

Still scant and insufficient knowledge about HIV/AIDS among teenagers in Solapur District, Maharashtra State, India



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Abstract

Background

HIV has become a serious problem in India with one of the highest rates of spread in the world. Many features contribute to India's vulnerability concerning the transmission of HIV; poverty, illiteracy, a large and young population and an increasing level of urbanisation. To prevent the further spread of HIV it's fundamental that people have a good knowledge about the disease. Since many risk behaviours, associated with the transmission of HIV, are adopted in young ages it's very important to put much of the prevention efforts on adolescents. The aim of our study was to investigate and compare the knowledge about and attitudes to HIV/AIDS among teenage students in the city and the rural area in India.

Methods

260 standardised questionnaires concerning knowledge and attitudes towards HIV/AIDS, socio-cultural factors and private life were filled in by teenage students in the rural area and the urban area in the Solapur district in the state of Maharashtra, India. 39 personal interviews with more open questions regarding the same subject were also done in the same area.

Results

Our study showed that almost all of the students (99%) had heard about HIV/AIDS. Most of the students were aware of the sexual transmission (96.6% in the village and 99.3% in the city) and many knew that the disease can be spread through breast feeding (82.8% in the village and 76.8% in the city). Still there are misconceptions about the transmission of HIV, about one third of all the students thought that HIV can be spread by kissing and 14.3% of the female students in the village thought that you can get HIV if you wash or change clothes for someone who has the infection. 93% of the students in the city and 74% in the village claimed that there are ways to protect against HIV and answers that were mentioned were protected sex and use of disposable syringes. The knowledge about condoms was insufficient among the students, especially among the females. Only 18% of the females and 29% of the males knew how to use a condom

Conclusion

The knowledge about how HIV is transmitted is incomplete among the students. 99% of the students had heard about the HIV/AIDS but there are still many misconceptions about the disease. The majority of the students first heard about HIV/AIDS from media. Media is an effective way of spreading information but the school also plays an important role. The awareness of protection against HIV is insufficient among the students and there are misunderstandings about it. Many of the students would like to test themselves for HIV but a lot of them don't know where they can do the test. The most important way to prevent the rapid spread of HIV is to raise the level of knowledge about the transmission of and the protection against HIV.

Introduction

There has been a rapid and uncontrolled expansion of HIV in the developing countries during the last two decades. HIV has become a serious problem for India with one of the highest rates of spread in the world (19). The picture in India today has a lot of similarities with the progress of HIV in Africa 15 years ago (23). Many features contribute to India's vulnerability concerning the transmission of HIV; India is a low income country with a large and young population, low educational and literacy rate and an increasing level of urbanisation (22). Another contributory factor to the rapid spread of the HIV epidemic is lack of adequate knowledge about the disease among the people.

About India

The federal republic of India has about 1 027 million inhabitants (according to the latest census in 2001) and is divided into 29 states and six union territories (13). The main religion in India is Hinduism (80.5%) followed by Islam (13.4%), Christianity (2.3%), Sikh (1.9%), Buddhism (0.8%), Jainism (0.4%) and other religions (0.6%). India has 18 official languages of which Hindi is the most common (40%) (14). The literacy rate is 65% (76% for men and 54% for women) (13). Two thirds of the Indian people make their living as agricultural workers (15).

Solapur is a city located in the southern part of Maharashtra state and has a population of more than 1 million. The main religion in Solapur is Hinduism. The Nannaj area, located 22 km east of Solapur has a total population of 38 342 of which 9 000 lives in the Nannaj village (1,5). The majority of the inhabitants are farmers and the main religion is Hinduism.

Epidemiology

According to UNAIDS/WHO AIDS Epidemic Update in December 2004, there is a total of around 39.5 million people living with HIV/AIDS in the world. About 37 million of those are adults and 2.5 million are children under the age of 15 years. During 2004, 5 million were newly infected , and about 3 million died from AIDS.

In the end of 2004, 7.1 million people were estimated to live with HIV/AIDS in South and South-East Asia. About 900 000 were newly infected during 2004 in this area and around 490 000 died due to AIDS.

In India the number of HIV-infected was 5.1 million in 2004 (8). This means that less than one percent of the population is infected. Bearing the huge number of people in mind, India has the second highest number of people living with HIV in the world after South Africa. Globally India accounts for about 10 % of the people living with HIV/AIDS (8). In 2002, the US National Intelligence Council estimated that 20-25 million of the Indian population will be infected with HIV in 2010 (25). NACO (National AIDS Control Organisation) predicts this number to be 9 million (1).

It is though important to mention that there isn't one epidemic in India , rather there are many localised sub-epidemics due to the great variety in socio-cultural patterns and many vulnerabilities in India. Six states in India; Andhra Pradesh, Karnataka, Maharashtra, Manipur, Nagaland and Tamil Nadu have the highest incidence of HIV in the country (80% of the estimated HIV cases in India) (2).

About 85% of the HIV infections in India are transmitted through heterosexual contacts and 15% through other ways such as injecting drugs (2.2%), blood transfusions (2.6%) and

perinatal transmission (2.2%) (9). In Manipur and Nagaland injecting drug use is the main mode of transmission (11). Young people are at high risk of getting infected by HIV. Consequently most of the HIV cases in India is found in the age group 15-24 years (35%). The main course of transmission among young people is through unprotected sexual contacts(10). Poor and unemployed youth and street children are at a higher risk of getting infected due to low education and difficulties in getting access to prevention services. Many of them are exposed to HIV through sexual abuse or while selling sex for survival. In Andhra Pradesh, Karnataka, Maharashtra and Tamil Nadu more than 50% of the sex workers are infected with HIV (2).

Women are also more often infected by HIV. They are vulnerable due to their low status, low education and gender inequality (8). A research done in 2002, showed that 27% of the men who have sex with men also have a female sexual partner. This makes the women vulnerable since the HIV prevalence among the men having sex with men is high (16). The HIV prevalence among the women attending antenatal clinics exceeds 1% (12).

Other risk groups in India are, like in many other countries, intravenous drug users, prostitutes and people infected with other sexually transmitted diseases.

According to the latest report from UNAIDS, the HIV epidemic in high-prevalence states is spreading from urban to rural areas, and from high risk groups to the general population (16).

The Indian school system

The children in India start school at the age of three or four years. First they go to play school/nursery for one year, thereafter they attend pre primary school/kindergarden for two years. At the age of six or seven they go to primary school for four years (grade 1 to 4). After grade 4 they start secondary school where they go for six years (grade 5 to 10). At the age of 15 or 16 (after grade 10) they have their first graduation. Then there is the higher secondary school, also called junior college, which lasts for two years (grade 11 and 12). When finishing the 12th grade, they have their second graduation, and then they can choose to go to the university or the college.

In our survey classes of the higher secondary school were visited.

AIDS control programs in India

Soon after the first HIV/AIDS cases had been reported in India in 1986, the Government of India initiated important measures to attack the epidemic. Pilot screening of high risk population started and a National AIDS Committee was immediately constituted by the Ministry of Health & Family Welfare. In 1987 a National Aids Control Programme was started. The National AIDS Committee was formed to bring together different ministries, private institutions and non-Government organisations for effective collaboration in accomplishing the program. The committee provide overall policy directions and control the performance of the program.

In 1989, a medium term plan for HIV/AIDS Control was developed with support of WHO (World Health Organisation). This plan was implemented in the worst affected areas; Maharashtra, Tamil Nadu, West Bengal, Manipur and Delhi.

