

## Interventional study of immediate and long term changes in HIV/AIDS knowledge and attitude among school students in an urban slum in Mumbai.

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### Abstract:

**Background:** Education sector plays an important role in imparting vital information regarding HIV AIDS to large number of adolescents. The present study was carried out to assess the baseline level of knowledge and attitude regarding HIV / AIDS and retention of various aspects of information over the period of one year among ninth standard school students in Mumbai.

**Methods and Material:** The present study was designed as a school based interventional follow up study. Health education sessions on HIV/AIDS were conducted. Pre test, immediate post test, along with a follow up post test at six months and one year were administered. SPSS (Version 16) and Excel software were used for statistical analysis. Z tests for difference between proportions were applied.

**Results:** The proportion of correct responses regarding some of the aspects of knowledge of HIV / AIDS significantly increased on health education intervention. However, no significant change in the proportion of correct responses regarding blood donation leading to HIV transmission was observed. Significant waning ( $p < 0.01$ ) away of the effect of health education has been observed in some important aspects especially regarding spread without being aware of transmission, involvement of infected needles, condoms as mode of prevention and no complete cure till date. Though there is a general acceptance of HIV positive patients, attitudes involving sexual mode of transmission, drug abuse and homosexuality did not show positive change post intervention.

**Conclusions:** Health education sessions were very effective in increasing knowledge. However, students tend to lose information regarding certain aspects. We thus need strategies for reinforcing knowledge as well as attitude aspect in school AIDS education.

**Key-words:** HIV/ AIDS, Students, Knowledge, Attitude.

### Introduction:

HIV/AIDS epidemic in India has largely affected the youth<sup>1,2</sup>. India has 1.7 million HIV affected young people (15-49 years); also youth exhibits misconceptions and have poor knowledge regarding the issue<sup>3</sup>. Education sector is cost effective for creating awareness among adolescents<sup>4-7</sup>. However, the number of studies studying impact of AIDS on children and young people, particularly in education sector in Asia are limited<sup>7</sup>. The given study was conducted with the objective of (1) Assessing the level of baseline knowledge regarding HIV / AIDS among ninth standard school students. (2) To assess the impact of health education session on knowledge levels (3) Retention of various aspects of information over the period of one year. (4) To assess changes in their attitudes if any. Thus, the study was carried out to understand those aspects of health education which fade over the period of time and thus need to be reinforced to achieve successful reversal of epidemic, which is the goal of NACP-III<sup>1</sup>.

### Methods:

The present study is an interventional and follow up study. It was carried out among ninth standard students of a Government aided private school in the slums of Mumbai. One school was randomly selected out of 36 private and grant

in aid schools in the study area. The selected school had English and Marathi medium classes.

All the ninth standard students from both the mediums were included in the study. The school had, two English medium divisions having 85 students (50 males and 35 females) and five Marathi medium divisions having 293 students (172 males and 121 females). Thus there were a total of 378 students. A flip chart devised by UNICEF, was used as reference point to develop the course content of the sessions, and also as the health education tool during the health education sessions. Topics covered in health education sessions included modes of transmission, prevention and cure of HIV / AIDS, misconceptions regarding them and healthy attitude towards HIV positive people. Based on the flip chart a semi structured questionnaire was designed. The same questionnaire was developed in both the languages and pilot tested.

A parent teacher meeting was conducted. The flip chart and the questionnaire were put up for approval. After approval by the parents and teachers, the health education sessions were initiated. Health education sessions were conducted in the school timings separately for the girls and the boys

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by the principal author. A single session of one hour duration was conducted. The languages of instructions were Marathi and English for the concerned students. Sessions were conducted separately for each division. Each session started with a self-administered questionnaire. The students were assured of confidentiality. The questionnaires were answered like an examination. No exchange of thoughts and ideas was allowed. This was followed by the health education intervention. The first post intervention evaluation was done immediately after the health education session. This was labelled as 'immediate post test evaluation'. The second post test was administered at six months and third post test at one year after the health education session to observe the maintenance of impact of intervention on knowledge and attitude.

Literature search shows similar studies where follow up were conducted, post intervention to study the decay effect of intervention.<sup>[8,9,10]</sup>

Out of the total of 378 students, 265 answered the pre test and all the three post tests. Thus the responses of only these 265 students were recorded and analysed. Students, who had not solved all the three post tests (113) due to their absence on the days of any one of the tests, were excluded from the study. It was not possible to include these students by repeat post tests due to administrative problems of approaching the school at times other than the decided schedule. Repeated post tests would also mean that uniformity in time would not be maintained at six month and one year follow-up among various students.

