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Telephonic follow-up of Indian truck-drivers and cleaners participating in a government HIV peer educator prevention program reveals challenges in program evaluation

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Abstract

Background—HIV prevention programs for truck drivers/cleaners (TDC) in India are limited. Longitudinal follow-up presents an obstacle to program effectiveness evaluation.

Methods—We asked 3,028 TDC in a truck-driver HIV prevention program in Hyderabad to leave a cellular telephone number; we contacted participants six months after the intervention to assess sexual risk behavior change.

Results—Married, older, and better educated participants were more likely to leave phone numbers (all $p < 0.001$). Only 6.5% of TDC were reachable after six months.

Conclusion—Longitudinal follow-up of TDC remains a challenge. New methods for evaluating program effectiveness with this mobile sub-population are needed.

Keywords

India; truck drivers; program evaluation; digital communication

INTRODUCTION

Approximately six million truck drivers work on the road in India [1], and, as a group, have an estimated HIV prevalence of about 2 – 6% [2]. These migrant workers represent a population at high risk for HIV and other STIs as they frequently engage in risky sexual behaviors such as visiting female sex workers [FSWs] [3]. Truckers also represent a bridge population to the general public, as they move between partners from high risk groups such as FSWs and their wives [4]. While previous intervention programs have been evaluated in terms of cost and outputs [5], most of these programs have not been evaluated for long – term effectiveness in changing sexual risk behavior and reducing rates of new infections.

One main challenge to follow-up in this population using traditional methods such as in-person interviews is difficulty in actually contacting truckers, especially as they are often on the road. Digital communication technology [DCT] such as the internet and cellular telephones has been used in the United States and elsewhere to improve retention rates in longitudinal studies [6]. Data quality also has not been assessed for this population. In addition to allowing for more thorough follow-up, DCT potentially could lead to more reliable reporting on sexual behavior than face-to-face interviews, in which respondents may be reluctant to give information on sensitive or stigmatized behaviors [7]. These novel methods have only recently been adapted for health interventions in India, where cellular telephones are much more common than landlines, and there are nearly 800 million cell phone users [8].

The purpose of this study was to evaluate retention using cellular telephone technology to contact participants for follow-up surveys, rather than using in-person interviews at their workplace. We also tested whether interviewer effects, such as truck-driver (TD) – peer educator (PE) homophily in terms of age, religion, and caste affected participants' willingness to provide a phone number.

METHODS

Intervention and follow up

The Surakshitham Project is a government funded standard peer educator program for truck-drivers that includes four major components: behavior change communication, STI care, condom promotion, and creating an enabling environment. Project staff collected phone numbers at the time of the initial interview and intervention. Participants that left a number were contacted up to five times for the six month follow up survey.

Measures

TDs were categorized into three groups: those who left a number, those who refused to leave a number, or those that did not have a phone. Detailed information was collected on TD age, religion [Hindu, Muslim, Christian, Sikh], caste [other caste, backwards caste, scheduled caste, scheduled tribe], marital status [unmarried/married], occupation [driver or cleaner (apprentice driver)], and educational attainment [illiterate, primary school graduate, high school graduate, > high school]. Behavioral information was collected with respect to contact with female sex workers, condom use, alcohol use and history of STI symptoms. PE age group [16 – 25, 26 – 30, 31 – 35, 36 – 40, 41 – 70], religion [Hindu, Muslim, Christian, or Sikh], and caste [Forward, Backward, or Scheduled tribe/Scheduled caste] were also collected. PE – TD homophily in terms of age group, religion, and caste were determined using these data.

Sample

4,836 trucking affiliated men initially participated in the intervention and survey between December 2008 and July 2009. We excluded 1,348 individuals who were not drivers or cleaners, and thus not spending long periods of time away from home, when the likelihood of engaging in risky sexual behavior is the highest. We further excluded 460 individuals

who were missing data on predictor covariates. This left us with our final analysis sample of 3,028.

Data analysis

We used chi square tests to determine significant bivariate predictors of leaving a telephone number at the time of initial intervention and survey. We also used multinomial logistic regression to examine predictors of whether participants left a phone number, including TD – PE homophily in terms of religion, caste, and age category. While we tabulated responses to questions regarding behavior change after a six month follow up period, because of the low follow up rate, we did not attempt to analyze predictors of behavior change over this period.

