

HIV Prevention in India: Focus on Men, Alcohol Use and Social Networks

Sudha Sivaram, DrPH, MPH, Carl A. Latkin, PhD, Suniti Solomon, MD, and David D. Celentano, ScD

The first case of HIV in India was detected in 1986.¹ Since then, over five million adults in India have been infected with HIV.² While this number in a population of over a billion individuals translates to a low overall prevalence rate, the epidemiology of HIV infection suggests the need for focused prevention interventions that can avert large numbers of new infections. India is a country with a population of 1.02 billion individuals residing in thirty-five states and union territories.³ Of these residents, 82% reside in rural areas. HIV infections have been reported in all states and territories,

with the highest numbers reported from the southern states of Tamil Nadu and Karnataka and from the western state of Maharashtra. Heterosexual transmission is the dominant mode of transmission, accounting for 85% of infections.² Heterosexual risk is reported from all Indian states, and data from sexually transmitted disease (STD) clinics in the community suggest an increasing prevalence of HIV among STD patients. National HIV prevention campaigns focus on messages appealing to individuals to adopt safe sexual behaviors. 2% of infections nation-wide are attributed to injecting drug use.² While

.....

Sudha Sivaram, DrPH, MPH, is an Assistant Scientist with the Department of Epidemiology at the Johns Hopkins Bloomberg School of Public Health. She has been involved in HIV research and program implementation in India for over 15 years. Carl Latkin, PhD, is Professor of Social and Behavioral Sciences, Department of Health, Behavior and Society at the Johns Hopkins Bloomberg School of Public Health. Dr. Latkin is a social psychologist with extensive experience in HIV prevention interventions, network analysis and high-risk communities (drug and alcohol users). Suniti Solomon, MD, is Founder and Director of the YR Gaitonde Center for AIDS Research and Education (YRGCARE), which is a leading provider of education, care and support for persons and families living with HIV/AIDS in India. David D. Celentano, ScD is Professor and Director of the Infectious Disease Epidemiology program in the Department of Epidemiology of the Johns Hopkins Bloomberg School of Public Health with joint appointments in International Health, Environmental Health Sciences and Health Policy & Management. His research integrates behavioral science theory and research with epidemiology, in the study of behavioral and social epidemiology.

earlier reports focused on the transmission of HIV among injecting drug users (IDUs) in the northeastern states, recent reports from southern India show that prevalence among IDUs there is 19%, emphasizing the need for interventions that prevent HIV transmission while promoting harm reduction in this population.⁴ Men who have sex with men (MSM) are also receiving increased attention as a HIV risk group in the country. Among MSM surveyed from reporting sites nationwide, 8.7% are HIV positive.⁴ Recent efforts by advocates to highlight the prevention needs of gay men mark an important beginning in addressing needs of this group.⁵ In this paper, we will focus on the prevention of HIV transmitted through heterosexual intercourse and draw on lessons from the ongoing NIMH HIV/STD Prevention Trial, a community-based prevention intervention being implemented in Chennai city in southern India among patrons of bars or wine shops.

Heterosexual HIV Transmission in India: The Case for Focusing on Men

The risk factors surrounding heterosexual transmission are well known. Perhaps the most important factor is failure to use condoms during sexual intercourse. Condom use has been promoted as a male barrier contraceptive in India as part of the government's national family planning program since 1952. While the condom brand marketed by the government (nirodh, meaning "to prevent") is now a household name, India's family planning program has suffered many setbacks due to

poor management, excessive focus on sterilization and improper targets for family planning.⁶ Furthermore, the association of nirodh with the failed family planning program and the gradual shift in the onus of family planning from men to women have diluted or even entirely negated any previous progress in habituating men to regular condom usage. Thus, for HIV prevention, new approaches and motivators are needed in order to help men adopt and sustain condom use.