During the first years, the AIDS control programs in India focused on getting public awareness. Screening of blood for transfusion purpose was introduced and surveillance

activities was held. Preventive activities, like performance of education programs, condom promotion to prevent HIV/AIDS and strengthening of clinical services for HIV/AIDS and other sexually transmitted diseases did not start until 1992.

To strengthen the AIDS programs at the state level, the state governments have own organisations and committees. These take the policy decisions for implementation of the HIV/AIDS control program and make guidelines and plans in the respective states.

NACO was established by the Government of India in 1992 and the organisation is trying to reach the young people through different special programs. One of them is *School AIDS Education Programme* which focuses on improving HIV awareness, helping young people to refrain from risk behaviours and instead develop a safe lifestyle. The program is running by the teachers in the schools using the special module “Learning for Life”. Another program is *The Universities Talk AIDS Project* for college students. This program is not only dealing with HIV/AIDS but also questions regarding relationships, marriage, sexuality and drugs. This programme is carried through with the help of seminars and workshops. It is estimated that this programme has reached over 7 million young people in India since the start in 1991. There is also a program meant for the out-of-school youth in the rural areas called *The Villages Talk AIDS programme*. This is a very important program since up to 100 million young people (10-25 years) are out of school in India (4).

HIV/AIDS awareness programs in Nannaj

In 2002, a HIV/AIDS awareness program started in Nannaj. This program is a part of the preventive health care of the community health and was carried out at St Luke’s Health and Welfare centre. The program goals were to create awareness about HIV/AIDS, implement counselling services at doorsteps, take preventive measures against the spread of AIDS and to provide rehabilitation to the families of HIV infected patients. The target group was the reproductive age of the community, and especially girls and adolescents. In 2002, five villages in and around the Nannaj area were included in the program. In 2003 it was extended to ten villages. Activities that took place was health camps, seminars for high school students, teachers and medical staff, film shows, street play and HIV testing at health camps and in hospital.

In 2003, 216 HIV tests were done at the health centre in Nannaj. Of those, 5 tests were positive. 6 out of the tested were men, 2 of them were positive. For women screened in association with tubectomy, 2 out of 69 (3%) tested positive. The remaining 151 women were screened at the antenatal care and one of them was HIV positive (0.7%). HIV testing was also performed in the surrounding villages. Of totally 584 tested in the villages, 3 were positive.

A baseline study of HIV awareness among students in secondary school (age 15-20) was done in January 2002. The study was performed in Bibi Dharphal and Ranmasale, villages in the Nannaj area. The study was followed up in November 2002, to see if the HIV awareness programme had improved the knowledge. In the first round 98% had heard of HIV and 95% knew that the disease is sexually transmitted. After intervention there was a significantly improved ($p < 0.05$) knowledge about other ways of transmission, such as intravenous drug use and breast feeding. Before intervention, 81% of the students knew that HIV is spread by intravenous drugs, compared to 98% after intervention. The corresponding numbers for breast feeding were 56% before intervention and 68% after. They also had a better knowledge about the symptoms of the disease. Fewer students had the misconception that HIV is spread just by

taking care of an HIV infected (34% before intervention and 3% after). It should be noted that more male than female students participated in the follow up part of the study (5).

Aim of the study

The aim of the survey was to investigate awareness, attitudes and risk behaviour for HIV among teenagers in the rural area and in a middle sized city in central India. A good knowledge about how HIV is spread and how it can be prevented is of big importance for preventing the further spread of the disease. Informing teenagers about HIV is very important since they are or soon will be in a sexually active age. The knowledge about the disease, as well as the misconceptions about it, strongly influence how people behave and their attitudes to HIV infected persons. The teenagers' interest for HIV testing was also investigated.

Methods and participants

The study was conducted in April and May 2004 in Nannaj and Solapur. A standardised questionnaire was used (Appendix) and personal interviews with open questions were also made. Since many of the students not fully understood English, some of the questionnaires were translated into the local language Maharati. The translation was made by Dr Priti at St Luke's Health and Welfare Centre. The same questionnaire was used in similar studies in China and Tanzania, but some of the questions had to be modified to fit the Indian circumstances (such as religion etc). The personal interviews were performed using a set of questions (Appendix) that were extended during the interviews. The majority of the interviews were done together with interpreters translating from English to Maharati and vice versa. The interpreters were Dr Priti and Sister Torne at St Luke's Health and Welfare Centre.

The participants of our study were students between 15 and 20 years. We invited them to participate by visiting their schools and informing about the study. We stressed that they were free not to participate and if participating they were free not to answer questions they found too personal. The students were also informed that everything was strictly confidential. In the rural area we visited the science classes at Shelgaon pre college school (40 km from Nannaj). In the city we visited two schools; Mery be Harding pre college school (a college for future teachers) and Shree Academy (which holds private coaching classes after the "ordinary" school), both in Solapur. The students answered the questionnaires in their classrooms. The personal interviews were made at St Luke's Health and Welfare Centre in Nannaj and in the two schools in Solapur.

Statistics

When counting the statistics the confidence interval (CI) of 95% was used.

Formula:

Interval = mean value \pm 1.96 * square root ($p * (100 - p) / n$), where n is number of observations and p is frequency in percent. These calculations were done for the numbers where $p * n \geq 500$ and $(1 - p) * n \geq 500$. (11)

Results

Questionnaires

General questions

The questionnaires were answered by a total of 260 students, 122 students in the village and 138 in the city. The students in the village were between 15 and 19 years old with a mean age of 17. In the city the ages ranged from 16 to 19 years and the mean age was 17.2 years. Of the students in the village 77% were male, in the city the corresponding percentage was 39. 7% of the students in the village were married compared to 0.7% in the city. The main religion among the students in both the village and the city was Hinduism (94% and 79% respectively). The distribution of the other religions as well as the economical situation among the students can be viewed in table 1.



Questions about HIV/AIDS

All of the students had heard about HIV/AIDS, except for one student in the village and one in the city. However, these students seemed to have knowledge about the disease since they could answer the further questions about HIV.

The students in the city were between 5 and 17 years old (mean 13.1 years) when they first heard about HIV. The students in the village were between 7 and 16 years old (mean 13.4 years). The majority in both the village and the city were in the age of 12-15 years when they first heard about the disease.

On the question “How did you first hear about HIV/AIDS?” most of the students claimed that they heard of HIV from media (about 60% in both the village and city). About 20% of the students in both the village and the city answered “school”. In the village 14% of the students answered that they first heard about HIV from friends. The corresponding number in the city was only 1% (Fig. 1).

When asked if there is any difference between HIV & AIDS, 25% of the students in the village answered that there is a difference and 44% said that there's not. In the city 72% answered that there's a difference and 26% said that there's not (Fig. 2).

