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# Understanding Vulnerability Patterns of HIV/AIDS among Junior College Male Students: A Knowledge and Attitude Study in Central India

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## ABSTRACT

**Introduction**: In India, as of 2017 only 32% of young men knew how to prevent HIV (UNAIDS 2018).There is evidence of emerging epidemics among men who have sex with men in areas not previously recognized as having high HIV burdens. There is gap in evidence on knowledge and attitude about HIV/AIDS among male students, particularly from central India. The objective was to assess knowledge & attitude regarding HIV/AIDS among male students of a Junior College.

**Methodology:** This study was conducted in Bramhapuri block of Chandrapur district in Maharashtra. Data was collected from 277 study subjects**.**

**Results**: Mean Age of participants was 17.31 ± 0.91 years (16 - 25 years). The majority of study subjects 243 (87.73%) had heard about HIV. Knowledge about common mode of HIV/AIDS transmission like unprotected sexual contact, infected needle was found correct in the majority of study subjects. The attitude of study subjects towards person living with HIV (PLWH) was unfavorable with 67.76% subjects agreeing to accept the person in family. The knowledge about HIV/AIDS was better in urban resident students than rural students.

**Conclusion:** Majority of study subjects were aware of HIV/AIDS. However, they lacked complete knowledge about routes of transmission and their attitude towards a PLWH was unfavorable**.**

**Keywords:** HIV/AIDS, Knowledge, Students, Central India, Males

## INTRODUCTION

HIV/AIDS, is a major and serious public health challenge of the world with 36.9 million people living with HIV (2017) and as many as 1.8 million people newly infected with HIV(2017)[1]. The vast majority of people living with HIV are in low- and middle-income countries. In 2017, there were 5.2 million (14%) people living with HIV in Asia and the Pacific. [1]In India, the first serological tested HIV positive case was identified in 1986, when serological testing found that 10 of 102 female sex workers in Chennai were HIV positive. [2]India has the third largest HIV epidemic in the world, with 2.1 million people living with HIV. In 2017, 88,000 people in India were newly infected with HIV. The majority were men, who accounted for 50,000 new infections [3].

The Joint United Nations Programme on HIV/AIDS (UNAIDS) coordinates many efforts and resources in cooperation with governments and nongovernmental organizations throughout the world to help minimize the spread of the infection, as well as provide medication for patients already infected.[4] The National AIDS Control Pro-

gramme (NACP), launched in 1992, is being implemented as a comprehensive programme for prevention and control of HIV/AIDS in India.[5] Over time, the focus has shifted from raising awareness to behavior change, from a national response to a more decentralized response and to increasing involvement of NGOs and networks of PLHIV.[5]

Young people are vulnerable to HIV at two stages of their lives; early in the first decade of life when HIV can be transmitted from mother-to-child, sometimes known as vertical transmission and the second decade of life when adolescence brings new vulnerability to HIV [6].Currently, over 30% of all new HIV infections globally are estimated to occur among youth ages 15 to 25 years. Also, increasingly, children infected at birth grow into students who have to deal with their HIV positive status. Combining the two, there are 5 million youth living with HIV.[7]

Increasing awareness among the general population and key affected populations about HIV prevention is a central focus of NACP IV. However, as of 2017, only 22% of young women (aged 15-24) and 32% of young men knew how to prevent HIV.[8,11] This is reflected in the wider population, as only one fifth of women and one third of men (aged 15-49) had comprehensive knowledge of HIV and AIDS.[9,12] In India, around 2.7% of men who have sex with men in India are living with HIV, of whom around 65% are aware of their status.[8,11] HIV prevalence varies between areas. For example, around 10% of men who have sex with men in Andhra Pradesh and 5% in Maharashtra are estimated to be living with HIV.[11] There is evidence of emerging epidemics among men who have sex with men in urban areas not previously recognized as having high HIV burdens.[12]

Considerable gaps exist in evidence regarding knowledge of HIV among male students. There are very limited studies of HIV/AIDS related knowledge and attitude conducted among junior college male students and more so in central India. Therefore this study was planned and carried out with the objective to assess knowledge & attitude regarding HIV/AIDS among male students of a Junior College as a measure of understanding their vulnerability to HIV/AIDS. The finding of the study helped to design the health education program at college level so that young students particularly males could have better understanding of the HIV/AIDS including best ways to prevent its spread.