In the 2001 National HIV Behavior Surveillance Study,⁷ while over 76% of those surveyed were aware of HIV/AIDS, only 46% reported that condoms can prevent HIV and only 49% of men reported using condoms with a recent, non-regular partner. Other community-based behavioral risk factor surveys among married women⁸ and among adults in the community⁹ report that among sexually active men, 74% to 98% have never used condoms. While these studies have worked with diverse populations who consequently may not bear the same burden of risk behaviors, they nevertheless illustrate that increasing condom use among men needs to remain a priority among prevention efforts in India. Recent community-based interventions in India have repeatedly shown that when condom-use messages are effectively delivered, condom usage increases and becomes more consistent.^{10,11} However, studies have also shown that men face many difficulties in adopting safe sex behaviors, ranging from situational constraints such as the unavailability of condoms when needed to personal obstacles such as a preference for sex without physical barriers.^{12,13} These personal barriers are reinforced by social and gender norms that deempha-

size sexual communication and value female acquiescence to male partner's sexual wishes, often under the threat of physical and sexual violence.¹⁴ Traditional norms also confer upon men unique powers in sexual relationships. By expecting men to be more experienced in sex and by supporting men's need for frequent sexual release, these norms support another sexual behavior that fuels HIV risk—having multiple sexual partners.¹⁵ High prevalence of pre-marital sex and reports that young men account for a disproportionately high percentage of STDs suggest that levels of unsafe sex are high in this population.^{16,17} Similar findings have been reported among married men. A study of middle-class professionals found that 15% of men reported having extra-marital relationships.¹⁸ Indeed, recent reports indicate that the primary and, often times only, risk factor for HIV acquisition among married, monogamous women is the husband's risky sexual behavior. This further suggests that male sexual behavior is an important target for HIV prevention.¹⁹

Female Sex Workers (FSWs) have been an important focus for HIV prevention efforts. FSWs are women who offer sexual services in exchange for cash or durable goods and who typically take up sex work either through coercion or because of their poor economic circumstances. A recent study estimated that there are between 1 and 16 million FSWs in India, and average HIV prevalence rates among Indian FSWs are projected at 15%.²⁰ Another recent study posited that the elimination of HIV transmission through FSWs in India would essentially eliminate the Indian epidemic,²¹ a contention that further highlighted the magnitude of HIV spread

through male contact with FSWs. Interventions with FSWs that have been successful to date have focused not only on disease prevention and control, but also on larger contextual factors such as the need for social support, skills to address issues of abuse and violence that women face from clients and brothel owners, and access to needed health care services.²² These interventions have resulted in reduced HIV and STD incidence rates, in large by motivating women to consistently ask clients to use condoms and empowering them to refuse services if condom use is not realized. Additionally, they have also succeeded in highlighting male risk behaviors, such as physical abuse, sexual coercion, and the role of alcohol use in increasing vulnerability to unsafe sexual situations²³ that must be addressed if sustained risk reduction is to be achieved.

Alcohol abuse has long been reported as a scourge to public health interventions in India, given its role in fueling spousal abuse and other instances of domestic violence, its negative community impact in forcing women to take action against alcohol service outlets, and the debilitating and often fatal results of alcohol dependence, particularly with regards to homemade brews commonly reported in both popular and scientific literature in India.^{24,25} Alcohol use prior to sexual intercourse has also been associated with high prevalence of STDs and extra-marital relationships among men.^{26,27}

Men's Alcohol Use

As behavioral factors influencing HIV risk in India are examined, the role of alco-

hol in sexual risk is gaining attention. In India, more men than women consume alcohol, and alcohol can be easily obtained from wine shops, bars, discotheques and pubs. These locations are often spread out in a given geographical area, and as such are not specific to any socio-economic class. Alcoholic beverages are available in three categories: Indian-made foreign liquor (IMFL), country liquor and illicit liquor.²⁸ IMFL has a maximum alcohol content of 42.8% and includes whisky, rum and brandy. Country liquor has an alcohol content of about 40% and is a distilled beverage made from grain and crops such as rice, palm and sugarcane. Popular among poorer populations are illicit, home-brewed liquors where the alcohol content varies up to 56%. According to the World Health Organization, such brews account for more than half the alcohol consumed in terms of quantity. With recent economic liberalization policies, alcohol has become more available, with more varieties and outlets.²⁹ This ease of access is reflected in surveys that assess alcohol sales and prevalence in India. 6% to 75% of those surveyed in Indian states report using alcohol, and studies investigating dependence report reliably that approximately 50% of those who drink alcohol are dependent on it.³⁰ Calling for more attention to social and health impacts of alcohol use, qualitative studies report that heavy drinking results in a high burden of domestic discord and violence in India.³¹

However, the relationship between alcohol and HIV risk is only beginning to be explored in India. International studies suggest that alcohol use may increase

risk for unsafe sex³² by impairing cognitive reasoning and condom use during sex³³ and by aggravating individual differences in particular sexual situations.³⁴ However, while it is plausible and recognized that alcohol use impacts unsafe sexual activity, the precise mechanisms of this association are still being researched.