When the students were asked how HIV is spread from one person to another we found only one significant difference between the city and the village. On the question if HIV is spread from mother to child during pregnancy or delivery 95.7% (95% CI: 92.3-99.1) of the students in the city answered yes, compared to 84.4% (95% CI: 78-90.8) in the village. When asked if HIV is spread when eating or drinking from the same plates and cups, 7.1% of the female students and 2.1% of the male students in the village answered yes. The corresponding numbers in the city were 4.8% for the females whereas none of the male students answered yes. 14.3% of the female students in the village thought that you can get HIV if you wash or change clothes for someone who has the infection. 4.3% of the male students in the village were of the same opinion regarding that question. In the city only 1.4% of the students (0% of the males, 2.4% of the females) had the belief that HIV can be spread that way. In the village, 36.9% of the students answered that HIV is spread by kissing. The corresponding percentage in the city was 31.9. On the question if HIV is spread by having sexual contacts, 96.6% of the students in the village and 99.3% of the students in the city answered yes. 82.8% of the students in the village and 76.8% in the city answered that HIV can be spread through breast feeding. (Table 2)

The students were asked what they think is the main way HIV is spread from one person to another. In the village 89% of the students gave sex as one of the main ways. Of those students, 11% answered sex with HIV infected persons, 13% unprotected sex, 3% sex outside marriage and 3% multiple sexual partners. 24% of the students thought that another main way by which HIV is transmitted is needles, syringes and blades. 8% answered blood transfusions, 7% answered from mother to child during pregnancy. 2% of the students thought that kisses is one of the main ways that HIV is spread by. Unexpected answers that were given by the students in the village was "kidneys" and "external genital organs" (3% and 4% respectively). 6% of the students didn't give any answer on this question. In the city 98% of the students gave sex as one of the main ways by which HIV is spread. Of those students, 4% answered sex with HIV infected persons, 17% unprotected sex, 26% multiple sex partners and 53% answered sexual contact. 40% of the students in the city answered that needles and injections accounts for another major part of the transmission. Another main way of transmission that was mentioned by 12% was mother-to-child transmission during pregnancy. Other answers were blood transfusions (16%), prostitution (4%), homosexuality (3%) and kisses (0.7%).

About the protection against HIV, 93% of the students in the city claimed that there are ways to protect against the infection and 3% answered that there are no ways for protection. The corresponding numbers in the village were 74% and 14% respectively. The remaining percentages in each group did not know or did not answer. Ways to protect against HIV that were mentioned by the students in the village were protected sex (26%), using disposable syringes (15%), avoid sexual contacts (12%), avoiding sex outside marriage (7%), control of feelings (5%). Answers mentioned in the city were protected sex (33%, of which 24% answered use of condoms), on sexual partner (18%), avoid sexual contacts (9%), using disposable syringes (27%) and control of feelings (4%). Unexpected answers given in the city were contraceptive tablets (0.7%), medicines (1%) and "avoid pregnancy during infected periods" (0.7%).

On the question when the students were asked if there are any special groups more often infected with HIV there was no difference between the village and the city. About 39% of the students in both the village and the city thought that there are special groups more often infected with HIV and about 34% answered that there are not. Special groups mentioned in the city were prostitutes (20%), truck drivers (6%), drug users (5%), young people (5%) and low educated (4%). In the village the students answered young people (14%), prostitutes (6%), truck drivers (6%).

When asked if you can see if a person is infected by HIV only by looking at him or her, 15% in the city answered that you can while the corresponding percentage in the village was 20%.

69% of the students in the city and 58% of the students in the village estimated that 1% of the population in the area where they live are infected with HIV. The remaining students thought that the prevalence is higher, except for 3 students in the village that stated that no one in the area is infected.

4% of the students in the city and 12% of the students in the village had a relative or a friend with HIV or AIDS.

On the question if there is a medicine that can cure HIV/AIDS, 14% of the students in the city and 5% in the village said that there is. 12% in the city and 8% in the village didn't answer or didn't know. 29% of the students in the city and 8% in the village answered that there are other ways but medicine to cure HIV/AIDS.

When asked how long HIV infected persons can live without medicine the majority of the students in the village answered that they could live 5-10 years. In the city the most common answer was 0-2 years. When asked how long the HIV infected could live if they get medicine the majority of the students in the village answered 11-15 years. In the city the most common answer was 5-10 years (Fig. 3, 4).

The students were asked what they think are the reasons why HIV/AIDS has spread so rapidly in the world. In the village the most common answer that was given was sex (54%). 13% of the students answered lack of knowledge. The most common answer in the city was also sex, given by 44%. 34% in the city answered lack of knowledge and 9% answered blood transfusions.

When asked if the students have got enough information regarding HIV/AIDS, 60% in the city and 43% in the village answered yes. 26% in the city and 50% in the village thought that they haven't got enough information.

Private life

The questions about the private life were only filled in by the students in the city. The results from the city are recorded below but no comparisons could be made between the village and the city.

On the question "would you like to test yourself for HIV/AIDS?" 44% of the students answered yes and 35% answered no. The remaining students didn't answer or didn't know.

83% of the students wouldn't like to have children if they were found to have HIV. 4% would like to give birth to a child even if they would get the infection.

When asked if they had any sexual experience none of the students answered yes. 91% answered that they have never had sex and the remaining students didn't answer the question. The students were asked if it's common that people in their neighbourhood pay or get paid to have sex. 43% answered no and only 1% answered yes. The remaining students answered don't know or didn't answer.

On the questions about condoms only 13% of the female students and 43% of the male students said that they have seen a condom. 18% of the females and 29% of the males answered that they knew how to use a condom. 36% of both the males and the females were of the opinion that the man has the biggest responsibility to make sure a condom is used during sexual intercourse. 35% and 39% of the females and males respectively thought that the man and the woman have equal responsibility. None of the females but 6% of the males answered that the woman is responsible. (Fig. 5, 6, 7)

Personal interviews

19 students in the village (8 girls and 11 boys) and 20 students in the city (10 girls and 10 boys) were interviewed. The students were between 16 and 20 years old. The mean age was 18.2 years in the city and 18.1 years in the village. None of the students was married. All the students in the village were Hindus, in the city 16 students were Hindus, two were Muslims and two were Christians.



Knowledge about HIV/AIDS:

Symptoms of HIV:

The majority of the students, both in the village and the city, told us that the most important symptom of HIV is weight loss. Other symptoms they mentioned were weakness, multiple infections, fever, loss of appetite, black coloured face, diarrhoea and unsteady walk. We didn't notice any difference in knowledge about symptoms between the village and the city but the students in the city used a more "educated" language, for example they used expressions like "opportunistic infections" and "decreased immunity".

Ways of transmission:

In both the city and the village most of the students knew that HIV is sexually transmitted. However some of them thought that you get infected through sexual contact only if you have sex with more than one person or have sex before marriage. Most of the students also knew that the virus is spread through blood, sharing needles and from mother to child during pregnancy. On the question “is HIV spread through breast feeding?” the same proportion of students answered yes and no respectively in both the city and the village. During the interviews we noticed some misconceptions about how HIV is spread, for example some students thought that mosquitoes, unclean environment and water, kisses, eating together, hugging and shaking hands can spread the virus.

Protection against HIV/AIDS:

The students were asked if they knew how to protect against HIV. The most common answer was “having only one sexual partner”. In the city many students thought that a sterile hospital could prevent the spread of HIV. In the village only some students gave that answer. Answers that were mentioned by students in the village but not in the city was “no sex before marriage”, “keeping HIV infected people outside the village” and “clean water and environment”. In the city, but not in the village, answers like “not having sex with risk persons”, “not sharing needles for injection”, “not getting pregnant if you are HIV infected”, “medicines” and “education” came up. Four of the students in the village and two in the city said that they had no idea of how to protect against HIV.

All of the male students but only one of the female students in the village knew what a condom was. The corresponding numbers in the city were nine of the males and four of the females. About one fourth of the students in the village and half of the students in the city knew that a condom could be used to protect against HIV. None of the female students had seen a condom. Only few of the students knew how to use a condom. Four female students in the city said that they had heard the word condom but they had no idea of what it is. A male student in the city explained that “a condom is used as a barrier between the penis and the vagina” and a female student in the village said that “a condom lengthens the time until you get children” (Fig. 8, 9).

Medicine against HIV?

