

KAP of HIV/AIDS among IT Professionals in Indian Silicon Valley – A Pilot Study

**DR. M.N. SUMANA
ARNAW KISHORE**

Department of Microbiology
JSS Medical College and Hospital, Mysore
India

Abstract:

AIDS was first recognized in 1981 in the USA among homosexuals. Since then HIV/AIDS has emerged as the challenge to Health care personnel's, public health, human rights and in the development in the new era free of HIV/AIDS. There is still a lot of social stigma attached with it. As a responsible individual of society every one of us must understand and think HIV/AIDS prevention as a part of our collective social responsibility (CSR). Most of the literatures on KAP on HIV/AIDS are replete with studies on children, school/college students, general population, but the authors are yet to come across a study from Engineers and Managers working in the corporate sectors. This study gives more emphasis in an attempt to understand the KAP among working professionals of Engineers and Managers.

Key words: KAP, HIV/AIDS, Managers, Engineers, Professionals

Acquired Immunodeficiency Syndrome (AIDS) a chronic infectious disease which causes profound immune suppression and precipitating signs and symptoms due to decrease in CD4+ cell count [1] was first recognized in 1981 in the USA among homosexuals. Since then HIV/AIDS has emerged as the challenge to Health care personnel's, public health, human rights and in the development in the new era free of HIV/AIDS.

It has become the most serious health problems of the 21st century which affects all body systems as well as the mental health and social relationships of carriers and asymptomatic patients [2]. Globally, 34.0 million [31.4 million–35.9 million] people were living with H.I.V at the end of 2011. An estimated 0.8% of adults aged 15-49 years worldwide are living with H.I.V. Although the regional prevalence of H.I.V. infection is nearly 25 times higher in sub-Saharan Africa than in Asia, almost 5 million people are living with H.I.V. in South, South-East and East Asia combined [3]. Since the introduction of Highly Active Antiretroviral Therapy (HAART) has not only improved the CD 4+ count but also transformed the [4] disease from a fatal to manageable disease. With this pandemic in its fourth decade and no medicine till date and, it is a cause of serious public health concern in world. Asian countries have already responded in their own diverse ways to address HIV/AIDS in the worksteads [5] United Nations (UN) have always given emphasis and proposed to mainstream HIV/AIDS into various sectors and programs as its global action plan for prevention [6]. As a responsible individual of society every one of us must understand and think HIV/AIDS prevention as a part of our collective social responsibility (CSR). Most of the literatures on KAP on HIV/AIDS are replete with studies on children, school/ college students, general population, but the authors are yet to come across a study from Engineers and Managers working in the corporate sectors. This study gives more emphasis in an attempt to understand the KAP among working professionals of Engineers and Managers. Here we have mainly **focused** on the **Knowledge, Attitude, Practices (KAP)** surveys. A KAP survey means **K**nowledge, **A**ttitude and **P**ractices. To properly carry out this type of survey it is important to establish a basic premise and provide definitions for each word.

K: Knowledge is a set of understandings, knowledge and of “science.” It is also one’s capacity for imagining, one’s way of perceiving. Knowledge of a health behaviour considered to be beneficial, however, does not automatically mean that this behaviour will be followed. The degree of knowledge assessed by the survey helps to locate areas where information and education efforts remain to be exerted.

A: Attitude is a way of being, a position. These are leanings or “tendencies to....” This is an intermediate variable between the situation and the response to this situation. It helps to explain that among the possible practices for a subject submitted to a stimulus, that subject adopts one practice and not another. Attitudes are not directly observable as are practices, thus it is a good idea to assess them. It is interesting to note that numerous studies have often shown a low and sometimes no connection between attitude and practices.

P: Practices or behaviours are the observable actions of an individual in response to a stimulus. This is something that deals with the concrete, with actions. For practices related to health, one collects information on consumption of tobacco or alcohol, the practice of screening, vaccination practices, sporting activities, sexuality etc.

