

# Behavioral surveillance survey regarding human immunodeficiency virus/acquired immunodeficiency syndrome among high school and junior college students

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## ABSTRACT

**Background and Aims:** It is necessary to know the baseline knowledge, attitude, and practices about human immunodeficiency virus/acquired immunodeficiency syndrome among young people and the changes in these with intervention to guide prevention efforts. **Methods:** A cross-sectional pre- and post-survey with health education as a method of intervention was carried out in four different randomly selected schools and junior colleges among the Class IX-XII students of both sex. Instrument developed by the World Health Organization (WHO)/UNAIDS in their best practice recommendations was used for data collection. **Results:** Knowledge about all correct methods was present in 61.23% of the respondents. Knowledge of at least two methods of prevention was present in 70.31% of the respondents. Misconceptions about prevention were that good diet (33.42%), avoiding mosquito bite (49.71%) and avoiding public toilets (65.14%) could help in the prevention. With intervention, there was an improvement in the knowledge. However, the proportion of students with misconceptions did not come down. Correct knowledge about two methods of prevention also did not reach the WHO recommendation of 90%. **Conclusion:** It is very difficult to change the attitude and practices by a single health educational intervention and an ongoing behavior change communication is recommended.

**Key words:** Behavioral surveillance surveys, Human immunodeficiency virus/acquired immunodeficiency syndrome, Prevention

## INTRODUCTION

Young people make up a segment of the population that is particularly vulnerable to human immunodeficiency virus (HIV). Altogether, 50% of HIV transmission takes place among those aged 15-24 years, and 5000-6000 young people become infected every day.<sup>[1]</sup> The second decade of life is a period of experimentation and risk, and many factors increase the young people's vulnerability to HIV during these years of rapid physical and psychosocial development. These factors include a lack of knowledge about HIV/acquired immunodeficiency syndrome (AIDS) and the taboo on explicit discussion of human sexuality with young people in some cultures.

Schools are a key setting for providing information and teaching adolescents life skills necessary to prevent

HIV/AIDS. Information, education and communication (IEC) should contribute to the development of life skills that can help reduce a young person's vulnerability to HIV infection. However, there is no standardized internationally comparable method for directly assessing whether young people have developed sufficient adaptive and positive behaviors to enable them to deal effectively with the demands of everyday life.<sup>[2]</sup> As a proxy indicator, "reported behaviors" can be used.<sup>[3]</sup>

Behavior precedes HIV infection. Therefore, to plan a proper IEC campaign, one needs to have data regarding the behavior of the target population. Behavioral Surveillance Survey (BSS) is the most important method for collecting baseline data regarding the knowledge, attitude and practice regarding HIV/AIDS and the behavioral trends in the community.<sup>[4]</sup>

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Against this background, the present study was carried out with a view to ascertain, firstly, the knowledge, attitudes and self-reported behavior in relation to HIV/AIDS among high school and junior college students and, secondly, to see the impact in the short term intervention in the form of IEC package.

## METHODS

### Study site and sample

The study was conducted among the adolescent school and junior college students of classes IX, X, XI and XII in the Pimpri-Chinchwad industrial area of Pune. All the schools in this area were listed and out of these, four were selected by simple random sampling. The subjects included both boys and girls in the classes IX-XII. The total number of students of both sexes thus selected was 1136 as ascertained from the principals of the selected schools. Of these, 1024 students participated in the study.

### Sample size

The level of baseline knowledge reported in previous studies by the National AIDS Control Organisation (NACO) and the ORG Centre for Social Research was around 70%.<sup>[5,6]</sup> Considering the effect, size of increase in knowledge of at least 10% of the pre-intervention level, an alpha error of 0.05 and power 80%, the sample size calculated using Primer of Biostatistics along with its statistical software<sup>[7]</sup> came to 652. Catering to the non-respondents and loss to follow-up, a 30% increase was planned with a sample size of around 850. Finally, 1024 students from the four schools were interviewed in the baseline study and 957 in the post-intervention evaluation.

### Study design

The design was a pre- and post cross-sectional survey with health education in the form of IEC as the method of intervention.

### Period of study

The study was carried out from 1<sup>st</sup> September 2005 to 31<sup>st</sup> May 2007.