In the village one fourth of the students thought that there’s a medicine against HIV. Half of those said that the medicine can cure the patient while the others thought that the medicine just lengthens the life. The rest of the students in the village stated that there’s no medicine against HIV. Half of the students in the city thought that there’s a medicine and two of those said that the medicine can cure. The rest of students in the city said that there’s no medicine.

Most of the students in the village answered that you die from HIV but some students stated that you don’t die from it. All of the students in the city, except for one, thought that you die from the infection. One student said that you can survive if a miracle happen.

Special groups more often infected with HIV/AIDS:

Six of the students in the village and five in the city answered that truck drivers are more often infected by HIV. Most of them could not explain why, they had only heard rumours that they are at higher risk. Two students in the village told us that truck drivers sometimes visit prostitutes at the highways and there they get infected. The second most common risk group that was mentioned was prostitutes. Other risk groups that came up during the interviews in the village were low educated, muslims, militaries, medical workers and people working in

lodges. The explanation why low educated should be at higher risk is that since they can't read it's harder for them to get information about HIV. In the city, young people, persons buying sex, drug addicts and poor people were mentioned as groups that are more often infected by HIV. During the interviews in the village, some students spontaneously said that farmers very seldom are infected by HIV, and therefore they are at lowest risk. They couldn't explain further why. Many students in both the city and the village stated that there are no risk groups.

Source of information:

Most of the students in both the city and village had heard and learned about HIV from media and in school. Some students mentioned hospitals, friends and society as sources of information. One student thought that the Indian people need more education about HIV and sex. He said that a good way to spread the information would be by posters.

Attitudes:

Attitudes towards HIV-infected persons:

Some of the students, both in the village and the city, told us that they do avoid HIV infected persons. One fourth of the students in the village said that they are afraid of people that are infected with HIV, whereas none of the students in the city said that they are afraid of these persons. A couple of students considered that HIV infected persons shouldn't live at home. They thought that the infected people should live either in the hospital or in the countryside. On the question "how would you react if someone you know well would get HIV?" half of the students in both the village and the city answered that they wouldn't be afraid of that person and wouldn't avoid him or her. Some students in the village said that they wouldn't eat from the same plate as that person and avoid close contact with him or her.

To whom do you talk about sex and HIV?

One fourth of the students, in both the village and the city, had talked about sex in school. The students more often talked about sex with their friends. Only few of the students talked about sex in the family. Many students said that they didn't talk to anybody about sex. About half of the students in the city didn't want to have sexual education in school. A female student said that if you have sexual education in school before the 10th grade there is a high risk that you will become a prostitute if you are a girl and buy sex from prostitutes if you are a boy (Fig. 10).

Half of the students in the village and almost all of the students in the city had talked about HIV in school. About one third of the students in both the city and in the village talked about HIV with their family. Many students talked about HIV among friends. One fourth of the students in the village said that they didn't talk to anybody about HIV, whereas no one in the city gave that answer (Fig. 11).

Sexual experience:

None of the students, except for two male students in the village, told us that they have any sexual experience. Some students told us that sex before marriage doesn't occur in India, whereas other students told us that it's common but you don't talk about it.

Prostitution:

More than half of the students had heard about prostitution. Almost half of the students in the village, but no one in the city, knew where to find prostitutes. Anyway, one male student in

the village told us that it's common known where to find prostitutes, and he stated that although people tell that they don't know where to find prostitutes, they do know. We saw that many students in the village weren't acquainted with the word prostitution. When asking if there was any prostitution in their village they answered no, but when asking if women sometimes get money for having sex they answered yes.

HIV-testing:

Of all students participating in the interviews only four students in the village had been tested for HIV. More than half of the students would like to find out if they had the infection, but some of them didn't know where they can do the test.

During the personal interviews some reflections, ideas and conceptions came up that aren't represented under the titles above. The students also had many questions to us during the interviews. Below is a summary of some of the statements and questions.

In the village one student told us that HIV is a dangerous disease but you don't die from it if you want to live. He said that if you lose the belief that you will survive, you will die. Another student asked how many prostitutes you can have sex with before you get infected and how long time the virus stays in your body if you get the infection. A question that came up during one interview was how many persons a HIV infected person can infect, is there a limited number? Many of the students in the village wanted us to tell them all the different ways that HIV is spread by.

In the city many students asked us how to use a condom. Two female students asked if there's a condom for girls. One boy asked if a condom is a tablet. One female student told us that the HIV virus first was found in an animal in the USA, and from that animal it was spread throughout the world. Another female student said that sex shouldn't be shown on television since that would tempt the young males to visit prostitutes.

Difficulties and sources of error

We had some problems reaching the students since they had a busy schedule doing their final exams before summer vacation. During our stay in India the election for the National Parliament was going on. This also caused some problems for us. Some of the teachers and headmasters were involved in the election and it was hard to get in contact with them and some of the schools were even closed.

The students answered the questionnaires while sitting close to each other in their classrooms. That made it possible for the students to look at each others answers. We also noticed that quiet discussions sometimes occurred among students in the classroom. The personal interviews in the schools took place in the corner of the classroom or in a separate room. During the interviews there were often disturbing elements, such as curious classmates, teachers and cleaners. The interviews made at the hospital in Nannaj were performed in an examination room or in a separate building at the hospital. We were sometimes disrupted during the interviews since the interpreters also had to take part in the ordinary work at the hospital. We got the impression that the interpreter sometimes didn't translate correctly and gave the students alternative answers where there shouldn't be any. The reason for this was probably the interpreters limited knowledge of the English language.

Another possible source of error is that since we don't know the Maharati language the questionnaire could be incorrectly translated from English to Maharati. The answers in the Maharati questionnaires were translated and construed in two steps, first by the Indian doctor and then by us, and this increases the risk for misconceptions.

The headmasters of the school in the rural area didn't allow us to ask the questions about private life. They found the questions too personal and were afraid that the school could get a bad reputation and that the parents might get angry if such questions would be asked. Therefore we excluded questions 28 to 41 in Shelgaon pre college school. That made it impossible for us to do the comparisons and evaluations that we had intended to do from the beginning.

When we read the answers in the English questionnaires, we got the impression that the students not fully understood all of the questions. The reason could be that they didn't have a good command of English or that the questions were put in a wrong way. We also had some problems to construe the Maharati questionnaires. We think that some of the students completely misunderstood the questions since many of the answers were absurd and incongruous. For example, one 16-year old student answered that she was 25 years old when she first heard of HIV. Another example is the student who numbered the alternative answers from 1 to 5 (1 for very poor and 5 for very good) on the question about her families economical situation (question 10) instead of answering the question. Many of the students, especially the girls, seemed to be embarrassed and shy during the personal interviews. Therefore we don't know if they answered honestly on the questions or if they sometimes answered "don't know" even if they knew the answers.

The word boyfriend and girlfriend probably don't have the same meaning in India as in Sweden. We think that all their friends are called boyfriends and girlfriends. Therefore we exclude these alternatives in table 1.

Discussion

Even though the HIV prevalence is still low (about 1%), India faces an explosive spread of the disease and has one of the most rapidly growing HIV/AIDS epidemics globally. To prevent the spread of HIV in India it's very important to raise the level of knowledge about the disease. The first National Aids Control Programme was started in 1987 and a lot of effort has been done in India after that to prevent further expansion of the disease. To know where to put the effort in the future, it's very important to investigate the educational level of HIV and evaluate what people have learned from prior campaigns.

