

HIV-Related Knowledge and Attitudes among First Year Medical Students in Mumbai, India

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Abstract

Background: The total number of people with HIV (Human Immunodeficiency Virus) infection in India is estimated to be 10% of all global cases. People living with HIV in India often experience discrimination while receiving health care due to inadequate knowledge and fear among health care professionals. Data presented in this paper represents the first phase of a six-year study being conducted at a Medical College in Mumbai, India. Information from this phase of the study will be used to demonstrate the need for an HIV-specific training module for the first year medical students. **Methods:** A cross-sectional study was conducted among 200 first-year medical students in Mumbai, India to assess knowledge and attitudes as they relate to HIV infection. A self-administered survey was distributed among the medical students at a medical college in Mumbai. The survey sought student responses pertaining to knowledge of HIV risk and transmission, and attitudes towards HIV-infected people. **Results:** A response rate of 87% was obtained (174 out of 200). Overall, females showed less knowledge pertaining to issues related to human sexuality and HIV transmission when compared to their male peers. Anal intercourse was reported as a risk for HIV transmission by 3 % of females as compared to 20% of males ($p < 0.05$). Furthermore, 28 % of females reported no relationship between the risk of contracting HIV and the type of sexual intercourse compared to 3 % of males ($p < 0.05$). In general, there were considerable misconceptions regarding the spread and risk of HIV transmission among all medical students. Sixty six percent (66%) of females were comfortable having HIV infected doctors and nurses (co-workers) in clinics and hospitals compared to 36% of males. Forty-four percent (44 %) of the medical students preferred not being friends with HIV infected individuals. Sixty-two (62%) percent of the students favored abstinence only messages for prevention of HIV among teenagers. **Discussion:** Knowledge regarding risk and routes of HIV transmission was lacking among the medical students. Attitudes of the students toward HIV-infected individuals could be best described as ambivalent. However, female students showed more positive attitude towards HIV infected people than their male peers. **Conclusions:** Based on our findings we recommend the development and integration of a HIV training module in the first year medical curricula in order to address gaps in knowledge and provide training for the development of positive attitudes and tolerance toward HIV infected people.

Key Words: HIV, Medical Students, Knowledge, Attitudes and Medical Curricula

Introduction

In April 2005, experts from Global Fund to Fight AIDS stated that India had overtaken South Africa with regard to the number of AIDS cases.¹ The joint United Nations program for HIV/AIDS (UNAIDS) reports India harbors between 7-9 million HIV cases compared to 4-6 million cases of HIV found in South Africa.²

The official Indian figures (111,000 HIV infected cases) do not reveal the scale of the HIV infection because of the weaknesses in surveillance systems, bias against targeting groups such as commercial sex workers for testing, and the lack of testing services in many parts of the country.³

Although the prevalence of HIV in India is 0.9%, the total number of people living with active HIV infection in the country is estimated to be 10% of all global cases.³⁻⁴ A fraction of a percent increase in the prevalence of HIV in India will increase the number of adults living with HIV by approximately million people.

People living with HIV in India often experience discrimination while receiving health care.⁵⁻⁸ Inadequate knowledge and fear of HIV infected people have been identified as a serious problem among health care professionals in India.^{6, 9-14}

Discrimination of HIV infected people in healthcare settings exists because health care professionals lack adequate knowledge about HIV and consider themselves to be at risk of contracting the infection. The feelings of anxiety and fear concerning HIV infected people among Indian health care professionals results in their meting out derogatory behavior towards their HIV infected patients.

Research in other countries has indicated the central role of medical education in improving knowledge of HIV risk and transmission and changing the attitudes of medical students as it relates to HIV-infected people.¹⁵⁻¹⁶ Integration of an HIV training module in the first year medical curricula that emphasizes on knowledge concerning HIV transmission, human sexuality including training on the development of positive attitudes toward HIV infected people will help India build a knowledgeable and compassionate health care workforce to combat the HIV epidemic.

The World Health Organization's report on the role of HIV-related medical education in the South Asia region has also underscored the importance of including training in sensitivity, communication skills, and the development of compassionate attitudes toward HIV infected patients in the medical curricula.¹⁷

According to the World Health Organization's estimates, there are approximately 500,000 licensed physicians in India. These physicians obtain their medical training at one of the 243 medical colleges in the country. Each year these medical colleges admit approximately 23,000 medical students.^{18, 19} However, we were only able to find a few research studies pertaining to HIV-related knowledge and attitudes among Indian medical students. These studies had somewhat opposing conclusions.