## MATERIAL AND METHODS

The present cross-sectional study was conducted in a Junior College of Bramhapuri block of district Chandrapur in Maharashtra from July 2016 to August 2016. Permission from Principal of Junior College Bramhapuri was obtained. Informed consent of class teachers were obtained after explaining nature and purpose of the study. Male Students of 11th standard were included in the study. Male students who remained absent during pre-informed visits were excluded from the study. The present Junior College had three streams, Art, Commerce & Science. As per enrollment register of the College, there were 291 Male students in 11th standard.

There were three divisions for Science stream, two divisions for Art and only one division for Commerce for 11th standard. We included all 291 Male students in the study from Art, Commerce & Science streams. Data was collected from 277 study subjects, as 14 students remained absent in 3 successive visits to the college.

Using structured pre-designed questionnaire by National AIDS Control Organisation and National Institute of Medical Statistics (Indian Council of Medical Research) New Delhi [12], pilot study was conducted with 51 study subjects. Appropriate changes in questionnaire were made using analysis of pilot study. Data was collected by distributing proforma in Marathi, after explaining in detail, the information given in the Proforma. Detailed information about the participant's socio-demographic characters like age, residence, socioeconomic status, etc. collected. Information about the participants' knowledge about HIV/AIDS regarding route of transmission, methods of prevention, treatment, testing & source of knowledge and attitude towards HIV patients obtained. Approval for the study was obtained from the Institutional Ethics Committee, Government medical college, Nagpur. Data was entered in excel and analysed using statistical software Epi Info 7.2. Descriptive statistics (percentage, mean, standard deviation, range) were used to summarize baseline characteristics of the study subjects. Association between two categorical variables was analysed by using OpenEpi software. Chi-square test was applied & P value was calculated. P value < 0.05 was considered to be statistically significant.

## RESULTS

Mean Age of study subjects was 17.31 ± 0.91 years with range 16 - 25 years. Out of 277 study subjects 163 (58.84%) belonged to urban areas and 114(41.16%) belonged to rural areas respectively.

According to Modified Kuppuswamy Classification (*Modified Kuppuswamy's Classification [13] maximum urban study subjects 40(35.09%) belonged to Upper middle (II) class followed by 37

(32.46%) to Lower middle class (III) and only 3 (2.62%) to Lower (V) class, 12(10.53%) of the study subjects belonged to Upper (I) class. Maximum rural study subjects 81(49.69%) belonged to lower class (V) and only 4 (2.45%) to Upper class (V). According to Modified B. G. Prasad scale classification for Rural area [14] maximum rural study subjects 81(49.69%) belonged to lower class (V) and only 4 (2.45%) to Upper class (V)

In our study, health personnel were found to be the major source of information in 72 (25.99%) of study subjects followed by Television 62 (22.38%), Newspaper 61(22.02%) and Teacher 43(15.52%) study subjects respectively. Books, poster& banner, friends & relatives and internet were the source of information in 27(9.74%), 19(6.86%), 15(5.41%), and 9(3.25%) of study subjects respectively.

The majority of study subjects i.e. 243 (87.73%) had heard about HIV (Table 2). Table 3 shows knowledge of study subjects about mode of HIV/AIDS transmission. Knowledge about common mode of HIV/AIDS transmission like unprotected sexual contact, infected needle was found correct in the majority of study subjects i.e. 207 (74.73%), and 210 (75.81%) respectively, while knowledge regarding transmission though breast feeding by HIV infected mother was found correct in only 141(50.90%) study subjects.57.76% study subjects correctly reported that HIV cannot be transmitted by sharing meal with any HIV infected person. 96(34.66%) and 207(74.73%) study subjects answered in negative when asked if HIV can be transmitted by hugging a person living with HIV (PLWH) or by sharing a public telephone respectively.

