Association between general media exposure and sexual behavior among mobile female sex workers in India

Varun Sharma
Tata Institute of Social Sciences
sharmavarun84@gmail.com

Niranjan Saggurti
Bill & Melinda Gates Foundation
Niranjan.Saggurti@gatesfoundation.org

Shalini Bharat
Tata Institute of Social Sciences
sbharat@tiss.edu

Abstract

Background: In HIV intervention programs, mass media like newspapers, radio and televisions plays a vital role as a source of information for individuals and society. This paper investigates the association between general mass media exposure and the sexual behavior among mobile female sex workers in India. Methods: The data were collected from 5,498 mobile FSW in four high HIV prevalence states in India regarding their social-demographic, economic profile, sexual behavior and exposure to media. Results: Multivariate logistic regression analysis highlighted that higher media exposure [more than two sources of media] was associated with "consistent condom use with occasional clients and regular clients" in paid sex [65.2% Vs 80.1%, AOR = 1.12, p < 0.001; 54.3% Vs 69.1%, AOR = 1.10, p<0.001] and with non-paying partner [12.7% Vs 24.3%, AOR = 1.13, p < 0.001], higher exposure to media was also associated with consistent condom use with all partners [11.3% Vs 23.4%, AOR = 1.14, p<0.001] and self perceived high risk of HIV infection [42.9% Vs 36.4%, AOR = 0.86, p<0.001]. Conclusions: The results highlight that general media exposure is significantly associated with the sexual behavior among mobile FSWs. The findings highlight that a pro-active media campaign may transform the lives of masses considerably and may open a window of opportunity to infuse the information and awareness to marginalized groups.

Key Words: Consistent condom use; Female sex workers; HIV; Mass media exposure; Sexual behaviour; India

Background

Worldwide, information regarding HIV and safer sexual practices is recognized as a major characteristic of HIV prevention, care and support programs (Gruskin & Tarantola, 2008). Dissemination of information through multiple mass media is found to be an effective means of communicating and improving people's knowledge, attitudes, and health-protective behaviors (Bertrand & Anhang, 2006; Li et al., 2009). In this discourse, levels of media exposure are an important consideration in the planning of information campaigns (Shisana & Simbayi, 2002). In the context of HIV, different media channels such as, newspapers, radio and television have been employed to increase knowledge and awareness through advertisements, shows, and movies (Bertrand & Anhang, 2006). Surveys have reported that media usage was linked with HIV/AIDS knowledge and condom use (Jung, Arya & Viswanath, 2013; LaCroix, Snyder, Huedo-Medina, & Johnson, 2014). A study based in sub-Saharan African countries, reported that women, those who used newspaper, radio and television were more likely to use a condom at the last sexual intercourse (Jung et al., 2013). A Thailand based study, found substantial, significant differences in communication about condoms between those exposed to the Thai audio drama and those who were not (68 versus 48% for women, 65 versus 47% for men) (Elkins et al., 1996). Also, higher condom use was reported among sexually experienced campaign participants (Kim, Kols, Nyakauru, Marangwanda, & Chibatamoto, 2001). Shapiro et al. 2003 found that the likelihood of condom use at last sexual encounter was significantly higher among those who had seen more episodes of *'SIDA dans la Cite'* [AIDS in the City] TV drama (Shapiro, Meekers, & Tambashe, 2003). Likewise, ever use of condoms and use of condoms in the past year increased sharply in Colombia after a radio advertising effort targeted at increasing condom use (25–34% and 8–12%, respectively) (Vernon, Ojeda, & Murad, 1990). Hence, worldwide, there are considerable empirical evidences showing that the mass media can be used for

attitude and behavioral changes linked with HIV/AIDS (Jane T. Bertrand, O'Reilly, Denison, Anhang, & Sweat, 2006). Besides, mass media are well suited to meet the goal to reach a large audience and has been found to be a cost effective HIV prevention approach (Cohen, Wu, & Farley, 2005; Romer et al., 2009).

