDS

Z-score	*Standard error*	*P-value*
3.97	0.14	0.001

The focus of this research was to improve the emergent body of research on pediatric HIV in India. This study reveals that in direction to convey improved knowledge and comprehension of HIV/AIDS, there is a requisite for creative, broad-based scientific information to be disseminated through the media, particularly to rural children in school. The current study's limitations include a limited sample from a single hospital in the state of Uttar Pradesh. As a result, the findings cannot be generalized because the participants do not appropriately represent the Indian population of HIV-positive youngsters. Third, this research does not use intervention studies to improve their situation. Future studies may try to consider the intervention's impact on their overall development.

Conclusion

The focus of this research was to improve the emergent body of research on pediatric HIV in India. This study reveals that in direction to convey improved knowledge and comprehension of HIV/AIDS, there is a requisite for creative, broad-based scientific information to be disseminated through the media, particularly to rural children in school. The current study's limitations include a limited sample from a single hospital in the state of Uttar Pradesh. As a result, the findings cannot be generalized because the participants do not appropriately represent the Indian population of HIV-positive youngsters. Third, this research does not use intervention studies to improve their situation. Future studies may try to consider the intervention's impact on their overall development.

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