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STD in Bangladesh's trucking industry: prevalence and risk factors

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Objectives: This study characterises the prevalence of a broad spectrum of sexually transmitted diseases (STDs) (herpes simplex virus 2, syphilis, chlamydia, gonorrhoea), and examines associations between risk factors and infection in men working in Bangladesh's trucking industry. Given the high risk sexual behaviours of truck drivers and helpers in many contexts, as well as the direct health effects of STDs and their role in facilitating HIV transmission, it is important to understand the prevalence of STDs and associated risk factors in this population.

Methods: A cross sectional study was conducted at Tejgaon truck stand, one of the largest truck stands in Dhaka, the capital city. The study group, comprising 388 truck drivers and helpers, was selected via a two tiered sampling strategy. Of 185 trucking agencies based at the truck stand, 38 agencies were randomly selected, and a mean of 10 subjects (drivers/helpers) were recruited from each agency. Urine and blood samples were collected from subjects after an interview about their lifestyle and a comprehensive physical examination. Gold standard laboratory tests were conducted for the detection of STD. Multiple logistic regression was used to assess associations between infections and potential risk factors.

Results: The levels of prevalence of disease were HSV-2 (25.8%), serological syphilis (5.7%), gonorrhoea (2.1%), chlamydia (0.8%). For infection with any bacterial STD (syphilis, gonorrhoea, or chlamydia) the only significant risk factor was having sex with a commercial sex worker in the past year (OR=3.54; CI=1.29–9.72). For HSV-2, truck helpers working primarily on interdistrict routes were significantly more likely to be infected than drivers working on these routes (OR=2.51, CI=1.13–5.55).

Conclusions: The high prevalence of HSV-2, and to a lesser extent syphilis, and the low levels of condom use despite high numbers of casual sexual partners, illustrate the importance of promoting condom use, particularly in commercial sexual encounters, to men in Bangladesh's trucking industry.

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Truck drivers have been identified as having high risk lifestyles for STD (sexually transmitted disease) transmission in India, Thailand, and sub-Saharan Africa.[1–6] It is unknown whether truck drivers and helpers (men who travel on the trucks assisting drivers) in Bangladesh have high STD rates as there is no ongoing surveillance and little published data on infection rates. There is also little information on lifestyles of this population, except unpublished qualitative studies indicating that truck drivers are an important client group for commercial sex workers.[7–9] As elsewhere, in Bangladesh work conditions for truck drivers and helpers are conducive to high risk sexual activity (frequent absences from home, easy access to sex workers located near truck stops).

A study of 403 Bangladeshi truck drivers and helpers (men who travel on the trucks with the driver) reported that 6.7% tested positive for syphilis (positive on both a rapid plasma reagin test and the *Treponema pallidum* haemagglutination assay).[10] Truck drivers and helpers in Bangladesh do not appear to have high HIV rates, unlike other countries where truck drivers have been a core group for HIV transmission.[1–3 5] No HIV infections were found in the study of 403 truck drivers and helpers[10] or in our unpublished study of HIV and hepatitis infections in the 388 Bangladeshi truck drivers and helpers who also constitute the sample for the data reported here. These results are commensurate with the very low rates of HIV infection in the country. At the end of June 1997, UNAIDS estimated that there were 21 000 infected adults in Bangladesh (0.03% of the adult population).[11] Only 102 cumulative HIV positive cases had been reported to the National AIDS Committee by December 1998; two of those cases were in truck drivers (Dr Nazrul Islam, personal communication, 1999). Potential reasons for the low HIV rates

include a low rate of introduction; sexual and drug use patterns that are less conducive to transmission[12 13]; high rates of male circumcision (the population is ~88% Muslim and male Muslims in Bangladesh are all circumcised) which may be protective[14–16]; and lower STD rates.[17 18]

An assessment of rates of STD infection in Bangladeshi truck drivers is needed to ascertain whether they are, as elsewhere, a high risk group for STD. This is important both because of the role STD may have as co-factors in the transmission of HIV,[19 20] as well as the burden of disease they cause. Recent analyses show that STDs collectively rank among the five most important causes of years of healthy productive life lost in developing countries.[21] If truck drivers are a high risk group, with the capacity to spread infections to wives, girlfriends, and casual partners, targeted STD/HIV prevention efforts might be warranted, particularly at this early stage in the spread of the disease in Bangladesh.