A KAP survey is a quantitative type method (predefined questions and formatted in standardised questionnaires) that provides access to quantitative and qualitative information to the study [7]

Materials and Methods –

A cross sectional study was done among the Engineer and Manager professional in the IT capital of India. All the subjects involved were instructed not to be the part of study if they are not comfortable with the study design. The study was carried

for a period of six months (December 2013 – May 2014). A set of questions were distributed to all these professionals either in a form of hard copy or soft copy (in form of mail) which has to be returned after a stipulated time of 30 minutes. Details such as Age, Sex, Educational Qualification, Source of Information etc were collected. Out of 360 questions distributed; 297 were received in 30 minutes with a percentage of 82.50%. Remaining 17.5% was received after the stipulated time.

Results –

General Information

All the participants who returned the answers fall in an age group between 20 and 40 with a minimum educational qualification to participate were graduation in any discipline. Majorities were in an age group of 31-34 years with a minimum age were 22 years and 28 years for Engineers and Managers respectively. The mean age among Engineers is 30.22 years while among Managers is 33.87 years (**Diagram 1**). The ratio of Manager to Engineer is 1:2.1. The study was dominated by male (73%) and the ratio of male and female is 1:3.6 among Managers and is 1:2.3 among Engineers with a total participant ratio of male and female is 1.2:6 (**Table 1**). A total of 114 (39%) of people have gained information on HIV/AIDS with the help of internet followed by 87 (29.29%) through books, magazines, newspapers etc. Friend circles also have not contributed on sharing much information on HIV/AIDS as only 10% individuals have got some basic idea on HIV/AIDS from the friends circle (**Table 2 & Diagram 2**).

Demographic profile of Study population –

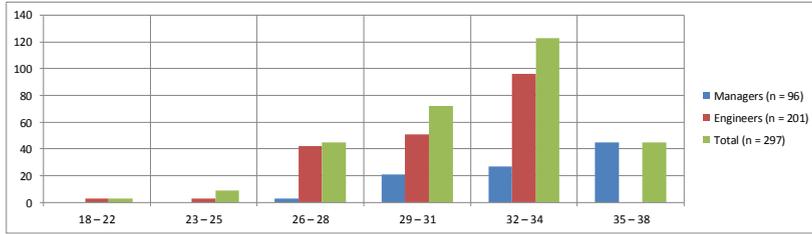


Diagram Age Distribution

Table 1 Sex Ratio

Sex	Numbers		
	Managers (n = 96)	Engineers (n= 201)	Total (n= 297)
Male	75 (78.12%)	141 (70.15%)	216 (72.72%)
Female	21 (21.87%)	60 (29.85%)	81 (27.27%)

	Managers	Engineers	Total
Male : Female	1:3.6	1:2.3	1:2.6
Manager : Engineer	1:2.1		

Table 2 Source of information

S.No	Areas	Numbers		
		Managers (n = 96)	Engineers (n =201)	Total (n =297)
1.	Academic	03 (03.12%)	12 (05.97%)	15 (05.05%)
2.	Books/Magazines/Newspaper	33 (34.37%)	54 (26.86%)	87 (29.29%)
3.	Friend/s	09 (09.37%)	21 (10.44%)	30 (10.10%)
4.	Internet	27 (28.12%)	87 (43.28%)	114 (38.38%)
5.	Parents/Guardians	00	00	00
6.	TV/Radio	18 (18.75%)	27 (13.43%)	45 (15.15%)
7.	Word to mouth	06 (06.25%)	00	06 (02.02%)