Knowledge about HIV/AIDS

All students answering the questionnaires had heard about the sickness called HIV/AIDS, except for one student in the village and one in the city. When comparing our results with results from other studies the percentage in our study is higher (99%). In a study made among pregnant women in Maharashtra (2002), 90% had heard about HIV/AIDS (25), and in a study among men in Karnataka (2004), 91% had heard about HIV/AIDS (20). In a national behavioural study done in 2001 (including almost 85 000 people) only 75% of the participants had heard about AIDS and the awareness was especially low among the rural women in West Bengal, Bihar and Gujarat (12). A study among 650 slum dwellers (age 15-45 years) in Chennai showed that 13% of the females and 22% of the males were totally unaware of AIDS (17). A study from 2001-2002, done in a rural district in Tamil Nadu, (10 000 persons from

different occupational groups were interviewed) showed that only 41% of the respondents had heard about HIV/AIDS. This study also showed large differences in knowledge between different occupational groups. The professionals and office-goers had the highest awareness while laborers, farmer, vendors and housewives had most misconceptions about HIV/AIDS. The student category fell in between (18). In a study done in 2002-2003 among students of higher secondary schools in an urban area of Himachal Pradesh most of the students (92%) had heard of HIV/AIDS (19).

In our survey the majority of the students first heard about HIV/AIDS through media (about 60%). The same trend was seen in both the Maharashtra study (25) and the Karnataka study (20) where most of the participants also answered media. Even if media is an effective way of spreading information, we think it's important that teenagers have the possibility to discuss and ask questions about HIV, and in that aspect well informed parents and information in school are important parts.

During the personal interviews we saw that many students don't talk to anyone about sex. Many of the students said that they would like to learn about sex in school but some students in the city said that they wouldn't like to have any sexual education in school. Since HIV is a sexually transmitted disease it's important to have knowledge about sex to be able to protect against the disease. Many risk behaviours, such as risky sexual behaviours and drug use, are often adopted in young adolescence. Therefore it's important to put a lot the prevention efforts on the young people. It might be easier to influence young people to develop a healthy behaviour rather than modify behaviours at a later age (21). The school plays an important role in mediating knowledge about sexual behaviour. Another reason why the prevention efforts should be focused on the adolescents is that approximately 30% of India's population is between 10-24 years old (21).

To prevent the further spread of the disease it's fundamental that people have a good knowledge about the transmission of HIV and the protection against it. In our study we see that still there are misconceptions about the ways of transmission. 96.7% of the students in the village and 99.3% in the city knew that HIV is spread through sexual contact. However some of them thought that you get infected only if you have multiple sexual partners or sex before marriage. One question asked by a student during the personal interviews shows one of the misconceptions about the transmission. He asked "how many persons can you have sex with before you will get the HIV infection?". He thought that it's the number of sexual partners that determines if you get infected or not. A large amount of the students in our study do know about the sexual transmission of HIV but the percentages has to increase to 100. Everyone also needs to know that you can get the infection through sex, irrespective of numbers of partners and that it's not related to if you have sex before or after marriage. The misconceptions among the students in our study that HIV is spread when eating or drinking from the same plates or cups, shake hands/ hug/ live in the same house, or wash/change clothes for an HIV infected can lead to avoidance and segregation of the HIV infected persons from the society. Therefore it's important to clear up those misconceptions.

Compared to other studies, the students in our study had a better knowledge about sexual transmission. In the study among males in Karnataka, 80% were aware of the sexual spread (20). The corresponding percentage among the women in Maharashtra (25) was 89. A study made in 2003 showed that less than 25% of the women in the rural areas of Bihar, Gujarat and Uttar Pradesh knew that HIV can be transmitted sexually (16). The study among slum dwellers in Chennai showed that 39% weren't aware of the sexual transmission of HIV (17).

In the study in the rural area in Tamil Nadu, only 26 % were aware of the sexual transmission (18).

Our study showed that 17.2% of the students in the village and 23.2% of the students in the city didn't know that HIV can be spread from mother to child during breast feeding. The same trend was seen in the study among the pregnant women in Maharashtra where 17% didn't know about breast feeding as a way of transmission (25).

In our study, 36.9% of the students in the village and 31.9% of the students in the city thought that HIV can be spread through kisses. The study done in Himachal Pradesh showed that 45% of the students had the misconception that HIV can be transmitted by kissing (19). In our survey, 93% of the students in the city and 74% in the village said that there are ways to protect against HIV. When comparing our results with the results from the Karnataka study among men in rural India (20), where only 50% said that there are ways for protection, we see that the students have a higher awareness about protection. Even though the results in our study show that many of the students know that you can protect against HIV, the percentages don't tell us if they know the proper ways for protection. During the personal interviews some misconceptions about protection against HIV came up. For example, eight students in the city and eight students in the village answered that having only one sexual partner is a way to protect against the infection. Other ways of protection that were mentioned during the interviews was: not to have sex before marriage, keep HIV infected persons outside society and keep water and environment clean. It is utterly important that everybody knows that you can protect against the infection but it's of the same importance that you know how to protect.

Private life

The headmasters in the rural area didn't allow us to include the questions about private life in the questionnaires, since they found them too personal. They were afraid that the parents might get angry if such questions were discussed in school. This shows their conservative way of looking at issues like sex and relations. The school is an important source of information for young people and if the headmasters of the school don't allow education or discussions about sex it's hard for the students to get proper information about that subject.

44% of the students in the city would like to test themselves for HIV and 35% wouldn't. We don't know their reasons for wanting or not wanting to do the test. The students that wouldn't like to test themselves, do they "know" that they aren't infected or are they afraid of getting the result? In the personal interviews we found out that some students in the village have been tested for HIV but no student in the city has done that test. More than half of the students in both the village and city would like to test themselves for HIV, but many of them don't know where to do the test. To prevent the further spread of HIV it's important that everybody know where they can have the HIV test done. In many places in India you have to pay for the HIV test. Since many people are poor, free HIV testing would be a strategy to make more people test themselves.

83% of the students wouldn't like to have children if they got infected with HIV, while 4% would like to have children even if they were found to have the infection. It's interesting that all the students that said that they would like to have children even if they were infected, answered in the questionnaire that HIV can be transmitted from mother to child during pregnancy or delivery and through breast feeding. One can find it hard to understand that they

want to have children even when there's a risk that the child would be infected or be an orphan.

Of all students in our survey, only two male students said that they've had sex. Some students told us that sex before marriage is common in India but no one talk about it, while other students said that sex before marriage doesn't occur. Monogamous marital sex is the cultural norm in India and that might influence the willingness to report sexual activity before marriage. "General population" surveys have reported premarital sex among 7-48% of the males and 3-10% of the females. Among students in secondary school and college (in urban areas) sexual experience is reported by 8-39% of males and 1-20% of females. A study in Orissa among urban and rural men showed that 25% had premarital sex and the mean age for the sexual debut was 23 years (22).

Only 1% of the students in our study said that prostitution is common in their neighbourhood and only some of the students said that they knew where to find the prostitutes. An interesting statement from a male student is that everybody knows where to find prostitutes but it's common that people don't want to admit that they are aware of where to find the prostitutes.

In our study we saw that the knowledge about condoms was deficient among the students. In the questionnaires only one fourth of the students answered that they had seen a condom and only one fourth knew how to use it. The students in the interviews that had seen a condom were all males. During the personal interviews many students asked us about condoms and they were interested in knowing how condoms are used. A national behavioural study done in 2001 found that 70% of the men knew that a condom can be used to protect against HIV. The corresponding percentage for women was 48 (12).