The first study reported that 98% of female students and 99% of male students were aware of the cause of HIV (n =145).²⁰ The second was a multi-national study conducted among medical students in four countries (Canada, USA, Thailand and India). Knowledge among Indian medical students regarding HIV was lower than medical students in other countries. The Indian medical students harbored a greater degree of discomfort while caring for HIV infected patients as compared to their contemporaries in Canada, the US and Thailand.¹¹ A third study by Puri et al., reported gaps in knowledge concerning HIV risk and transmission among 200 medical students in northern India. Specifically, only 28 % of medical students associated "safer sex" with use of condoms.²¹

A review of medical curricula for the first year medical students in the city of Mumbai indicates that training pertaining to social, medical, legal and ethical aspects of HIV is offered after students have entered their second year of medical school.²² However, there is no coursework targeted toward sensitivity training and development of positive attitudes toward HIV infected people. Specific training in human sexuality as it relates to risk and transmission of HIV was also lacking.

Studies in India concerning HIV-related knowledge and attitudes amongst both health professionals and medical students suggest that early educational intervention has the potential to address the gaps both in knowledge and the negative attitudes directed towards those with HIV infection.^{10-14, 21, 23}

The study reported here was designed to address the gaps that have been identified in the literature concerning the knowledge and attitudes of medical students in India regarding HIV. The information obtained in this study will be used to demonstrate the need for development and integration of an HIV training module into the first-year medical curricula at the medical college where this study was conducted.

Methods

An English language survey was developed based on information drawn from relevant literature pertaining to knowledge, attitude and behaviors regarding HIV/AIDS amongst Indian and foreign health care professionals and clinical students.^{10, 24-31}

This paper and pencil survey consisted of open-ended questions (n =3) (For example; Your concept of safe sex), multiple-choice questions (n =2) (For example; Routes of HIV transmission- Sexual contact, infected needles, saliva, blood transfusion, toilet seats etc) and closed ended questions (n =33) (For example; HIV and AIDS are the same condition: Yes or No).

The survey was pilot-tested with two medical-student focus groups each comprising two male and two female first-year medical students from the participating medical college. Epidemiologists and survey design specialists with expertise in HIV and behavioral research were consulted for completeness and scientific accuracy of the survey. The survey was also tested for reliability using split half method. A Cronbachs alpha of 0.78 was obtained indicating good internal consistency reliability.³²

There are four medical colleges funded by local government and municipal authorities in the city of Mumbai. These medical colleges fall under the auspices of a single medical university (Maharashtra University of Health Sciences - MUHS) and follow the same medical curricula.²² There were 581 medical students admitted to the first year program at these four medical colleges in Mumbai.^c The ages of these medical students ranged from 17-23 years with a mean age of 19 years. Thirty five percent (35%) of these medical students were females and 65% were male.^c

First year medical programs at the four medical colleges in the city of Mumbai were invited to participate in this study. However, only one medical college agreed to participate and permitted us to follow the students over a period of six years. The participating medical college had 600 students pursuing medical studies with 200 students admitted to its first year medical program.

The medical student population in the first year program at the participating medical college represents 34% of the first year medical student population across the four colleges in the city of Mumbai. There were 71 (35%) female and 129 (65%) male first year medical students at the participating medical college.^d

Data collection in this study happens in three waves over a course of 6 years. First, at the time when the students commenced medical school; second, at the end of their second year; and third, during their internship. Class time was utilized for administering this survey. Information regarding confidentiality and voluntary participation was

provided before surveys were distributed to the students. The surveys obtained demographic information concerning the student's age and gender but no identifying information.

The data in this paper presents findings from the first wave of the survey. Data were analyzed to derive descriptive and Chi Square statistics. For the purpose of quantitative data analysis, the responses to open-ended questions on the survey were coded into common categories. The categories were identified based on themes of responses in consultation with the participants of the medical student focus groups. Epidemiologists and survey design experts also provided technical expertise in development of themes for categorization of the responses.

Results

Consent forms were obtained from 192 out of 200 students. Eighteen students did not return surveys after consenting to participate in the study. One hundred and seventy-four students returned the completed surveys (87%). This included 110 (63%) males and 64 (37%) females. The mean age of the study population was 18.5 (range 17 – 21 years).

Study results pertaining to knowledge are found in Table 1. Significant differences regarding routes of HIV transmission were observed between male and female students. In particular, twenty-eight (44%) female students, as compared to 31 (28%) male students, believed that saliva was a potent route of transmission (p<0.05). Sharing of razors was reported as a route of HIV transmission by 97 (88%) males compared to 50 (78%) females (p<0.05).

Significant differences were found between male and female students with regard to mass media and friends as sources of HIV related information. Ninety-percent (90%) of males compared to 78% of females indicated mass media as source of information (p<0.05). Similarly, of those who reported friends as a source of information, 40 (37%) were males and 12 (19%) were females (p<0.05).

Sixty-three students (36%) reported both female commercial sex workers and multiple sex partners as individuals at maximum risk of contracting HIV. These two categories were followed by homosexuals (11%), intravenous drug users (5%), commercial blood donors (4%), illiterate people (3%) and male commercial sex workers (1%).