RESULTS

The majority of truck drivers in the study were Hindu (69.9%), from a backward caste (58.7%), with at least a primary school education (93.0%) (Table 1). Nearly all participants were married (91.9%). 15.4% of truckers visited female sex workers and 43.8% drank alcohol prior to sex in the past six months. Relatively few truckers (2.1%) reported STI symptoms, while 26.9% had used a condom (data not shown in table). There was considerable discordance in demographic characteristics between PEs and participants: 70.2% of respondents were from a different religion, 66.7% were of a different caste, and 88.6% were of a different age group than their interviewer (Table 1).

As Table 1 indicates, in bivariate analyses, TD religion, caste, marital status, age, occupation, and educational attainment were all significantly associated with leaving a phone number ($p < 0.001$ for all factors). In multivariate analyses, TDs from backward castes were more likely either to refuse to leave a number (relative risk ratio (RRR) = 1.53, $p = 0.001$) or to not have a phone (RRR = 1.79, $p < 0.001$). Older and more educated drivers were less likely to refuse to leave a number (RRR = 0.81 for age, RRR = 0.69 for education, $p < 0.001$ for both), or to not have a phone (RRR = 0.85 for age, RRR = 0.75 for education, $p < 0.001$ for both). Drivers were also less likely than cleaners to refuse to leave a number (RRR = 0.14, $p < 0.001$) or to not have a phone (RRR = 0.16, $p < 0.001$).

Discordance between PE and TDs in terms of religion, age, and caste was also associated with whether study participants left a phone number. In TD – PE dyads where religion was discordant, participants were more likely to give a phone number ($p < 0.001$). Respondents from TD – PE dyads with discordant caste, however, were more likely to refuse to leave a phone number (RRR = 1.59, $p < 0.001$) or to not have a phone (RRR = 2.14, $p < 0.001$). Respondents from TD – PE dyads discordant in age were more likely to leave a phone number.

Of the 1,562 TDCs who left phone numbers following the initial intervention and survey, 101 (6.5%) were contactable six months later. Common reasons for not being able to reach truckers who left numbers included: the phone being switched off despite repeated attempts to call, the number was invalid/disconnected/incorrect, someone other than the study participant answered, or the phone was consistently out of service area. Of these 101 TDs

contacted, 42 completed the six month follow up survey. Of these, 29 (69.0%) reported that overall, their sexual behavior became less risky, while 13 (31.0%) reported that their behavior had remained about the same. None reported that they had had an STI in the past six months, but 26 (61.9%) had taken an HIV test.

DISCUSSION

Long – distance truck drivers and cleaners represent a sub – population at high risk of HIV infection in India [9]. Participants in this study exhibited high rates of sexual risk behaviors, including visits to FSWs and relatively low condom use. Previous interventions with this group have included advocating for working conditions that decrease the likelihood of sexual risk behavior [10], increasing knowledge of HIV transmission and prevention [5], and, primarily, promoting condom use [9]. Our intervention sought to improve longitudinal program evaluation by employing digital communication technology to reach this highly mobile population.

While half of the initial participants left cellular telephone numbers, our follow – up rate remained markedly low. Six months later, most of those who did leave a number were not reachable. This rate of 6.5% compares less favorably to that of 15.4% for face to face follow-up of TDs in this region [11], although that population was selected from one large trucking corporation. We did not test the phone numbers at the time of the initial survey; doing so may have improved the follow – up rate by ensuring that participants were leaving valid numbers. Of those that were contactable, many endorsed a change in sexual risk behavior over time, but since such a small proportion of the original participants were reached, no real conclusions regarding the effectiveness of the initial intervention can be drawn. Respondent characteristics such as educational attainment, religion, marital status, and caste were all associated with leaving a telephone number. Researchers should be aware of these factors, as they may introduce selection bias into future studies that rely on cellular telephones for follow up, similar to selection biases that arise in surveys conducted in developed countries that rely on landlines [12]. These findings show evidence that discordance between interviewers and respondents in terms of religion, caste, and age might affect willingness to leave a phone number, perhaps due to mistrust of individuals from outside one’s own social group, or alternatively concerns of confidentiality with disclosing personal information to individuals within one’s own social group. While new technology holds a promise of better communication, in this instance, longitudinal program assessment in this population of mobile workers remained challenging.