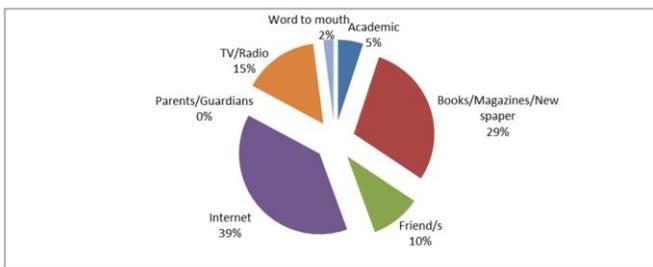


Diagram 2 Source of information

Knowledge and Awareness

A total of 207 participants say that the common mode of transmission of HIV/AIDS is through unsafe sexual contact, blood transfusion and through unsterile syringes and needles. The most startling fact is that a 10% of Engineers and 3% of Managers responded by stating that HIV/AIDS spread by Mosquito/Insect bite. A total of 10% of Engineers also answered that HIV/AIDS spreads by eating with HIV reactive people. Only 15% of the respondent stated that HIV spread by mother to child during pregnancy. All the participants are aware that HIV is not a communicable disease as it doesn't spread by Hugging, Kissing etc. Presence of HIV in body fluids has come as an interesting reply when asked where a total of 12 and 30 Managers and Engineers respectively have reported their absence in semen and vaginal secretions, while a total of 14% were not able to answer. Almost a quarter of respondent feels that HIV is not present in the breast milk. The participants feel that the risk of transmission of HIV through oral sex is less but increases when sexual partner have cuts/sore in their genitals (42%), followed by anal or vaginal sex (24%). Almost 76% prefer to go to Private Lab, Clinics or Government hospital when they want to know their HIV status diminishing the role of ICTC. There was a varied opinion when asked about the significance of CD4+ count. The answer varied from healthy immune system to death of the individual within a week. The conditions were almost similar when asked about Antiretroviral Therapy (ART). Almost two- third of the participant said that Anti Retroviral Therapy is a treatment for HIV which is to be given when advised by the doctor, while the one third was not able to answer the same. A high figure of 59% in total were unable to reach a satisfactory mark when asked about the initiation of ART while 20% says that ART will not improve the condition of life **Table 4A**. Almost 237 people were highly confident that a healthy looking HIV positive person can transmit the disease

surprisingly 70% of them again insisted that only commercial sex worker can transmit HIV. Almost 70% Engineers and Managers agreed to the fact that if woman is faithful to her husband then there is no risk of HIV infection **Table 4B**.

