Knowledge, attitude and practices concerning HIV/AIDS among Iranian at risk sub- populations

Iran has been ranked among the countries with low prevalence concentrated epidemic, but due to the paucity of research on high-risk groups, little is known about their awareness, behaviors and potential points of entry for HIV.

This study looked at knowledge, attitude and behaviors concerning HIV in a sample of 1005 cross boarder truck drivers, female sex workers and youth.

It has been shown that the level of knowledge about HIV on average was low and it was even lower among individuals with high-risk behaviors, furthermore the individual risk perception was low. High-risk groups' awareness about other sexually transmitted infections are relatively higher than youth but their knowledge comes primarily from personal experience rather than public awareness program. People who engage in behaviors that carry a high risk for HIV transmission very often engage in more than one risky behavior.

Social and cultural constraints constitute a barrier to factual communication about HIV issues, and existing awareness programs are not directed at people with risky behaviors, so their poor knowledge and low risk perception may lead to acquisition of HIV/AIDS.

The need to create a supportive environment through a multi-sector policy, religious, political and programmatic approach is recommended for the implementation of effective awareness and prevention activities among specific sub population as well as general population.

Key words: Iran, HIV, knowledge, commercial sex worker, truck driver

Introduction:

HIV spreads rapidly both within the countries and across the borders. It affects people regardless of gender, geography or sexual orientation. In I.R Iran, according to WHO/UNAIDS classification, the HIV epidemic is considered low or “concentrated”, because its prevalence rate is less than 1% among general population but it is more than 5% among high risk groups, mainly among intravenous drug users (IDUs) (UNAIDS, 2004).

The first case of HIV infection in the I.R. Iran was reported in 1986and by the end of 2004, there were 9800 sero-positive cases of HIV and 374 cases of AIDS (Center for Disease Management, 2004), but the estimate in 2004 indicate that more than 30,000 people with HIV/AIDS are living in Iran(MAP Network, 2004). More than half of the reported HIV-positive cases has been identified since 2002, this may reflect expanded surveillance and introduction of new program such as voluntary counseling and testing centers(VCT), but it almost certainly also mirrors a recent escalation in the epidemic.

Although the epidemic in Iran is primarily fueled by drug use, HIV prevalence has reached 20% among them in some sites (MAP Network, 2004), and the mode of transmission has been indicated to be mostly through injection drug use (51.3% in 2004), however this perception is partly due to manner in which data are collected . Although, it has become apparent in last few years that heterosexual transmission has risen , also the rate of sexually transmitted infections (STIs) was increased dramatically, confirming the suspicion that the infection has indeed permeated in to the community at large(Center for Disease Management, 2003)

The government has launched double-prong initiative program to address the growing epidemic of HIV/AIDS through enhancing public awareness and reduction of vulnerability of high risk groups by implementing voluntary counseling and testing services , mass media campaign and symptomatic approach to STIs since 1995.But due to the paucity of research in Iran on high risk behaviors, little is known about potential points of entry for HIV and about behaviors that may influence the rate at which HIV might spread and take hold within specific subpopulations, their HIV/AIDS awareness had not been studied as well . Particular groups identified as being at high risk for HIV/STD and studied in other contexts, have not been the focus of published research on Iran, apart from a few studies on drug users (Mokri, 2002; Razzaghi et al., 1999; UNODC 2002; WHO 2004; Zamani et al., 2005)

Given the potential importance and cost effectiveness of HIV prevention efforts targeted at high-risk groups in contexts where the general prevalence of HIV is very low, it is crucial at this time to learn more about the knowledge, attitude and behaviors of groups that may be at higher risk. The present study focuses on three groups, Cross boarder truck drivers and travelers, Female commercial sex worker and youth, which considered as vulnerable groups in world wide studies (Abdolmoneim et al., 2002; Agha, 2002; Bwayo et al., 1994; Gibney et al., 2003; Jeff 1999; Kimoto 2001; Lacerda et al., 1997; Lertpiriyasuwat and Plipat 2003; Lowndes et al., 2002; Prybylski and Alto 1999), but except a few studies on sexual reproductive health behavior of youth(Simbar et al., in press; Mohammadi et al.,2004;), there is not available data on HIV/AIDS knowledge and the risk characteristic of these two other groups.