The data was analysed using SPSS (Version 16) and Excel software. Statistical analysis was carried out by applying Z tests by standard error of difference between two proportions.

### Results:

The mean age of the students was 14.96 years, standard deviation is 1.14 and range is 13 to 18 years. Majority of the students (69.43 %) were from nuclear families. Education up to higher secondary standards was attained by 64.15 % fathers and 39.62 % mothers. Average per capita income was Rs 324.77 per month. As per The National Statistics Socio-economic Classification<sup>[11]</sup> most of the mothers (83.40 %) were housewives (Class 8). Majority of the fathers (44.15%) were engaged into intermediate occupations (Class 3) like clerks, secretaries etc.

As seen in Table 1, 83.02 % students were aware that AIDS is a life threatening disease; however only 35.47 % perceived it as a problem which affects their community too

and not only other countries of the world. Positive effect of health education was observed, which was sustained over the period of one year for both the questions. The fact that an individual can get infected by HIV without being aware of it was known to 51.32 % before intervention. However, after a rise post intervention, a significant drop ( $p < 0.01$ ) is observed among percentage of correct response at six and twelve months ( $p < 0.01$ ).

Viral origin of AIDS was known to 53.21 % of the students and more than 60 % baseline correct responses were observed regarding sexual and vertical mode of transmission and no spread by casual contact prior to intervention. Percentage of correct responses significantly increased post intervention and remained high throughout the year ( $p < 0.01$ ) regarding all above aspects.

Though transmission of HIV by infected needles was known to 63.77 % students before intervention, a significant drop of percentage of correct responses was observed in immediate post test and one year follow up. This indicates a waning effect of health education intervention.

Statistical significance was not observed in any changes in proportion of correct responses regarding blood donation not being responsible for the spread of HIV. Thus, the health education intervention has failed to make an impact on the students in this regard.

Role of condom in prevention of HIV / AIDS showed significant rise in correct responses on immediate post intervention however significant decrease in correct responses was observed at the end of one year ( $p < 0.05$ ) when compared with the immediate post test.

Majority of the students were of the opinion that 'Early treatment cures AIDS' prior to intervention. Proportion of correct responses significantly increased on first post test and also significantly dropped at six months and one year when compared with immediate post test ( $p < 0.01$ ).

As observed in Table 2, the number of correct responses significantly increased post intervention and remained so throughout the year for the statements, 'AIDS is God's way of punishing people for their evil act' and 'Refusing to sit next to a person with AIDS' ( $p < 0.01$ ).

Health Education showed no positive effect in all three post tests, on the statement, 'Individuals indulging in drug abuse and homosexuality are getting what they deserve', Health education had a temporary rise in correct responses on the Statement regarding, sympathy felt towards a person and the aetiology of infection.