Table 4 A Knowledge and awareness

QUESTIONS	MANAGERS (n= 96)	ENGINEERS (n= 201)	MANAGERS & ENGINEERS (n=297)
1. What are the modes of HIV transmission?			
a. Sexual	36 (37.50%)	51 (25.37%)	87 (29.29%)
b. Blood transfusion	18 (18.75%)	51 (25.37%)	69 (23.23%)
c. A and B	54 (56.25%)	102 (50.74%)	156 (52.52%)
d. Unsterile syringes and needles	15 (15.62%)	36 (17.91%)	51 (17.17%)
e. A, B, D	69 (71.87%)	138 (68.65%)	207 (69.69%)
f. Mother to child	24 (25.00%)	21 (10.44%)	45 (15.15%)
g. Hugging	00 (00.00%)	00 (00.00%)	00 (00.00%)
h. Living with HIV reactive people	00 (00.00%)	00 (00.00%)	00 (00.00%)
i. Eating with HIV reactive patients	00 (00.00%)	21 (10.44%)	21 (07.07%)
j. Mosquito/insect bite	03 (03.12%)	21 (10.44%)	24 (08.08%)
2. In which of the following the HIV is not present?			
a. Semen and vaginal secretions	12 (12.50%)	30 (14.92%)	42 (14.14%)
b. Sweat	42 (43.75%)	96 (47.66%)	138 (46.46%)
c. Blood	00 (00.00%)	00 (00.00%)	00 (00.00%)
d. Breast milk	30 (31.25%)	45 (22.38%)	75 (25.25%)
e. No answer	12 (12.50%)	30 (14.92%)	42 (14.14%)
f. A and B	54 (56.25%)	126 (62.68%)	180 (60.60%)
3. What is the risk of transmission of HIV during oral sex?			
a. Just the same as anal or vaginal sex	30 (31.25%)	42 (20.89%)	72 (24.24%)
b. 50% chances of transmission if person is HIV Positive	30 (31.25%)	36 (17.91%)	66 (22.22%)
c. Risk is very low but increases if person has cuts/sores on their mouth or genitals	36 (37.50%)	87 (43.28%)	123 (41.41%)
d. No answer	00 (00.00%)	36 (17.91%)	36 (12.12%)
4. Place to visit for getting HIV tested			
a. ICTC	09 (09.37%)	06 (02.98%)	15 (05.05%)
b. ART centre	15 (15.62%)	24 (11.94%)	39 (13.13%)
c. RNTCP centre	06 (06.25%)	09 (04.47%)	15 (05.05%)
d. Private Clinic/lab	36 (37.50%)	99 (49.25%)	135 (45.45%)
e. Government Hospital	30 (31.25%)	63 (31.34%)	93 (31.31%)
5. If someone with HIV has a CD4 count of 350 or less, what does this mean?			
a. Their immune system is very healthy	27 (28.12%)	60 (29.85%)	87 (29.29%)
b. They no longer have HIV They should probably start antiretroviral treatment	15 (15.62%)	96 (47.66%)	111 (37.37%)
c. They will die within a week	00 (00.00%)	15 (07.46%)	15 (05.05%)
d. No answer	54 (56.25%)	30 (14.92%)	84 (28.28%)
6. What is ART?			
a. Treatment for HIV, to be given as early as possible	00 (00.00%)	00 (00.00%)	00 (00.00%)
b. Treatment for HIV, to be given only when advised by doctor	42 (43.75%)	156 (77.61%)	198 (66.66%)
c. Do not know	00 (00.00%)	00 (00.00%)	00 (00.00%)
d. No answer	54 (56.25%)	45 (22.38%)	99 (33.33%)
7. Antiretroviral therapy should be initiated?			
a. As soon as diagnosis of HIV infection	00 (00.00%)	81 (40.29%)	81 (27.27%)
b. When the immunity of the patients goes down & CD4+ count goes below 350cells/ μ L	00 (00.00%)	00 (00.00%)	00 (00.00%)
c. Not necessary	42 (43.75%)	51 (25.37%)	93 (31.31%)
d. No answer	54 (56.25%)	69 (34.32%)	123 (41.41%)
8. What can happen to an AIDS patient on ART?			
a. He is cured of HIV	12 (12.50%)	117 (58.20%)	129 (43.43%)
b. He does not get better	24 (25.00%)	36 (17.91%)	60 (20.20%)
c. He feels better with improved immunity & hence can postpone death	12 (12.50%)	00 (00.00%)	12 (04.04%)
e. No answer	48 (50.00%)	48 (23.88%)	96 (32.32%)

Table 4B Knowledge and awareness

	MANAGERS (n= 96)	ENGINEERS (n= 201)	MANAGERS AND ENGINEERS (n=297)
1. A healthy looking well built person can also transmit HIV?			
Yes	12 (12.50%)	36 (17.91%)	48 (16.16%)
No	72 (75.00%)	165 (82.08%)	237 (79.79%)
Can't Say	12 (12.50%)	00 (0.00%)	12 (04.04%)

2. Only commercial sex workers can transmit HIV?			
Yes	69(71.87%)	141 (70.14%)	210 (70.70%)
No	00	60 (29.85%)	60 (20.20%)
Can't Say	27(28.12%)	00 (0.00%)	27 (09.09%)
3. A woman faith full to her husband has no risk of HIV infection?			
Yes	66 (68.75%)	141 (70.14%)	207 (69.69%)
No	00	15 (7.46%)	15 (05.05%)
Can't Say	30 (31.25%)	45 (22.38%)	75 (25.25%)