This study characterises in Bangladeshi truck drivers and helpers the prevalence of a broad spectrum of sexually transmitted diseases (herpes simplex 2, syphilis, chlamydia, and gonorrhoea) and examines risk factors and background characteristics associated with these diseases.

METHODS

A cross sectional study was conducted at Tejgaon truck stand, one of the largest truck stands in Dhaka, the capital city, from October 1998 to April 1999. The study was approved by the institutional review board of the University of Alabama at Birmingham and the ethics committee of the Bangladesh Medical Research Council. The study group comprised 388 men in the trucking industry (drivers and helpers) working out of

transport agencies based at Tejgaon truck stand. For an STD with a relatively low observed frequency of 3%, the estimate of true prevalence would have 95% CI of 1.3% to 4.7% in a sample of 388 subjects.

Owing to the impossibility of obtaining a list of the approximately 10 000 drivers/helpers operating at the truck stand, and the difficulty in locating those individuals, a two tiered sampling strategy was used. Initially, a census was conducted at the truck stand of employment agencies for truck drivers and helpers (a total of 185 agencies). A random sample of 38 of these 185 agencies was selected (using a random numbers table on EPI-INFO). After obtaining approval from the selected agencies to recruit their workers for the study, subjects were recruited from each of the 38 trucking agencies. The recruitment objective was 10 subjects per agency; recognising that some individuals who consented to participate would not later show up at the clinic, more than 10 potential subjects were initially recruited at most agencies. The mean number from each agency who later showed up at the clinic was 10.2, the mode was 11, and the range was from 6 (one agency) to 14 (two agencies). The number of drivers and helpers from each agency varied according to whether drivers or helpers were available on the days of recruitment.

Over a period of 4 months, a team of three field workers visited the selected trucking agencies' office at Tejgaon truck stand to recruit subjects; each agency was visited several times. These offices were appropriate recruitment sites as all drivers and helpers need to go to them to obtain their trip assignments. Drivers and helpers in the office on recruitment days were invited to participate. Subjects who consented to participate were accompanied by a field worker to Paricharja clinic (a non-profit clinic located in the centre of the truck stand) or given an identification card (with the name of the subject's trucking agency and a subject ID number) and requested to come to the clinic on their own within a week.

The rate of refusal was estimated to be approximately 15–20%. This estimate is based on: (i) records of the number of men (22) who either agreed to participate but did not come to the clinic or who came to the clinic but left before it was their turn to be seen by the interviewer, and (ii) an informal estimate by the project field manager of the proportion of men (10–15%) who were approached but who either did not agree to participate or who were unwilling to even listen to a description of the study. As the latter group was not documented by the field workers, the rate of refusal is an estimate. We were unable to gather background data on those who did not participate as they frequently were in a hurry, having neither the time nor inclination to respond to questions.

At the clinic, subjects read (or had read to them) a consent form which they signed or marked with a thumb print. Research assistants then interviewed them about their lifestyle for approximately 40 minutes using a structured questionnaire, and a male physician conducted a comprehensive physical examination. Subjects provided both urine and blood samples at the clinic; the blood specimens were collected using standard venepuncture techniques.

After collection, the blood and urine samples were stored in a refrigerator until the end of the day when they were transported to the laboratory of the department of immunology at the Bangladesh Institute of Research and Rehabilitation in Diabetes, Endocrine and Metabolic Disorders (BIRDEM). There, blood and urine samples were centrifuged to obtain serum from the blood and pellets from the urine. These were stored in a −70°C refrigerator until the time of analysis. For gonorrhoea and chlamydia, DNA was extracted from the urine pellets using a commercial reagent Instagene Matrix (Bio-Rad, CA, USA); PCR and DNA enzyme immunoassays (DEIA) were performed using primer/probe kits (Diasorin srl, Italy). Taq DNA polymerase and deoxyribonucleotides (dNTPs) were used during DNA amplification (Gibco Brl, Life Tech, USA). Serological tests for syphilis were performed using rapid

plasma reagin (RPR) with a dilution of 1:16 and *Treponema pallidum* using haemagglutination tests (TPHA) (Shield Diagnostic, UK). Further classification of syphilis into early latent, late latent, or previously treated categories was not possible because medical records were not available; we, therefore, used a minimum dilution of 1:16 to maximise the likelihood of active infection. Serum was also screened for antibodies to herpes simplex virus 2 (Diasorin srl Italy).

