Original Article

Exploring factors influencing the perspective regarding HIV transmission and prevention among college students in India

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Abstract

Objective and Design: Although many studies have been conducted to assess the knowledge and practices among healthcare workers, high-risk groups or medical students, very few studies have been conducted among college students from non-medical backgrounds. Our study aimed to assess the knowledge, attitudes and perception about human immunodeficiency virus/acquired immunodeficiency syndrome (HIV/AIDS) among the college students of the Mumbai region and to determine their association with the socio-demographic variables. **Setting and Methods:** A cross-sectional online and offline questionnaire survey was conducted among 401 college students from the month of August 2022 to October 2022. Mean score and percentage were used to analyse the data. **Results:** About 82.04% of participants exhibited good knowledge about HIV transmission and prevention, while 46.38% had a positive attitude towards HIV. Age, gender, religion and education had not influenced either knowledge or attitude significantly. Overall, knowledge score had a weak positive correlation with attitude of the participants. **Conclusion:** Our study findings indicate that a holistic approach covering knowledge, psychological and societal health aspects is necessary among youth in India for positive changes in people's behaviour and achieving HIV prevention and management goals which will benefit public health at large.

Keywords: Attitude, college students, HIV, knowledge, perception, prevention

Introduction

Human immunodeficiency virus (HIV) is one of the most devastating diseases that have affected humanity. It is a major public health concern with nearly 50% of the new infections occurring in young people.[1] In 2015, the US Centres for Disease Control and Prevention (CDC) estimated that 1.2 million people in the United States were infected with HIV, and globally, one in seven were unaware that they were infected with HIV.[2] The World Health Organization (WHO) factsheet shows that approximately 38.4 million people are currently living with HIV in the world with 1.5 million new infections in 2021. Approximately 650000 people died of HIV- and acquired immunodeficiency syndrome (AIDS)-related complications in 2021.[3] As per recent estimates, the number of people living with HIV (PLWHIV) in India is around 24 lakhs and the annual

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new infection (ANI) is estimated at 62.97 thousand in 2021 with around 41.9 thousand AIDS-related deaths (ARD).[3,4] Although there is a steady decline in ANI with the current prevalence of HIV in India being 0.21%, still there are concerns in certain states and regions especially in the southern states of Maharashtra, Andhra Pradesh and Karnataka being the top three.[5] A more serious challenge is the rise in infection rate among adolescents, and studies have reported that the age-group of 15 to 24 years is the highest group found to be infected with the virus.[6] Young people are particularly vulnerable to HIV infection because of the physical, psychological, social and economic attributes of adolescence.[7] Young adults are also at risk as a result of high-risk sexual behaviours, attitudes and constraints of the societies in which they grow up.[8] The HIV epidemic in India is grabbing specific attention among elevated risk groups, because of its heterogeneity in its allocation, societal barriers and cultural and religious beliefs.

Adequate knowledge and health behaviour are the most crucial tool for prevention, reducing transmission and the global burden of HIV infections.[9] National AIDS Control Organization (NACO), India, focuses on three components, that is, to improve awareness, education and attitude relating to HIV. According to the WHO, young adolescents are at a higher risk of exposure to HIV/AIDS.[8] However, it has also been demonstrated that increased knowledge about AIDS is not a predictor for behavioural change, although knowledge about the disease is a prerequisite for change.[8,10]

Being in the learning phase of life, it is difficult for an adolescent to comprehend correctly the significance of unsafe and/or casual sex, drug abuse and many such behaviours leading to increased risk of HIV transmission.[11,12] In India, adolescents in the age-group of 15–18 (9.1%), 18–19 (10%), 20–24 (13.6%), 20–22 (13.1%) and 23–24 (14.1%) tested HIV-positive in the year 2019–2021.[5] Lack of knowledge and awareness about HIV and negative perceptions largely affect the successful implementation of preventive measures for HIV control.[13] Younger age-groups between 15 and 20 years, with various behavioural as well as physiological changes, are more vulnerable to sexually transmitted diseases (STDs), such as HIV/AIDS, because of lack of sex education and preventive measures.[14,15] In Indian society, most of the parents and families fail or hesitate to discuss this crucial topic which is of most concern in this current situation.[16] Literature suggests that a better knowledge, attitude and behaviour towards HIV/AIDS among the population are important for a better and healthy society. It is a well-known fact that the youth of any country is a great asset. They are indeed the future of the country and represent it at every level. Our youth can bring social reform and improvement to society. As per the National Family Health Survey 5 (NFHS-5) data, only 38% of people in Maharashtra have comprehensive knowledge about HIV transmission and prevention, whereas about 25% of people still have misconception and stigma about PLWHIV.[17] In recent years, inadequate knowledge and negative attitudes have been observed among the young population which is ultimately leading to the surge of HIV/AIDS. Assessing community knowledge and behaviour could help in designing effective healthcare policies tailored to the need of the target population. We found that most of the knowledge, attitude and practice (KAP) survey in India were conducted among sex workers, medical students, healthcare workers, the general population, caregivers and HIV patients. With this background, our present study was designed to access knowledge, attitudes and perceptions among the college students of the Mumbai region. The main objective was to evaluate HIV/AIDS knowledge influencing attitudes among young college students and how it can be used for improving HIV prevention strategies in India.