Attitude

Only 13% of participants feel that students with AIDS should go to special school, and 81 participants said they will not sit with a person having HIV/AIDS showing a pessimistic reaction towards People living with HIV/AIDS (PLWHA). On the other hand showing love and respect almost 80% participants feel that they will have personal contact with someone having HIV/AIDS. Almost half the Managers and two third of Engineers will not wash clothes who are infected with HIV/AIDS. Engineers were more vocal when it comes to stating the status of PLWHA through National Media (69%). Only 15% of participants were not able to answer when asked that PLHA should be supported, treated and helped which indirectly gives a negative response. Only 65% people were ready to share their meals. Almost 90% participants will help their HIV/AIDS positive relatives in household works. Confidentiality of HIV status in the family will be maintained by 75% Managers and 55% Engineers. Sixty percent of participants will not buy food from a shopkeeper who is HIV positive. A little more than 55% of the total respondent will not share a swimming pool with someone having HIV/AIDS. **Table 5**

Table 5 Attitude

	MANAGERS (n= 96)	ENGINEERS (n=201)	MANAGERS & ENGINEERS (n=297)
1. Students with AIDS should go to special schools?			
Yes	21(21.87%)	18(08.95%)	39(13.13%)
No	54(56.25%)	183(91.04%)	237(79.79%)
Can't say	21(21.87%)	00(00.00%)	21(07.07%)

2. I would not sit with a person having AIDS?			
Yes	36(37.50%)	45(22.38%)	81(27.27%)
No	48(50.00%)	141(70.14%)	189(63.63%)
Can't say	12(12.50%)	15(07.46%)	27(09.09%)
3. I would have personal contact with someone with AIDS as an ordinary person?			
Yes	72(75.00%)	162(80.59%)	234(78.78%)
No	12(12.50%)	30(14.92%)	42(14.14%)
Can't say	12(12.50%)	9(04.47%)	21(07.07%)
4. I would not wash my clothes with those of an individual with AIDS?			
Yes	09(09.37%)	45(22.38%)	54 (18.18%)
No	45(46.87%)	126(62.68%)	171 (57.57%)
Can't say	42(43.75%)	30(14.92%)	72(24.24%)
5. They must be supported, treated and helped			
Yes	84(87.50%)	144(71.64%)	228(76.76%)
No	03(03.12%)	21(10.44%)	24(08.08%)
Can't say	09(09.37%)	36(17.91%)	45(15.15%)
6. Everybody must know about those with AIDS by means of national media?			
Yes	12(12.50%)	138(68.65%)	150(50.50%)
No	72(75.00%)	45(22.38%)	117(39.39%)
Can't say	12(12.50%)	18(08.95%)	30(10.10%)
7. Do you share a meal with a person who is positive for HIV/AIDS?			
Yes	66(68.75%)	126(62.67%)	192(64.64%)
No	15(15.62%)	30(14.92%)	45(15.15%)
Can't say	15(15.62%)	45(22.38%)	60(20.20%)
8. If your male/female relative is positive for HIV/AIDS, do you take care for him in your households?			
Yes	90 (93.75%)	174(86.56%)	264(88.88%)
No	06 (06.25%)	15(07.46%)	21(07.07%)
Can't say	00 (0.00%)	12(05.97%)	12(04.04%)
9. If you knew a shopkeeper or food seller had the HIV virus, would you buy food from them?			
Yes	60(62.50%)	114(56.71%)	174 (58.58%)
No	30(31.25%)	60(29.85%)	90 (30.30%)
Can't say	06(06.25%)	27(13.43%)	33(11.11%)
10. If one of your family members is positive for HIV do you keep it in secret?			
Yes	72(75.00%)	111(55.22%)	183(61.61%)
No	00(00.00%)	36(17.91%)	36(12.12%)
Can't say	24(25.00%)	54 (26.86%)	78(26.26%)
11. I would share public toilets and swimming pools with someone with AIDS?			
Yes	42 (43.75%)	45(22.38%)	87(29.29%)
No	36(37.50%)	132(65.67%)	168(56.56%)
Can't say	18(18.75%)	24(11.94%)	42(14.14%)

