

# Human immunodeficiency virus, sexually transmitted disease awareness and condom usage among long-distance internal truck drivers in Pune, India

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## Abstract

**Introduction:** The study was conducted to evaluate the knowledge and awareness of sexually transmitted disease (STD) and human immunodeficiency virus (HIV), and condom usage among long-distance internal truck drivers in Pune, India.

**Material and methods:** Cross-sectional descriptive study was conducted at Pune-Solapur highway in India. The data was collected from 360 truck drivers. The symptoms were suggested by the investigators.

**Results:** The mean age of truck drivers was 37.8 (SD = 10.8). Only 90 (25%) were educated up to senior secondary school or higher. Awareness among truck drivers about modes of spread of HIV/AIDS for unprotected sex, blood transfusion, needle sharing, mother to unborn child, breast milk was 80%, 56.1%, 51.7%, 60.3%, and 38.1%, respectively. Truck drivers with misconception score (about mode of transmission) of 0, 1, 2, 3, 4, and 5 were 43 (11.4%), 60 (16.8%), 80 (22.2%), 74 (20.8%), 86 (23.9%), and 17 (4.9%), respectively. Both knowledge and misconception score were associated with education. Median knowledge score for specific symptoms of STD was 2. Only 67 (18.6%) participants used a condom each time during sexual act. A total of 151 (41.9%) condoms were obtained from peer educators/NGO, and 280 (77.8%) drivers said that they will use a condom if available for free near brothels or 'dhabas', and educated about proper use of a condom.

**Conclusions:** The awareness about the STD was insufficient, and a delay in health seeking among truck drivers was noted. Condom usage among the truck drivers was low. These results suggest the need for focused behavioral change program, including modification in health seeking behavior among long-distance truck drivers.

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**Key words:** India, truck drivers, HIV and STD awareness.

## Introduction

The first case of infection with human immunodeficiency virus (HIV) in India was detected in 1986 [1]. In response, in

1987 the Government of India launched its National AIDS Control Programme [2]. The adult HIV prevalence has shown its steady decline from an estimated peak in 2001-2003. Current national adult (15-49 years) HIV prevalence is estimated

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at 0.26% (0.22-0.32%) in 2015 [3]. However, the prevalence varies among different states in India. Maharashtra is a high prevalence state, and within Maharashtra, the Pune district is a high prevalence district [3].

In understanding the nature and magnitude of HIV/AIDS (acquired immunodeficiency syndrome) problem, periodical behavioral surveillance may play a major role. Earlier studies conducted in mid-nineties 20<sup>th</sup> century, show that 50-60% of truck drivers were aware of the HIV/AIDS [4, 5]. However, studies published after the year 2000, show more than 90% awareness regarding the HIV/AIDS [6].

Long-distance truck drivers form the high-risk group of spreading sexually transmitted disease (STD) and HIV [7]. One national survey and few small studies in different parts of the country were completed to assess behavior of long-distance truck drivers [7-9]. The Pune study was conducted at Pune-Bangalore highway, and included all truck drivers irrespective of the residents of Pune [10]. There was no study conducted on truck drivers who are residents of Pune, and no study on STD awareness and condom usage among truck drivers in Pune were conducted either. Therefore, our study was conducted to evaluate the knowledge and awareness of STD and HIV, and condom usage among long-distance internal truck drivers residing in Pune.

## Material and methods

This is a cross-sectional descriptive, questionnaire-based study, conducted among truck drivers at Loni, Pune. Loni is a small town located on outskirts of Pune (20 km) on Pune – Solapur National Highway (NH-9) in Maharashtra, India.

### Inclusion and exclusion criteria

Pune district-based truck drivers, aged 18 years and above, with 2 or more years of experience as a truck driver, with national or an interstate permit were included in the study. All truck drivers who were from outside Pune district, declined to consent for interview were excluded from study.