Statistical methods

Descriptive statistics (frequencies, means) were reported and contingency tables constructed. Multiple logistic regression was used to assess associations between infections and potential risk factors. In the regression analyses, conducted separately for infection with any bacterial STD (syphilis, gonorrhoea, or chlamydia) and with herpes simplex 2, the hypothesis driven model was determined by previous conceptualised risk factors for STD infection and pertinent background characteristics. Independent variables in the regression analyses included: (i) background characteristics (age, marital status, income, occupation, years in occupation, working interdistrict or local routes), (ii) recreational activities (alcohol and drug use) that can be conducive to high risk sexual relations, (iii) sexual behaviours (sex with a commercial sex worker, sex with a male partner, condom use, number of years of sexual intercourse), and (iv) markers of past high risk sexual behaviour (number of previous diagnoses with STD, and in the analysis of bacterial STD, infection with HSV-2). The latter were included to provide evidence beyond self reports of high risk sexual behaviour. Standard parametric methods, with the individual as the unit of analysis, were used as no significant differences were detected in sociodemographic characteristics of subjects according to the trucking agency employing them.

RESULTS
General characteristics of the study population

All 388 subjects participated in an interview about their background and lifestyle (table 1). Slightly over half (54%) were single. Almost two thirds were truck drivers and one third were helpers on trucks; 51% of the subjects currently worked primarily on interdistrict routes and 49% primarily on local routes. The majority had worked in the trucking industry less than 5 years. Most had attended school, though only 26% had gone beyond primary school and 54% were able to read and easily understand a newspaper. In formative research at the truck stand all drivers or helpers encountered were Muslim (the general population of Bangladesh is ~88% Muslim, 10.5% Hindu, 0.6% Buddhist, and 0.3% Christian[22]).

High risk sexual behaviours for STD were common. Condom use was very low, with approximately 73% never using, 5% using once, almost 20% using only occasionally, and 3% always or most of the time. The majority (54%) acknowledged having sexual relations with a female commercial sex worker (CSW) in the past year, and almost 40% had three or more sex partners in the past year. While 21% reported having a type of sexual relation (a "physical release") with a male partner in their lifetime, only 7% had done so in the past year. For the 80 subjects who had ever had a male partner, sexual activities included: anal sex (95%), oral sex (4%), mutual masturbation (26%). Male partners of those 80 subjects included a friend (47.5%), a family member (5%), a male sex worker (15%), a neighbour (28.8%), and others (2.5%). The use of illicit drugs that are ingested or inhaled (particularly ganja and phensidyl) was common; alcohol consumption was also frequent, though to a lesser extent. Slightly over one third of the subjects reported having ever been diagnosed with an STD. Of 123 subjects who had been diagnosed with an STD in the past 2 years, 51% were diagnosed by an allopathic doctor the last time they were infected, 20% by a kobiraj (an indigenous doctor), 14% by self diagnosis, 9% by a pharmacist,

Table 1 Background characteristics (n=388)

Factor	Frequency	Percentage	Mean	SD
Age			26.8	7.46
Marital status				
Currently unmarried	208	53.6		
Currently married	180	46.4		
Job				
Driver	245	63.1		
Helper	143	36.9		
Local or interdistrict work currently				
Interdistrict driver	146	37.6		
Interdistrict helper	53	13.7		
Local driver	99	25.5		
Local helper	90	23.2		
Years in current job			5.39	5.51
Earnings per month in taka (42.7 taka = $1.00)			3587	2113
Last grade of school completed				
None	107	27.6		
1–5 years (primary)	172	44.3		
6–10 years (high school)	100	25.8		
11–12 years (college)	9	2.3		
Number of times diagnosed with an STD				
None	249	64.2		
Once	71	18.3		
Two or more times	48	12.4		
Does not know number	19	4.9		
Does not answer	1	0.3		
Frequency of condom use				
Never	283	72.9		
Once	19	4.9		
Occasionally	75	19.3		
Always/most of the time	11	2.8		
Had sexual intercourse with a female CSW* in the past year				
No	177	45.6		
Yes	211	54.4		
Number of sex partners in past year			4.57	8.68
Ever released yourself physically with a male partner†				
No	305	78.6		
Yes	80	20.6		
Does not answer	3	0.8		
Number of male sexual partners in past year				
None	360	92.8		
One or more	28	7.2		
Years of sexual intercourse			8.84	7.24
Sometimes drink alcohol				
No	294	75.8		
Yes	94	24.2		
Sometimes take drugs for recreation				
No	229	59.0		
Yes	159	41.0		

*CSW = commercial sex worker.
†With these male partner(s) respondents reported engaging in one or more of the following activities: anal or oral sex, mutual masturbation.