Practice

When the respondents were asked about sexual practice, there was a division of opinion on prevention of sexual mode of HIV transmission among Managers and Engineers. Sexual abstinence came as the safest mode followed by masturbation and use of condoms at 37%, 33% and 30% respectively among Engineers, while the Managers opt to masturbate as the safest method. More than half of the Managers and one third of Engineers denied the fact that using protection such as a latex barrier when performing sex (vaginal, oral or anal) lowers the risk of HIV transmission, but one third of Engineers favoured it and one third were not able to answer. A total of 34% Managers and Engineers stated that washing the genitals with antiseptics can prevent HIV and STI transmission and 37% of them were not able to answer. When asked about the condom usage 24 Managers and 48 Engineers agreed to the fact that condom even if properly worn tears during sexual intercourse which was denied by 47.5% respondents. Almost 40% Managers and 25% Engineers believe that a condom reduces the sexual pleasure. **TABLE 6**

Table 6 Practice

	MANAGERS (n= 96)	ENGINEERS (n=201)	MANAGERS & ENGINEERS (n=297)
1. What is Prevention of sexual mode of HIV transmission?			
Sexual abstinence	27(28.12%)	75(37.31%)	102(34.34%)
Masturbation	45(46.87%)	66(32.83%)	111(37.37%)
Always use condoms	24(25.00%)	60(29.85%)	84(28.28%)
2. Using protection such as a latex barrier when performing sex (vaginal, oral or anal) lowers the risk of HIV transmission			
Yes	15(15.62%)	60(29.85%)	75(25.25%)
No	54(56.25%)	60(29.85%)	114(38.38%)
Can't say	27(28.12%)	81(40.29%)	108(36.36%)
3. Washing the genitals with antiseptics can prevent HIV and STI transmission?			

Yes	30(31.25%)	81(40.29%)	102(34.34%)
No	18(18.75%)	57(28.35%)	66(22.22%)
Can't say	48 (50.00%)	63(31.34%)	111(37.37%)
4. Condom even if properly worn tears during sexual intercourse?			
Yes	24(25.00%)	48(23.88%)	72(24.24%)
No	66(68.75%)	75(37.31%)	141(47.47%)
Can't say	06(06.25%)	78(38.80%)	84(28.28%)
5. Condom reduces the sexual pleasure?			
Yes	36(37.50%)	48(23.88%)	84(28.28%)
No	60(62.50%)	96(47.76%)	156(52.52%)
Can't say	00(00.00%)	57(28.35%)	57(19.19%)

Discussion –

In the current study the source of information on HIV/AIDS was obtained by Internet (39%) like Facebook, Google, Twitter and other web pages followed by books, magazine and newspaper (30%). Both these electronic media and print media have come as a powerful source to give information on HIV/AIDS. Internet has gained much of popularity among the youths. While none mentioned that they got information on HIV/AIDS from their family which matches with the study by Pankaj Kumar et al. TV (54.9%) was the commonest source of information followed by friends [8]. No information was obtained from parents/guardian on HIV/AIDS reveals that probably there is less knowledge amongst parents or stigma to talk with the children about HIV/AIDS. In Kuwait the 69 % participants acquired information about AIDS from the mass media [9]. In a study done by Shiferaw Y et al the information was acquired from various sources like radio (50%), television (46.7%), News paper (33.3%), teachers (25%), parents (21.7%), health workers (13.3%) and youth club (11.7%) [10]. In the present study almost 70% of them were aware that mode of transmission of HIV is by 3 mode viz sexual , blood transfusion and unsterile syringes and needles. Regarding various modes of transmission of HIV/AIDS 61.76% students were aware about unsafe sex as a mode of transmission [8]. Most of the youth who