Materials and Methods

Study design, participants and data collection

This cross-sectional study was administered as an anonymous hybrid survey using an online questionnaire constructed using Google Forms as well as through offline mode. Ethics clearance for the study was granted by the Institutional Ethics Committee for Research on Human Subjects, ICMR–National Institute of Immunohematology, Mumbai (ICMR-NIIH-IEC). An online Google Form with brief study details was created, and the link was shared among the classes of the college students. In the offline mode, printed questionnaires were distributed among the students. Responses for online Google Forms were captured automatically, whereas for responses collected through offline mode, data were fed into the MS Excel format for further analysis. Findings from a previous online survey show that approximately 60% of respondents were found in the high knowledge category. With this proportion, the estimated sample size was calculated using a single population proportion formula [$n = (Z\alpha/2)\ 2\ p\ (1\text{-}p)/d2$] with a 95% confidence level and 5% margin of error (d). The estimated sample size was 401. Informed consent was taken in both online and offline modes of the survey. The participants' inclusion criteria were graduate and postgraduate college students (above the age of 18 years) from the Mumbai and Peri-Mumbai regions and willing to participate in the study. The exclusion criteria were non-willing participants or who did not provide consent to participate in the survey.

Questionnaire and scoring

The questionnaire consisted of two parts – demographic details and HIV prevention and transmission-related questions. The demographic variables include sex (male or female), age (18–20, 21–24 and >25), education level (secondary, higher secondary, undergraduate (UG) and postgraduate (PG)), occupation (student, private employment, government employment and unemployed), marital status (unmarried, married, divorced, separated and widowed) and religion (Hindu, Muslim, Christian, Jains and others). A total set of 16 questions were included under the knowledge domain which included basic knowledge regarding HIV transmission, symptoms and prevention, while the attitude and perception domain contained

22 questions to assess the participant's attitude and behaviour towards HIV patients.

Scoring: Each correct response was awarded one point, and an incorrect response was awarded zero points for the questions included under the knowledge, attitude and perception sections. The highest score for knowledge ranged from 0 to 16, and therefore, the classification for knowledge level was categorized into three levels: poor knowledge (score 0–7), moderate knowledge (8–11) and good knowledge (12–16) depending upon the score gained by each participant for their knowledge towards HIV/AIDS. The highest score for attitude and practice ranged from 0 to 22. The attitude was classified into two categories: positive attitude score ranging from 12 to 22 and negative response score ranging from 0 to 11.

Validation of questionnaire

The purpose of this content validation was to ensure that the questions were not ambiguous and the content was appropriate for the participants to understand. The subject experts established the content and structural validation of the questionnaire. Pilot testing for validity was performed among 10 students which tested whether the questionnaire was comprehensible and appropriate, well-defined, clearly understood and presented in a consistent manner. Repeated data were collected after 1 month for reliability assessment. After pilot testing and repeated discussions among several expert panellists, the questionnaire was finalized.

Data analysis

Descriptive statistics were used to describe the socio-demographic characteristics of the sample. To evaluate reliability, Cronbach's alpha for each of the questionnaires was calculated.

The dependent variables were knowledge and attitudes towards HIV/AIDS. In this study, knowledge on HIV/AIDS was categorized into the following three groups: poor, moderate and good, while attitudes on HIV/AIDS were categorized into positive and negative. Knowledge was categorized into 'good knowledge' if the respondents were able to score 11–16, 'moderate knowledge' if the respondents were able to score 6–10 and 'poor knowledge' if the respondents answered less than 5.