**Table 1:- Distribution of study subjects by socioeconomic status (n=277)**

| Class | Urban Students (n=114) (%) | Rural Students (n=163) (%) |
|---|---|---|
| I (Upper) | 12 (10.53) | 4 (2.45) |
| II (Upper Middle) | 40 (35.09) | 30 (18.4) |
| III (Lower Middle) | 37 (32.46) | 24 (14.73) |
| IV (Upper Lower) | 22 (19.3) | 24 (14.73) |
| V (Lower) | 3 (2.62) | 81 (49.69) |

**Table 2:- Knowledge of study subjects about HIV/AIDS as a disease**

| Knowledge | Study Subjects (n= 277) | |
|---|---|---|
| | Yes (%) | No (%) |
| Ever heard of HIV | 243 (87.73) | 34 (12.27) |
| Do you know anyone who is infected with HIV/AIDS | 23 (8.30) | 254 (91.70) |

**Table 3:- Knowledge of study subjects about various aspects of HIV/AIDS**

| Knowledge topics | Knowledge of Study Subjects (n=277) (%) | | |
|---|---|---|---|
| | Correct | Incorrect | Don't Know |
| **Knowledge on mode of HIV/AIDS transmission** | | | |
| Unprotected sexual contact | 207 (74.73) | 19 (6.86) | 51 (18.41) |
| Transmitted through Infected needle | 210 (75.81) | 26 (9.39) | 41 (14.80) |
| HIV Infected mother through breast feeding. | 141 (50.90) | 46 (16.61) | 90 (32.49) |
| Transmitted by sharing meal with any infected person | 65 (23.47) | 160 (57.76) | 52 (18.77) |
| A healthy looking person can transmit HIV. | 109 (39.35) | 96 (34.66) | 72 (25.99) |
| Transmitted through hugging a PLWH | 121 (43. 68) | 96 (34.66) | 60 (21.66) |
| Transmitted by sharing a public telephone | 23 (8.30) | 207 (74.73) | 47 (16.97) |
| **Knowledge on prevention and control of HIV/AIDS** | | | |
| HIV can be prevented | 174 (62.82) | 72 (25.99) | 31 (11.19) |
| Use of Condom | 220 (79.43) | 24 (8.66) | 33 (11.91) |
| Having one uninfected faithful sex partner | 179 (64.62) | 37 (13.36) | 61 (22.02) |
| Avoiding used syringe | 174 (62.82) | 54 (19.49) | 49 (17.69) |
| **Knowledge on testing and treatment of HIV/AIDS** | | | |
| Testing of HIV before marriage decreases chances of spread of HIV | 208 (75.09) | 38 (13.72) | 31 (11.19) |
| Aware about Facility, where can get HIV/AIDS Testing | 138 (49.82) | 106 (38.27) | 33 (11.91) |
| Heard about PPTCT | 79 (28.52) | 173 (62.45) | 25 (9.03) |
| Any treatment that can cure HIV | 83 (29.96) | 108 (38.99) | 76 (31.05) |
| Antibiotics can prevent HIV/AIDS | 83 (29.96) | 74 (26.72) | 120 (43.32) |

**Table 4:- Attitude of study subjects towards HIV/AIDS patients**

| Attitude | Study subjects (n=277) | | |
|---|---|---|---|
| | Agree (%) | Disagree (%) | No comments (%) |
| He/she be accepted in the family | 160 (57.76) | 66 (23.83) | 51(18.41) |
| Share food with a HIV/AIDS patient | 99 (35.74) | 151 (54.52) | 27(9.74) |
| A HIV positive teacher continuing teaching in school/college | 174 (62.82) | 76 (27.44) | 27(9.74) |
| Share cloth/sweater with a HIV positive person | 80 (28.88) | 173 (62.45) | 24(8.67) |
| Banning prostitution can control the spread of HIV/AIDS | 166 (59.93) | 78 (28.16) | 33(11.91) |