This study aims to define HIV and STIs knowledge, high-risk sexual attitude and behavior, also drug related behavior among these three groups.

Methods:

Participants and setting:

A cross sectional study was conducted among young male and female aged 15-25, cross boarder truck driver and travelers (CBTD/T), and commercial female sex workers (CFSW) in 2003. Saravan, Astara, Islamshahr and Kermanshah were chosen as the place of study, because of having higher HIV prevalence rate compare to average country level, numerous cross boarder traveling, being near to a metropolitan city, and having access to sex workers accordingly, Kermanshah was the first city that VCT center was established there and the existence of sex worker was not ignored by local authorities.

Sampling methods:

Youth has been recruited from the list of total house holds of each cities, through modified stratified, multi stage cluster sampling approach often referred to as the "Segmentation method"(Turner et al., 1996). Clusters were chosen using a systematic random sampling procedure with probability –proportional –to-size. In each cluster interviews attempted to obtain the information from five eligible household (household with at least one resident 15-25 years of age) within that segment. If one household had more than one eligible subject, only one of them whose name was first based on alphabetic order has been selected. For Cross border truck driver and travelers, due to the impossibility of obtaining a comprehensive list of the approximately 40,000

drivers and 180,000 travelers who passed the Astara boarder annually and the difficulty in locating those individuals, a randomized sample of individuals could not be recruited. It was determined that the most rigorous and viable sampling strategy was to randomly select numbers and then recruit truck drivers and travelers present with those numbers on days of recruitment. As all drivers and travelers needed to go to the registry office for getting the pass permission and received a confirm number at early morning so it was unlikely that any particular bias was introduced by recruiting subjects present in the registration office on the days of recruitment. For female commercial sex workers a modified respondent driven sampling method has been selected. A non-official net work of female sex workers was existed in Kermanshah, and we got access to this net work through some of them who had been seeking advice from VCT and have faith in it and be sure about their confidentialities. They have been asked to write the name of as many sex workers as they know, then after omitting the similar names that have been introduced by more than one person, a comprehensive list was prepared and samples were randomly selected form the list.

Data Collection:

A nameless questionnaire including closed questions was considered for this study. Its validity confirmed by 15 experts and its reliability was assessed by re-interviewing of 10 respondents from each groups after three days in pilot phase of the study. After obtaining written informed consent, each respondent has been asked to fill up a nameless questionnaire by an experienced interviewer, of the same gender as the respondent, but illiterate or low literate subject was confidentially interviewed. Sex workers, who had cooperated for introducing their colleagues, have been asked to assist

with sex worker's data collection team. The filled questionnaires have been put in to a sealed box with "National Research Center for Reproductive Health" stamp.

Scoring:

HIV Knowledge Index was calculated by adding the scores of 14 item true –false scale questions and index equal or more than 9 considered as high HIV/AIDS knowledge (table 2). STIs Knowledge Index was computed by adding the scores of 11 related questions, index equal or greater than 6 assumed as high STIs knowledge (table 2). Sexual Attitude Index was estimated by summing the scores of six items with three point Likert scales ranging from disagreement; do not have any idea and agreement, with 0, 1 and 2 scores accordingly. Index equal to five or more considered as positive sexual attitude.

Drug use was illegal in Iran and the probability of getting correct answer from asking their personal drug use habit was very low, so we preferred to ask it indirectly and asses their susceptibility for drug use by asking about their drug use observation and their friends or relatives' drug use behavior and we assumed that some body who is in contact with drug users is more susceptible to use drug than the others. Susceptibility for Drug Use Index was calculated by adding the scores of 5 related questions. For each one of the drug user friends, out of five close friends, they got 1 score. Index equal or more than four considered as high susceptibility for drug use.

No questions concerning sexual activity or condoms were included in questionnaire of young girls, women and boys younger than 20 years old, because it has not been allowed by "National Ethical Committee of Medical Research".