In our work in southern India, we conducted open-ended interviews with patrons of community-based alcohol outlets or wine shops in Chennai city in southern India. Analysis of these interviews suggests four factors that might influence this mechanism.¹² First is the role of disinhibition and increased bravado in encouraging risky sexual behavior that wine shop patrons attribute to alcohol consumption. For example, interviewed men frequently reported that alcohol made them more self-assured in soliciting sex from a sex worker. Second is the role of the individual's social background in driving both alcohol dependence and risky sex following alcohol use. Mental health status and socio-economic factors interact in complex ways in pushing people toward alcohol dependency. For example, in our interviews, one young man reported that the pressure to maintain his family financially and the frustration of his own single marital status drove him to drink and seek sex workers afterward. During the planning stage of this study, a community leader commented that in order to save and build an economic foundation, there must be a steady flow of income. He observed that among the poor in his community reliant upon the irregular flow of income, discouragement over income uncertainty often drove

individuals to spend their daily wages on alcohol and sex workers due to a mentality of “being jolly” when one could.³⁵ A third factor is the absence of sexual communication between men and their regular partners. In our interviews, we often heard from both wine shop patrons and from female sex workers in our study area that men who seek risky sex and sexual experimentation want to get what they do not get at home. In fact, a common lament among sex workers is that male clients, when asked to use condoms, often remark that if they wanted to use a condom, they would be with their partners and would not have to seek out a sex worker. This implied that an inability to communicate with regular sexual partners is a key barrier to HIV prevention efforts.¹⁴

The fourth factor is the role of personal and social networks. A social network refers to a group of individuals who are linked together by common interests or activities.³⁶ Network members can be close friends, colleagues at work, members of an organization or participants in a sports team. HIV prevention efforts led by key members of social networks, such as opinion leaders, offer replicable models for community-based prevention efforts.³⁷ Another network crucial to understanding needs for HIV prevention activities are individual sexual networks, which are comprised of individuals who inform, mediate and provide sexual companionship.³⁸ Network members may influence each other’s behavior through modeling of group norms on alcohol use and sexual behaviors and by facilitating opportunities to meet sexual partners.^{39,40}

Value of Social Networks in Interventions for Heterosexual Men in India

HIV prevention interventions that rely on social networks are not new in the literature. In fact, those that have been implemented with gay men and minority women in United States cities have been particularly efficacious in reducing risky sexual behavior.^{41,42} Social network based interventions assume that behavior change is facilitated by interaction and communication among network members. Studies have shown, for instance, that among communities of gay men and minority women, network members relied upon popular opinion leaders—friends who are well-respected, liked and whose opinions are valued—to effect change. In designing HIV prevention programs, opinion leaders are identified through methods such as observation and interviews among the population; once identified, opinion leaders can be trained to communicate relevant prevention messages to their peers.

Social network approaches to HIV prevention are very relevant in India for three reasons. First, communication about sex and sexual health often occurs among friends and members of close social networks.¹⁴ In our studies, we found that male friends gather to drink alcohol, discuss women and then seek the services of sex workers. Men refer each other to women who will provide certain sex services, and men also discuss HIV prevention methods in detail. Incorrect beliefs about sexual behaviors are also shared. We

found, for instance, that misinformation about post-coital prevention measures following unprotected sex was often discussed and circulated in male networks.¹² These measures include using herbal or other topical disinfectants on male genitalia and taking medications perceived to prevent HIV. Other information communicated in networks includes motivation to have sex, sharing the same women, particularly sex workers, and sharing the contact information of previous female sexual partners. The personal nature of information flows and the trust shared between close network members imply that if trained appropriately, network members may share accurate prevention message in a natural manner of conversation in a way that they deem most appropriate.

