Towards Social Network HIV Prevention Interventions in Migrant Workers

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About the Authors:

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Mr. Prem Kumar, Research Associate, received his Masters Degree in Economics. He has formally evaluated HIV prevention interventions from an economic and cost-effectiveness perspective and in particular the peer led HIV prevention interventions amongst mobile populations such as truck drivers. A pupil of Lalit Dandonna, his previous research experience includes time at the Administrative Staff College of India, George Institute – India, SHARE-India and in December the Public Health Foundation of India. As a co-investigator, he is set to begin an ICMR/NIH supported study of social network and risk analyses in truck-drivers in Andhra Pradesh. He currently lives in Hyderabad with his wife and daughter.
Abstract:
In sharp contrast to the attention devoted to sexual networks, research on social-network effects on HIV transmission has rarely been emphasized globally, and empirical research is limited owing to lack of pertinent data. Despite lack of data to its effectiveness, peer-educator models prescribed by NACO are the dominant social network intervention in India. A recent randomized controlled trial of a community popular opinion leader intervention also failed to demonstrate efficacy when studied in the context of wine-shops in Chennai. Utilization of existing networks of friends including linked or unlinked dyads may give additional dimensions to enacting behavior change that support current prevention models like the ones described above. Investigation into this sub-level has been called “micro-sociologic inquiry”.

We propose using social network theory to both explore the relationship of truck drivers’ confidante/friend networks and acceptability of HIV prevention methods using qualitative and quantitative methods. We examine levels of friend closeness and influence and how these attributes might be used to improve an outcome of interest – such as HIV testing. We have conducted a series of five focus groups, and five in-depth qualitative interviews with high-risk truck-drivers recruited from several halt points in Hyderabad to determine the depth and breadth of truck-driver social networks and how these may relate to HIV prevention behavior. All interviews were digitally recorded and professionally transcribed. We have found that truck drivers have disparate sets of friends that they share personal information with – some from their village of origin and others in and around their halt points. Bond strength and closeness appear to be potential assets to negotiating behavior change as do relationships where the ego looks to the confidante in a mentoring or influence seeking role. However, this can be mitigated by dyadic control and level of ties that the friend has to ego’s family. Mobile phone technology facilitates communication and longitudinal follow-up. If feasibility is determined, a candidate network intervention of friend dyads participating together to improve HIV prevention behavior, could complement and build upon currently available peer-educator HIV prevention models.
Introduction
Early in the HIV pandemic, truck drivers along highways in Asia were increasingly recognized as a high risk bridge population for HIV infection and transmission given the long hours spent away from home, frequent contact with sex workers and lack of health services such as HIV VCT. (Gawande, Vasudeo, Zodpey, & Khandait, 2000; Gibney, Saquib, Macaluso, Hasan, Aziz, Khan et al., 2002; Gibney, Saquib, & Metzger, 2003; Singh, Singh, Joshi, Rustagi, & Malaviya, 1993) Typically, in India, male participation in sexual and reproductive health is very low. Current condom use is 5% and vasectomy rates are 1%. (NFHS-3, 2006) Improving the behavior and HIV prevention activities amongst high-risk men, such as truck drivers, may be an important strategy that also benefits the women they are in contact with. However, after initial characterization and mapping of transmission routes, there has been disappointingly little HIV prevention research, programs and attention for this highly mobile and marginalized population. Specific national and international advocacy groups and program funders that exist and have supported other high risk groups such as men who have sex with men and female sex workers do not exist for migrant workers. Sentinel surveillance conducted by the state of Andhra Pradesh has included most sub-populations thought to be at high-risk for HIV and STIs, but has not included truck drivers. Despite this gap, truck drivers are consistently thought to be at increased risk for HIV and other STIs,(Chandrasekaran, Dallabetta, Loo, Rao, Gayle, & Alexander, 2006) some of whom are targeted by state and private programs. Of the 31 government targeted HIV prevention programs in Andhra Pradesh in 2007–2008, 65% were for female sex workers, 10% for MSM/transgender and 25% composite; truck-drivers and other migrant workers were overlooked as interventions targeting this group were not included. Recognizing this lacuna, the Indian government (NACO) in 2008, awarded our group with one of seven country wide truck driver dedicated HIV initiatives utilizing a standardized health/peer educator approach to behavioral intervention. Unfortunately, in 2009 this number had been reduced to three.