Data analysis:

Statistical analysis was performed using SPSS for windows. Univariate analysis were conducted to assess association between the out come measures (HIV/AIDS knowledge, STIs Knowledge, sexual attitude, susceptibility for drug use and pre/extra marital sex) and potential covariate. Statistical tests for equality of means (t test or one way ANOVA) were used for categorical variables. To determine which predictor variables were significantly associated with pre /extra marital sex a series of univariate logistic analysis were conducted. Then multivariate analysis was conducted using back ward stepwise regression. Tests for multi co linearity were conducted, and according to the variance inflation factor and the tolerance statistic, co linearity between variables in the models was not a problem, so has not considered in final module. The initial multivariate module included all of the variables utilized in univariate logistic regression analysis.

Ethical issues:

The study was approved by the Research Review Board of the Deputy Ministry for Research & Technology and the National Ethical Committee of Medical Research. Informed consent was obtained and no personal identifier was recorded on the questionnaire.

Results:

754 youth, 201 Cross boarder truck drivers/travelers (CBTD/T) and 50 commercial female sex workers (CFSW) were enrolled in this study. The response rate for sensitive topic related to sexual or drug behavior was 75% among “Youth” and

CTD/T but all of the CFSW answered to these questions may be due to cooperation of female sex workers with research team.

Table1shows the socio demographic characteristics of these three groups, part of the differences among them, can be explained by eligible criteria that has been considered for each group, e.g. the significant difference of their mean age can be elucidated by recruiting “Youth” from 15-25 years age group. The educational level of these groups were significantly different and because educational level has an important influence on outcome measures (HIV/AIDS knowledge, STIs Knowledge, sexual attitude, susceptibility for drug use), so it considered as a confounding variable and all of the mean indexes have been adjusted for it.

CFSW and CBTD/T were significantly less knowledgeable about HIV/AIDS in compare to youth in all most all of the questions. In addition, finding revealed, HIV/AIDS misinformation in areas of transmission and prevention was higher among CFSW in compare to other groups. The adjusted mean of HIV knowledge index was significantly lower among low literate CFSW in compare to other groups. 42% of FCSW has not been aware about sexually transmitted pattern of HIV and 62% of them has not known condom or not been informed about its preventive effect on HIV transmission.

Although generally STIs knowledge was low and about 1/3 of subjects (27.2%)has never heard about the sexually transmitted infections, but it has been shown that the CFSW significantly more than CBTD/T and Youth responded correctly to STIs questions(Mean score: 4.54, 3.32, 2.79 respectively).HIV/AIDS and Gonorrhea were the two most common mentioned STIs (59.7% , 29.4% respectively).

All of the female sex workers had previous history of STIs, 60% of them had it frequently, but it was 31.9% among CBTD/T and 27.9% among youth. Abnormal vaginal discharge and genital ulcer were the two most common symptoms of STIs among all subjects with previous history of STIs (40.2%, 19.3% respectively). 57.2% of CFSW and CBTD/T with previous history of STIs mentioned self treatment or seeking advice from their friends as their common approach to STIs symptoms, but "Youth" was usually treated by health personnel or physician (59.3%).How ever the majority of subjects with previous history of STIs from all of these three groups (69.5%), were not been aware about the necessity of partners' treatment.

Sexual attitude of respondents was assessed based on their responses to 6 items and its result has been shown in table 2. The scales demonstrated good internal consistency (Alpha Cronbach=77.2%).Results revealed that CBTD/T had more positive sexual attitude than "Youth" (Scores: 2.80 and 2.06 accordingly) and this difference is meaningful after adjustment for educational level (table 3). There was a gender discrepancy on sexual attitude and premarital sexual relationship was less acceptable for girls than to boys (18.9%, 23.7%).CBTD/T had less negative attitude regarding polygamy in the shape of temporary marriage in compare to youth (43.3% and 27.1% accordingly) and overall temporary marriage was more acceptable than extra marital sex(table 3).

