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ree categories - no exposure, less intensive exposure
ogistic regression methods to understand the
ion and between program exposure and condom use.

on interventions has increased over time with much
our routes (NE: from 14.9% to 28%, P < 0.01; NS: from

[1]National Institute of Medical Statistics, New Delhi, India
Full list of author information is available at the end of the article

simultaneous targeted interventions among female sex workers appeared to have contributed to safe sexual practices among truckers.

Introduction

India trucking population is estimated at five to six million truck drivers and helpers, with about two to two and half million being long-distance truckers [1]. The Indian long-distance trucking industry consists of three different segments: free agents, port operators, and express cargo operators. Truckers tend to specialize in any one of these segments, primarily because it is difficult to build business networks in more than one segment. The free agent segment which accounts for approximately 70 percent of the long-distance truckers, is fragmented with a vast majority working for small transport operators [2]. In the late 1990s, almost 77% of India's truck fleet was owned by operators with no more than five trucks, while only about 6% of trucks were owned by operators with more than 20 trucks [3]. This ownership profile created middlemen (transporters and brokers) on whom small trucking operators depend to generate business. This structure of the Indian trucking industry has diluted the visibility of the industry to transport planners and policy-makers [4,5].

Truck drivers and their helpers, particularly those who travel on highways for longer distances, have been associated with the spread of sexually transmitted infections including HIV in many parts of the world including India [6-18]. Long distance truckers are considered to be particularly vulnerable to STIs and HIV infection because they spend many days away from their families in contrast to short-distance, state-level truckers [7,18]. Earlier reports demonstrated that in spite of high rates of STI prevalence of HIV remained lower in long distance truck drivers [19,20]. However, because of high-risk behavior coupled with their mobility these long distance truckers are said to have potential of spreading HIV to different geographical areas [1,7,9]. For these reasons, truckers have been key target populations in the Indian national response since 1996 under National AIDS Control Program II and III. The

(NW) and South-East (SE). TSL were the places where the transporters and brokers operate by linking truckers with individuals wanting their goods to be transported and the route categories were the road corridors traveled by LDTD. Following TSL were considered as survey sites- Sanjay Gandhi Transport Nagar, New Delhi; Ghaziabad Transport Nagar, Ghaziabad; Kalamboli, Mumbai; Narol Chowkdi, Ahmedabad; Gandhidham, Kandla; Neelamangala, Bangalore and Territy bazar, Kolkata. The first survey round covered a total of 2,066 long distance truck drivers (NE- 498; NS- 540; NW- 515; SE- 513) with an overall participation rate of 97% (NE- 97%; NS- 96%; NW- 98% and SE- 98%). Results from the first round of survey are available [17].

The second round of the survey was conducted in 2009-10 at same TSL except for that in Kandla along the four aforesaid routes. The main reason behind excluding TSL at Kandla was less availability of long distance truck drivers. The TSLreareo9.7631009.7639(378(4290[(lon)dv)4(errolka)(lon)d65ms40(in3428t(tane)-3774(Kandla)-326(w

simplex virus type 2 using HerpeSelect 2 ELISA IgG Kit (FOCUS Technologies, USA).

The study was approved by all relevant institutional review boards (Health Ministry Screening Committee, Government of India, Scientific Advisory Committee of National AIDS Research Institute, Protection of Human Subjects Committee of Family Health International and Scientific Advisory Committee and Ethical Committee of National Institute of Medical Statistics). Participation followed written informed consent and all data were recorded in a linked anonymous manner using numerically coded cards. Clinics run by the Transport Corporation of India Foundation at highway locations were used to enable participants to obtain syphilis test results and treatment upon presentation of the numerically coded cards. More information about the survey methodology can be found elsewhere [17,26,27].

Measures

Based on information from truckers on their awareness of HIV prevention interventions and utilization of services from Avahan or non-Avahan interventions three categories of program exposure were created: no program exposure if they never heard of any HIV prevention intervention along their route; less intensive exposure if they heard of HIV prevention intervention but either did not utilize its services in past 12 months, or received services only from non-Avahan interventions; intensive exposure if they received any of the following services either from Avahan or from both Avahan and non-Avahan at least once in past 12 months- contacts by peer educators/ out-reach workers, receipt of condoms from peer educator or outreach worker, visit to Khushi clinics, counseling services on HIV/AIDS, , participation in any community meeting or events (such as street plays, health games, truckers' festival) organized by Khushi clinic. By non-Avahan interventions we mean all interventions which are being implemented by agencies other than Avahan. Our definition of classifying interventions under Avahan as being more intensive than interventions under other

t-test while differences in the percentages were tested using z-test statistic. To examine the association of program exposure with risk behavior we have used data from second round only. It has been done because the

Table 3 describes the bi-variate association between having sex with paid and non-paid female partners and program exposure. The program exposure was positively associated with having sex with paid female partners in past 12 months across all the four routes. These associations were statistically significant in NE and NW routes as well as at aggregate level. Similarly, program exposure was positively linked with having sex with non-paid female partners in past 12 months. However, the association could reach at statistical significance only in NW route.