In the Indian context, National AIDS Control Organization (NACO) is the nodal agency responsible for developing the national HIV/AIDS policy through the National AIDS Control Program (NACP) since 1992. NACP focuses on the extensive reach of information, education and communication (IEC) on HIV/AIDS prevention (NACO, 2008, 2012). Providing information, disseminating knowledge and awareness, changing attitudes and behavior, is a key thrust area of the National AIDS Control Programme. Since its establishment, NACO has been conducting regular thematic mass media efforts on TV and Radio to cover several subjects linked to safer sexual practices (e.g. Condom promotion), voluntary HIV testing (e.g. ICTC/PPTCT), treatment (e.g. STI treatment and services), stigma and discrimination, vulnerability of youth to HIV, ART, and HIV-TB and blood safety (Agarwal & Araujo, 2014; NACO, 2008). Various TV advertisements, popular radio soap operas and mini-dramas supported and created a community dialog on various health issues and promoted condom use. In 2006, *"Condom Bindas Bol"* (Condom, just say it) campaign was launched to overturn a decline in condom use. Several star celebrities of Hindi film industry, promoted the message on HIV via NACO advertisements. In 2002, Doordarshan [National TV channel], NACO and BBC World Service Trust launched the country's mass media awareness programme about HIV/AIDS. The campaign was launched with an idea of spreading education in a more entertaining way with a popular interactive detective series "*Jasoos Vijay"* (Detective Vijay), and a reality youth show "*Haath se Haath Milaa"* (Lets Join Hands). Likewise, Bollywood (Indian/ Hindi film industry) has also become sensitive to the issues related to HIV and attempted to disseminate information and awareness regarding HIV/AIDS through various movies. Other initiatives relate to MTV Chewing Gum HIV/AIDS awareness Public Service and Population Service International's (PSI) communication campaign in the form of a fictional character named *'Balbir Pasha'* which was narrated as *'Yeh Balbir Pasha Kaun hain? Kya Balbir Pasha Ko AIDS hoga? [Translated as: Who is Balbir Pasha? Will Balbir Pasha get AIDS?]* (PSI, 2003)*'*

However, most of the mass media campaigns to date have focused on members of the general public, or more narrowly on youth, but not on other high-risk populations like SWs, IDUs and MSMs (Jane T. Bertrand et al., 2006), yet the benefits of various comprehensive mass media campaigns targeting the general public may trickle-down to Most at Risk Population (MARP) and may influence the sexual behavior among them provided they have access to different channels of media.

A large focus of NACO's HIV prevention work is with female sex workers (FSWs) considered more vulnerable to HIV infection and other STIs due to their risky sexual behavior, limited access to information and awareness, work environment and other social-demographic characteristics (Chattopadhyay & McKaig, 2004; Dandona et al., 2006; Saggurti et al., 2011). In India and elsewhere high HIV prevalence has been reported among this group of the population (Baral et al., 2012; NACO, 2013; Prüss-Ustün et al., 2013). To reduce HIV infection among FSWs intervention strategies have, to a great extent, focused on guaranteeing that SWs have the vital "tools" [e.g. Ease of access to information, free or socially marketed condoms, health care services and other peer led activities,] available to them in order to make sound judgments about risks and safer sexual practices (Arora, Nagelkerke, Moineddin, Bhattacharya, & Jha, 2013; Campos et al., 2013). Though the NACO had initiated various targeted interventions to disseminate information and education about HIV and safer sexual practices, mass-media campaigns targeted to specific audience like female sex workers, truckers, injected drug users and men having sex with men are limited. However, exposure to different channels of media among FSWs may have an added advantage that the message related to safer sexual practices and condom promotion is reaching for them as well with the general public, which may bring behavior change among them. Here it is assumed that like the general population, SWs or other high risk groups, who are more exposed to media channels have a higher probability of being exposed to some mass media communication message on STI, HIV / AIDS than those who are not / low exposed to media channels (NACO, 2006).

This paper explores association of general media exposure with sexual behavior among mobile female sex workers in India. Unlike other SWs, FSWs with greater mobility are more vulnerable to HIV infection due to their indulgence in unprotected sexual practices, often for more money with different clients (Reed, Gupta, Biradavolu, & Blankenship, 2012; Saggurti et al., 2012). They lack access to information and awareness about HIV and health care services because of their mobile nature. In this scenario different modes of mass media may bring sustainable behavior change through promotion of safer sexual practices, condom promotion and disseminating information about HIV/ AIDS.

Methods

Study sites

The paper uses the data collected from a cross-section survey among mobile FSWs in 22 districts from four high HIV prevalence states in India (Andhra Pradesh, Karnataka, Maharashtra, and Tamil Nadu). The data were collected from September 2007 to July 2008.

Eligibility criteria

FSWs aged 18 years and older and who had moved at least two places for sex work [one of which included a move across districts] were eligible to participate in the survey.

Sampling procedure and sample size

A two-stage sampling procedure was used to select FSWs from both brothel and non-brothel sites. A detailed mapping of the large and small solicitation sites was done and the list was used to define and select cluster sites, which included both small and large area and covering approximately 500 FSWs in each cluster. Three clusters were randomly selected and FSWs were systematically sampled. The sample size was determined using an estimated proportion of 30% non-condom use, an assumed difference of 3% increase in the proportion with every unit increase in degree of mobility, a confidence level of 95% and power of 80%. A sample of 5,498 FSWs was drawn. Detailed methodology and data collection procedure is discussed elsewhere (Saggurti et al., 2012).

Ethical approval

Ethical approval for the study was obtained from the institutional review boards (IRBs) of the Population Council and the University of Manitoba, Canada.