What is the rationale for new HIV prevention strategies in high-risk male populations such as truck drivers in India? Current HIV prevention programs are heavily condom-centric. (NACO, 2007) While condoms are one of the most efficacious of HIV Prevention Interventions currently available,(Weller & Davis, 2002), they are often not the most effective due to poor adherence. (Weller & Davis, 2002) From the male perspective, condom promotion efforts are limited by several cultural and health belief factors: 1) If a female partner wishes to use condoms during intercourse men may believe partner’s insistence is because of previous HIV/STI acquisition on her part or suspicions of his fidelity;(Bhattacharyya, 2004) 2) Disposal of semen in condoms can be considered a waste of bodily powers that breaks the natural law of harmony and as such condom use can make men ill;(Nichter M, 1989) and 3) Because condoms block the flow of semen and collect it, they are feared to cause an unnatural rise in body heat,(Nag, 1996) which is particularly important for truck drivers who already are forced to endure high engine temperatures while on the road.(Singhal, 2003) Additionally, condom use has been promoted for interaction with female sex workers, however, far less evidence exists of intervention impact on condom use in casual relationships.(Weller & Davis, 2002) Likewise, in primary partnerships, post-intervention condom use has been noted to be low unless one partner was knowingly HIV-infected or at high-risk, or avoiding pregnancy.(Foss, Hossain, Vickerman, & Watts, 2007) Thus, new behavioral methods for HIV and other STI prevention are increasingly needed in this high-risk population, especially in the setting of recent setbacks with HIV preventive/treatment vaccines. There is especially increased need for novel HIV Prevention Interventions, in India where the epidemic phase present amongst high-risk groups and the increased functional difficulties and cost of caring for each HIV infected person strains the limited health care resources that are available.(Freedberg, Kumarasamy, Losina, Cecelia, Scott, Divi et al., 2007)

Why use Social Network theory and methods to develop behavioral HIV prevention interventions?
Increasing evidence suggests that the role of social networks may have an even more important effect on
an individual’s risk for a disease, such as obesity, than genes do.(Christakis & Fowler, 2007) What makes this even more compelling is the pervasiveness of this phenomenon across disease states and systems(Barabasi, 2007) and for the potential for it to be most critical to the spread of HIV infection given the strong linkages between social and communicable factors in predicting HIV transmission.

