

Original Article

Efficacy of Interventional Awareness Program on HIV/AIDS among High School Students of West Bengal, India

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Introduction: Worldwide Human Immunodeficiency Virus (HIV) Infection is a Public Health Problem. Adolescents and young people are inclined to experiment with sex and prone to have HIV infection. Interventional Education Program on HIV/AIDS may prevent spread of the infection.

Materials and Methods : Knowledge and attitude of students (N=2373) of 10th to 12th grade from 38 schools of Kolkata about HIV/AIDS was assessed based on a questionnaire. Subsequently an interventional educational program was conducted for them. A follow-up study with the same questionnaire after 6-8 weeks of the interventional program was performed among the students (N=811) of 11th and 12th standard. Knowledge and attitude towards HIV/AIDS was evaluated by defining a 'Knowledge' and 'Attitude' score from responses of the students to relevant questions. Data was analyzed using SPSS, version 17 software.

Observations : Interventional Program improved student's (a) responses to more questions, (b) knowledge level and (c) positive attitude towards HIV/AIDS. Significant improvement occurred in the association of knowledge score with respect to the male students after the Intervention Program but not much with respect to girls. Association of the attitude score with respect to gender and three streams (Arts, Science, Commerce) of study were significantly enhanced after the program.

Discussion : Several studies around the world indicate that Interventional Educational Programs almost certainly improve knowledge and attitude of the school students about HIV/AIDS. Some differences in findings may be due to qualitative differences of the study participants. Our observations may not be extrapolated to other Indian Student Groups who may differ in awareness and cultural status.

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Key words : HIV/AIDS, Awareness, School students, Knowledge, Kolkata.

HIV infection is posing a challenge for Public Health for the World. Globally 38.0 million people were HIV infected in 2019 and 1.8 million were children (0-14 years). New infections of HIV were detected in 2019 alone among 460,000 young people of 10 to 24 years, of whom 170,000 were adolescents aged of 10 to 19 years¹.

One-fourth of India's population is comprised of adolescents (10-19 years) and one-third of young people aged 10-24². This large proportion of young people contributing to India's economic growth and development must be healthy, educated and equipped with information. Adolescence is the period when

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Editor's Comment :

- High school students are in special need of accurate HIV/AIDS education.
- This was an interventional follow-up study among school students (N=811).
- Students of class XI and XII of schools in Kolkata were included.
- Knowledge and attitude of the students regarding HIV/AIDS improved through an interventional educational talk.

individuals often experiment with sex and drugs. Consequently, they are prone to be HIV infected. In a conservative Indian Society, most parents hesitate to discuss sexual issues and teens tend to acquire inaccurate information from cheap media. So, educating them before they become sexually active can lay a foundation for safe sexual habits and healthy relationships. School life is an excellent opportunity to educate them³.

In view of above and the importance of HIV/AIDS in Public Health Domain, the current study was conducted in context of adolescence population. Evaluating knowledge level and attitude of the adolescents about HIV/AIDS may facilitate in development of a strategy for HIV prevention. Assessment of knowledge on HIV/AIDS is a fundamental step in the Education Process

and Preventive Measure for the disease⁴.

We are not aware of any previous study dealing with knowledge and attitude towards HIV/AIDS targeting a vast number of students of Higher Secondary Schools in Kolkata, India.

Objective of our study was to reveal improvement in knowledge and attitude towards HIV/AIDS among the students after an Interventional Education Programme.

MATERIALS AND METHODS

In the present School-based Cross-sectional Intervention Study knowledge and attitude of 10th to 12th grade students (N=2373) of 38 randomly selected schools of Kolkata and its suburbs about HIV/AIDS were studied earlier⁵. A pre-designed, pre-tested questionnaire containing 41 questions (in English as well as Bengali) was administered to them. Both open and close-ended questions were there. Participation of the students in this study was voluntary. To maintain confidentiality students were asked not to write their name in the questionnaire. Steps were taken to restrict consultations among themselves. All questions and purpose of the study were explained to them. Afterwards, an Interventional Educational Talk was conducted as a Class Lecture on HIV/AIDS by an expert in the field.

Next, in the present study participating students of only 11th and 12th standard attended a follow-up study with the same questionnaire after 6-8 weeks but with fewer number of questions (N=29). Questions on demographic status (age, marital status, religion, address, home status eg, rented / own, family size, parents profession, caste, habit of visiting religious places, staying status eg, with parents / others) were excluded in the follow-up questionnaire. In total 811 (37%; 811 of 2181 of Pre-interventional study) students (256 boys, 555 girls) answered the questionnaire for the follow-up study. The study was completed during July, 2011 to December, 2013.

Ethical Committee of K K Chatterjee Memorial Association Approved the Protocol of this Study. Further, authorities of the schools extended their consents to perform this study.