There was a significant difference on "Susceptibility for Drug Index" among different groups; it was 7.98, 2.47 and 1.58 for CFSW, CBTD/T and youth respectively. This difference was also significant after adjusting for educational level (Table 3). The mean number of their close friends, out of five, who use drug or injected was (2.72,

2.42) among CFSW, it was (0.66, 0.22) and (0.49, 0.16) between CBTD/T and youth respectively. 60% of the FSW denoted that they have used drugs and 2.5%of them use it intravenously.

No questions concerning sexual activity or condoms were included in questionnaire of young girls, women and boys younger than 20 years old, so these questions have been asked from 812 of subject .12.4% of young men and boys had previous history of extra marital or premarital sex; it was 38.3% among CBTD/T. In multivariate analysis conducted on this data, belonging to CBTD/T remained the major factor, associated with pre/extra marital sex (adjusted OR: 4.6, 95% CI: 3.04-6.96). Accesses to internet and/ or satellite, high level of STIs and/ or HIV knowledge, positive sexual attitude, high susceptibility for drug use were the other predictor variables. The educational level has not indicated as a predictor variable in this module (table 3).

More than 1/3 of sexually active CBTD/T and male youth (35.2%) have never used condom. Reduction of sexual pleasure was acknowledged as the most common reason (42%) for not using condom among youth. 48% of female sex workers have never used condom, cost, disagreement of their partners, were mentioned as the two main reasons for not using condom by 58%, 26% of them accordingly.

14.2% of youth and 9.9% of CBTD/T were concerned about HIV infection and less than 1% of them have been tested for HIV before, but there was not any significant difference based on their previous history of extra marital sex and their personal risk perception.16% of FSW were concerned about HIV infection and 8% of them have done it before.

Discussion:

The impediments facing countries with low HIV prevalence permeate responses at all levels from policy formulation to prevention planning, implementation strategies and individual behavior change (UNAIDS 2001).So more than two decades in to the HIV/AIDS epidemic and one decade of our National HIV prevention program, this study indicates that the average level of HIV/AIDS knowledge was low and it was even lower among people with high risk behaviors. A majority has heard of AIDS, but many do not know its transmission pattern properly, not been informed about preventive effect of condom or have misconception, also the individual risk perception was low.

Accurate knowledge regarding possible routs of transmission is not only critical for decreasing infection rate, it also important to dispel persistent myths and partial knowledge can further perpetuate the risk of infection (Babakian et al., 2004; Boyer and Tschann 1999). Lack of knowledge and misconception about HIV/AIDS are key factors in the lack of prevention effort and it has been shown that people need a solid factual understanding of HIV and its transmission, access to relevant services, and the confidence and social power to initiate and sustain behavior change in order to prevent the spread of HIV/AIDS (Cindy 1998, Gupta and Wiess 2000). Although knowledge alone does not change behavior and there is no significant relationship between sexual knowledge and safer sex, but knowledge of the fact of HIV transmission plays obvious role in increasing the likelihood of safer sex through perception of individual risk that medicate action based on knowledge(Camlin and Chimbwete 2003;Macintyre et al., 2004; Prohaska et al., 1990). However, poor knowledge and low risk perception among

groups with high-risk behaviors in this study, may lead to acquisition of HIV/AIDS in our community.

There was not any formal HIV/AIDS prevention program in Iranian schools when this study was conducted and television was the most popular mass media for HIV/AIDS introduction and almost all of our population has access to it. Therefore, it seems that the difference between HIV knowledge of youth and the other groups is not related to HIV/AIDS schools awareness program. It has been shown that informing the high risk groups like as CFSW requires especial informal approaches, so public awareness program cannot improve their knowledge significantly (Parker et al. 2000; UNAIDS 2003). It is unrealistic to assume that HIV/AIDS campaigns targeting the general population will have the same impact and effectiveness for high-risk groups, particular program should be designed to target these groups, and it has to be included appropriate examples and be sub- culturally relevant (Lamptey et al. 2001).