**Table 1:** General perceptions, modes of transmission, misconceptions, prevention and treatment

Question	Number of students giving correct responses during pre and post tests (n = 265)				P values (z score)
	Pre test P <sub>0</sub> No(%)	Post test			
		Immediate P <sub>1</sub> No(%)	At 6 months P <sub>6</sub> No(%)	At 1 year P <sub>12</sub> No(%)	
AIDS is a life threatening disease	220 (83.02)	256 (96.60)	250 (94.34)	246 (92.83)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =5.16, 4.12, 3.47) ‡P <sub>1</sub> versus.P <sub>6</sub> (z=1.25) ‡P <sub>1</sub> versus.P <sub>12</sub> (z=1.94) ‡P <sub>6</sub> versus.P <sub>12</sub> (z = 0.71)
AIDS is commonly found in other countries. People in my community need not worry about it.	94 (35.47)	177 (66.79)	173 (65.28)	205 (77.36)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z= 7.22, 6.87, 9.72) ‡P <sub>1</sub> versus.P <sub>6</sub> (z = 0.37) *P <sub>1</sub> versus.P <sub>12</sub> (z = 2.71) *P <sub>6</sub> versus.P <sub>12</sub> (z =3.07)
People can be infected with AIDS without knowing about it	136 (51.32)	237 (89.43)	208 (78.49)	209 (78.87)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =9.6, 6.55, 6.65) *P <sub>1</sub> versus.P <sub>6</sub> ,P <sub>12</sub> (z =3.43, 3.33) ‡P <sub>6</sub> versus.P <sub>12</sub> (z =0.11)
AIDS is caused by a virus	141 (53.21)	244 (92.07)	246 (92.83)	247 (93.21)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =10.04,10.26, 10.39) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z =0.33, 0.5) ‡P <sub>6</sub> versus.P <sub>12</sub> (z = 0.17)
HIV spreads through sexual contact with infected person	188 (70.94)	245 (92.45)	251 (94.72)	251 (94.72)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =6.4,7.25,7.25) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z =1.07,1.07) ‡P <sub>6</sub> versus.P <sub>12</sub> (z =0)
Pregnant woman with AIDS may harm her unborn infant	163 (61.51)	259 (97.75)	256 (96.60)	254 (95.85)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =10.35,9.94,9.65) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z =0.8,1.24) ‡P <sub>6</sub> versus.P <sub>12</sub> (z = 0.45)
Transmission of AIDS is possible by sharing an infected needle	169 (63.77)	258 (97.36)	247 (93.21)	240 (90.57)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =9.76,8.25,7.34) †P <sub>1</sub> versus.P <sub>6</sub> (z =2.26) *P <sub>1</sub> versus.P <sub>12</sub> (z =3.28) ‡P <sub>6</sub> versus.P <sub>12</sub> (z =1.11)
A person can get AIDS from donating blood	130 (49.06)	138 (52.08)	117 (44.15)	118 (44.53)	‡P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =0.7,1.13,1.05) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z =1.83,1.74) ‡P <sub>6</sub> versus.P <sub>12</sub> (z =0.09)
HIV/AIDS spreads by casual contact with AIDS patient	187 (70.57)	255 (96.23)	254 (95.85)	260 (98.11)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z =7.94,7.78,8.72) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z = 0.22,1.31) ‡P <sub>6</sub> versus.P <sub>12</sub> (z = 1.52)
Use of condom during sex lowers the risk of getting AIDS	152 (57.36)	235 (88.68)	221 (83.40)	216 (81.51)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z = 8.11,6.56,6.04) ‡P <sub>1</sub> versus.P <sub>6</sub> (z =1.75) †P <sub>1</sub> versus.P <sub>12</sub> (z = 2.32) ‡P <sub>6</sub> versus.P <sub>12</sub> (z = 0.57)
Early treatment cures AIDS	34 (12.83)	201 (75.85)	168 (63.40)	145 (54.72)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z = 14.59,11.98,10.19) *P <sub>1</sub> versus.P <sub>6</sub> , sP <sub>12</sub> (z = 3.12,5.1) †P <sub>6</sub> versus.P <sub>12</sub> (z = 2.03)

By using Z – proportionate test n = 265  
\* = p<0.01 † =p<0.05 ‡ = Not significant

**Table2:** Attitude regarding HIV positive people

Question	Number of students giving correct responses during pre and post tests (n = 265)				P values (z score)
	Pre test P <sub>0</sub> No(%)	Post test			
		Immediate P <sub>1</sub> No(%)	At 6 months P <sub>6</sub> No(%)	At 1 year P <sub>12</sub> No(%)	
AIDS is God's way of punishing people for their evil act	186 (70.19)	219 (82.64)	212 (80.00)	226 (85.28)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z = 3.37, 2.61, 4.18) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z =0.78,0.83) ‡P <sub>6</sub> versus.P <sub>12</sub> (z =1.6)
Refusing to sit next to a person with AIDS	111 (41.89)	214 (80.75)	211 (79.62)	205 (77.36)	*P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> , P <sub>12</sub> (z = 9.19,8.9,8.33) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z = 0.33,0.96) ‡P <sub>6</sub> versus.P <sub>12</sub> (z =0.63)
Individuals indulging in drug abuse and homosexuality who contract AIDS are getting what they deserve	80 (30.19)	84 (31.70)	88 (33.21)	53 (20.00)	‡P <sub>0</sub> versus.P <sub>1</sub> , P <sub>6</sub> (z =0.38,0.75) *P <sub>0</sub> versus.P <sub>12</sub> (z = 2.7) ‡P <sub>1</sub> versus.P <sub>6</sub> (z =0.37) *P <sub>1</sub> versus.P <sub>12</sub> (z =3.08) *P <sub>6</sub> versus.P <sub>12</sub> (z =3.44)
More sympathy is felt towards a HIV positive person when the cause of infection is blood transfusion rather than IV drug abuse or sexual activity	35 (13.21)	59 (22.26)	51 (19.25)	50 (18.86)	*P <sub>0</sub> versus.P <sub>1</sub> (z =2.73) ‡P <sub>0</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z = 1.89, 1.77) ‡P <sub>1</sub> versus.P <sub>6</sub> , P <sub>12</sub> (z =0.86, 0.97) ‡P <sub>6</sub> versus.P <sub>12</sub> (z =0.11)