Conclusions

- All of the students have heard about HIV/AIDS but their knowledge about how HIV is transmitted is incomplete and there are still many misconceptions.
- The majority of the students heard about HIV/AIDS for the first time through media. Media is an effective way of spreading information but the school plays an even more important role in mediating knowledge about HIV and sexual behaviour to young people.
- The knowledge about protection against HIV is insufficient among the students. Many know that it's possible to protect against the infection but there are many misunderstandings about the ways of protection. Only one fourth of the students have seen a condom and one fourth know how to use it.
- Many of the students would like to test themselves for HIV but a lot of them don't know where they can do the test.
- The most important way to prevent the rapid transmission of HIV is to raise the level of knowledge about how HIV is transmitted and how to be protected.

Acknowledgements

We would like to thank Dr. Surendra Urunkar and Reverend Steven David, Hindustani Covenant Church, for letting us stay at St Luke's Health and Welfare Centre in Nannaj. We would also like to thank our translators and interpreters Dr. Priti and Sister Torne. Another thank to all of the staff at St Luke's Health and Welfare Centre in Nannaj for helping us with our daily living and making our stay unforgettable. Finally we would like to thank our supervisor Dr. Rune Andersson for his invaluable comments and help through the project and making this study possible.

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Table 1: Demographic distribution of interviewed students in secondary school in Maharashtra state

Location	nr	Age		Gender		Marital status	
		Mean	Range	Male	Female	Married	Single
Village	122	17.0	15-19	77%	23%	7%	80%
City	138	17.2	16-19	39%	61%	0.7%	91%
Total	260	17.1	15-19	57%	43%	4%	86%

Location	nr	Religion					
		Hindu	Muslim	Sikh	Other	No religion	No answer
Village	122	94%	3%	0.8%	0.8%	0.8%	0%
City	138	79%	12%	0%	5%	0%	4%
Total	260	86%	8%	0.4%	3%	0.4%	2%

Location	nr	Economical situation					
		Very poor	Poor	Average	Good	Very good	No answer
Village	122	7%	3%	32%	46%	8%	5%
City	138	0%	0%	45%	43%	6%	7%
Total	260	3%	1%	39%	44%	7%	6%

Location	nr	How often do you attend religious services?					
		More than once/week	Once a week	1-2 times/month	1-2 times/year	Never	No answer
Village	122	16%	22%	27%	24%	7%	3%
City	138	27%	18%	10%	15%	15%	14%
Total	260	22%	20%	18%	19%	12%	9%

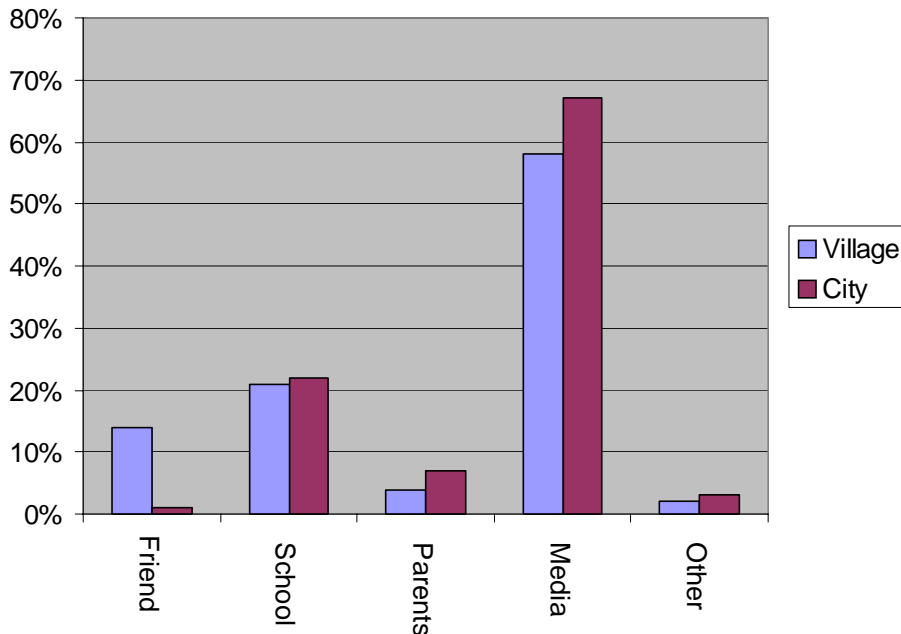
Table 2: Knowledge about the transmission of HIV/AIDS (Based on 138 answers in the city (54 males, 84 females) and 122 answers in the village (94 males, 28 females)).

		Believe that HIV/AIDS is spread by:		
		Eat/drink from the same plate/cup	Shake hands/hug/live in the same house	Wash/change clothes for an HIV infected
Location	Gender	mean (%) (95% CI)	mean (%) (95% CI)	mean (%) (95% CI)
Village	Total	3.3	2.5	6.6 (2.2-11)
	Male	2.1	2.1	4.3
	Female	7.1	3.6	14.3
City	Total	2.9	0.7	1.4
	Male	0	0	0
	Female	4.8	1.2	2.4

		Believe that HIV/AIDS is spread by:		
		Kissing	Have sexual contact	Share needles while injecting drugs
Location	Gender	mean (%) (95% CI)	mean (%) (95% CI)	mean (%) (95% CI)
Village	Total	36.9 (28.3-45.5)	96.7	97.5
	Male	28.7 (24-33.8)	95.7	96.8
	Female	64.3 (46.6-82)	100	100
City	Total	31.9 (24.1-39.7)	99.3	99.3
	Male	29.6 (17.4-41.8)	100	98.2
	Female	33.3 (23.3-43.3)	98.8	100

		Believe that HIV/AIDS is spread by:		
		Breastfeeding	Mother to child during pregnancy	Mosquitos
Location	Gender	mean (%) (95% CI)	mean (%) (95% CI)	mean (%) (95% CI)
Village	Total	82.8 (76.1-89.5)	84.4 (78-90.8)	23 (15.5-30.5)
	Male	79.8 (71.7-87.9)	81.9 (74.1-89.7)	18.1 (10.3-25.9)
	Female	92.9	92.9	39.3 (21.2-57.4)
City	Total	76.8 (69.8-83.8)	95.7 (92.3-99.1)	17.4 (11.1-23.7)
	Male	64.8 (52.1-77.5)	92.6	14.8 (5.3-24.3)
	Female	84.5 (76.8-92.2)	97.6	19.1 (10.7-27.5)

**Fig. 1. How did you first hear about HIV/AIDS?
(Based on 137 answers in the city and 118 in the village)**



**Fig. 2. Is there any difference between HIV & AIDS?
(Based on 138 answers in the city and 122 in the village)**

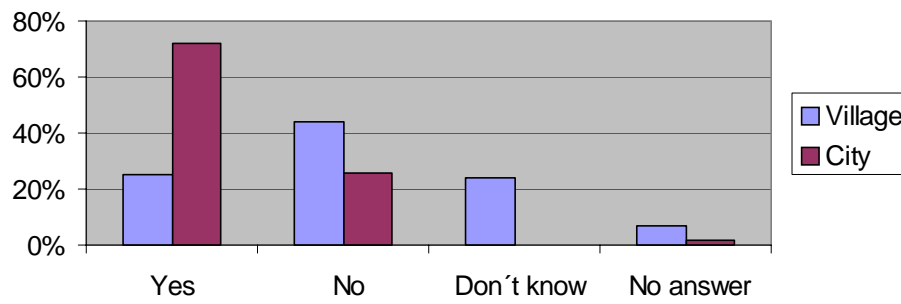


Fig 3. For how long do you think an HIV infected person will live without medicine? (Based on 122 answers in the village and 138 in the city)