Although the average STIs knowledge among subjects in this study was low, but CFSWs were relatively more knowledgeable in this issue in compare to others, however it was mostly due to their previous history of STIs, so their knowledge comes primarily from their personal experience rather than public awareness program. Lack of information about STIs or sexually transmitted pattern of HIV demonstrated that due to our social and cultural barriers that restrict an open and frank dialogue on sexual related issues, these aspects have not been addressed properly in our program.

This study, like other studies (FHI 1999; Wirawan et al., 1993), shows that the previous history of STIs was much more common among people with high-risk behaviors but most of them have not been treated appropriately or not been informed

about necessity of partners' treatment or condom preventive effect. In addition, only symptomatic STIs have been considered for treatment. However, the large proportion of STIs are asymptomatic, which complicated their early diagnosis and prompt treatment (Gerbase et al., 1998) and effective treatment of STIs is an essential component of HIV prevention because they increase individuals' susceptibility to HIV and its infectiousness (Donovan 2004; Cohen 2004; Fleming and Wasserheit 1999; Galvin and Cohen 2004; Ping et al., 2000; Rottingen et al., 2001).

Involving the CFSWs in this project enhanced the response rate in this sub population to 100%. This strong effect has also been shown in the other studies (Jana et al., 1998; Kimoto 2003), and it reveals that their participation can strengthen the effectiveness of prevention program and has to be taken in to account in further program planning. Obviously they are not likely cooperated with program in an atmosphere of stigmatization and victimization (Arachu and Paul 2005), so first, stigma need to be addressed in our community.

Pre or extramarital sex is reported less than the other countries, but it is existed (UNAIDS 2002). So although providing moral guidance about sexual abstinence and mutual fidelity will be the cornerstone of our HIV prevention program, but because of existence of people who are not willing or able to conform to these standards of behavior, it is necessary to provide clear and accurate information regarding condom. Also reduction of negative images of condom, giving the negotiation and decision making skills for its use, and making it easy available are the other aspects that have to be taken in to account in condom promotion program(Singh et al., 2003).

A positive attitude regarding temporary marriage, especially among CBTD/T has been shown in this study. Although the prevalence of HIV infection in Islamic countries is low and a recent study showed that among 38 Sub- Saharan countries, the percentage of Muslims within the countries negatively predicted HIV prevalence (Gray 2004; Lenton 1997; UNAIDS 2002). However, the positive attitude to polygamy may be associated with sexual permissiveness and increase tendency to engage with multiple sexual partners, it had been considered as an explanation for higher rate of HIV among some Muslims (Kapiga and Luggala 2002; Kapiga 1996). Multiple sexual partners among men, in the shape of temporary marriage have not to be socially sanctioned, because these social norms allow men to be an important source of spread of HIV infection in the general population. In Iran most of the HIV infected women ,had been infected through their spouses who are engaged with multiple partners sex or drug injection, especially in part of Iran which poly gamy is more common(Center for Disease Management 2002).

Mobile population was not considered as a high-risk group in our National HIV prevention program and not any specific program has been designed for them, also the local authorities denied the necessity of having particular program for them. This study shows that the high-risk behavior is more common among them and the public awareness program has not improved their knowledge sufficiently.

This study illustrates that people who engage in behaviors that carry a high risk for HIV transmission very often engage in more than one risky behavior like the other Asian countries (Lu and Essex, 2004). All most all of the CFSW in present study have been in contact with drug, directly or in directly, and having higher drug use index was

positively associated with higher risk of pre or extra marital sex between CBTD/T and young male. The link between drug use and risky sexual behavior is mentioned in literature (Persaud et al., 1999; Saidel and Jarlais 2003; Zamani, et al. 2005).

It is recommended to provide more comprehensive and reliable information about attitudes, beliefs and practices of community at risk, particularly sexual and drug taking behavior in order to respond promptly and effectively to HIV/AIDS epidemic. In a concentrated epidemic setting, behavioral data collection is critical to determine the link with general population and designing the appropriate intervention program. Experiences from North America, Europe and countries like as Senegal, confirm that the cheapest and most cost effective way to maintain low prevalence situation is to provide effective prevention to a large population of group with the highest risk behavior early in epidemic (Meda et al., 1999; UNAIDS 2001).