From the view of social network analysis, the social environment can be expressed as patterns or regularities in relationship among interacting units.(Wasserman, 1994) For the purposes of this analysis, units are composed of truck drivers, cleaners and helpers, and excludes their sex partners and family members, and units not accessible while in the Hyderabad area. Dyads represent two interacting units that often are brokers of influence(Burt, 2005), have associated ties and control patterns(Laumann EO, 2004) and fit within a larger network.(Wasserman, 1994) We are not simply concerned with collections of dyads or subgroups but in the ability to model the relationships and ties among a finite set of actors. Historically, the main focus of STI and HIV epidemiology has been on the attributes and behaviors of individuals.(Aral, 1999) The role of sexual networks in sustaining the higher rates of HIV and STIs in India have steadily gained research attention.(Schneider, Saluja, Oruganti, Dass, Tolentino, Laumann et al., 2007; Sivaram, Srikrishnan, Latkin, Johnson, Go, Bentley et al., 2004) Transmission depends not only on the individual person’s risk factors, but also on that person’s sex partners’ risk factors. In sharp contrast to the attention devoted to sexual networks, research on social-network effects on STI and HIV transmission has rarely been emphasized, and empirical research is limited owing to lack of pertinent data, with a few notable exceptions. (Laumann EO, 2004; Morris, 1995; Rosenberg, Moseley, Kahn, Kissinger, Rice, Kendall et al., 1999; Wasserheit & Aral, 1996) In western nations there has been some evidence that social factors are critical to the spread of HIV, but most of this research has focused on social relationships in general instead of probing the specific features of social networks that mediate these effects such as character and depth of the network,(Hubert, 1998; Van Campenhoudt, 1997) qualities we begin to examine in this analysis. Reaching a high-risk population targeted for HIV prevention interventions is not straightforward because most do not get information about novel strategies from public media, instead high-risk individuals obtain and transmit information about HIV and STIs primarily through their informal social networks, especially their friends.(Laumann, 1994) A population-based survey in the United States found that 40% of adults relied primarily on close informal non-kin networks for learning about sexual matters while only 8% relied primarily on school instruction, and only 1% on television or medical clinics.(Laumann, 1994) In India television as a medium of HIV information may have a greater effect when compared to the United States, however, the effect of networks of friends is unknown.(Pallikadavath, Sreedharan, & Stones, 2006)

What social network methods and strategies are currently used to implement behavior change? Two behavioral interventions that utilize peer educators or social networks, have been explored at the community or sub-population level to promote behaviors that avoid HIV infection (ie. sexual partnering and condom use) in India. 1)Community popular opinion leader (C-POL) model. A social network strategy that was recently under investigation in India used community opinion leaders whose views may influence those of other members through interactions in existing social relationships.(NIMH, 2007) C-POL is grounded in the “diffusion of innovation” theory, that explains how new technological and behavioral innovations are initiated and become adopted, accepted and normative within community populations.(Rogers, 1995) Critical to C-POL’s success in improving HIV risk-reduction is an identifiable, stable, and non-transient population that can be reached in well-defined community venues. These attributes are often not present in the highly mobile truck-driver populations that we work with. Equally important with respect to model fidelity is selecting 15% of the community leaders as disseminators of HIV prevention messages. However within truck driver communities there has been rapid loss of the “ustads” or leaders, as their industry becomes squeezed for productivity, trucks are easier to navigate which necessitates less apprenticeship, and rapid turnover of drivers including younger drivers predominate.(Akhavi, 2008) Utilization of the C-POL model for bio-behavioral HIV prevention method
promotion may require new strategies for this community. The C-POL model as recently tested in a community randomized controlled trial in India and four other countries preliminarily demonstrated only modest benefits amongst the C-POL group that did not differ from the control arm of health educators alone. (W. Pequegnat, 2008) 2) Peer/Health educator model. Initially, peer-based behavioral HIV prevention interventions have focused on disseminating information rather than on using social influence to promote behavior change. Research suggests that information alone often does not result in behavior change or uptake of a new intervention. (NIMH, 2007) Behavioral interventions that have been successful in reducing rates of high risk behaviors such as unprotected intercourse or in reducing levels of STIs have used social influence to implement this behavior change. (Crepaz, Horn, Rama, Griffin, Deluca, Mullins et al., 2007; Darbes, Crepaz, Lyles, Kennedy, & Rutherford, 2008; Herbst, Sherba, Crepaz, Deluca, Zohrabyan, Stall et al., 2005; Johnson, Diaz, Flanders, Goodman, Hill, Holtgrave et al., 2008) Using peer/health educators for HIV prevention efforts is increasingly used in India, however, hard outcomes are generally limited and resort to provision of information and quantity of prevention devices administered such as bleach for intravenous drug users in Manipur (Hangzo, Chatterjee, Sarkar, Zomi, Deb, & Abdul-Quader, 1997), or in our evaluation of a government program targeting truck drivers in Andhra Pradesh, number of condoms distributed. (Kumar, Dandon, Schneider, Ramesh, & Dandona, 2009) Additionally, peer/health educator programs are often not grounded in theory and are limited by providing HIV and transmission knowledge rather than enacting true behavior change. (Elford, Bolding, & Sherr, 2001, 2004; Flowers, Hart, Williamson, Frankis, & Der, 2002)