The second reason motivating us to focus on these social networks is ease by which network-based prevention programs can be developed and evaluated. For example, recent research has shown that, in addition to content, the location of prevention programs is very important.⁴³ Venue, or location-focused, HIV prevention begins to address the contextual factors that affect the behavior of men. Chennai wine shops offer men a private space to enjoy conversation and socialization. Furthermore, wine shops are often located in easily accessible public areas, as are the locations frequently patronized by individuals who mediate access to sex workers, leading to a convergence of social and sexual networks. This convergence offers a unique opportunity to target HIV prevention messages to these networks. In the light of findings that suggest that the HIV epidemic remains concentrated within key risk groups and has not yet transitioned to a general-

ized epidemic, the opportunity to easily target men within their social networks is one that should not be overlooked.

Thirdly, social networks may provide unique access to sexually active men in India. Few HIV prevention activities in India to date have focused entirely on men, save for those working with select risk groups such as long distance truck drivers.⁴⁴ Conversely, public health activities, such as those related to family planning, education, nutrition promotion and immunization, have traditionally addressed women and their gender-based social networks.⁴⁵ Women work at home more often than men, are relatively easy to approach and have vested interests in seeing positive outcomes from these activities. However, HIV prevention is different. Here, women's interests or motivations may remain concealed given the real threat of violence or coercion by their sexual partners. In order to more effectively produce sexual behavior change, involving men is essential, and an approach targeting men based on social and communication networks allows desired sexual behavioral outcomes to be addressed from male perspectives. By tailoring prevention messages so that they address the context and determinants of risky male behavior and by employing individuals that men respect in delivering such messages, HIV prevention programs are much more likely to succeed in facilitating behavior change.

Planning Future HIV Prevention Programs

It is noteworthy that the current Indian Health Minister, Dr. Anbumani Rama-

doss, recently declared the promotion of condom use among men as an important focus area.⁴⁶ Outside of India as well, this emphasis on involving men in HIV prevention is being encouraged by funding agencies.⁴⁷ As prevention efforts gather momentum in India, we present some considerations for program planners. Specifically, our presentation is focused on the relevance of a social network approach to work with men and alcohol users. We outline four areas relevant to program design—choosing a venue, program planning and logistics, implementation and evaluation and collaboration with the private sector—as points to consider while planning an intervention.

Program Location. The term “community-based prevention” is used widely in HIV prevention. However, the community is a dynamic and heterogeneous entity. So, while mass media campaigns deliver prevention messages that might reach all residents in a given community, their impact can vary based on how the information is processed. Future programs, therefore, might consider identifying venues within a community where men and social networks interact. Our research shows that in a random sample of residents in communities where wine shops are located, HIV prevalence was 0.9%, which was close to the national prevalence rate. However, when we explored factors associated with sexually transmitted infections, we found that alcohol users had a higher probability of infection.⁴⁸ This suggests that in Chennai, HIV prevention may yield the most benefit if directed at specific behaviors and risk groups. Identifying specific locations or venues where risky behaviors may be facilitated is an important consideration

when selecting locations for interventions. Privacy, the opportunity to communicate and discuss HIV prevention and the relative permanence of a venue are some criteria to consider while identifying a program location. There are several groups in communities in India that meet these criteria; youth groups, sports clubs and movie star fan clubs are some examples where close networks of men may interact.


Program Planning. Once a venue is identified, our experience suggests that it is important to understand specific risk behaviors and their enablers among venue residents. This involves using techniques of anthropology and surveillance to measure the range and nature of risk behaviors. Leading up to our work with wine shop patrons, we learned through extensive interviews that alcohol use and the location of alcohol use both play important roles in risk behaviors. We also investigated patterns of communication among men. How men discuss sex and sexual health, how these topics can be incorporated to HIV prevention while maintaining men’s interest and where these discussions might naturally take place were some questions we answered using ethnographic techniques. We then tailored our training protocol for opinion leaders to include messages about alcohol use. Future initiatives and policies on HIV prevention need to be prepared to encounter venue-specific enablers of risk, such as alcohol, and include them in their prevention messages.