### Pilot study

The instrument used in the study was adapted from the instrument designed for BSS by the UNAIDS Best Practice Collection.<sup>[4]</sup> The instrument was pre-tested on 50 students and suitably modified and translated in Marathi to suit the target population. After translating in Marathi, the same was again back-translated and compared with the original English version. The

results of the pilot study were not included in the analysis.

### Data collection

The principals of the selected schools were contacted by the investigators to explain the purpose of the study. The method of conduction of the study and the IEC intervention were also explained. Confidentiality was assured. The information collected was unlinked anonymous. Written consent from the principals was also obtained. Before asking the students to complete the questionnaire in the instrument, they were explained the purpose of the study, the meaning of different terms used in the instrument and the method of filling up the questionnaire. Any doubts expressed were cleared in the local language. After this, the questionnaire was distributed to the students in their classrooms. The questionnaire or instrument consisted of the following parts: Personal details (six questions), knowledge about HIV/AIDS (16 questions), attitudes (seven questions), knowledge about condom (four questions), practices (eight questions) and sources of information about HIV/AIDS (three questions).

The seating arrangement was such that there was only one student on each bench so as to ensure confidentiality. No consultation among the students was allowed during the session. After the students submitted the filled up instrument, a class room session on HIV/AIDS education was conducted by the investigators as described below.

### Information, education and communication package

This consisted of the following:

- (a) Short lecture on HIV/AIDS.
- (b) Audio visual film titled (i) *Jeev lakh molacha* (life is precious) and (ii) *Break the silence*, prepared especially for the HIV/AIDS awareness campaign by Pravara Medical Trust, Loni, and the State "IEC" Bureau, Maharashtra, Pune.
- (c) Interactive session where in the investigators answered the questions raised by the students.
- (d) Poster exhibition.

Besides, additional information was also collected from the teachers regarding HIV/AIDS education being imparted to the students on a day-to-day basis. Also, the books prescribed for the students in the curriculum were also reviewed to assess the information provided to the students on HIV/AIDS.

### Post intervention survey

To assess the change in knowledge and attitude, a

repeat survey using the same instrument was carried out after 3 months. It was ensured that only those students who took part in the initial survey and attended the IEC session were included in this survey. Nine hundred and fifty-seven (93.46%) of the initial sample of 1024 took part in this repeat survey.

### Data analysis

Analysis of data was carried out using statistical software EPI INFO 2002<sup>[8]</sup> and Primer of Biostatistics.<sup>[7]</sup>

## RESULTS

### Response rate

Of the 1136 students selected for the study, 1024 agreed to participate, giving a response rate of 90.32%.

### Age and gender distribution

The majority (88.37%) were in the age group between 14 and 17 years. There were 583 (56.93%) girls as against 441 (43.07%) boys out of the total study sample of 1024.

### Overview of knowledge about HIV/AIDS

Nine hundred and ninety-two (96.88%) of the students had heard about HIV/AIDS. However, only 112 (10.94%) of the students knew the full form

of HIV and still less, 59 (5.76%), knew the full form of AIDS. Seven hundred and thirty-two (71.48%) of the students felt that HIV/AIDS is preventable. The knowledge about the cause of AIDS was poor. Only 139 (13.57%) of the respondents knew that AIDS is caused by a microorganism (virus).

### Pre- and post-intervention knowledge about the mode of transmission

This is summarized in Table 1. The most common misconception about transmission was that HIV/AIDS can be transmitted by sharing a meal. Another common misconception was that it can spread by mosquito bite. Although knowledge of it being transmitted by infected needle and blood was over 90%, awareness about risk of sexual exposure and contacting HIV was only 68.26%. After intervention, maximum improvement in knowledge was seen in relationship to myth about mode of transmission by mosquito bite followed by improvement in knowledge regarding sexual transmission. On other modes of transmission where baseline levels were already high (around 90%), there was not much improvement after intervention.