9% a homeopath, and 3% a friend (the percentages total more than 100% because 7% were diagnosed by more than one type of practitioner).

Prevalence of STD

Serological evidence of herpes simplex virus 2 (HSV-2) and syphilis were prevalent in this population; current gonorrhoea and chlamydia rates were at low levels (table 2).

Table 2 Prevalence of diseases

Disease	Test	No	No positive	%
Gonorrhoea	PCR (and DEIA) on urine	385	8	2.1
Chlamydia	PCR (and DEIA) on urine	385	3	0.8
Syphilis	RPR and TPHA*	387	22	5.7
Syphilis	TPHA	387	27	7.0
HSV-2	ELISA	387	100	25.8

*Positive on both RPR and TPHA.

There were only two co-infections with bacterial STD; one person had syphilis, gonorrhoea, and chlamydia and one person had both syphilis and gonorrhoea. Eleven of the subjects with HSV-2 also had a bacterial STD.

Logistic regression for current infection with any bacterial STD

Simple and multiple logistic regression analyses were conducted, examining associations with bacterial STD of (i) demographic characteristics, (ii) sexual risk factors, (iii) lifestyle factors that might contribute to sexual risk by reducing inhibitions (alcohol and drug consumption), and (iv) disease markers of high risk sexual behaviour (table 3).

In both simple and multivariate analyses the only significant risk factor for having a bacterial STD was having sex with a CSW in the past year.

Logistic regression analysis for infection with herpes simplex virus 2

Simple and multiple logistic regression analyses of associations with HSV-2 infections were also conducted (table 4).

Table 3 Analysis of risk factors by multiple logistic regression on any prevalent bacterial STD (chlamydia, gonorrhoea, syphilis) (n=384)*

Risk factor	No (%) positive in category	Unadjusted odds ratio	95% CI	Adjusted odds ratio†	95% CI
Age (years)					
15–20	3 (3%)	1.0		1.0	
21–26	10 (9%)	3.08	0.82 to 11.52	1.68	0.39 to 7.26
27–32	7 (8%)	2.66	0.67 to 10.62	0.83	0.14 to 4.99
33+	10 (13%)	4.76	1.26 to 17.92	1.34	0.21 to 8.63
Marital status					
Currently unmarried	12 (6%)	1.0		1.0	
Currently married	18 (10%)	1.83	0.86 to 3.91	1.67	0.54 to 3.01
Job					
Interdistrict driver	15 (10%)	1.0		1.0	
Local driver	9 (9%)	0.87	0.37 to 2.08	1.14	0.43 to 3.01
Interdistrict helper	2 (4%)	0.34	0.07 to 1.53	0.45	0.08 to 2.50
Local helper	4 (4%)	0.40	0.13 to 1.25	0.91	0.24 to 3.53
Years in job					
1–2	6 (4%)	1.0		1.0	
3–4	7 (8%)	2.02	0.66 to 6.22	2.01	0.59 to 6.88
5+	17 (12%)	3.07	1.18 to 8.03	2.49	0.71 to 8.75
Sex with a CSW in the past year					
No	6 (3%)	1.0		1.0	
Yes	24 (12%)	3.68**	1.47 to 9.21	3.54**	1.29 to 9.72
Number of male sexual partners in past year					
None	27 (8%)	1.0		1.0	
One or more	3 (11%)	1.68	0.47 to 5.98	1.83	0.45 to 7.57
Condom use					
Once or never	23 (8%)	1.0		1.0	
Occasionally/most of time	7 (8%)	1.08	0.45 to 2.61	0.61	0.23 to 1.61
Number of times diagnosed with an STD					
Never	15 (6%)	1.0		1.0	
Once	7 (10%)	1.73	0.67 to 4.41	1.16	0.42 to 3.21
Two or more times	6 (13%)	2.27	0.83 to 6.20	1.64	0.55 to 4.88
Does not know number	2 (11%)	1.83	0.39 to 8.66	1.45	0.27 to 7.86
Sometimes drink alcohol					
No	21 (7%)	1.0		1.0	
Yes	9 (10%)	1.40	0.62 to 3.18	0.94	0.34 to 2.58
Sometimes take drugs for recreation					
No	18 (8%)	1.0		1.0	
Yes	12 (8%)	0.95	0.45 to 2.04	0.66	0.27 to 1.65
Ever exposure to HSV-2					
No	19 (7%)	1.0		1.0	
Yes	11 (11%)	1.73	0.79 to 3.78	1.88	0.80 to 4.43

*Missing 3 cases because of loss of specimens in laboratory and 1 case to non-response on questionnaire item.
†Adjusted for all variables in the model.
**p<0.05.