Program Implementation and Evaluation. Once risk behaviors are identified, planners need to brainstorm appropriate mechanisms and protocols for message delivery. For instance, in working with men, there are several logistical and program de-

sign considerations. First, planners might consider hiring staff members who can discuss sensitive topics and who evoke interest and responses from men. Staff who deliver these programs also need training in facilitating informational sessions with men. Second, planners might consider logistical factors such as men's work hours. Men who work are traditionally available in the evenings, and this implies that program delivery and staff effort and time should be planned to accommodate participants' needs. Program evaluation is an important component of implementation. Ongoing process evaluation, for instance, can seek feedback from staff and opinion leaders on effective communication techniques and utilize this information to update staff skills. Outcome evaluation can help assess goals achieved and set measurable goals.

Collaboration and Sustainability. Finally, planners might benefit greatly by collaborating with private sector entities and other community groups. Leading up to our intervention in wine shops, there was speculation about the level of participation and interest among wine shop owners and staff. We were pleasantly surprised to see enthusiasm for our intervention by these businesses. Indeed, the role of wine shop staff in helping identify opinion leaders has been invaluable in our intervention. Social network based programs have the unique ability to personalize prevention messages and involving businesses, and ongoing prevention efforts may help sustain this natural process of information exchange.

Conclusion

HIV prevention must be prioritized in order to achieve current health and development goals in India, where even small percentage increases in infection will translate into very large increases in absolute infection numbers. Designing prevention interventions through social networks offers a unique opportunity to deliver appropriate prevention messages to groups in the community, as well as to promote discourse on prevention in everyday conversations between friends. More importantly, this approach offers promise in targeting male needs for HIV prevention, because in-depth communication of sex and sexual health takes place in male social networks. 

References

1. E.A. Simoes, P.G. Babu, T.J. John, S. Nirmala, S. Solomon et al, "Evidence for HTLV-III infection in prostitutes in Tamil Nadu (India)," *Indian Journal of Medical Research* 85, no.4 (1987): 335-338.
2. National AIDS Control Organization. Ministry of Health and Family Welfare. "HIV/AIDS: Indian Scenario," 27 March 2000, www.nacoonline.org (24 October, 2006)
3. Office of the Registrar General of India. Census of India, 2001, "Provisional Population Counts," 2001, www.censusindia.net/results/webex.html (24 October, 2006)
4. M. Suresh Kumar, M. Shakunthala and D. Daniels, "Community Based Outreach HIV intervention for street recruited drug users in Madras, India," *Public Health Reports*, 113, no.S1 (1998): 58-66.
5. S. Khan, "Culture, sexualities and identities: men who have sex with men in India," *Journal of Homosexuality* 40, no.3-4 (2001): 99-115.