**Table 5: Association between residence and knowledge on various aspect of HIV/AIDS transmission**

| Knowledge Topics | Subject with Correct Knowledge (%) | | P value |
|---|---|---|---|
| | Urban (n=114) | Rural (n=16) | |
| Knowledge about mode of HIV/AIDS transmission | | | |
| Unprotected sexual contact | 90 (78.95) | 117 (71.78) | 0.177 |
| Transmitted through Infected needle | 94 (82.46) | 133(81.60) | 0.854 |
| HIV Infected mother through breast feeding. | 64 (56.14) | 77(47.24) | 0.145 |
| Transmitted by sharing meal with any infected person | 22 (19.30) | 43 (26.38) | 0.171 |
| A healthy looking person can transmit HIV. | 51 (44.74) | 58 (35.58) | 0.125 |
| Transmitted through hugging a PLWH | 45 (39.47) | 76 (46.63) | 0.238 |
| Transmitted by sharing a public telephone | 7 (6.14) | 16 (9.82) | 0.276 |
| **Knowledge on prevention and control of HIV/AIDS** | | | |
| HIV/ AIDS can be prevented | 70 (61.40) | 104(63.80) | 0.684 |
| Use of Condom | 94 (82.46) | 126(77.30) | 0.298 |
| Having one uninfected faithful sex partner | 74(64.91) | 105(64.42) | 0.932 |
| Avoiding used syringe | 79(69.30) | 95(58.28) | 0.061 |
| **Knowledge on testing and treatment of HIV/AIDS** | | | |
| Testing of HIV before Marriage decreases chances of spread of HIV | 87 (76.32) | 121 (74.23) | 0.693 |
| Aware about Facility, where can get HIV/AIDS Testing | 64 (56.14) | 74 (45.40) | 0.078 |
| Heard about PPTCT | 39 (34.21) | 40 (24.54) | 0.079 |
| Any treatment that can cure HIV | 45 (39.47) | 63 (38.65) | 0.890 |
| Antibiotics can prevent HIV/AIDS | 33 (28.95) | 41 (25.15) | 0.482 |

**Table 6: Association between Socio-economic status and attitude of study subjects towards HIV/AIDS patients**

| Attitude | No. of Subject Agreed (%) | | P value |
|---|---|---|---|
| | Upper Class (I & II) (n=86) | Lower Class (III, IV & V) (n=191) | |
| He/she be accepted in the family | 49 (56.98) | 111 (58.12) | 0.859 |
| Share food with an HIV/AIDS patient | 31 (36.05) | 68 (35.60) | 0.943 |
| A HIV positive teacher continuing teaching in school/college | 50 (58.14) | 124 (64.92) | 0.281 |
| Share cloth/sweater with a HIV positive person | 24 (27.91) | 56 (29.32) | 0.810 |
| Banning prostitution can control the spread of HIV/AIDS | 54 (62.79) | 112 (58.64) | 0.514 |

**Table 7: Association between residence and attitude of study subjects towards HIV/AIDS patients**

| Attitude | No. of Subject Agreed (%) | | P value |
|---|---|---|---|
| | Urban (n=114) | Rural (n=163) | |
| He/she be accepted in the family | 69 (60.53) | 91 (55.83) | 0.436 |
| Share food with an HIV/AIDS patient | 51 (44.74) | 48 (29.45) | 0.008 |
| A HIV positive teacher continuing teaching in school/college | 78 (68.42) | 96 (58.90) | 0.106 |
| Share cloth/sweater with a HIV positive person | 37 (32.46) | 43 (26.38) | 0.273 |
| Banning prostitution can control the spread of HIV/AIDS | 63 (55.26) | 103 (63.19) | 0.185 |

Table 3 also shows Knowledge of study subjects about prevention and control of HIV/AIDS. Knowledge about common preventive measures of HIV/AIDS transmission like use of condom was found good in majority of study subjects i.e. 220 (79.43%). 174 (62.82%) study participants correctly reported that HIV/AIDS can be prevented. About preventive strategies, having one uninfected faithful sex partner, avoiding used syringe was correctly reported by 179 (64.62%) and 174 (62.82%) respondents.

Testing of HIV/AIDS before marriage decreases the chances of spread of HIV/AIDS was correctly reported by 208(75.09%) respondents. Knowledge about facility for HIV testing and maintenance of testing confidentiality was correctly reported in 138 (49.82%) and 152 (54.87%) respectively. While only 71(25.63%) and 79(28.52%) knew about Integrated Counselling and Testing Center (ICTC) and prevention of parent to child transmission (PPTCT) respectively (Table 3).