The need to create a supportive environment through a multi-sector policy, religious, political and programmatic approach is recommended for the implementation of effective prevention activities among high-risk groups and the general population. Working together, Iranian can overcome the epidemic, but there is a need to act quickly and to act in effective ways so that the devastating effects can be reduced.

Study limitation:

The present study has some limitation, first our participants are unlikely representative of their groups as they recruited from only a few cities. Although the use of a non- randomized sampling method for CBTD/T and FCSW more limits its generalizability. Furthermore, our study was based on self- reported information, which could be biased by the participants recall ability. The apparent social desirability bias, specifically in subjects' responses to the sensitive issues like as sexual attitude and practice is a considerable potential limitation. The results, therefore, regarding these

sensitive issues should be interpreted with this possibility in mind. Our failure to assess detail of extra or premarital sex in terms of different types of partners, having homosexual and heterosexual sex and condom use differentiating based on various type of sex, require further investigation.

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Table 1: Socio-demographic characteristics of the respondents

characteristics		FSW (%)	CBTD/T (%)	Youth (%)
Educational level	Illiterate /primary	48.0	3.5	9.1
	Un complete secondary	48.0	47.0	29.5
	Complete secondary /higher	4.0	49.5	61.4
Access to mass Media	TV	94.0	92.5	95.5
	Video	25.0	47.8	38.3
	Satellite	2.0	7.5	7.3
	Internet	2.0	4.5	7.6
Marital status	Married	98.0	71.1	37.8
	Single	2.0	28.9	62.2
Age group	15-19 (y.o)	10.0	2.5	30.5
	20-25 (y.o)	6.0	34.8	69.5
	>25 (y.o)	84.0	62.7	-

Table 2: frequency distribution of response to different items that have been used for scoring the HIV/AIDS knowledge, STIs knowledge, sexual attitude and susceptibility for drug use

Items	Questions	FCSW (%)	CBTD/T (%)	Youth (%)	P value
STIs' knowledge	Heard about disease which transmitted sexually	76.0	71.6	73.5	n
	Named Gonorrhea	52.0	34.3	26.3	<0.001
	Named HIV/AIDS	38.0	65.7	59.7	0.002
	Named Syphilis	26.0	17.4	9.6	<0.001
	Named Genital wart	4.0	6.0	6.1	n
	Named Genital herpes	28.0	2.5	5.2	<0.001
	Abnormal vaginal discharge is a symptom of STIs	68.0	35.3	25.9	<0.001
	Burning pain on urination is a symptom of STIs	52.0	44.8	28.1	<0.001
	Genital ulcer /sores is a symptom of STIs	62.0	26.4	21.5	<0.001
	Swelling in groins area is a symptom of STIs	20.0	8.0	5.6	<0.001
	Lower abdominal pain is a symptom of STIs among women	38.0	21.4	18.1	0.002
HIV/AIDS Knowledge	Known a healthy looking person could be infected with HIV	34.0	65.7	71.1	<0.001
	HIV can be transmitted through sexual intercourse with unknown person	58.0	77.6	80.3	0.01
	HIV can be transmitted through infected mothers to her fetus	38.0	45.8	53.2	0.03
	HIV can be transmitted through sharing the shaving instrument	50.0	63.7	76.9	<0.001
	HIV can not be transmitted through kissing or shaking the hand	42.0	92.0	87.8	<0.001
	HIV can be transmitted through blood transfusion	64.0	69.7	74.7	n
	HIV can be transmitted through breast feeding	22.0	19.4	27.9	0.04
	HIV can be transmitted through needle or syringe sharing	60.0	66.2	73.5	0.02
	HIV can be transmitted through un sterile dental instrument	46.0	50.2	56.0	n
	HIV can not be transmitted through Sharing meals with infected person	40.0	87.6	87.8	<0.001
	HIV can not be transmitted through mosquito biting	60.0	80.2	79.6	0.02
	Condom can be prevented from HIV transmission	38.0	42.8	58.8	<0.001
	Condom can not be used more than one time	45.0	54.8	61.7	<0.001
Sexual attitude (Not having negative attitude to ward)	Boys having sexual relationship before marriage	-	36.4	20.4	<0.001
	Girls having sexual relationship before marriage	-	30.4	15.8	<0.001
	Homosexual relationship	-	31.4	15.3	<0.001
	Having temporary marriage before marriage	-	61.7	33.8	<0.001
	Having temporary marriage along marriage	-	43.3	27.1	<0.001
	Having extra marital sex	-	37.8	36.9	0.04
Susceptibility to drug use	Have ever seen some body who use inhalator drug	100	21.4	33.5	<0.001
	Have ever seen some body who injecting the drugs	84.0	10.4	15.3	<0.001
	Have family member who use drug	100	48.5	41.6	<0.001
	The number of close friends, out of five, uses inhalator drug (Mean ±SD)	2.72± 0.73	0.66± 1.24	0.49± 1.06	<0.001
	The number of close friends, out of five, uses injected drugs (Mean ±SD)	2.42± 1.11	0.29± 0.86	0.16± 0.59	<0.001