### Sample size

The approximate proportion of high-risk behavior among truck drivers is reported to be 35%, including truck drivers in all India behavior survey on truck drivers by Family Health International [6]; although other studies have reported lower or higher proportions engaged in high-risk sexual behavior. Thus, the minimum sample size calculated with 5% of error margin and 95% of confidence interval comes out to be 350. However, a total of 360 truck drivers were interviewed.

Truck drivers who stopped at a 'dhaba' (eating place) were approached individually and invited to participate in the study after explaining the purpose. Those truck drivers who consented for interview, were taken to a separate area to maintain privacy and confidentiality, and assured that their identity and information given would be kept confidential.

An informed verbal consent was obtained from the truck drivers. Participants could discontinue the interview at any point, or choose not to answer specific questions. Data was collected in structured individual face to face interviews by the investigators. Initially, a pilot study of 30 truck drivers was carried out with a help of a draft questionnaire adopted from UNAIDS. It included questions on sexual behavior, knowledge on HIV, STD, and condom usage. The truck drivers were asked about six specific symptoms of STD: genital discharge, genital ulcer, pain during intercourse, lower abdominal pain, burning pain during urination, swelling in groin area. Based on the experience from the pilot study, the questionnaire was modified (the questionnaire is attached at the end of article). However, the data from the pilot study were not included in the final analysis. The information was collected by a single investigator to avoid inter-rater bias, and an interview took 35 minutes (on average). The study was conducted from October 2009 to February 2010. A total of 550 truck drivers were approached to acquire data from 360 truck drivers. After completing an interview, the truck drivers were educated about mode of transmission and prevention of HIV/AIDS, STD, and the usage of condoms by using flip charts. The importance of early diagnosis of HIV/AIDS and a prompt treatment was highlighted by investigators. The subjects were also motivated to refrain from illegitimate and pre-marital sex activities.

The study was approved by institutional ethical committee. Filled questionnaires were checked for errors and omissions, and were appropriately corrected. After completing all interviews, the responses were coded and entered in MS excel in a computer. The analysis was done using STATA version 13 IC (StataCorp 2013, Stata Statistical Software: Release 13, College Station, TX, StataCorp LP). The continuous variable was explained using mean and standard deviation, while categorical variable was explained using number and percentage. Chi square test was completed to find out the association between two variables. The *p* value of less than 0.05 was considered significant.

## Results

### Socio-demographic profile

The mean age was of the truck drivers was 37.8 (SD = 10.8). There were 200 (55.6%) truck drivers in the age category 31-45 years. A total of 160 (44.4%) drivers were from rural background. Only 20 (5.6%) drivers were illiterate, while 90 (25%) were educated up to a senior secondary school or higher. The majority of truck drivers were Hindus (255, 70.8%) and married (280, 77.8%). The age of marriage was 19-25 years for most of the truck drivers (285, 79.2%). A total of 270 (75%) of married truck drivers were living with a spouse. Maximum 220 (61.11%) truck drivers had 3-4 adults in their family. The mean income of truck drivers was \$96.6 (Rs. 4,347) (SD = \$15.8; Rs. 711). Nearly 70% of participants have had one or more children. In last six months, truck drivers (on average) stayed 20 nights (SD = 2.4) away from

**Table 1.** Distribution of truck drivers as per education status and knowledge scores for modes of spread of HIV/AIDS

Education status	Knowledge score regarding modes of HIV spread						Total	Median score (of row)
	0	1	2	3	4	5		
Illiterate	10 (50%)	3 (15%)	4 (20%)	1 (5%)	1 (5%)	1 (5%)	20	1
I-V	1 (1%)	4 (34%)	47 (47%)	6 (6%)	10 (10%)	2 (2%)	100	2
VI-X	1 (0.6%)	20 (13.4%)	30 (20%)	56 (37.4%)	33 (22%)	10 (6.6%)	150	3
X +	0 (0%)	1 (1.1%)	12 (13.2%)	24 (26.6%)	19 (21.2%)	34 (37.8%)	90	4
Total	12 (3.3%)	13 (16.2%)	93 (25.8%)	87 (24.2%)	63 (17.5%)	47 (13%)	360	3