### Knowledge and misconceptions about prevention

This is shown in Table 2. Certain misconceptions

**Table 1: Pre- and post-intervention knowledge about the mode of transmission**

Mode of transmission	Pre-intervention correct knowledge (n = 1024) (%)	Post-intervention correct knowledge (n = 957) (%)	Change (%)	$\chi^2$ , df = 1	P
Sharing meal*	902 (88.09)	892 (93.21)	5.12	15.18	<0.001
Mosquito bite*	459 (44.82)	598 (62.49)	17.67	62.01	<0.001
Infected needle	972 (94.92)	901 (94.15)	0.77	0.57	>0.05
Blood transfusion	947 (92.48)	907 (94.78)	2.3	4.34	<0.05
Sexual contact with HIV infected	699 (68.26)	805 (84.12)	15.86	68.03	<0.001
Mother to child transmission	689 (67.29)	741 (77.43)	10.14	25.98	<0.001
Breastfeeding	468 (45.70)	607 (63.43)	17.73	63.15%	<0.001

\*Correct knowledge that HIV is not transmitted by these routes

**Table 2: Knowledge and misconceptions about prevention according to gender**

Prevention method	Males (441) (%)	Females (583) (%)	Total (1024) (%)	$\chi^2$	P-value
Good diet	150 (34.01)	182 (31.22)	332 (32.42)	0.89	>0.05
Faithful sex partner	351 (79.59)	432 (74.09)	783 (76.46)	4.21	<0.05
Avoid public toilet	308 (69.84)	359 (61.58)	667 (65.14)	7.55	<0.01
Condom use	407 (92.29)	462 (79.24)	869 (84.86)	33.26	<0.001
Avoid touching HIV +ve persons	389 (88.21)	512 (87.82)	901 (87.99)	0.04	>0.05
Avoid sharing food	369 (83.67)	486 (83.36)	855 (83.49)	0.02	>0.05
Avoid mosquito bites	241 (54.65)	268 (45.97)	509 (49.71)	7.57	<0.01
Use sterilized needles	357 (80.95)	476 (81.65)	833 (81.35)	0.08	>0.05
Abstinence	281 (63.72)	395 (67.75)	676 (66.02)	1.82	>0.05

about the mode of transmission are also reflected in the misconceptions about prevention, such as avoiding sharing food and avoiding mosquito bites. Misconceptions about prevention such as avoiding the use of public toilets and avoiding touching HIV +ve people were also found in the study sample.

**Number of correct methods known about prevention**

This is shown in Table 3. Most (more than 95%) could cite one method. However, this proportion fell to only 61.23% when citing all three methods of prevention. Post-intervention, there was a highly significant improvement in the awareness about all the methods except in the knowledge of at least one method (which already had a high baseline level).

**Awareness whether an HIV-infected person could appear healthy**

Only 45.51% of the students were aware that an HIV-infected person could appear healthy. Awareness on this aspect was more among female students compared with male students [Table 4].

**Attitudes of the respondents toward some HIV/AIDS-related issues**

This is shown in Table 5. Although a majority had favorable attitudes over most issues, an appreciable number ranging from 14 to 25% had certain reservations regarding integration of an HIV +ve person in the mainstream of the society, as evident from the responses to some issues shown in Table 5.

**Table 3: Pre- and post-intervention knowledge of number of correct methods about prevention of HIV/AIDS**

	Know at least one method of prevention*	Know two methods	All three methods
Pre-intervention (n = 1024) (%)	982 (95.90)	720 (70.31)	627 (61.23)
Post-intervention (n = 957) (%)	927 (96.87)	750 (78.37)	676 (70.64)
Change %	0.97	8.06	9.41
χ <sup>2</sup>	1.05	16.30	19.30
P-value	>0.05	<0.001	<0.001

\*One faithful partner, condom use, sterile needle

**Sexual behavior**

Only 1.86% of the total participants had indulged in sexual intercourse, males more than females [Table 6].

Of the 19 students who gave a history of sexual intercourse, 12 had sex with a friend, six gave a history of visiting a commercial sex worker and four had sex with a casual acquaintance. Some gave multiple answers. Only eight had indulged in sexual encounter within the past 12 months. Of the 19 with sex experience, 10 had one partner, one had two partners and eight did not state the number of sex partners. The mean age of first sexual encounter was 15.33 years.