STUDY LIMITATIONS

One main limitation of this study in terms of assessing the effects of PE – TD homophily is that the degree to which respondents can assess the age, religion, and caste of their interviewer is unknown. Religion and caste could be determined through outward cues such as dress, symbols such as crucifixes, vocabulary, speaking patterns, and accents. Evidence from other settings indicates that anthropometric characteristics such as facial features and skin color can be used to distinguish members of one’s own social group from outsiders,

even for categories like religion which are not necessarily linked to genetic inheritance [13]. These types of experiments have not been conducted, however, in India.

We excluded TDs who were missing data on predictor covariates of leaving a phone number, which might bias our analyses. TDs with missing data on predictor covariates were not significantly less likely to leave a phone number ($p = 0.412$).

Finally, as these data are cross – sectional in nature, all associations presented of leaving a telephone number are correlational only.

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Table 1

Characteristics Associated With Leaving a Cellular Telephone Number

Variable	N	% of sample	Left number	Bivariate		No phone	P value	Multinomial Logit RRRs ^a [ref. -left phone number]				
				Refused/ invalid	No phone			Refused/ invalid	P value	No phone	P value	
Religion:												
Hindu	2115	69.9	50.2	20.0	29.8	0.001	[ref]	[ref]				
Muslim	493	16.3	49.9	17.2	32.9		0.80	0.134	1.15	0.284		
Sikh	24	0.8	61.9	20.8	37.5		0.78	0.646	1.15	0.367		
Christian	396	13.1	41.7	14.4	23.7		1.29	0.162	1.66	0.290		
Caste:												
Forward caste	1237	40.9	57.6	17.1	25.3	<0.001	[ref]	[ref]				
Backward caste	1778	58.7	47.5	20.0	32.6		1.53	0.001	1.79	<0.001		
Scheduled caste/tribe	13	0.4	53.9	15.4	30.8		0.92	0.920	1.41	0.593		
Education:												
Ordinal												
Illiterate	212	7.0	48.1	20.3	31.6	<0.001						
Primary	1174	38.8	46.6	21.9	31.5							
High school	1370	45.2	54.3	17.2	28.5							
10th class/Intermediate/Degree	272	9.0	62.5	12.1	25.4							
Occupation:												
Driver	2819	93.1	54.3	18.1	27.6	<0.001	0.14	<0.001	0.16	<0.001		
Cleaner	209	6.9	15.3	28.2	56.5							
Marital Status:												
Married	2782	91.9	53.6	18.8	27.7	<0.001	0.45	0.004	0.95	0.802		
Unmarried	246	8.1	29.7	19.1	51.2							
Age:												
Ordinal												
16 – 25	403	13.3	32.3	24.1	43.7	<0.001	0.81	<0.001	0.85	<0.001		

Variable	N	% of sample	Left number	Bivariate		No phone	P value	Multinomial Logit RRRs ^a [ref. -left phone number]		
				Refused/ invalid	Refused/ invalid			Refused/ invalid	No phone	P value
26 – 30	757	25.0	46.9	20.6	32.5					
31 – 35	972	32.1	57.1	18.1	24.8					
36 – 40	686	22.7	59.9	14.0	26.1					
41 – 70	210	6.9	53.3	21.0	25.7					
Counselor/Subject Discordance:										
Same religion	901	29.8	47.0	16.9	36.2		< 0.001			
Different religion	2127	70.2	51.6	18.8	26.8	1.15	0.234	0.67	< 0.001	
Same caste	1008	33.3	60.1	17.3	22.6		< 0.001			
Different caste	2020	66.7	47.4	19.6	33.1	1.59	< 0.001	2.14	< 0.001	
Same age category	346	11.4	43.9	19.7	36.4		0.005			
Different age category	2682	88.6	52.6	18.7	28.7	0.67	0.016	0.63	0.001	
N:			3028					3028		

^aRRR = relative risk ratio