$\chi^2 = 257.5$ ;  $p$  value  $< 0.001$

**Table 2.** Distribution of truck drivers as per education status and misconception score for modes of spread of HIV/AIDS

Education status	Misconception score for modes of HIV spread						Total	Median score (of row)
	0	1	2	3	4	5		
Illiterate	0 (0%)	0 (0%)	1 (5%)	3 (15%)	5 (25%)	11 (55%)	20	5
I-V	3 (3%)	2 (2%)	7 (7%)	25 (25%)	60 (60%)	3 (3%)	100	4
VI-X	10 (6.7%)	28 (18.7%)	52 (34.7%)	39 (26%)	20 (13.3%)	1 (0.6%)	150	2
X +	30 (33.3%)	30 (33.3%)	20 (22.2%)	7 (7.9%)	1 (1.1%)	2 (2.2%)	90	1
Total	43 (11.4%)	60 (16.8%)	80 (22.2%)	74 (20.8%)	86 (23.9%)	17 (4.9%)	360	2

$\chi^2 = 308$ ;  $p$  value  $< 0.001$

their home. A total of 200 (55.6%) participants had a history of smoking, at least one cigarette/'bidi' per day, while total of 290 (80.6%) had history of alcohol consumption of at least once a week. Heavy drinkers, defined to drink more than 12 pegs per week were 50 (13.9%) drivers.

### Knowledge about HIV/AIDS

All the 360 truck drivers have heard of HIV/AIDS. A total of 267 (74.2%) participants were aware of correct and full form of HIV/AIDS. Of these, 52.8% got the knowledge from mass media, 28.9% from peer groups, and rest were informed by health workers (doctors, nurses etc.). Awareness among truck drivers about modes of spread of HIV/AIDS for unprotected sex, blood transfusion, needle sharing, mother to unborn child, and breast milk was 80%, 56.1%, 51.7%, 60.3%, and 38.1%, respectively.

Knowledge score was calculated for each truck driver for awareness of HIV/AIDS spread modes with correct answer being awarded as 1 and incorrect answer as 0.

Knowledge score of 5 represented maximum knowledge about the modes of transmission of HIV/AIDS, while a score of 0 indicated lack of knowledge on HIV/AIDS transmission. The knowledge score among truck drivers according to their education level is presented in Table 1.

As the education status increases, more and more truck drivers had a higher knowledge scores about methods of HIV/AIDS transmission. The trend is also reflected in the median values of knowledge scores for individual rows of educational qualification. As anticipated, progressively higher values of knowledge scores were observed with increasing educa-

tional qualification of truck drivers. Overall median value for knowledge score for truck driver population interviewed was calculated to be 3, and indicates that a truck driver, in general, is likely to be aware of three out of five modes of HIV/AIDS transmission.

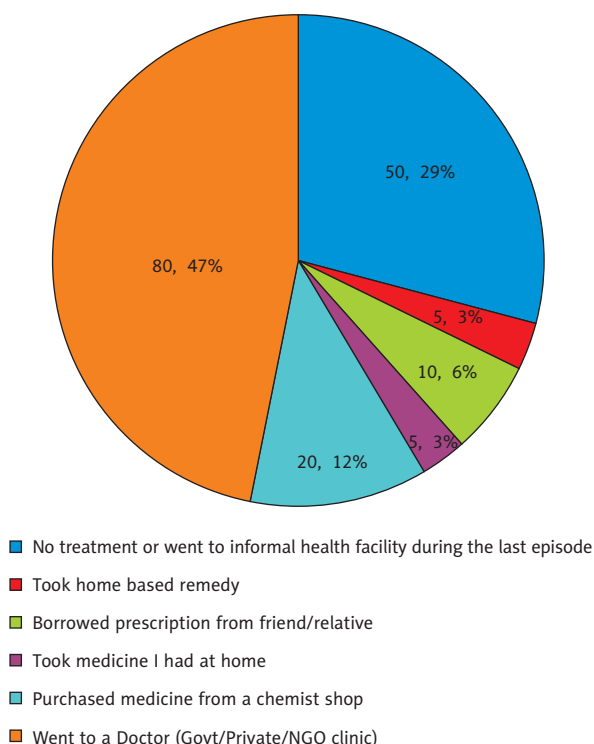
### Misconception about HIV transmission