Data analysis :

To analyze the data SPSS, version 17 (Chicago, IL, USA) was used. Chi-square Test of Association was used to understand Significance of Association between categorical variables. Statistical significance was assigned to P value of ≤ 0.05 .

Knowledge and Attitude Scores :

To determine students' knowledge level about HIV/

AIDS a score was defined after considering their responses to the following 8 questions in both the pre- and postinterventional studies.

(i) Knowing details of the abbreviations HIV and (ii) AIDS, (iii) Mode of HIV/AIDS Transmissions, (iv) which are the symptoms of AIDS/HIV Infection, (v) knowledge about those at greater risk for HIV/AIDS, (vi) whether HIV/AIDS preventable, (vii) whether treatment for AIDS available and (viii) whether in India HIV/AIDS is spreading fast. A score of '1' was assigned to each correct answer to a question and '0' for a wrong answer. Thus, '0' and '8' were the minimum and maximum value respectively of the total knowledge score.

To know attitude of the students towards the disease and the persons living with HIV/AIDS another score was defined. This was done considering their answers to following 5 questions of this postinterventional (follow-up) study: (i) whether AIDS is considered as a disease of the poor, (ii) should AIDS patients or those who are HIV infected marry/ have children, (iii) is it embarrassing to discuss HIV/AIDS, (iv) whether ever dissuaded talking on HIV/AIDS and (v) whether guardians and teachers should discuss HIV/AIDS.

A positive response to 'Attitude' question (v) whether guardians and teachers should discuss HIV/AIDS and negative to the remaining four was accepted as positive attitude about HIV/AIDS. The responses indicating positive attitude was given a score '1' and '0', otherwise. 'Attitude score' was the sum total of all responses of the above questions.

OBSERVATIONS

Mostly the students were Hindus, unmarried, aged 16-18 years and of general caste as stated in the pre-interventional study⁵. Table 1 shows that more of the girl students (68.4%) than boys (31.6%) attended the postintervention study. A much higher proportion (62.5%) of class XI students than class XII (37.5%) attended the follow-up program. Students of Arts (or Humanities) stream were found to attend the postintervention Programme in large number (49.62%) compared to Science and Commerce Stream (36.22% and 14.15% respectively).

Table 2 reveals that in general, compared to pre-intervention test more students responded to the 'Knowledge questions' (4 out of the 5 questions) as the 'No response' numbers reduced to a great extent. Similarly more students in the postintervention test responded to 'Attitude' questions compared to pre-intervention study (Table 3). Further, remarkable improvement in knowledge level of the students after the Interventional Education Programme was observed

	Pre-Intervention Freq (%)	Postintervention Freq (%)
Gender :		
Boys	971 (40.9%)	256 (31.6%)
Girls	1402 (59.1%)	555 (68.4%)
Class :		
Class XI	1515 (63.8%)	507 (62.5%)
Class XII	666 (28.1%)	304 (37.5%)
Stream :		
Arts	955 (43.78%)	263 (49.62%)
Science	875 (40.12%)	192 (36.22%)
Commerce	351 (16.09%)	75 (14.15%)

(Table 2) in regard to most of the knowledge questions asked. In general, more of the students could offer 2 to 3 correct answers to the three knowledge questions after the Interventional Programme.

Table 3 describes attitude of the participants towards HIV/AIDS. The Interventional Programme improved positive attitude towards HIV/AIDS to a great extent as indicated by their responses to attitude questions. After attending the interventional program fewer (3.9%) students opined that AIDS affects mainly the poor people compared to the result (7.7%) of the Pre-interventional study. The intervention was not found to influence to any significant extent attitude of the students in respect to marriage of the HIV infected/

AIDS patients or having children (negative answer: 77.7% versus 81.3% from pre- and post- interventional participants respectively). Large number of the students either before or after the interventional program indicated that they were not embarrassed to talk about HIV/AIDS (73.7% versus 80.6%) or ever discouraged (84.6% versus 89%) to talk on the subject. More students of the follow-up study (90.3%) than from the Pre-intervention Study (81.8%) thought that HIV/AIDS should be discussed by the Guardians and Teachers.

High knowledge score almost doubled among both the boys and girls after attending the Interventional Education Talk (Table 4). The score also improved much among the students of all the streams.

Table 4 depicts that 'low' and 'medium' level attitude score was more pronounced among the students after their participation in the Interventional Programme and the 'high' score was among fewer proportion of the students. The improvement in low and medium level attitude score after the intervention was comparable among the male and female students. However, the improvement in medium level attitude score was significantly more among the 'Science' students when compared to those in 'Arts' or 'Commerce' Stream.