6. S. Panakadan, G.V. Murthy and J.V. Rao, "Base line behavioral surveillance survey in general population in India," *Int Conf AIDS*. Jul 7-12, 2002: abstract no. TuOrC1232.
7. L. Visaria, S. Jejeebhoy and T. Merrick, "From Family Planning to Reproductive Health: Challenges Facing India," *Family Planning Perspectives* 5, Supplement January (1999):s44-s49.
8. N. Chatterjee and G.M. Hosain, "Perceptions of risk and behavior change for prevention of HIV among married women in Mumbai, India," *Journal of Health Population and Nutrition* 24, no.1 (2006): 81-88.
9. V. Sharma, A. Sharma, S. Dave, A. and P. Chauhan, "Sexual behavior of adolescent boys – a cause of concern," *Sex Marital Therapy* 11, no. 2 (1997): 147-151.
10. M.E. Bentley, K.Spratt, M.E.Shepherd, R.R. Gangakhedkar, S. Thilikavathi, R.C.Bollinger and S.M. Mehendale, "HIV testing and counseling among men attending sexually transmitted disease clinics in Pune, India: changes in condom use and sexual behavior over time," *AIDS* 12, no.14 (1998):1869-77.
11. G. Bhawe, C.P. Lindan, E.S. Hudes, S. Desai, U. Wagle, S.P.Tripathi and J.S.Mandel, "Impact of an intervention on HIV, sexually transmitted diseases and condom use among sex workers in Bombay, India," *AIDS* 9, Suppl 1 (1995): S21-30.
12. S.Sivaram, A.K.Srikrishnan, C.A.Latkin, S.C.Johnson, V.F.Go, M.E.Bentley, S.Solomon and D.D.Celentano, ".Development of an opinion leader-led HIV prevention intervention among alcohol users in Chennai, India," *AIDS Education and Prevention* 16, no.4 (2004): 137-49.
13. J. Roth, S.P.Krishnan, and E.Bunch, "Barriers to Condom Use: Results From A Study In Mumbai (Bombay), India," *AIDS Education and Prevention* 13, no.1 (2001): 65-77.
14. S. Sivaram, S. Johnson, M.E. Bentley, V.F. Go, C.Latkin, A.K.Srikrishnan, D.D. Celentano and S. Solomon, "Sexual health promotion in Chennai, India: key role of communication among social networks," *Health Promotion International* 20, no.4 (2005): 327-333.
15. G. R.Gupta. Gender, Sexuality and HIV/AIDS: The what, the why and the how. Plenary Session. International AIDS Conference, Durban, South Africa. July 2000, <http://www.gender.co.za/gendersexualityhiv-aids.pdf> (23 October, 2006)
16. L. Abraham and K. Anil Kumar, "Sexual experiences and their correlates among college students in Mumbai city, India," *International Family Planning Perspectives* 25, no. 3 (1999): 139-146.
17. S. Hawkes and K.S. Santhya, "Diverse realities: sexually transmitted infections and HIV in India," *Sexually Transmitted Infections* 78, Suppl 1 (2002): 31-9
18. J. Bhattacharjee, R.S.Gupta, A. Kumar and D.C. Jain, "Pre- and extra-marital heterosexual behaviour of an urban community in Rajasthan, India," *Journal of Communicable Diseases* 32 no.1 (2000): 33-9.
19. R.R.Gangakhedkar, M.E.Bentley, A.D.Divekar, D.Gadkari, S.M.Mehendale,, M.E.Shepherd, R.C.Bollinger and T.C. Quinn, "Spread of HIV infection in married monogamous women in India," *Journal of the American Medical Association* 278, no.23 (1997): 2090-2092.
20. C.B. Venkataramana and P.V. Sarada, ".Extent and speed of spread of HIV infection in India through the commercial sex networks: a perspective," *Tropical Medicine and International Health* 6, no.12 (2001): 1040-61.
21. N.J. Nagelkerke, P. Jha, S.J. de Vlas, E.L.Korenromp, S.Moses, J.F. Blanchard and F.A. Plummer, "Modelling HIV/AIDS epidemics in Botswana and India: impact of interventions to prevent transmission," *Bulletin of the World Health Organization* 80, no. 2 (2002): 89-96.
22. S. Jana, I. Basu, M.J. Rotheram-Borus and P.A.Newman, "The Sonagachi Project: a sustainable community intervention program," *AIDS Education and Prevention* 16, no.5 (2004): 405-14.
23. A.K.Jayasree, "Searching for justice for body and self in a coercive environment: sex work in Kerala, India," *Reprod Health Matters* 12, no.23 (2004): 58-67.
24. S.Shyamsunder, "Hooch deaths," *The Hindu*, Chennai, 9 October, 2001
25. J. Shankar, "India-AIDS: Male-dominance, alcohol hinder India's efforts to combat AIDS," *Agence France-Presse*, 1 December, 2001
26. P. Madhivanan, A. Hernandez, A. Gogate, et al., "Alcohol use by men is a risk factor for the acquisition of sexually transmitted infections and human immunodeficiency virus from female sex workers in Mumbai, India," *Sexually Transmitted Diseases* 32, no.11 (2005): 685-690.
27. S.L.Schensul, A.Mekki-Berrada, B.K.Nastasi, R.Singh, J.A. Bureson and M. Bojko, "Men's extramarital sex, marital relationships and sexual risk in urban poor communities in India," *Journal of Urban Health – Bulletin of the New York Academy of Medicine* 83, no. 4 (2006): 614-624.
28. World Health Organization, *Mental Health: Evidence and Research*; Department of Mental Health and Substance Dependence, "Alcohol use and sexual risk behaviors across cultures: A 2001-2002 literature review from eight countries," (Geneva, Switzerland: 2002)
29. K. Basu, "Globalization and Culture," *India Today* 20 April, 1998.
30. V.Benegal, "India: alcohol and public health," *Addic-*