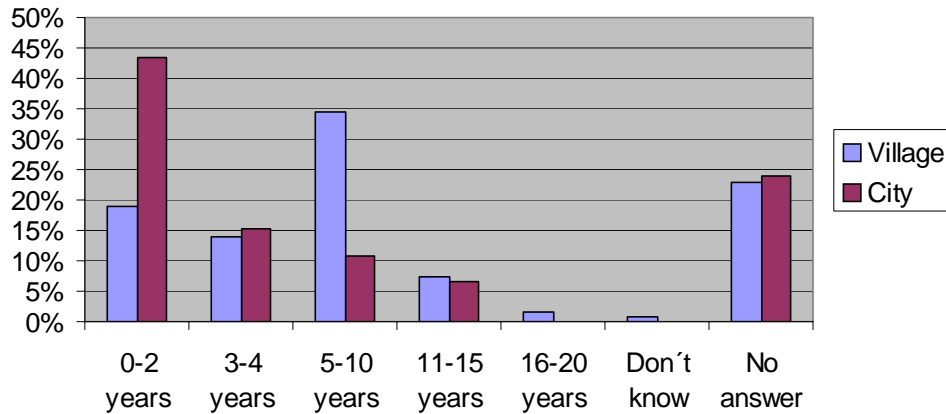
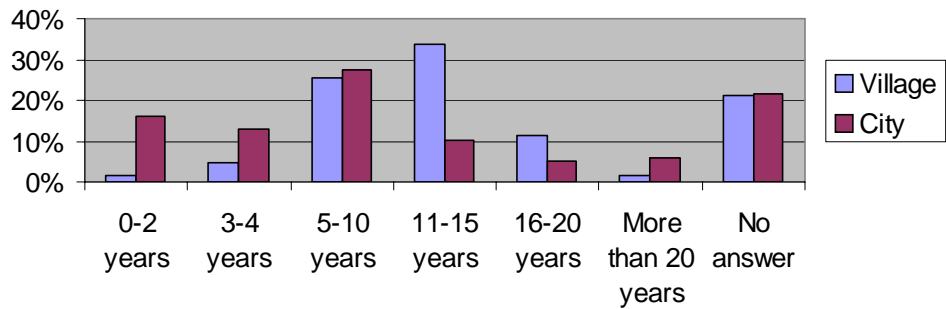
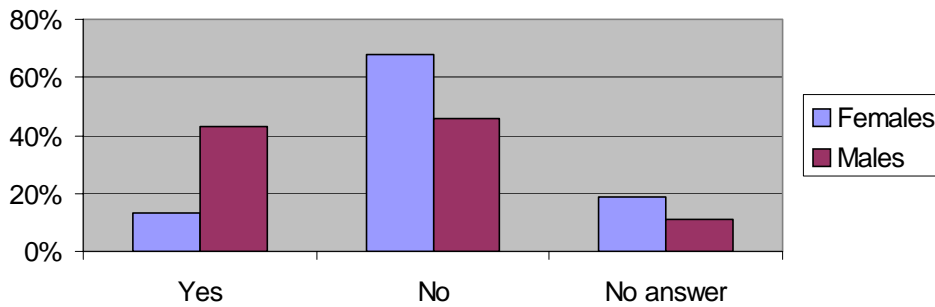


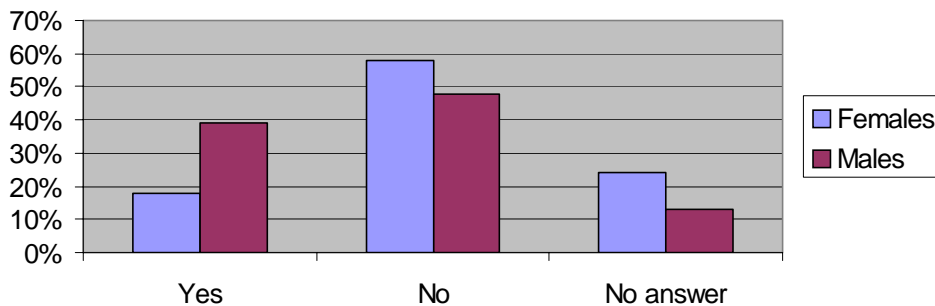
Fig 4. For how long do you think an HIV infected person will live with medicine? (Based on 122 answers in the village and 138 in the city)



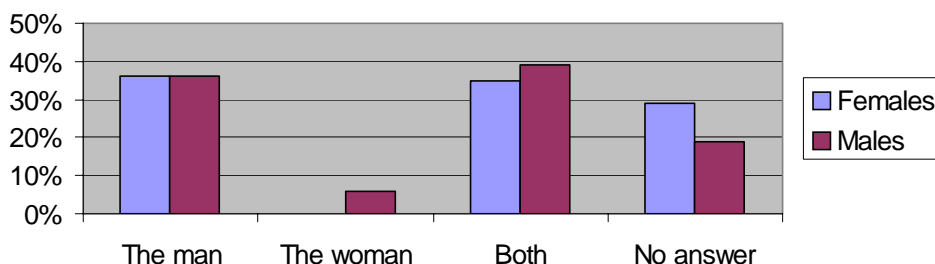
**Fig 5. Have you seen a condom?
(Based on answers from 84 females and 54 males
in the city)**



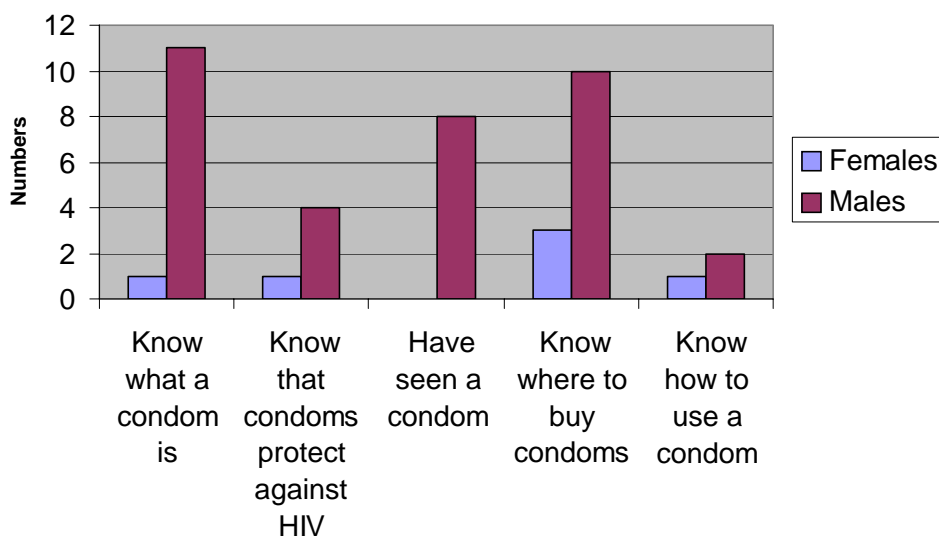
**Fig. 6. Do you know how to use a condom?
(Based on answers from 84 females and 54 males
in the city)**