Association of gender and stream of study of the students with knowledge and attitude score was

	Pre-Intervention			Postintervention		
	Yes	No	No response	Yes	No	No response
Know detail form of HIV	867(36.5%)	515 (21.7%)	991 (41.76%)	394 (48.6%)	223 (27.5%)	194 (23.90%)
Know detail form of AIDS	888 (37.4%)	207 (8.7%)	1278 (53.85%)	410 (50.6%)	114 (14.1%)	287 (35.3%)
Can HIV /AIDS be prevented?	1591 (67%)	575 (24.2%)	207 (8.72%)	567 (69.9%)	216 (26.63%)	28 (34.52%)
Is there any treatment for AIDS?	1090 (45.9%)	999 (42.1%)	284 (11.97%)	427 (52.7%)	340 (41.92%)	44 (5.42%)
Whether in India AIDS is spreading fast?	1808 (76.2%)	434 (18.3%)	131 (5.52%)	723 (89.1%)	84 (10.4%)	4 (0.5%)
	No. of Correct Answers			No. of Correct Answers		
	1	2	3	1	2	3
What are modes of HIV/AIDS transmissions?	1105 (46.6%)	426 (18%)	62 (2.6%)	364 (44.9%)	213 (26.3%)	44 (5.4%)
Which are symptoms of AIDS/HIV infection	545 (23%)	97 (4.1%)	14 (0.6%)	234 (28.9%)	56 (6.9%)	2 (0.2%)
Knowledge about people at greater risk for HIV/AIDS	405 (17%)	52 (2.2%)	-	207 (25.5%)	62 (7.6%)	30 (3.7%)

	Pre-Intervention			Postintervention		
	Yes	No	No response	Yes	No	No response
Does AIDS affect only the poor?	182 (7.7%)	2146 (90.4%)	45 (1.89%)	32 (3.9%)	773 (95.3%)	6 (0.7%)
Should HIV infected/ AIDS patients marry/ have children?	373 (15.7%)	1843 (77.7%)	157 (6.61%)	139 (17.1%)	659 (81.3%)	13 (1.6%)
Is it discomfiting to discuss HIV/ AIDS?	574 (24.2%)	1750 (73.7%)	49 (2.06%)	145 (17.9%)	654 (80.6%)	12 (1.5%)
Have you been deterred discussing HIV/AIDS?	294 (12.4%)	2007 (84.6%)	72 (3.03%)	78 (9.6%)	722 (89%)	11 (1.3%)
Should HIV/AIDS be discussed by guardians and teachers ?	1942 (81.8%)	350 (14.7%)	81 (3.41%)	732 (90.3%)	70 (8.6%)	9 (1.1%)

Table 4 — Knowledge and Attitude Score

Knowledge Score							
	Pre-Intervention			Postintervention			Chi Square Value, Degrees of Freedom, P Value
	Low	Medium	High	Low	Medium	High	
Gender :							
Male	225 (23.17)	548 (56.43)	198 (20.39)	22 (8.59)	130 (50.78)	104 (40.62)	56.26 ; 2 ; <0.0001
Female	294 (20.97)	827 (58.98)	281 (20.04)	69 (12.43)	287 (51.71)	199 (35.85)	4.31 ; 1 ; 0.0379
Stream :							
Arts	220 (23.03)	590 (61.78)	145 (15.18)	37 (14.06)	163 (61.97)	63 (23.95)	4.51 ; 1 ; 0.0337
Science	116 (13.25)	495 (56.57)	264 (30.17)	9 (4.68)	75 (39.06)	108 (56.25)	1.23 ; 1 ; 0.2674
Commerce	92 (26.21)	217 (61.82)	42 (11.96)	15 (20)	48 (64)	12 (16)	0.51 ; 1 ; 0.4751
Considered Knowledge scores : Low = 0 to 2; Medium = 3 to 5; High = 6 to 8							
Attitude Score							
	Pre-Intervention			Postintervention			Chi Square Value, Degrees of Freedom, P Value
	Low	Medium	High	Low	Medium	High	
Gender :							
Male	1 (0.1)	209 (21.52)	761 (78.37)	148 (57.81)	101 (39.45)	7 (2.73)	97.58 ; 1 ; <0.0001
Female	1 (0.07)	234 (16.69)	1167 (83.23)	382 (68.82)	166 (29.91)	7 (1.26)	127.84; 1; <0.0001
Stream :							
Arts	0 (0)	195 (20.41)	760(79.58)	179 (68.06)	80 (30.42)	4 (1.52)	115.87; 1; <0.0001
Science	1 (0.1)	99 (11.31)	775 (88.57)	126 (65.62)	65 (33.85)	1 (0.52)	43; 1; <0.0001
Commerce	0 (0)	74 (21.08)	277 (78.92)	41 (54.67)	32 (42.67)	2 (2.66)	29.63; 1; <0.0001
Considered Attitude Scores (for pre-intervention) : Low = 0 to 1; Medium = 2 to 4; High = 5 to 7.							
Considered Attitude Scores (for postintervention): Low = 0 to 1; Medium = 2 to 3; High = 4 to 5.							