were aware of HIV/AIDS also knew that HIV/AIDS could be transmitted through unprotected sexual contacts (92%), transfusion of infected blood (95%) and sharing of used/infected needles (94%). More than two-fifths of the youths could correctly identify three common misconceptions on transmission of HIV/ AIDS [11]. In a south Indian study[12] conducted on first year medical students, it was noted that 25.7% believed that mosquitoes bite could transmit infection while this study recorded 16.9% among all students. This wrong belief was present among 28.3%, 25.5% and 8.5% of nursing, pharmacy and MBBS students respectively. In an another study conducted in Nigeria and Delhi, proportion of respondents who were aware about existence of anti-retroviral drugs for HIV/AIDS was 52.6% and 28.6% respectively.[9,10]. In our study 8% and 7% people believed that HIV spread by Mosquito bite and by living together with HIV reactive people. The decrease in trend can be attributed towards the mass approach about HIV/AIDS towards the common people. There is still no clear awareness about the presence of HIV among body fluids and transmission of HIV during sexual activity particularly oral sex. This may be attributed by lack of basic sex education during higher secondary school age. Hospitals or laboratory either private or government has come as a favourite destination when HIV testing is concerned ignoring the important role played by I.C.T.C. and ART centre. When asked about the significance of range of CD 4+ cells and initiation of ART almost 29% and 33% people were not able to answer. This may be due to the unawareness about the CD 4+ cells and ART among non life science graduate.

Attitude of participants also varies in different study. A study conducted in Dakshina Kannada district of Karnataka, showed that 34% people felt that HIV infected individual should be kept away from others, and 40% were not willing to accept a family member with HIV [15]. While a study done in Ethiopia by Shiferaw Y et al says that 34% of the respondents

had negative attitude towards HIV, AIDS patients and other STDs. More than 30% of the students associated AIDS with an immoral life style and even recommended isolation of AIDS patients [10]. Though most of the attitude based questions in our study has a positive response from the respondent except a few like, when asked about having a personal contact with AIDS people, sharing a meal with HIV/AIDS sero reactive people, sharing a swimming pool and buying grocery items from a shopkeeper who is HIV/AIDS positive where 30%, 15%, 56% and 28% had a negative attitude respectively. There is a lot of misconception and social stigma attached with the HIV which has forced people to think and change their attitude towards People Living with HIV/AIDS (PLWHA).

As far as Practice is concerned Masturbation followed by sexual abstinence has come as a favoured answer with 37% and 34% respectively while 285 people saying that condom reduces the sexual pleasure. Although almost all of them had heard of HIV/AIDS, only 56.1% knew they can protect themselves from HIV by abstaining from sexual intercourse and only 54.4% knew that correct condom use is one way to prevent HIV transmission [17]. In our study 25% believes that condom breaks if properly worn during sexual intercourse.

Conclusion

Although there are various source of information available including electronic media the youth of today are quite ignorant on the KAP on HIV/AIDS including its source and mode of transmission. In a conservative Indian society, where more than 70% population live in villages, the issue related to sex and sex education is still a taboo [18]. More emphasis about HIV/AIDS education should be given at school and college level. Engineering and Management colleges should include HIV/AIDS awareness in their extracurricular activity which may help to know about this dreadful disease. Parents and

Guardians should be more open to their children in terms of Sexually Transmitted Disease (STI). It's very heart full to note that Internet has come very handy when we want to explore about HIV/AIDS but government and NGOs should come up with street plays, theatres and other mode of communication to spread more awareness about it. Condoms manufacturing companies should also come with some catchy tag lines as per their advertisement policy which spread awareness about HIV. As more of the study is concentrated on Nursing, Pharmacy, Dental and Medical students or among people with such background, it is highly recommended that students and people with background other than these backgrounds should also be assessed regarding their knowledge about infectious diseases with common misconception.

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