The attitude was categorized as follows: positive attitude: if the respondents were able to score ≥11/22; negative attitude: if the respondents answered less than 11 for attitude items.

The independent variables were related to socioeconomic and demographic factors, including age, sex, education level, religion and marital status. The significant associations between socioeconomic and demographic factors and participants' knowledge and attitudes were determined using a Chi-square test. Multiple logistic regression was performed to determine the role of independent variables on knowledge and attitude. Values were represented as adjusted odds ratio (AOR) and 95% confidence interval as measures of association. The level of statistical significance was considered for a P value < 0.05. All statistical analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 26.

Table 1: Socio-demographic profile of study participants (*n*=401)

Variable	Category	Frequency	Percentage (%)
Age	18-25	399	99.50
	>25	2	0.49
Gender	Male	200	49.87
	Female	201	50.12
	Others	0	
Education	UG	349	87.03
	PG	52	12.96
Marital status	Married	5	1.24
	Unmarried	396	98.75
Religion	Hindu	376	93.76
	Muslim	04	0.99
	Buddhist	13	3.24
	Jain	06	1.49
	Others	02	0.49

Results

A total of 401 undergraduate and postgraduate students from four colleges were enrolled in the study. The participation response rate was noted as 100%. The mean age of the study participants was 21.18 ± 5.11 years (mean ± SD). A total of 393 (98%), six (1.49%) and two (0.49%) study participants were in the age-groups of 18–20 yrs, 21–25 yrs and >25 yrs. As shown in Table 1, the majority of the students were Hindu (93.76%) followed by Buddhist (3.24%), Jain (1.49%) and Muslims (0.99%) and others (0.49%). Totally, 98.75% of the respondents were unmarried, while only 1.24% were married.

Knowledge level of the study participants on HIV

The majority of the study participants (82.04%) had good knowledge about HIV infection, mode of transmission and prevention [Figure 1]. As shown in Table 2, 31.9% of the respondents chose HIV and AIDS as the same, while 65.8% opted that they are different. Among the study participants, 264 (65.83%) knew that HIV infection causes AIDS. Results

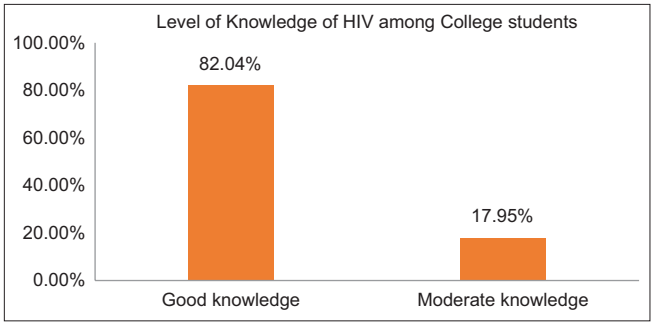

Figure 1: Overall knowledge among study participants

showed that unprotected sexual contact (83.79%), blood transfusion (76%) and sharing needles (73.3%) were the three most common modes of HIV transmission as chosen by the study participants. Regarding the symptoms, Table 2 shows that fever (139, 34.66%), weight loss (73, 18.20%), weakness (69, 17.20%), fatigue (58, 14.46%) and night sweats (31, 7.73%) were the most reported symptoms of HIV by our study participants [Table 2]. Multinomial logistic regression was performed to assess the effect of age, gender, education level and religion on the knowledge, and none of them significantly influenced the knowledge score in our study.

Attitude and perception about HIV

Overall, 186 (46.38%) of the study participants had positive attitude towards HIV. The majority of the study participants (314, 78.3%) perceived that HIV patients should not be isolated from society and 338 (84.28%) believed about going for HIV test. However, only 217 of participants believed to keep HIV test reports confidential (54.11%). Most of the respondents (311, 77.5%) had positive attitude towards travelling or eating with HIV-infected people and willing to care for their HIV-positive relatives. However, 158 (39.4%) believed that there is a vaccine for prevention of HIV. Multinomial logistic regression was performed to assess the effect of independent variables, such as age, gender, education level and religion on attitude score, and none of them had significantly influenced the knowledge score in our study. We also tested whether knowledge level influenced the attitude and found a weak positive correlation ($P < 0.003$, F 8.7 Figure 2) between knowledge and perception.