ascertained by a statistical test (chi-square) in the context of pre- and postintervention tests. Significant improvement in the Association of Knowledge Score with respect to the male students was observed after conducting the intervention talk (Chi-square, degrees of freedom and p-value as 56.26, 2 and <0.0001 respectively) but not so much with respect to girl students. However, significant improvement in the association between Knowledge Score and only art stream was observed ($p=0.0337$). In contrast, association of the Attitude Score with respect to gender and the Three Streams of study were significantly enhanced after the Interventional Programme as showed by the p-values in Table 4.

DISCUSSION

Adolescent population having high risk for infection with HIV/AIDS are also in close social contact and these may put them in Focus of HIV Epidemic. Hence, it is of paramount importance to understand the existing lacunae in their status of knowledge and attitude about the infection as they are likely to start sexual life after few years.

After attending an Interventional Education Talk, knowledge level about HIV/AIDS among the students of our study was remarkably enhanced. Identical observation has been reported in a similar study among students of a Senior Secondary School in Pune, India⁶. An investigation⁷ from Wuhan, China among students of a secondary school found that the students' knowledge about HIV/AIDS increased significantly and

their attitudes changed positively after an educational intervention. Health education intervention dealing with HIV/AIDS among Senior Secondary School students of Jos, Nigeria has been shown⁸ to have an effect in reducing the students' sexual risk behavior.

High knowledge score on HIV/AIDS was secured by 40% of the male and 35% of the female students of this study. The score improved significantly among the male students after the interventional education program. This observation is consistent to some extent with the findings of good knowledge scores on HIV/AIDS of around 45% of the high school students in Erbil City of Iraq⁹, in Lao Peoples Democratic Republic¹⁰ and adolescents in Bangladesh⁴.

Unlike the previous Kuwait¹¹ and Iraq⁹ studies showing better understanding of HIV/AIDS of male high school students than females, present investigation did not reveal much disagreement in knowledge scores with respect to two genders in both the pre- and postinterventional studies.

Studies from Cameroon¹² and Ghana¹³ observed high degree of knowledge related to HIV/AIDS more (62.1 % and 61.6%) among the high school students. Our investigation showed remarkably more 'high' level of knowledge score among the students in Science stream (30% and 56% in pre- and postintervention) compared to those in Arts and Commerce Streams (15%, 12% in pre- and 24%, 16% postintervention). This observation was similar to that reported by the Kuwait study¹¹.

A study from Udaipur, Rajasthan, India¹⁴ reported that 96% of the Students of Senior Secondary English Medium Co-ed Schools were aware of full form of HIV/AIDS. In contrast, only about 50% of the students of our study knew the full forms even after attending the Interventional Talk. Similar awareness of knowing full forms of AIDS (51.4%) and HIV (19.9%) has been also reported by another study from Delhi among the students of Senior Secondary School¹⁵.

We observed 67% of the students of pre-interventional and 69% of postinterventional studies were aware that HIV/AIDS are preventable. This finding is comparable to that of an earlier investigation¹¹.

A study¹⁶ from North Bengal, India, on knowledge about HIV/AIDS of Adolescent School Girls, found that only 14.2% of the students knew all the four correct transmission routes. In contrary, our investigation showed that much less number (5.4%) of the students knew only three correct routes even after the Interventional Programme. Such difference in findings may be due to qualitative differences of the participants (N = 811; class XI, XII) from our study and that (N=318; class IX, X, XI & XII) from the North Bengal study¹⁶. After intervention, the Wuhan Study⁷ reported that the knowledge about mode of transmission increased more (85% to 90%) among their study participants. In the present study after the interventional education program the proportion of students who identified three correct ways of transmission of HIV increased by 100%.

Significant enhancement in students' attitude about HIV/AIDS was found in our study following the intervening educational talk. Similar change in attitude of Senior Secondary School Children in Pune following an educational talk has been reported by a previous study⁶. Educational intervention has also been found to change attitude of Secondary School Students positively by an investigation⁷ from Wuhan, China.

It may be concluded that interventional educational programs are almost certainly very effective in improving knowledge and attitude of the school students with respect to HIV/AIDS.

Limitations

First, this study included adolescents in schools and not the similar school dropouts. So, generalization of the results for the latter group may not be reasonable. Second, as the data of this were self-reported by the students, veracity of some responses should be interpreted with care. Third, as the study was conducted in one state of the country, the observations may not be extrapolated to student groups from other parts of India who may differ in awareness and cultural status.

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