In both the simple and multiple logistic regression analyses the only factor significantly associated with HSV-2 infection was being an interdistrict helper. In the multiple regression analysis, men who had a male sexual partner in the past year had much lower odds of infection than men who did not and the association approached significance (p = 0.052).

DISCUSSION

Truck drivers and truck helpers at Tejgaon truck stand had a higher prevalence of HSV-2 (25.8%) and serological syphilis (5.7%) than of gonorrhoea (2.1%) and chlamydia (0.8%). This compares with a population based study of 540 male slum dwellers in Dhaka that found higher rates of syphilis (11.5%), lower rates of gonorrhoea (1.5%) and similar rates of chlamydia (<1%).[18] We believe the higher syphilis rate in the Dhaka slum dwellers is because of different testing procedures. In our study, to define seropositives the RPR had a dilution of 1:16, making it a more specific testing procedure with fewer false positives.

In the multivariate analysis the only significant association with bacterial STD was having sexual intercourse with a female CSW in the past year (OR=3.54, CI=1.29 to 9.72, p=0.014). Most of these bacterial infections were syphilis and high rates of syphilis infection have been found in studies of CSWs in Bangladesh.[23 24] Reported condom use was not protective, probably because of limited variation; only 105

subjects (27%) had ever used a condom, and out of these 94 had used them either occasionally or only once.

For HSV-2, the odds of infection were almost three times as high for interdistrict helpers as for interdistrict drivers (OR=2.51, CI=1.13 to 5.55, p=0.023). Drivers have a much higher income than helpers and thus may frequent a different type of CSW and different sexual networks. Of the 29 interdistrict helpers who had relations with CSWs, 69% went to floating CSWs compared to 20% of the 88 interdistrict drivers who had CSW exposure. Evidence from several studies in the country show higher rates of syphilis infection in floating sex workers than in brothel based sex workers[10 23 25]; specific HSV-2 data do not exist. This suggests that men who have relations with floating sex workers may be at higher risk for at least certain types of sexually transmitted diseases. That interdistrict helpers were not also at higher risk for bacterial STD, may be attributable to our study population having much lower levels of bacterial infections than of HSV-2, making it harder to detect significant associations with risk factors.

The sexual behaviours of the truck drivers and helpers in this study are consistent with those of truck drivers in other contexts.[26 27] Sexual relations with CSWs were common: 54% of the subjects had sex with a CSW in the past year (57% of unmarried subjects, 43% of married subjects). Further, subjects frequenting CSWs were also having sex with other women: 50% of the married men in the sample had sex with both a CSW and their wife in the past year, and 25% of the 211

Table 4 Analysis of risk factors by multiple logistic regression on prevalent herpes simplex 2 (n=386)*

Risk factor	No (%) positive in category	Unadjusted odds ratio	95% CI	Adjusted odds ratio†	95% CI
Age (years)					
15–20	31 (31%)	1.0		1.0	
21–26	24 (21%)	0.59	0.32 to 1.09	0.56	0.28 to 1.13
27–32	22 (23%)	0.68	0.36 to 1.29	0.51	0.20 to 1.29
33+	23 (30%)	0.93	0.49 to 1.78	0.59	0.21 to 1.66
Marital status					
Currently unmarried	37 (26%)	1.0		1.0	
Currently married	40 (31%)	1.23	0.78 to 1.93	1.44	0.71 to 2.92
Job					
Interdistrict driver	31 (28%)	1.0		1.0	
Local driver	14 (21%)	0.93	0.51 to 1.72	1.01	0.52 to 1.98
Interdistrict helper	18 (44%)	2.14**	1.10 to 4.19	2.51**	1.13 to 5.55
Local helper	14 (26%)	1.12	0.61 to 2.06	1.38	0.64 to 2.95
Years in job					
1–2	21 (22%)	1.0		1.0	
3–4	20 (29%)	1.09	0.59 to 2.01	0.99	0.50 to 1.94
5+	36 (32%)	1.41	0.84 to 2.36	1.52	0.73 to 3.17
Sex with CSW in the past year					
No	31 (26%)	1.0		1.0	
Yes	46 (30%)	1.08	0.69 to 1.71	1.12	0.66 to 1.91
Number of male sexual partners in past year					
None	75 (30%)	1.0		1.0	
One or more	2 (10%)	0.22	0.05 to .96	0.23	0.05 to 1.01
Condom use					
Once or never	55 (26%)	1.0		1.0	
Occasionally/most of the time	22 (34%)	1.24	0.72 to 2.16	1.05	0.58 to 1.92
Number of times diagnosed with an STD					
Never	42 (25%)	1.0		1.0	
Once	18 (35%)	1.32	0.73 to 2.38	1.44	0.76 to 2.71
Two or more times	11 (28%)	0.92	0.44 to 1.91	1.03	0.47 to 2.25
Does not know #	5 (33%)	1.42	0.52 to 3.90	1.66	0.55 to 5.0
Sometimes drink alcohol					
No	54 (27%)	1.0		1.0	
Yes	23 (33%)	1.49	0.90 to 2.49	1.30	0.70 to 2.43
Sometimes take drugs for recreation					
No	44 (27%)	1.0		1.0	
Yes	33 (31%)	1.31	0.83 to 2.08	1.20	0.70 to 2.07