Table 2: Participants' response to HIV symptoms

To your knowledge, what are the symptoms of AIDS?	Responses *n* (%)
Fever	139 (34.66%)
Weight loss	73 (18.20%)
Weakness	69 (17.20%)
Fatigue	58 (14.46%)
Night sweats	31 (7.73%)

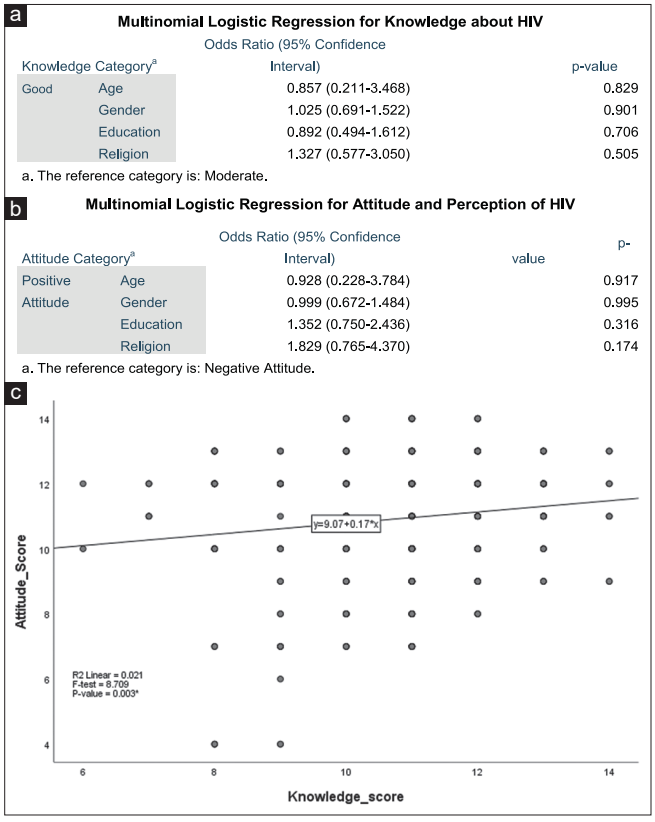

Figure 2: (a-c) Multinomial logistic regression for (a) Knowledge about HIV, (b) Attitude and perception about HIV and (c) Knowledge affecting attitude among study participants

Discussion

Our study found 82.04% of overall good knowledge about HIV among college students in Mumbai. The overall knowledge about HIV and AIDS in India as per the NFHS-5 data is about 21.6% females and 30.7% males, and 34.4% females and 42.6% males, respectively,[17] which is in agreement with our data. However, students predominantly had a negative attitude towards HIV/AIDS. One recent meta-analysis by Bhagavathula *et al.*[18] has reported that the overall knowledge about HIV in India among the general population is 75%, while the positive attitude towards HIV is far lesser among them (60%). The estimated subgroup analysis reported that 42% of students demonstrated negative attitude towards HIV. Our study has found that 53.61% of students had a negative attitude towards HIV/AIDS. Therefore, not only the level of knowledge among the young population is a priority but their attitude and practice are also equally important in the society to have a positive attitude and good practice with the proper knowledge regarding the fight against the deadly disease of HIV.

The majority of the participants knew that HIV can be transmitted by unprotected sexual intercourse (83.79%), blood transfusion (76.05%), pregnant mother to child (73.56%), through breastfeeding (55.86%) and sharing syringes and needles (73.31%) [Figure 3]. Data from the NFHS-5 between