- tion 100, no. 8 (2005):1051-6.
31. A.N.Chowdhury, J. Ramakrishna, A.K.Chakraborty and M.G.Weiss, "Cultural context and impact of alcohol use in the Sundarban Delta, West Bengal, India," *Social Science and Medicine* 63, no. 3 (2006): 722-31.
 32. K.H. Dermen, M.L.Cooper and V.B. Agocha, "Sex-related alcohol expectancies as moderators of the relationship between alcohol use and risky sex in adolescents," *Journal of Studies in Alcohol* 59, no.1 (1998):71-77.
 33. C.M.Steele and R.A. Josephs, "Alcohol Myopia: Its prized and dangerous effects," *American Psychologist* 45, no.8 (1990): 921-933.
 34. S.A.Stoner, W.H. George, L.M. Peters and J. Norris, "Liquid Courage: Alcohol Fosters Risky Sexual Decision-Making in Individuals with Sexual Fears," *AIDS and Behavior* June 27 (2006) Epub ahead of print.
 35. A.K.Srikrishnan, Personal Communication. The reference to the term *be jolly* is not limited to this community leader's perception. As we collected data from wine shop patrons this term emerged as one that was used to refer to a stress-free state often induced by alcohol use or associated with having sex. Details on this are available in our published work referenced in this list under number 12.
 36. J.A.Kelly, "Popular opinion leaders and HIV prevention peer education: resolving discrepant findings and implications for the development of effective community programmes," *AIDS Care* 16, no. 2(2004): 139-50.
 37. E.M. Rogers and D.L Kincaid, "Communication Networks: Toward a new paradigm for research (New York: Free Press, 1981).
 38. F. Liljeros, C.R. Edling, L.A. Nunes Amaral, "Sexual networks: implications for the transmission of sexually transmitted infections," *Microbes Infect* 5, no. 2 (2003): 189-96.
 39. Latkin CA, Mandell W, Vlahov D, "The relationship between risk networks' patterns of crack cocaine and alcohol consumption and HIV-related sexual behaviors among adult injection drug users: a prospective study," *Drug and Alcohol Dependence* 42, no. 3 (1996):175-181.
 40. C.A.Latkin, "Outreach in natural settings: the use of peer leaders for HIV prevention among injecting drug users' networks," *Public Health Reports* 113, Suppl 1 (1998): 151-9.
 41. J.A.Kelly, J.S. St.Lawrence, L.Y. Stevenson, et al., "HIV risk behavior reduction following intervention with key opinion leaders of a population: An experimental community-level analysis," *American Journal of Public Health* 81, no. 2 (1991): 168:171
 42. K.J.Sikkema, J.A. Kelly, R.A. et al., "Outcomes of a randomized community-level HIV prevention intervention for women living in 18 low-income housing developments," *Am J Public Health* 90, no. 1, (2000): 57-63.
 43. S.S. Weir, C. Pailman, X.Mahalela, N.Coetzee, F.Meidany and T.J. Boerma, "From people to places: focusing AIDS prevention efforts where it matters most," *AIDS* 17, no. 6 (2000): 895-903.
 44. J.V. Manjunath, D.M.Thappa and T.J.Jaisankar, "Sexually transmitted diseases and sexual lifestyles of long-distance truck drivers: A clinico-epidemiologic study in south India," *International Journal on STDs and AIDS* 13, no. 9 (2002): 612-7.
 45. J.T. Fullerton, R.Killian, P.M. Gass., "Outcomes of a community- and home-based intervention for safe motherhood and newborn care," *Health Care for Women International* 26, no. 7 (2005): 561-76.
 46. UNICEF, Newsline, 2005. http://www.unicef.org/infoby-country/india_27263.html (24 October, 2006).
 47. National Institutes of Health Program Announcement, "Men's Heterosexual Behavior and HIV infection," 2005. <http://grants.nih.gov/grants/guide/pa-files/PA-05-033.html> (23 October, 2006).
 48. D.D. Celentano, A.K. Srikrishnan, S.Sivaram et al, "The HIV epidemic in Chennai (southern India) remains concentrated in high risk groups," XV International AIDS Conference, Bangkok, Thailand, July 11-16, 2004: MoPeC3469.