Results from multinomial logistic regression confirmed these bi-variate associations of having sex with paid female partners (Table 4) and non-paid female partners (Table 5). Table 4 depicts that those who had sex with paid female partners in past 12 months were significantly more likely to have either less intensive (aRRR = 2.5, 95%CI 1.9 – 3.5) or intensive program exposure (aRRR = 3.8, 95%CI 2.8– 4.9) as compared to those who did not have paid sex in same duration. Similarly Table 5 shows that those who had sex with non-paid female partners in past 12 months were significantly more likely to have less intensive program (aRRR = 1.6, 95% CI 1.2-2.5) than their counterparts. However, in this

Table 3 Associations between sex with paid and non-paid female partner and exposure to the program, IBBA Round-2 on National Highways

Table 4 Multivariate Analysis: Exposure to intervention and sex with paid female partners, IBBA Round-2 on National Highways

	= %.	= %.
( )	1.0 2. 1. – 3.	1.0 3. 2. – 4.
( )	1.00 1.2 0. – 1. 1.2 0. – 1. 0. 0. – 1.1	1.00 2.1 1. – 2. 1. 1.3 – 2. 0.2 0.2 – 0.
Current age (years) [a]	1.0 [0.9 – 1.1]	0.9 [0.9 – 1.0]
Illiterate (Reference category) Literate	1.0 1.4 [0.9 -2.1]	1.0 2.6 [1.5 - 4.6]
Not currently married (Reference category) Currently married	1.0 1.5 [1.1 -1.9]	1.0 2.5 [1.6 -2.9]
Duration of working as truck driver (years) [a]	1.0 [0.9 – 1.1]	1.1 [0.9 – 1.2]
Number of round trips [a, b]	0.9 [0.8 – 1.2]	1.0 [0.9 – 1.1]
Respondent (Reference category) Other	1.0 0.8 [0.6 -1.3]	1.0 0.5 [0.3 -1.0]

Table 5 Multivariate Analysis: Exposure to intervention and sex with non-paid female partners, IBBA Round-2 on National Highways

	= %.	= %.
( )	1.00 1. 1.2 – 2.	1.00 1.1 0. – 1.4
( )	1.00 1.2 0. – 1. 1.1 0. – 1. 0. 0. – 1.0	1.00 1. 1. – 2. 1. 1.3 – 2. 0.2 0.1 – 0.4
Current age (years)		

case exposure to intensive program was not found to have any significant association.

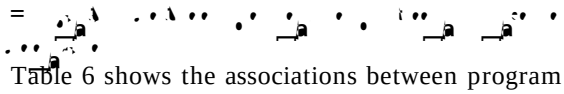

Table 6 shows the associations between program exposure and consistent condom use with paid and non-paid female partners. Overall, those exposed to intensive pro-

overall program has reached about 50% of the long distance truck drivers with considerable variations across the routes. The reported program exposure was found highest north-west route whereas it was found lowest on south-east route. A recent study in India has also concluded low exposure to public funded HIV prevention program among long distance truckers in Andhra Pradesh that falls on the south-east route [29]. Though the proportion of truckers visiting paid female partners remained almost unchanged over time across most of the routes, significant improvements in consistent condom use with paid as well as non-paid female partners were observed. A welcome reduction in the prevalence of Syphilis and HIV was observed at the aggregate level as well as across the routes. These improvements in safer sexual practices and reductions in the STIs were statistically significant in totality as well as in some of the routes.

The data also showed that truck drivers who had sex with paid female partners were significantly more likely to have program exposure, particularly the intensive exposure. On the other hand, those who had sexual contacts with non-paid female partners were more likely to have less intensive exposure. These findings suggests that the program has not just increased its coverage in the targeted population; it has been able to reach those who have sexual contacts outside marriage and hence at more risk of acquiring STI/HIV. This could be due to the two reasons. First, the program purposively targets those who take higher risk. Second, those who have riskier behavior may approach the program to avail information and services [30].

The paper also points out that consistent condom use with paid female partners was higher even among unexposed truckers in NS, NW and SE routes as compared to that in NE route. These points could be explained, at least partly, by attributing this as confounding effect of other parallel interventions among FSWs in several Indian states which are connected through the four route corridors. The NS and NW route corridors connect low HIV prevalence northern Indian states to high HIV prevalence southern and western states whereas the SE route connects the high HIV prevalence southern states to the low/ moderate HIV prevalence eastern

states. On the other hand, majority of the NE corridor falls within the low HIV prevalence northern states and partially into the low/ moderate HIV prevalence eastern states [2,31]. Due to higher prevalence of STI/HIV, the western and southern states have been receiving intensive intervention programs (including condom social marketing at 'hot-spots' where the commercial sex takes