*Missing 2 cases; 1 because of loss of specimen in laboratory and 1 to non-response on questionnaire.
†Adjusted for all variables in the model.
**p<0.01.

men who had sex with a CSW in the past year had 10 or more sexual partners in the past year. In addition, 82% of the 28 subjects who had a male sexual partner in the past year also had sex with a female CSW in the past year.

Few men used condoms. Only 24% of married subjects who had sex with a CSW in the past year had ever used a condom with a CSW (illustrating the risk of disease transmission to their wives). In male to male sexual relations, condom use was also rare, even though anal sex was the normative practice in those relations; only one of the 28 men who had a male partner in the past year had ever used a condom with a male partner. Condom use was low despite condoms being widely available in Bangladesh through government field workers, shops, and pharmacies. The most frequent responses given for not using condoms were that sex felt better without a condom (38%) and they did not see the necessity of using a condom (24%). Only 15% of our study subjects had ever used a condom for the particular purpose of preventing sexually transmitted diseases and only 13.7% were aware that condoms could prevent AIDS.

This study had several methodological limitations. The sample size of 388 may not have been sufficient to detect risk factors for STD infection, particularly for current infections. A second limitation was that a fully randomised sample could not be recruited as a comprehensive list of truck drivers employed at Tejgaon truck stop was unavailable. The most rigorous and viable sampling strategy was, therefore, to randomly select trucking agencies and then recruit truck drivers and helpers in those trucking agencies' offices. Given that all drivers and helpers need to go the trucking agencies'

offices to obtain their next work assignment, we do not believe that any particular bias was introduced by recruiting subjects present in those offices on the days of recruitment.

A further limitation was that the sexual behaviour data were only available for the past year, especially important in analyses of lifetime exposure to HSV-2. Moreover, these data were collected by self reports in interviews, which present validity and reliability issues because of recall problems and a tendency for social desirability bias.[28–30] In a study in Bangladesh, Caldwell *et al* pointed to potential validity problems with self reports on sexual practices.[12] With heavily stigmatised practices such as having sex with other men (widely considered a sin) and drinking alcohol or taking recreational drugs (both proscribed by religious dictate and law), underreporting is very likely, though it may have been minimised by the clinical and private context of the interviews for this study.

The finding of the study indicating a high prevalence of HSV-2 and serological syphilis is a concern, especially because the association of these diseases with HIV transmission.[31 32] Should HIV enter into this low prevalence population it could spread rapidly. These results illustrate the importance of promoting condom use to men in the trucking industry; they clearly need to be made more aware of the role of condoms in preventing STD and HIV and of the importance of disease prevention. Public health campaigns targeting men in the trucking industry should strive to increase use in contexts of casual and, in particular, commercial sexual encounters.

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CONTRIBUTORS

LG is the study principal investigator responsible for all aspects of the study; NS is a co-investigator and project manager responsible for all field operations and for assisting with data analysis; MM is a co-investigator who contributed to the study's research design and write up; NH is a co-investigator who conducted laboratory analyses and assisted with the write up; AHK is a co-investigator who conducted laboratory analyses; MA is a co-investigator who conducted laboratory analyses and assisted with the write up; PC is a co-investigator who contributed to the project's conceptualisation, clinical investigations, and write up.

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