Twenty (12%) medical students reported having no knowledge of the relationship between the type of sexual intercourse and the risk of HIV infection. Of these twenty medical students, three (3%) were males and 17 (27%) were females

($p < 0.05$). Only 26 (14 %) students in our sample associated anal sex with maximum risk of HIV transmission. Of these 22 (20%) were males and four (3%) were females ($p < 0.05$).

Students reported their concept of safe sex as follows: Fifty students (29%) reported intercourse with condom and a monogamous relationship, 77(44%) reported intercourse with condoms only, 23 (12%) students reported monogamous relationship only and 24 (14%) reported "not to know". Statistically significant differences were observed between female and male understandings of the concept of safe sex in all four categories ($p < 0.05$). Twenty-four medical students (14%) reported HIV and AIDS were the same condition. Of these, eight (8 %) were males and 16 (25%) were females ($p < 0.05$).

Results pertaining to attitudes are shown in Table 2. Eighty-two medical students (47 %) reported being comfortable having HIV infected doctors and nurses (coworkers) in clinics and hospitals. Forty-two female students (66%) compared to 40 males reported being comfortable having HIV infected doctors and nurses (coworkers) work in clinics and hospitals (36%) ($p < 0.05$).

One hundred and sixty students (92%) stated that they would care for an HIV infected family member and 14 students (8%) reported that they would consider abandoning the family member. However, 76 (44%) students reported that they would not be friends with HIV infected person. Of these 76 students, 60 reported fear of contracting the HIV infection by casual contact such as shaking hands. Abstinence only messages for prevention of HIV among teenagers were favored by 114 medical students (66%). Fifty-one female students (80%) favored abstinence messages compared to 64 male students (58%) ($p < 0.05$).

Discussion

Medical training has the potential to facilitate the development of positive behaviors and attitudes among medical students as they relate to HIV. Studies over the past decade among health professionals in India identify the gaps in their knowledge concerning risks and transmission of HIV. These studies also document the negative attitudes of Indian health professionals toward HIV infected people.^{6, 11, 13-14, 23, 33}

The data from our study shed light on the critical gaps concerning knowledge regarding the spread and risk of HIV transmission among the medical students. For example, saliva was reported as a transmission route by 34% of students, which is in contrast to scientific evidence that considers saliva as

a weak vehicle of transmission because of low viral loads.³⁴⁻³⁶

Kermode et al. reported consistent findings, where 38% of nurses in rural India indicated saliva as a potent vehicle of HIV transmission.¹⁴

Lack of knowledge regarding the HIV infection among the students in this study is also suggested by our data pertaining to vaccine availability for HIV prevention. Twelve percent (12%) of the students reported availability of a vaccine to prevent HIV. In a study conducted by Brij Mohan & Vashist among nursing students in India, they found that 10% of nursing students reported vaccine availability to prevent HIV.³⁷

The low level of knowledge among medical students concerning the relationship between HIV transmission and type of sexual intercourse also suggest a lack of awareness concerning human sexuality. In our study only 14 % of the medical students reported anal intercourse as a risk of contracting HIV. Even lesser number (10%) of students reported homosexuality as a risk factor. Our findings contrast sharply with prevalence studies conducted in Mumbai, which estimate that 15% of homosexual men tested in sexually transmitted disease clinics are HIV positive.³⁸

Our findings concerning level of knowledge pertaining to anal intercourse, homosexuality and HIV transmission, although much lower are comparable to the work reported by Farid & Choudhary among Pakistani medical students where only 40% of medical students reported homosexuality as possible route of transmission.³⁹

Overall, mass media was found to be a leading source of HIV-related information followed by medical literature and teachers. Lal et al., reported comparable findings in a study among college students in southern India where the majority of students suggested mass media as source of HIV related information.⁴⁰ The high response to mass media as a source of information is better understood considering the impact that Internet and satellite television has had on India in the past decade.

As compared to their male peers, female students in our study showed positive attitudes toward HIV infected individuals. However, the attitudes of these medical students toward HIV infected individuals could best be described as ambivalent. The ambivalence is demonstrated by the positive attitudes of the medical students toward HIV infected relatives and favorable attitudes toward allowing HIV infected people attend school and colleges. However, the students showed unfavorable attitudes toward being friends with an HIV infected person and had reservations about having HIV

infected doctors and nurses (coworkers) in hospitals and clinics.

In a study of Indian doctors and nurses, concerning their attitudes toward HIV infected people, Kermode et al., reported 23% of doctors and nurses preferred not to treat HIV infected patients.¹⁴ In a similar study conducted by Kubde et al., 34% of nursing students in New Delhi, India reported unwillingness to treat HIV infected people.¹⁰

Limitations

This study has several limitations. First, is the small sample size, in that these findings represent medical student knowledge and attitudes concerning HIV infection only from the participating medical college (n =1). However, cautious generalizations may be drawn to students at the three other medical colleges in this region based on the similarities in demographic distribution (age & gender).