**Use of condom during sexual intercourse**

Of the 19 respondents who had sexual intercourse, eight (42.11%) always used condoms, five (26.42%) used them sometimes and six (31.58%) never used condoms.

**Health education (information, education and communication) activities being carried out in the schools**

It was noted that in the surveyed schools, each school had a designated teacher who was in charge of the HIV/AIDS education under the School Adolescent Life Skills Education Programme (SALSEP). These teachers had undergone training for 3-5 days. They had conducted 2-4 IEC sessions (six classes in each session) for educating the students on HIV/AIDS. The teachers were of the opinion that this type of education was necessary and should be included in the syllabus. Except for one school that had a few charts and books, the rest did not have any

**Table 4: Awareness whether an HIV-infected person could appear healthy**

Gender	Can appear healthy (%)	Cannot appear healthy (%)	Total (%)
Male	179 (40.59)	262 (59.41)	441 (100)
Female	287 (49.23)	296 (50.77)	583 (100)
Total	466 (45.51)	558 (54.49)	1024 (100)

χ<sup>2</sup> = 7.56, P < 0.01

**Table 5: Favorable attitudes toward some HIV/AIDS-related issues**

Issue	Males (441) (%)	Female (583) (%)	Total (1024) (%)	χ <sup>2</sup>	P-value
HIV +ve can attend school	373 (84.58)	465 (71.76)	838 (81.84)	3.93	<0.05
Isolation of HIV +ve not required	320 (72.56)	449 (77.02)	769 (75.10)	0.08	>0.05
HIV +ve can hold a job	341 (77.32)	436 (74.79)	777 (75.88)	0.88	>0.05
HIV/AIDS education in school	378 (85.71)	504 (86.45)	882 (86.13)	0.11	>0.05
No embarrassment in sex education	354 (80.27)	466 (79.93)	820 (80.08)	0.02	>0.05

**Table 6: Number of participants who had sexual intercourse in the past**

Gender	Had intercourse (%)	Did not have intercourse (%)	Total (%)
Male	16 (3.63)	425 (96.37)	441 (100)
Female	3 (0.51)	580 (99.49)	583 (100)
Total	19 (1.86)	1005 (98.14)	1024 (100)

$\chi^2 = 11.71$ ,  $df = 1$ ,  $P < 0.01$ .

audiovisual health education material. Although all teachers mentioned that they were carrying out IEC activities in the school, the responses from the students brought out that only 44.34% of them had received such education.

## DISCUSSION

The study revealed that there were some important misconceptions among the respondents regarding the mode of transmission. An appreciable number (>55%) believed that HIV can be transmitted by a mosquito. Other studies have also found a prevalence of this misconception in young adults,<sup>[9]</sup> adults<sup>[10]</sup> and in the older population.<sup>[11]</sup> This misconception needs to be dispelled as it may lead to unnecessary fear resulting in discrimination and isolation of people with HIV/AIDS. In the present study, this misconception would be removed to some extent by intervention in the form of an IEC package. In spite of this, 37% of the respondents continued to harbor this myth.

Another misconception that can adversely affect the behavior toward people living with HIV/AIDS was that some respondents (>10%) believed that HIV can be transmitted by sharing meals. Others have also reported this myth in varying proportions.<sup>[12]</sup> This misconception could also be reduced to some extent in the present study by health education intervention.

There was also some lack of awareness about the ways in which HIV is transmitted. Infected blood and needles as mode of transmission was known to more than 90% of the respondents. However, surprisingly, more than 30% did not know about the sexual mode of transmission. Is it due to cultural reticence in discussing sex? Awareness about the sexual route of transmission could also be improved somewhat by

IEC. However, even after intervention, it was below the recommended level of 90% awareness.<sup>[5]</sup>

There was also improvement in the number of preventive practices after intervention with IEC. However, even after intensive health education, more than 20% could not recall at least two preventive practices 3 months later.

## CONCLUSION

IEC intervention can only marginally improve awareness about HIV/AIDS. Moreover, how much this favorable improvement about awareness and attitudes is going to be permanent and translate into behavior could not be ascertained from the study. Ongoing behavior change communication and repeated studies to assess the impact of such measures may resolve these issues.

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