Table 3: Mean score of HIV/AIDS Knowledge, STIs Knowledge, Sexual Attitude and Susceptibility to Drug use among different groups based on educational level

Item		CFSW (Mean± SD)	CBTD/T (Mean± SD)	Youth (Mean ± SD)	P Value	R
HIV knowledge Score	Primary Education	4.38 ± 3.64	5.86± 2.79	7.90 ± 2.90	<0.0001	0.19
	Secondary Education	8.17 ± 2.96	7.10± 2.92	8.22 ± 2.62		
	Diploma/Higher	12.0 ± 0.0	9.30± 2.30	9.21 ± 2.17		
	Total	6.5 ± 3.89	8.15 ± 2.86	8.80 ± 2.44		
STIs Knowledge Score	Primary Education	4.38 ± 3.03	1.0 ± 1.82	2.15 ± 2.08	<0.0001	-0.19
	Secondary Education	4.42 ± 3.08	2.66 ± 2.42	2.07 ± 1.73		
	Diploma/Higher	8.00 ± 0.0	4.12 ± 2.37	3.23 ± 1.90		
	Total	4.54 ± 3.05	3.32 ± 2.51	2.79 ± 1.95		
Sexual Attitude Score	Primary Education	-	1.86 ± 2.85	1.40 ± 1.98	<0.0001	-0.47
	Secondary Education	-	2.94 ± 2.77	1.27 ± 2.20		
	Diploma/Higher	-	2.67 ± 2.33	2.53 ± 2.67		
	Total	-	2.80 ± 1.56	2.06 ± 2.56		
Drug Susceptibility Score	Primary Education	8.79 ± 1.31	2.0 ± 4.0	1.63 ± 2.53	0.002	-0.11
	Secondary Education	7.42 ± 1.41	2.11 ± 3.34	1.61 ±2.28		
	Diploma/Higher	5.0 ± 2.82	2.92 ± 2.94	1.55±2.29		
	Total	7.98 ± 1.66	2.47 ± 3.17	1.58 ± 2.30		

Table 4: Multivariate analysis of the associated factors with the risk of Pre or extra marital sex among Cross Boarder Truck Drivers/Travelers and Youth

Variable	Variables' category	Odds Ratio	95% CI	P Value
Risk Group	Youth	1	-	<0.0001
	CBTD/T	4.60	3.04-6.96	
Access to Satellite	Not Have Access	1	-	0.001
	Have Access	2.87	1.53-5.36	
Access to internet	Not Have Access	1	-	0.04
	Have Access	1.98	1.04-3.78	
STIs' Knowledge	Low level of Knowledge	1	-	
	High level of Knowledge	2.07	1.24-3.46	0.006
HIV/AIDS Knowledge	Low level of Knowledge	1	-	0.05
	High level of Knowledge	1.53	1.01-2.32	
Sexual Attitude	Negative Attitude	1		0.0003
	Positive Attitude	2.20	1.44-3.37	
Susceptibility for Drug Use	Not Being Susceptible	1	-	0.0001
	Being Susceptible	2.59	1.63-4.13	