Current peer/health educator models and community opinion models are utilized as community level programs that target riskier groups for behavior change (ie. less unprotected sex, increase use of condoms) with the thought that this will decrease HIV/STI incidence. These interventions have had mixed results after the conduct of several RCTs in other locations (Kelly, Murphy, Sikkema, McAuliffe, Roffman, Solomon et al., 1997; Latkin, Donnell, Metzger, Sherman, Aramattana, Davis-Vogel et al., 2008; Sherman, Sutcliffe, Sriorj, Latkin, Aramratanna, & Celentano, 2009; St. Lawrence, Brasfield, Diaz, Jefferson, Reynolds, & Leonard, 1994), however, have not been tested in India or have not targeted individuals efficiently – those who are at the highest risk within targeted sub-populations. Increasingly important is the notion of influence through explicit or implicit mechanisms of behavior change, a quality that is feasible within units that naturally exist and are close (Burt, 2005) rather than relationships created through an outsider initiated intervention as those previously described. In this paper we begin to use social network theory to both explore the relationship of truck drivers’ friend networks and plan for a network intervention. We focus upon and will utilize existing networks of friends to create a framework that can potentially modify currently used social network prevention interventions. We examine levels of friend closeness and influence and how these attributes might be used to improve a future outcome of interest – uptake of new HIV prevention modalities. If found to be feasible, friend pairs participating together to improve HIV prevention behavior, will be compared to those participating alone as part of a future behavioral randomized controlled trial. These activities will build the foundation for studies that use social networks to implement future HIV prevention interventions in India.

Methods

Participants and setting

This formative work was conducted in parallel with a NACO supported truck-driver HIV prevention program (Surakshitham) at five parking lots on the outskirts of Hyderabad, the capital of Andhra Pradesh (AP) India in 2009, to assess truck-driver friend quality, network and influence. Truck drivers were selected, as AP has the highest rates of HIV infection due to heterosexual transmission in the country, and truck-drivers have had the highest male heterosexual prevalence (Steinbrook, 2008). Truck-drivers between the ages of 18-55, who were fluent Hindi or Telugu speakers, and fit one or more of the following inclusion criteria were
eligible for participation: 1) reported that they had contact with a sex worker or multiple partners in the last 6 months; 2) Drinks alcohol before sex; and 3) History of STD in the past 6 months. Truck-drivers were individually approached in the parking lots by a trained research assistant and asked if they were interested in participating in a focus group discussion or structured interview about friend networks and HIV.

Data collection procedures
The interviews were administered in person in a sound-proof room by one of three trained research assistants with 6 years experience working with this population. Each research assistant had previous experience in qualitative interviews and was further trained by reading a training manual and watching a videotape of a model interview being performed by a study investigator. The research assistants were given a script to follow, which contained semi-structured interview questions. They were encouraged to probe participants further when responses were vague or unclear. The interview questions inquired about basic background sociodemographics, qualities of friends, friend closeness, sex outside marriage, reciprocity of relationships, influence, popularity, and mode and frequency of communication. Drivers in the one to one qualitative interviews were also asked to share cell phone logs to validate friend network and communication frequency.

The focus group and one on one interviews took approximately ninety minutes to complete, and participants were provided a token (bag of rice or blanket) worth approximately 200 Indian Rupees for their participation. Each interview was digitally recorded and professionally transcribed verbatim into Telugu or Hindi. Transcripts were then translated into English by an English consultant translator. Procedures and protocols were approved by institutional review boards in India and the United States.