Among participants, 45%, 9.2%, 10.8%, and 23.3% answered affirmatively when asked about spread of HIV transmission by mosquitos' bites, sharing meal with any infected person, shaking hand, and sharing toilet/swimming pool, respectively. 82.5% said yes to the question that healthy looking person may already be suffering from HIV. Misconception score was calculated for every truck driver for the presence of misunderstandings about the HIV/AIDS, with each misconception being awarded 1 and 0 for a correct answer. The distribution of misconception score according to education is presented in Table 2.

On cross tabulation of truck drivers' education status against HIV/AIDS misconception scores, it was observed that as the education status increases, fewer participants had misconceptions about HIV/AIDS spreading methods. Maximum number of illiterate truck drivers ( $n = 11$ , 55%) had misconception score of 5, while one third of truck drivers educated at class tenth level and above, had misconception score of 0 and 1, respectively. The trend was also reflected in the median values of misconception scores for individual rows of educational qualification. As anticipated, progressively lower values of misconception scores were noted with increasing

**Table 3.** Knowledge score: specific symptoms of sexually transmitted disease

Truck drivers		95% confidence interval
Number (N = 360)	Percentage (100%)	
10	2.8%	1.4-5.2%
14	3.9%	2.2-6.6%
185	51.4%	46.1-56.6%
95	26.4%	22.0-31.3%
39	10.8%	7.9-14.6%
9	2.5%	1.2-4.9%
8	2.2%	1.0-4.5%

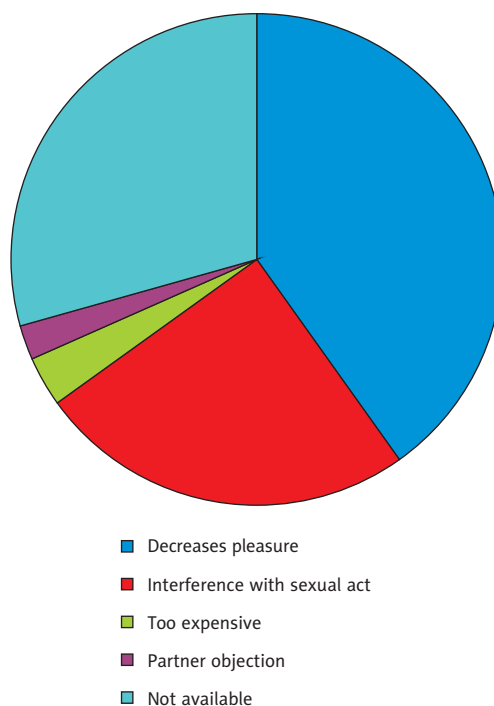


**Figure 1.** Distribution of truck drivers as per sexually transmitted disease treatment seeking behavior

educational qualification of truck drivers, e.g., median misconception score of 5 for illiterate truck drivers, while 1 for the truck drivers educated class tenth and above. Overall median value for misconception score for truck driver population interviewed was calculated to be 2, and indicates that a truck driver, in general, is likely to have 2 out of 5 common misconceptions about methods of HIV/AIDS transmission.

**Knowledge about STD**

A total of 350 (97.2%) truck drivers replied positive for ever heard of STD, and 270 (75%) participants could correct-



**Figure 2.** Distribution of truck drivers as per reason for not using condom during sexual act

ly name the meaning of STD. Truck drivers were enquired about the general and STD specific symptoms. The knowledge score was calculated for specific symptoms of STD and shown in Table 3.