By using Z – proportionate test n = 265

\* = p<0.01 † =p<0.05 ‡ = Not significant

**Discussion:**

Baseline percentage of correct responses was more than 50 % in majority of the aspects of knowledge of HIV / AIDS except for the questions related to universal presence of AIDS, blood donation and early treatment leading to cure of AIDS. Agrawal HK *et al*<sup>12</sup> observed good basal levels of knowledge, however study by Gyarmathy AV *et al.* showed poor to moderate knowledge prior to the interventions<sup>9</sup>.

Positive effect of health education when compared with scores prior to intervention, have been observed in the current study. Similar results were also observed in studies conducted in various parts of India<sup>10,12,13</sup>.

Though students were aware about the severity of the disease, students did not perceive it as a threat to their community. Also, students did not retain the fact that unsuspecting people can contract the infection over the period of one year. Moderate knowledge about general information was also observed in other studies<sup>9,14</sup>.

Viral origin of the disease, sexual and vertical mode of transmission and casual contact being harmless had good baseline awareness and are well understood. Similarly, Lal SS *et al*<sup>15</sup> observed that high number of students were conversant with major modes of transmission in Kerala, however many studies have also observed poor basal knowledge regarding transmission<sup>9,13,16</sup>.

In the current study it has been observed that transmission by infected needles needs to be emphasised and misconceptions regarding blood donation needs to be cleared. Lal P *et al*<sup>16</sup> observed that 31.1% students cited blood transfusion and 44.4% of students named sharing of syringes and needles as routes of transmission, respectively. Bennell P *et al*<sup>5</sup> and Lal SSet *al*<sup>15</sup> observed that misconceptions regarding blood donation leading to HIV exist and also show little evidence of learning.

Role of condoms and absence of cure showed waning effect of health education intervention in the current study.

Low awareness about prevention of HIV / AIDS and STD, and regarding condom, among school students has been observed in numerous national and international studies<sup>6, 9, 15, 16</sup>. In a Systematic review conducted by Paul, knowledge regarding condoms was evaluated immediately following the intervention in three studies with significant effects, but in the six-month follow up assessment later, this change had disappeared, suggestive of a decay effect of the intervention<sup>8</sup>.

Students believing that there is cure for AIDS have been observed in several studies<sup>5, 12, 14</sup>.

Misconceptions like HIV being God's curse and acceptability in day to day life activities like sitting next to the person showed good response to health education in the current study. However attitude towards homosexuality, sexual mode of transmission and IV drug abuse remained negative in spite of health education intervention. Discriminatory attitude towards patients with HIV / AIDS and no significant change on health education intervention, has been observed in many other studies<sup>5, 10, 17, 18, 19</sup>.

**Limitations:** This study has not probed the aspects of knowledge and attitude regarding sexual practices. Questions regarding individual sexual activity were also not included in the study as they were not appreciated by the school authorities.

#### Conclusion:

It has been observed in the current study, that baseline knowledge regarding many aspects of knowledge and attitude regarding HIV/ AIDS was above 50 %. Health education sessions have been found to be very effective in increasing knowledge.

Even after a decade of health education sessions being implemented in India, major needs remain unmet.<sup>[20]</sup> Students tend to lose information regarding certain aspects. We can thus have a sequential and developmentally appropriate health education programme, to re-sensitize the students especially to the less retained aspects of health education based on needs of students. This strategy must cover not only knowledge and skills (education and training), but also contraception, guidance and counselling, improved livelihoods, and improved security and elimination of sexual harassment. Parents and teachers need to be actively involved.

Innovative, student friendly techniques are thus the need of the hour. New aspects for school-based prevention such as the Letter box approach, having a school committee, student's organization, student's participation in such com-

mittees, inter-school organizations to plan and conduct HIV/ AIDS prevention program, should be considered.<sup>[21, 22]</sup>

Lastly, more research needs to be directed for understanding the motivation for high risk behaviour, felt needs and perceptions of the adolescents before designing education programmes for them.

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