Qualitative measures and analysis
Interview transcripts were analyzed by employing an iterative process of qualitative textual analysis. Open coding (Strauss & Corbin, 1998) was utilized to code the initial interviews by identifying and labeling discrete units of text that referred to one or more domains relevant to friend networks including quality of friends, friend closeness, reciprocity of relationships, alter-alter relationships, influence, and popularity of ego and alter. Three members of the study team met to develop a consensus about the content of and appropriate names for the different concepts and to formulate a working codebook of primary network domains, and emerging themes. Network domains were coded for examples both positive and negative for each domain. After the first few iterations of this process, and when the codebook developed some stability, we utilized qualitative software (NVivo qualitative data analysis software; QSR International Pty Ltd. Version 8, 2008) to recode all prior and subsequent interviews according to the codebook formulations. Where new ideas and themes emerged, we made addenda to the codebook. At various points throughout the study, an inductive approach was employed to identify emergent themes and to identify relationships and patterns between the themes. Following the principle of constant comparison (Janesick, 2003) each new transcript was considered in relation to the prior ones to ensure that the codebook and our evolving interpretations remained faithful to the data. All 10 sessions were coded using this scheme.

Results

Focus group discussions
Focus groups were designed to speak about friends broadly, with a narrowing of focus in the one to one qualitative surveys. The five focus groups were made up of 11, 5, 7, 5 and 5 participants. Leading the group was one interviewer, one documentation person and one facilitator. In focus groups, friends were described as “person who stands by you” (60%), “willing to lay down his life (20%), “help us in our weakness” (20%). Truck-drivers reported having many friends (57%) compared to 2 or 3 close friends
The majority had <10 friends (43%) and around a quarter with >10 friends (29%). Friends who provided HIV information would be listened to in 86% of participants and even if the individual had a disagreement with the participant (71%). If a friend underwent HIV testing, ego would also undergo testing 86% of the time. Most friends were other drivers (57%), not family members (80%), and considered co-drivers as friends (57%). Participants stated that their friends were often friends with their other friends (71%).

All focus group participants reported having a close friend. Close friends were also most likely to stay close to ego’s home (60%). Meeting with close friends occurred every month (100%), usually outside the parking lot (60%) and speaking with close friend over the phone, even daily, was common (60%). Many (40%) stated that they share personal information a close friend. Close friend’s advice was very important to ego (60%). Some sharing of sexual behavior such as visiting a sex worker occurred with close friends (40%), however, there was a sense of discomfort doing this as well (71%). Ego provided health information to a friend rarely (20%), however, would listen to a friend’s information on HIV (80%). If a friend was infected, ego would discuss medication and health care options with the friend (80%). Most would also reveal there HIV status to a friend (80%).

Most participants owned a cell phone (86%), many for more than 5 years (83%), and the majority with the same cell phone company (67%). Many also owned more than one cell phone, which they would use in different parts of the country (33%). Drivers were evenly split with monthly cell phone spending with <200 rupees (25%), 200-500 rupees (25%), and >500 rupees (25%). Few reported ever speaking with a health care provider or counselor over the phone (17%), however, all reported being interested in such an option (100%). Most reported answering the phone even if the number is not recognizable (87%).

**Qualitative Interviews**

Five in depth qualitative interviews were conducted to characterize the networks and further elucidate differentiations amongst and between types of friends. Two sample networks are provided in Figures 1 and 2. (networks 1 &2). Strength of the relationship is denoted by line thickness and nodes are color coded. RED indicates that the friend is from the same native place/village. BLUE indicates that the friend is from the same 'state' but not from the same village/place. GREEN indicates that the friend is from another state. Quadrants denote the type of friend with the right upper quadrant denoting “closest friends”, left upper quadrant denoting “other friends”, bottom left quadrant denoting “parking lot friend (Hyderabad)”, and bottom right quadrant denoting “parking lot friend (other location)”.