The awareness about STD specific symptoms in studied population was unsatisfactory, as more than three fourth of truck drivers could name only three or less specific symptoms of STD, out of six symptoms enquired in this study. A total of 170 (47.2%) with a history of suffering from STD were enquired about the treatment obtained for the illness. Figure 1 shows the distribution of truck drivers as per STD treatment seeking behavior.

Out of 80 truck drivers who sought treatment from the doctor, nearly half (39, 48.8%) needed a week to a month to visit a doctor, while 30 (37.5%) truckers delayed medical attention by more than a month, and only 11 (13.7%) were prompt and sought treatment within a week.

**Willingness for HIV/AIDS testing**

Truck drivers were enquired if they wished to get themselves tested for HIV/AIDS, and majority (246, 68.3%) expressed unwillingness. A little over a quarter of 360 truck drivers (97, 26.9%) were willing to take the HIV test. A minority (17, 4.7%) participants replied as 'don't know', and were not sure whether to take the HIV test.

While analyzing the data of 80 truck drivers who had sought treatment for STDs, it was found that majority (51, 63.8%) of these truck drivers wanted to get themselves tested for HIV/

AIDS. Among remaining 29 truck drivers, 20 (25%) declined to get tested, while the rest 9 (11.3%) participants were not sure whether they wanted to be tested for HIV/AIDS.

### Condom usage among truck drivers

In this study, all 360 interviewed truck drivers confirmed having sexual experience. Most of truck drivers (203, 56.4%) reported having used condom only sometimes during sexual act, 67 (18.6%) said that they have used condom every time during sexual act, while rest 90 (25%) had never used condoms. A total of 155 (43.1%) used free condoms, while paid condoms were used by 115 (31.9%) truck drivers. Enquiry regarding the source of condom revealed that 151 (41.9%) obtained condoms from peer educators/non-governmental organization (NGO), 79 (21.9%) purchased it at chemist shop, and 40 (11.2%) were provided condoms by sexual partners. Distribution of truck drivers as per reasons for not using condom during sexual act was shown in Figure 2. Majority of truck drivers (280, 77.8%) said that they would use condom if available for free near brothels or 'dhabas', and were educated about the use of condom.

A total of 84 (23.3%) truck drivers gave history of visiting commercial sexual workers in the past 12 months. Out of these, only 11 (13%) confirmed using condom every time, 66 (79%) declared using condom sometimes, while 7 (8%) stated to never using condoms.

## Discussion

Our study highlights a high awareness about HIV/AIDS in the truck population, and shows significant association of education of truck drivers with the knowledge and misconception about HIV/AIDS. In this study, 170 (47.2%) participants had history of STD, however only 11 (13.7%), sought the treatment within a week. Among those who seek treatment for STD, higher percentage were willing for HIV testing as compare to all truck drivers (63.8% vs. 26.9%).

The strength of our study is that the research was undertaken in a field setting by a face-to-face interview among truck drivers of Pune, which is one of high HIV prevalence districts of Maharashtra. The entire interview had been conducted by a single investigator, hence there is no inter-rater variability.

Sawal *et al.* conducted study on 129 truck drivers in ART center in Himachal Pradesh, and found that the knowledge about sexual transmission of HIV was 90.69% [11]. In a study on pan-Indian truck drivers on a sample size of 2,006 truck drivers, Pandey *et al.* found that the comprehensive knowledge about HIV transmission among the truck drivers was 17.1% [12]. Chaturvedi *et al.* conducted study on 315 truck drivers, and discovered that misconception about HIV was quite prevalent; highest misconception for HIV transmission by mosquito bites (53%) [10]. Our study had lower prevalence of misconception from published literature; however, the commonest misconception was that of mosquito's

bite (45%). Our observation regarding association with education and knowledge/misconception about HIV was expected. Mass media remains the major source of knowledge for HIV, as also noted in other Indian studies [13, 14].

We observed that the awareness of STD among truck drivers is inadequate. In this study, we found that 47.2% had a history of suffering from STD. However, only about half of them attempted to find a treatment (after a delay) from qualified doctors. This may have an impact upon National AIDS policy as not only HIV and STD share the same socio-behavioral etiology, but also the presence of STD increases the chances of HIV transmission.