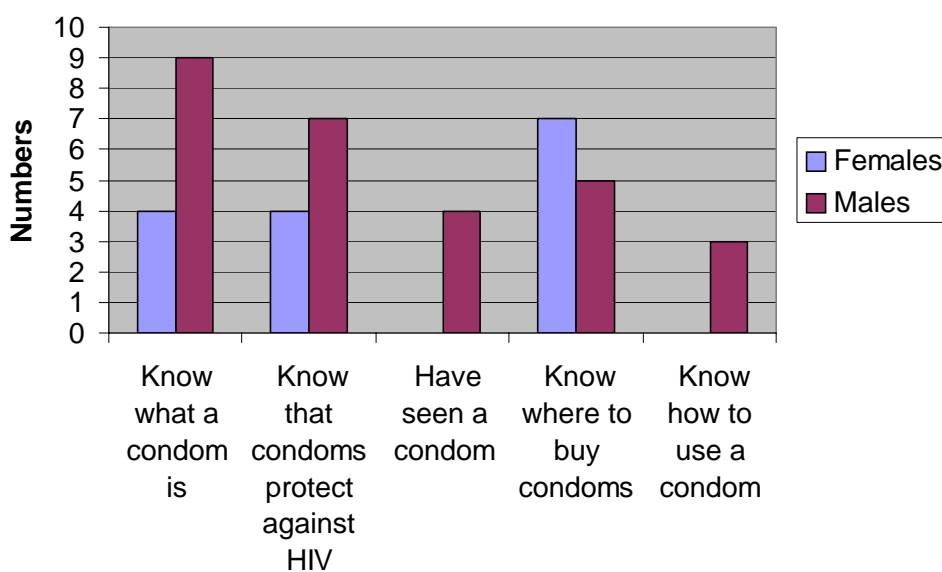
**Fig. 7. Who has the responsibility to make sure a
condom is used during sexual intercourse?
(Based on answers from 84 females and 54 males
in the city)**



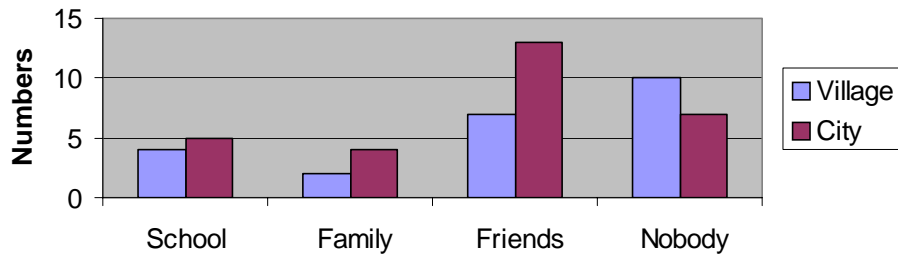
**Fig. 8. Knowledge about condoms in the village
(Based on answers from 8 females and 11 males)**



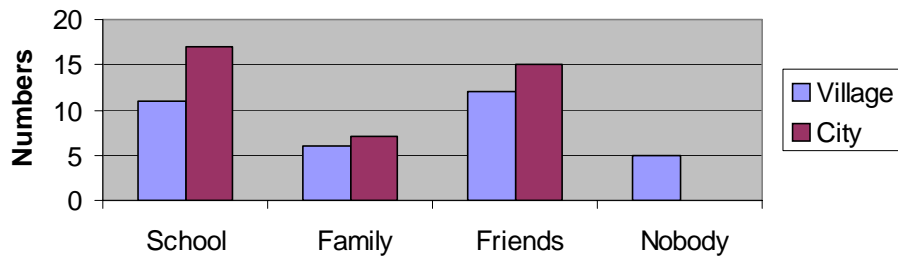
**Fig. 9. Knowledge about condoms in the city.
(based on answers from 10 females and 10 males)**



**Fig. 10. To whom do you talk about sex?
(Based on 19 students in the village and 20 in the city)**



**Fig. 11. To whom do you talk about HIV?
(Based on 19 students in the village and 20 in the city)**



- e) Having sexual contact?
 Yes No Don't know
- f) Sharing needles while injecting drugs?
 Yes No Don't know
- g) Breastfeeding?
 Yes No Don't know
- h) From mother to child during pregnancy or delivery?
 Yes No Don't know
- i) By mosquitos?
 Yes No Don't know

16. How do you think is the main way HIV is spread from one person to another?.....

17 Are there any ways to protect yourself against infection of HIV?

- Yes No Don't know

If yes, please specify:.....

18. Do you know if any special groups are more often infected with HIV than other?

- Yes No Don't know

If yes, please specify:.....

19. Can you by looking at a person see if he/she is infected with HIV?

- Yes No Don't know

If yes, how?.....

20.. Do you know any symptoms that can be caused by HIV/AIDS?

21. How many do you think are infected with HIV in the area where you live?

- 1/100 5/100 10/100 20/100 30/100
- more than 30/100

22. Does any of your relatives or friends have HIV or AIDS?

- Yes No Don't know

23. Is there a medicine that can cure HIV/AIDS?

- Yes No Don't know

If yes, please specify.....

24. Are there any other ways to cure HIV/AIDS?

- Yes No Don't know

If yes, please specify:.....

25. If a person has been infected with HIV, how long do you think he/she will live

- a) without medicine?.....
- b) with medicine?.....

26.. What do you think are the reasons why HIV/AIDS has spread so rapidly in the world?.....

27.. Have you got enough information regarding HIV/AIDS?

- Yes No Don't know

Private life

28.. Would you like to test yourself for HIV/AIDS?

- Yes. Why?.....
- No. Why not?.....
- Don't know

29. If you where found to have HIV in your blood, who would you tell? Choose one or several alternatives.

- Mother Father Other relatives Friends Coworkers
- Partner Nobody

30. Would you like to have children if you knew you where HIV infected?

- Yes No Don't know

If no, why not?.....

31. Have you had any sexual partner?

- Yes No No answer

If you answer no skip the questions 32- 37.

32. How old were you when you had your first sexual contact?.....

33. How many sexual partners have you had?

34. Are your sexual partners

Male Female Both

35. When you meet a new partner, do you

ask him/her of previous partners? Yes No Don't know

ask him/her to take a HIV test? Yes No Don't know

36. If a person wants to have sex with you, is it sometimes hard to say no?

Yes No No answer

If yes, when and why?.....

37. Have you ever received money from sexual favours versus paid to get one?

Yes No No answer

38. Is it common in the neighbourhood you live in that people pay or are paid to have sex?

Yes No Don't know

39. Have you seen a condom?

Yes No No answer

40. Do you know how to use a condom?

Yes No No answer

41k. Who do you think has the biggest responsibility to make sure a condom is used during sexual intercourse?

The man The woman Both

Template for the personal interviews:

Knowledge

1. Can you tell what you know about HIV/AIDS
2. Do you know if there is any difference between HIV and AIDS?
3. Can you see if a person is infected by HIV by looking at him/her?
4. Do you know any symptoms of HIV/AIDS?
5. Do you know any special groups that are more often infected by HIV?
6. Is HIV/AIDS a dangerous disease? Do you die from it? Can you be cured? Is there any medicine against it?
7. Do you know how HIV is spread?
8. Do you know how to protect against HIV?
9. Do you know what a condom is? Have you seen a condom? Do you know how to use it? Do you know where you can buy condoms?
10. Where have you got this information from?

Attitudes

11. Do you know any person with HIV or AIDS?
12. How would you react if someone you know well would get HIV?
13. Do you talk about HIV in school? Among friends? In family?
14. Do you talk about sex in school? Among friends? In family?
15. Would you like to learn about sex in school?
16. Would you like to learn more about HIV?
17. Do you know if people in your village/city get paid, or pay, for having sex? Do you know what prostitution is? Do you know where you can find prostitutes?
18. Do you know if people sometimes have sex before marriage? Have you had sex?
19. Have you tested yourself for HIV? Would you like to test yourself? Do you know where you can test yourself?