Friends generally fell into three categories: 1) Closest friend "Khas dost" or "Jigari dost"; 2) Other friends "Mamuli dost" and for the friends at the parking lot or on the roads "praking lot ke dost". Key qualities of close friends were that they support in time of need, such as financial difficulties, or around momentous occasions.

“We help each other, help each other on the road, financially, at the time of marriages and whoever helps in my difficulties so treat them as my closest friends.”

Most times there was a “criteria” for friendship creation, with familiarity of alters’ background and strong homophily of friend categories. This moved beyond closest friends and included other friends, and casual or parking lot friends.

“If he belongs to my place, if I knew him, if he is a good person and can adjust then I will try to make friendship with him.”
All friends regardless of category type were of the same religion as ego, and an overwhelming majority were also of the same caste as ego.

**Figure 1 (network 1)**

![Network 1](image1)

**Figure 2 (network 2)**

![Network 2](image2)
However, there was some openness to forming new friendships and relationships with networks of less homophily.

“No I have friends from my community only.......If I get a chance, I am ready to make friends from other religions.”

Co-drivers were an example of friends who could have been of another background with less homophily, however, were considered friends mostly because of the significant amount of time co-drivers spend with one another.

While there was overwhelming evidence that close friends discuss personal matters, such as income, family matters, there was a distinct cut-off of sharing personal information when the topic was related to sex, and especially sexual relations that are outside the marriage.

“No secrets about family and children, but when it comes to sex, I keep secrets about incidents that happened at Dhaba hotels and other things like that (giving 50 rupees to a girl for sex).”

However, ego was more willing to disclose outside sexual experiences and other substance use experiences with other friends. Additionally, information gathering, such as where sex can be obtained, and assistance with the transaction was often worked out with parking lot or casual friends. However, this could be one-sided, as the information may have been valuable and sharing it was not taken lightly.

“No sir, I will only ask the person who works in the Dhaba or in the hotel, if anyone (of the friends) asks me, please go on your own and find out, don’t ask me.”

Listening to advice and susceptibility to influence was evident through relationships with close friends and other friends. However, the subject matter that is to be influenced depended upon the relationship type. For example, influence over financial affairs and personal matters was mitigated through close friends and influence over sexual behavior and other substance use was provided by other friends.

“I used to consume alcohol very much and my friends (other friends) said “brother please stop consuming alcohol, if you don’t do that we are no more friends in the further.” Then I accepted their advice and stopped consuming alcohol.”

Close friends were seen as morally sound and not partaking in behaviors such as sex outside the marriage.

“No he is not that kind of person(sex with outside women)”

The lack of sharing of outside sexual contact related information with close friends was likely to be reciprocated, as it may be seen as immoral. For example if a close friend were to disclose outside relationships to ego:

“I think that was not correct, I will tell him that you are not a correct person, your wife is so good and you are going for sex outside, you are not a good person.”

As in this example, close friends were likely to know each others’ wives. If extra marital contacts were to occur, lack of disclosure because of the strong tie with ego and wife was explained in this way.
“Either he might not have done that (sex outside marriage) or if he had done it he might be hesitant to express it.”

Knowledge of other friends sex life was common:

“Yes, I can describe their (other friend’s) sex life and they also talk about my sex life.”

However not as much with closest friends:

“yes (we won’t discuss), not to lose respect”

Additionally, close friends who were younger or in a position of learning from ego, were unlikely to receive information that could influence in a negative manner.

HIV testing history and disclosure of HIV testing results, ego and his friendship network tended to follow a more nuanced pattern. HIV testing history may be shared with other friends, but not close friends or parking lot friends.

“yes my friends XX, YY and ZZ went for HIV test…..I have no idea about parking lot friends about their HIV status”

However, revealing of HIV test results and a positive HIV status, would be shared with closest friends and in some cases other friends.

“I would tell my friends about my disease, but only to the friends who are at my home.”