We have found that truck drivers with positive health seeking behavior (treatment for STD) are the one who are willing to take HIV test, while the majority of truck drivers have refused to get themselves tested. Hence, it is not only important to dispel misconception, but also to inculcate positive seeking health behavior through information, education, and communication (IEC) activities. Truck drivers may also be educated about the importance of early treatment seeking behavior.

In our study, 25 % of truck drivers had never used condoms. Other studies conducted on this study population have also noted lower condom usage [10, 11]. Major reasons for not using condoms were decrease pleasure and interference with sexual act. However, the majority (77.8%) of participants expressed willingness to use condoms based on ease, place, and education about using this protection. Similarly, in those who have visited commercial sex workers in the past 12 months, only 13% were using condom every time. Chaturvedi *et al.* also noted that only 6.8% of truck drivers used condom regularly. Manjunath *et al.* also discovered that 16.3% (43) used condom on all occasions [15]. Hence, there is a need for educating both truck drivers and commercial sex workers about condom usage for prevention of HIV infection. Qualitative studies are further recommended to find out the reason for non-usage of condoms.

## Limitation

All sexual practices and behavior documented in the study are self-reported. Therefore, there may be a social desirability bias. Serological test for common reproductive tract infections like syphilis, hepatitis B, gonorrhoea, and HIV were not included due to field setting of study. High refusal percentage (35%) was encountered from truck drivers when approaching them for interview. It is possible that the truck drivers who refused interview were different from those who consented.

## Conclusions

Nevertheless, the limitation of the study demonstrates that although there was a high awareness of HIV, yet the misconception for HIV was prevalent. The awareness about STD was low, and there was a delay in health seeking among truck

drivers. Condom usage among truck drivers was at low level, hence, it should be promoted and advocated. These results suggest the need for focused behavioral change program, including modification in their health seeking behavior in HIV for prevention of long-distance truck drivers in Pune.

## Conflict of interest

The authors declare no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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**APPENDIX****Questionnaire: Sexual behaviour of truck drivers****I. Personal particulars**

1. Sl No. \_\_\_\_\_ 2. Age: \_\_\_\_
3. Current place of residence: rural/urban
4. Education: illiterate/I-V/VI-X/X+
5. Religion: Hindu/Muslim/Christian/Sikh/Other
6. Marital status: unmarried/married/divorcee/widower
7. If married: age at marriage: < 18/19-21/22-25/25+
8. Status of sexual partnership:
  - Currently married, living with spouse
  - Currently married, living with other sexual partner
  - Married, not living with spouse or other sexual partner
  - Not currently married, living with/having sexual partner
  - Not currently married, not living with/having sexual partner
9. Family details: adults \_\_\_\_ children \_\_\_\_ average monthly income \_\_\_\_

**II. Personal history**

10. Smoking: yes/no
11. No. of 'bidi'/cigarette per day:
12. Duration of smoking:
13. Alcohol consumption: yes/no
14. Amount of alcohol taken in a week: < 6 peg/6-12 peg/> 12 peg
15. Duration of alcohol intake:
16. Tobacco chewing: yes/no
17. Amount consumed per day: < 5 pkt/5-10 pkt/> 10 pkt
18. Drug addiction: none/ganja/bhang/afim/charas/IV drug use
19. Frequency of drug intake: daily/twice a week/weekly
20. Work environment:
  - Average no. of nights spent away from house in a month on driving duties \_\_ nights
  - Job satisfaction: happy/satisfied/unsatisfied/unhappy
21. Entertainment: Mode of relaxation after a day's work or when off duty:
 

Radio/TV	Y/N
Newspaper/magazine	Y/N
Playing cards	Y/N
Pornography/XXX CD or DVD	Y/N
Dance bars	Y/N