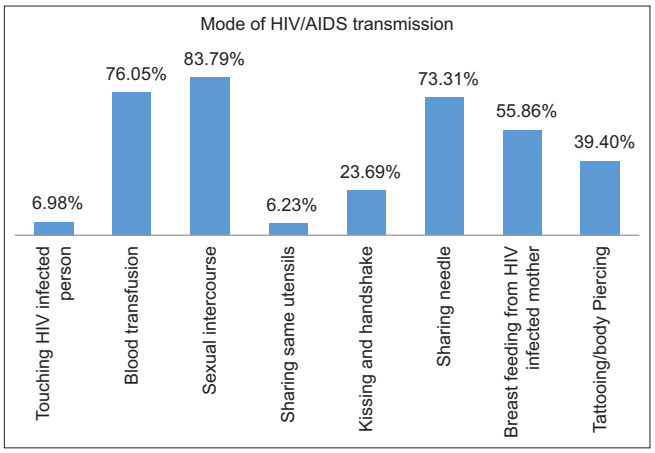

Figure 3: Overall knowledge among study participants

2019 and 2021 also indicate similar results with 58% of people knowing that HIV can be transmitted from mother to her child. One study from Ghana conducted on senior high school students also found these four routes as major routes for HIV transmission.[19] However, 23.69% of respondents from our study also chose kissing and handshake as transmission routes for HIV which indicates that still there is misconception and lack of proper knowledge among college students. Our results found positive attitude towards HIV patients among 45.13% of the students and thus indicate that still there are a lot of stigma, misconception and discrimination towards HIV in our society. In line with this, one survey by the United Nations AIDS study in 2016 observed that around one-third of the Indian population still bears a discriminatory attitude towards PLWHIV for the last 10 years.[20] Our study has shown that most of the students exhibited basic knowledge of primary transmission modes of HIV. It is documented from previous studies that participants seldomly continue to tell more details about the knowledge of HIV/AIDS especially in regard to high-risk sexual conduct.[12,21]

Overall, 45.13% of the participants believed that the HIV test report should be kept confidential. As per the NFHS-5 data of Maharashtra, 44.2% of males and 15.6% of females aged 15–24 years believed to maintain the confidentiality of HIV report, while nationwide, 24% of males and 23% of females had the same attitude and opinion regarding its confidentiality.[17]

Previous studies have indicated that health knowledge can predict and modulate personal protective measures, safe hygiene practices, restriction and behaviour. HIV/AIDS is very closely related to sexual activities and high-risk behaviours among the young population. Therefore, HIV/AIDS education would be very helpful if the education is conducted in schools and colleges on regular or continuous manner and with long-term realistic objectives. In our study, however, we found that knowledge level had a weak positive correlation with attitude in the study. This suggests that adequate knowledge might help correct misconceptions and develop a positive attitude towards HIV in the society to some extent, but it also highlights the fact that only knowledge might not be optimum to create desirable public health awareness and positive attitude and behaviour. A study among young females in India found important role of media in building positive attitude, sexual and reproductive health awareness and improved practices.[12,22] A study conducted on Chinese female college students revealed that their attitudes towards AIDS patients did not change significantly after health education intervention and they still had hostility towards AIDS patients. The reasons for this attitude may be due to more focus on reproductive health and basic knowledge about HIV/AIDS, whereas the health education for correct attitude towards AIDS patients is neglected. The stigma will remain as an obstacle to realizing the goal of zero discrimination as one of the 2021–2026 goals of the Joint United Nations Programme on HIV/AIDS (UNAIDS).[23] Health-related programmes should be conducted among students with elaborated knowledge and interaction without any hesitation. There are still some misconceptions, lack of knowledge and negative attitude towards HIV which needs to be rectified. One systematic review on AIDS awareness and attitude among university students in Iran showed that optimum AIDS prevention programmes were not available despite increased susceptibility of the students to high-risk behaviours.[24] The primary focus of effective health education should be to raise students' awareness and change their attitudes and maintain proper belief in a change of behaviour. A good quality of health education will enhance student's knowledge on HIV/AIDS and thereby develop positive attitudes towards people living with HIV/AIDS (PLWHA) which will ultimately reduce HIV- and AIDS-related discrimination and stigma.[25] Continued efforts in reducing the discrimination and stigma towards PLWHA are needed in future school-based comprehensive sexual education. Therefore, a holistic approach emphasizing knowledge, psychological and societal health aspects could bring positive changes in people's behaviour and benefit public health for achieving HIV prevention and management goals.

Study limitations

Our study has a few limitations. The self-administered questionnaires and responses might have influenced the true responses, and there is a recall bias. Secondly, minimal socio-demographic details were available. It should be considered in future research. Notwithstanding the limitations, the study findings are well indicative of the youth level knowledge and perception about HIV which will definitely help the government and other stakeholders to plan and adopt policy and healthcare delivery.

Conclusion

Our study has analysed the level of knowledge and attitude among college students which adds value to formulate appropriate policies by the health and family welfare ministry and educational institutions in India towards implementation of improved prevention of HIV. It is essential to develop innovative and effective training, capacity building and strong advocacy programmes to improve the general population's knowledge levels thereby reducing the false perceptions, stigma and discrimination towards PLWHIV. Finally, improving the knowledge and changing the attitudes among the young Indian population remains crucial for the success of India's HIV/AIDS response. The study findings will add value to the existing scientific knowledge base not only for India but also at the global level in this domain.

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Conflicts of interest

There are no conflicts of interest.

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