Furthermore, this study population represents 34% of all first year medical students in the city of Mumbai.

Second, the criterion validity for the survey was not tested given the subjective nature of the questions. However, medical student focus groups conducted for pre testing this survey, consultation with survey design specialists, epidemiologists with expertise in HIV and behavioral research methods and a rigorous review of surveys from the literature concerning this topic bolstered the face and content validity of this survey.

Conclusions

These data demonstrate the need for development and integration of an HIV training module into current first year medical curricula at this medical college. Among other things, the training module needs to be gender sensitive, address gaps in medical knowledge and the development of positive attitudes and tolerance toward HIV infected people.

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Table 1. Knowledge concerning HIV infection for 174 medical students in Mumbai, India

	Male	Female	Total
	N = 110	N = 64	N = 174
Routes of transmission (multiple choice responses)**			
Blood transfusion	100%	100%	100%
Mother to child transmission	100%	100%	100%
Intra venous drug users	100%	100%	100%
Needle stick injury	100%	100%	100%
Sexual intercourse	100%	100%	100%
Saliva	28.2% *	43.8% *	33.9%
Sharing razors	88.2% *	78.2% *	84.6%
Hugging	2.7%	3.1%	2.8%
Toilet seats	11.8%	10.9%	11.4%
Sharing food	0	0	0
Shaking hands	0	0	0
Source of Information (multiple choice responses)**			
Mass Media	90% *	78% *	85.6%
Family physicians	6.3%	9.3%	7.4%

Friends	36.5%*	18.7%*	29.8%
Parentts	14.5%	20.3%	17.2%
Teachers	50%	46.8%	48.8%
Medical literature	53.6%	43.7%	50.0 %
<u>Individuals perceived with maximum risk for contracting HIV</u>			
Female commercial sex worker	36.3%	36.7%	36.3%
Homosexuals	10.9%	3.1%	10.1%
Multiple Sex Partners	36.3%	35.9%	35.1%
IVDU (Intravenous Drug Users)	6.3%	3.1%	5.1%
Commercial blood donors	2.7%	5.6%	4.0%
Male commercial sex workers	1.8%	0%	1.1%
Not aware	3.6%	9.4%	5.2 %
Illiterates	2.1%	6.2%	3.1%
<u>Total</u>	100%	100%	100%
<u>Type of intercourse with maximum risk of HIV transmission</u>			
Anal	20.4%*	3 %*	13.9 %
Vaginal	72.9%	68.6%	71.5%
Oral	3.9%	1.6%	2.8%

Don't know	2.8% *	26.8% *	11.8%
Total	100%	100%	100%
<u>HIV is curable</u>			
Curable (Yes)	4.5%	3.1%	4.5 %
Curable (No)	95.5%	96.9%	95.5%
Total	100%	100%	100%
<u>Vaccine available to prevent HIV</u>			
Vaccine available (Yes)	10%	15.6%	12.0%
Vaccine available (No)	90%	84.4%	88.0%
Total	100%	100%	100%
<u>Condoms</u>			
Aware of condoms (Yes)	96.3%	89.0%	93.1%
Aware of condoms (No)	3.7%	11.0%	6.9%
Total	100%	100%	100%
Concept of Safe Sex			
Condom and Monogamy	38.2% *	14.4% *	29.1%
Condom only	24.5% *	76.6% *	44.3%
Monogamy	18.2 % *	1.5% *	12.2%

Don't know	19.1%*	7.5%*	14.4%
Total	100%	100%	100%
HIV and AIDS are the same			
Yes	8.2*	25%*	14.4%
No	91.8*	75*	85.6%
Total	100%	100%	100%

* Statistically significant $p < 0.05$ *

** Multiple-choice response (% do not tally)

N = number of students

Table 2. Attitudes concerning HIV infection

Will be friends with an HIV infected individual			
	Male (N =110)	Female (N =64)	Total (N =174)
Yes	63.4%	43.6%	55.7%
No	36.6%	56.4%	44.3%
Total	100%	100%	100%
<u>Ok for HIV infected doctors and nurses to work in hospitals and clinics (coworker)</u>			
Yes	36.0%*	66.0%*	47.0%
No	64.0%*	34.0%*	53.0%
Total	100%	100%	100%
HIV infected individuals should be allowed to schools and colleges			
Yes	87.2%	89.1%	90.2%
No	12.8%	10.9%	9.8%
Total	100%	100%	100%
Abstinence messages for HIV prevention			
Yes	58.0%	80.0%	62.0%
No	42.0%	20.0%	38.0%
Total	100%	100%	100%

Statistically significant $p < 0.05^*$

Only relevant responses have been included in the attitudes table

N = number of students