**III. Awareness of STD and treatment seeking behaviour**

22. Ever heard of STD: yes/no
23. STD stands for: correct/incorrect
24. What are the symptoms:
  - (General): fever/headache/backache
  - (Specific): genital discharge/genital ulcer/pain during intercourse/lower abdominal pain/burning pain during urination/swelling in groin area
25. Did you ever suffer from STD: yes/no
26. If yes, the no. of symptoms: one/more one symptom

27. STD treatment seeking behavior:  
 No treatment or went to informal health facility during the last episode:  
     Took home based remedy  
     Borrowed prescription from friend/relative  
     Took medicine I had at home  
     Purchased medicine from a chemist shop  
     Went to a doctor (govt/private/NGO clinic/quack)
28. After how many days did you go to a health practitioner: < week/> week/> month
29. Type of medicine taken: allopathic/homeopathic/ayurvedic

#### **IV. Awareness of HIV/AIDS**

30. Ever heard of HIV/AIDS: yes/no
31. Full form of HIV/AIDS: aware/not aware
32. From where did you come to know about it:  
     Peer group (neighbor/friend/family member)  
     Audio visual media (radio/TV/print media (poster/book/magazine)/awareness program like street play etc.)  
     Health worker (doctor/nurse/other)
33. HIV/AIDS spread by: Unprotected sex/blood transfusion/needle sharing/mother to unborn child/breast milk
34. Correct awareness on common misconceptions regarding HIV/AIDS transmission:  
     HIV is transmitted through mosquito bites/bed bug bite: yes/no  
     HIV is transmitted through sharing meal with any infected person: yes/no  
     HIV is transmitted by shaking hand: yes/no  
     HIV is transmitted by sharing toilet/swimming pool: yes/no  
     Healthy looking person may already be suffering from HIV: yes/no
35. Do you wish to get yourself tested for HIV/AIDS: yes/no/don't know
36. Have you ever attended HIV/AIDS awareness program: yes/no
37. If 'yes' in last: one month/six month/one year

#### **V. Sexual behaviour**

38. Age at first sex: < 15 yrs/16-18/19-21/22-25/25+  
     Did someone accompany you: yes/no  
     If 'yes' who: co-driver/other driver/middlemen
39. Are you staying with family: yes/no
40. If 'yes', how is your sex life: satisfactory/can be better/unsatisfactory
41. Sexual intercourse with wife: > once a day/daily/twice a week/once a week/< once a week
42. If not staying with family, do you masturbate: never/occasionally/frequently
43. Heterosexual preference: vaginal/oral/anal/mixed
44. Have you had extra marital sexual relation?  
     Extra-marital sexual relation: never/yes  
     Extra-marital sexual partner: relative/amateur/commercial sex worker
45. Were you intoxicated during sexual act: every time/sometime/never
46. Were you intoxicated during sexual act: every time/sometime/never
47. Preferred heterosexual partner: teenager/adolescent/< 30/> 30/no preference
48. Do you think in truck drivers to have extramarital relations is: common/exceptional/occasional/never/don't know

#### **VI. Homosexuality**

49. Do you indulge in homosexuality? yes/no
50. With whom: relative/amateur/commercial sex worker/colleague
51. Homosexual preference: oral/anal/mixed



52. Were you intoxicated during homosexual act: every time/sometime/never

53. Did you use condom during homosexual act: every time/sometime/never

**VII. Condom usage**

54. Do you use condom during sexual act: always/sometimes/never

55. Type of condom brands used: free (Nirodh brand)/paid (deluxe Nirodh/Kamasutra/Masti etc.)

56. Source of condom used: sexual partner/purchased at chemist shop/others (NGOs/peer educator)

57. Reasons for not using condoms:

Decreases pleasure/interference with sexual act/too expensive/partner objection/not available

58. Do you agree to use condom if proposed by sexual partner: always/sometimes/never

59. Will you use condom if: it is available free of cost/easily available near brothels or 'dhabas'/educated about its proper use and advantages/ not use it anyway

**VIII. Remarks**