Only 160 (57.76%) participants agreed that the PLWH be accepted in the family. Participants agreeing to share food with a HIV/AIDS patient were 99 (35.74%) while 151 (54.51%) disagreed for it. Participants who agreed of a HIV positive teacher continuing teaching in school/college were 174 (62.82%), while 76 (27.44%) participants disagreed for it. Study subjects agreed to share cloth/sweater with a HIV positive person were 80 (28.88%) while 173 (62.45%) disagreed. Banning prostitution can control the spread of HIV/AIDS was agreed by 166 (59.93%) study subjects while 78(28.16%) of study subjects disagreed for the same (Table 4).

Considering residence, the knowledge about mode of transmission, prevention ($p < 0.05$), and treatment of HIV/AIDS better in urban residence students than rural students (Table 5).

Analysis of the association between some socio-demographic factors and attitude towards HIV/AIDS patients showed that more study subjects of lower socio-economic class had more positive attitude than upper socio-economic class (Table 6).

Regarding residence of participants significantly more rural residence students had positive attitude than urban residence students (Table 7).

## DISCUSSION

The present study shows that 87.73% of study subjects had heard of HIV while 8.3% participants reported to know about someone infected with HIV. In the study done by Ravishankar S et al[15] in first year medical undergraduates in Nainital, Uttarakhand, India all participants had heard of HIV/AIDS. Around 92.60% of participants had heard of HIV/AIDS in a study conducted by Reddy B.C et al [16] in secondary school students in khammam town of Andhra Pradesh. The difference in this finding may be attributed to the study setting which in our case includes both urban and rural areas as compared to an urban area in study done by Reddy B.C. et al [16]

In this study, 25.99% study subjects answered that health personnel were the source of information followed by Television (22.38%), Newspaper (22.02), and Teacher (15.52%). In a study by Thakurli DS et al media was the main source of information [2.] McManus et al reported friends as the main source of information followed by media (72%) in their study conducted in Delhi [19.] Bhalla S et al reported Books (81.8%) followed by T.V. (78.2%), newspaper (58.6%) and health personnel (33.2%) as sources of information in their study conducted in Jamnagar Gujarat [19].

Regarding knowledge of study subjects about mode of HIV transmission, 74.73% and 75.8% study subjects correctly reported unprotected sexual contacts and infected needle as modes of transmission. In the study by Thakuri DS et al, 95.3% correctly reported unprotected sexual contact and 83.53% correctly reported infected needle and blade as transmission modes while about 43.68% misreported that it can be transmitted by hugging or PLWH[2].

Regarding prevention and control of HIV, 79.43% knew about use of condom with 64.62% being aware of one faithful sexual partner. In the study by Lal P. et al, only 14.9% students had knowledge about condoms as means of protection.[20] The reason for good knowledge about prevention may be because the source of information about HIV are health personnel whereby dissemination of information is more clear and direct.

In our study, the attitude of study subjects towards PLWH was not favourable with only 67.76% subjects agreeing to accept the person in family. Similarly, only 35.74% subjects agreed to share food with HIV patients. This may be because of incomplete knowledge of transmission of disease. At the same time, 62.82% participants had positive attitude towards HIV positive teacher. In study by Lal P et al, 77.8% of students had favourable attitude towards PLWH [20.]

Analysis of the association between socio-demographic factors and attitude towards HIV/AIDS patients showed that more number of study subjects of lower socio-economic class had positive attitude towards a PLWH than upper socio-economic class. It was similar to the study by Shiferaw Y et al[17]

## CONCLUSION

Majority of study subjects were aware of HIV. Knowledge regarding mode of prevention of HIV/AIDS was good, whereas about testing & treatment was poor. Most of students lacked complete knowledge about modes of transmission of HIV/AIDS. Overall attitude of study subjects towards HIV/AIDS patients was not favourable. Attitude of students of lower Socio-economic class towards HIV/AIDS patients was significantly better in comparison to those belonging to upper Socio-economic class. More number of rural resident students had positive attitude towards PLWH than urban resident students.

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