Perhaps when the secret can no longer be kept, and one is infected with HIV, then the ability to speak with closest friends about health and longer term planning occurs. Acceptance of advice from close friends may occur during this time.

Discussion

Truck-drivers have diverse groups of friends that can largely be broken into three categories: Close friends, other friends, and parking lot or casual friends. Types of information shared with these friends can be variable, with personal matters, but not sexual exploits shared with close friends. Other friends were more likely to be share sexual matters with ego, and casual friends/parking lot friends were often the group who would broker sexual encounters, but would not be individuals that would share personal information with or have any influence over ego. While close friends had the majority of influence over ego, they may not have influence over sexual matters, because of a lack of discussion about these topics. We conclude that other friends, may have a balance of influence over ego, combined with an ability to discuss sexual matters and HIV testing/prevention and may thus be targets of HIV prevention interventions.

Utilization of existing networks of friends including linked or unlinked dyads may give additional dimensions to enacting behavior change that support current prevention models like the ones described above. Investigation into this sub-level has been called “micro sociologic inquiry” coined after Amar Dhand’s examination of roles performed by peer educators within and during outreach programs amongst heroin addicts in India.(Dhand, 2006) Researchers providing group-based interventions across a broad array of group settings such as counseling or intervention groups, have pointed to the important roles played by participant interrelationships on the related group processes, retention, and outcomes.(Beadnell,
The influence of peers – particularly friends have a strong influence on health behaviors. (Hawkins, Catalano, & Miller, 1992) Linkage between friendship and risk behaviors such as substance abuse and unprotected sex are well categorized. (Aloise-Young, Graham, & Hansen, 1994; Dembo, Farrow, Schmeidler, & Burgos, 1979; Urberg, Degirmenciglu, & Pilgrim, 1997) Sexual behaviors can be linked to the norms and behaviors of peer groups and friends. (Dolcini & Adler, 1994; Morrison, 1998; Prinstein, Meade, & Cohen, 2003; Walter, 1992) Additionally, friends tend to be similar to one another with respect to sexual behaviors, expectations and feelings. (Billy, 1984) The influence of friendship on behavior has implications for interventions that occur in group settings. Pre-existing friendships, or those that develop during the course of an intervention, may lead to stronger relationships that then influence the group process and outcomes. These influences have the potential to further detract from the intervention goals. (Didion, 1999) This perspective points to the possibility that high-risk participants may support one another’s maladaptive behavior through deviant behavior, a process that may be heightened when friendships are closer or when one member exerts negative influence upon another. Despite its potential influence, the role of friendship closeness among members of intervention groups has received little empirical attention. In one study, researchers compared groups of friends receiving an HIV risk-reduction intervention to control groups composed of people without regard to friendship status. (Fang, Stanton, Li, Feigelman, & Baldwin, 1998) Not only did the HIV risk reduction intervention increase condom use, but participants within the intervention groups had increasingly similar use to each other. Without a specific measure, however, it is unclear whether friendship closeness among participants in the intervention groups mediated these positive effects of if the positive effects would have occurred regardless of group friendship levels. In this preliminary study, closeness may not in fact be a valuable quality for implementing HIV prevention. It will be important for future social network interventions that friendship closeness/influence measures have evidence for reliability and validity at both the individual and group levels, given the hierarchical nature of such studies (particularly nested within groups).

What may be needed is to bring the intervention to the migrant workers. C-POL and peer health educator intervention models, may not work in settings where migrant workers are concerned as they tend to be static systems based on geographically set locations and settings. It is beyond the scope of most HIV prevention programs to conduct these interventions in all settings, which would differentially affect all truck-drivers and parties moving in and out of these settings. However, truck-drivers and other migratory workers may need to receive the intervention longitudinally and without relation to geographic setting. Keeping in touch with friends outside of the typical intervention setting through visits to home and connections over mobile phones, may be a way to receive messages, and model other friend’s behaviors who may or may not be in high-risk away from home settings where current interventions are implemented.

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