Data collection tool

A structured questionnaire with detailed, in-depth guidelines was used to collect information from mobile FSWs regarding their demographic and socioeconomic status, sexual behavior with different clients, access, availability and use of condom, STI symptoms, mobility nature and pattern, system reach, media exposure, substance use, likelihood to move further and HIV awareness and self-perceived risk.

The dependent variables used in this paper are related to sexual behavior among mobile FSW. CCU with different partners and self perceived high risk of HIV constitute the area of enquiry.

Variable of interest— Media exposure

The respondents were questioned regarding the exposure to different modes of the general media. They were asked, *"Have you read/ watched/ listened any of the following in the last one month: Newspaper, Magazine, Movies (Hall/ video parlor), TV, Radio A.M. (Medium) and Radio F.M".* Those who had responded yes were coded as **1** else **0**. An additive index was constructed (score ranges from 0 to 6) and recoded as **1** "high exposure to media, i.e. more than two modes of media" and **0** "low exposure to media *i.e.* less than equal to two modes of media".

Statistical analysis

Bivariate analysis was carried out using proportions / percentages and Chi-square tests were performed on various factors, by levels of media exposure among mobile SWs. The odds ratios were used to measure the association between media exposure and sexual behavior among SWs using logistic regression models [adjusting for socio-demographic characteristics to control the confounding effect of demographics with the outcome variable]. All statistical analyses were carried out using STATA version 12. Variables used in the analysis are detailed in the following table.

Table 1. *Description of variables*

Variable name	Description	Categorization
q101	Age of the FSW in complete years	Continuous variable
Education	Educational status of the FSW	No schooling=0
		Primary=1
		Secondary=2
		secondary+=3
Marital	Marital status of FSW	Never married=0
		Currently married=1
		Formerly married=2
SW_type	Type of sex worker	Brothel based=0
		Street based=1
		Home based=2
Place	Place of residence	Rural=0
		Urban=1
Income_group	Average income earned by FSW	15000+ =1

		10001-15000=2
		5001-10000=3
		<=5000=4
Living_status	Living arrangement of FSW	Living alone=0
		Living with family/ relatives=1
		Living with others=2
Media_index	Exposure to channels of media	Low exposure=0
		High exposure=1
Membership	Membership of any SHG/ CBO/ NGO/ collective agency	No membership=0
		Membership=1
New_ent	New entrants into sex work	Others=0
		New entrants=1
Mobility	Mobility among FSW	Less mobile=0
		High mobile=1
Clients	Number of clients	Low flow of clients =0
		High flow of clients=1
Free_condoms	Access to free condoms	No=0
		Yes=1
Soc_condom	Access to socially marketed condoms	No=0
		Yes=1

Results

One in every fourth mobile FSW was in the age group of 18-25 years. The majority of SWs were in the middle age group. Mean age was 30.0 years and half of the FSWs were above 29 years. A large proportion of SWs (35%) were illiterate and more than half of SWs (51.9%) were ever married. The majority of them (85%) were residing in urban areas. A high percentage of SWs (58.6) were street-based and 62% were living with family or any other relative. Approximately 3/4th (79.9%) were in sex work more than two years and 46% were highly mobile. Most of them (71.2%) were members of any SHG/ CBO/ NGO or sex workers collective. Table **2** shows that different characteristics of mobile female sex workers by media exposure.

Table 2 *Characteristics of mobile female sex workers by media exposure*

Characteristics	Total [n=5498]	Low exposure [n=3084]	High exposure [a] [n=2414]	p value [b]
Age categories				p<0.001
Young FSW *[18-25 years]*	1,321 *(24.0)*	692 *(22.4)*	629 *(26.1)*	
Middle aged FSW *[26-30 years]*	2,217 *(40.3)*	1,370 *(44.4)*	847 *(35.1)*	
Older FSW *[31-62 years]*	1,960 *(35.6)*	1,022 *(33.1)*	938 *(38.9)*	
Mean age [c] *[±S.D]*	30.0 *[±5.8]*	29.9 *(±5.7)*	30.2 *(±6.1)*	p=0.01
Median age	29	29	30	
Educational status				p<0.001
No schooling	1,895 *(34.5)*	1,443 *(46.8)*	452 *(18.7)*	
Primary *[1-4 std.]*	983 *(17.9)*	658 *(21.3)*	325 *(13.5)*	
Secondary *[5-10 std.]*	2,546 *(46.3)*	971 *(31.5)*	1,575 *(65.2)*	
Secondary plus *[11+ std.]*	74 *(1.3)*	12 *(0.4)*	62 *(2.6)*	
Marital status				p<0.001
Never married	795 *(14.5)*	393 *(12.7)*	402 *(16.7)*	
Currently married	1,849	882	967	

	(33.6)	*(28.6)*	(40.1)	
Formerly married	2,854 *(51.9)*	1,809 *(58.7)*	1,045 *(43.3)*	
Classification of place				p=0.003
Rural	804 *(14.6)*	413 *(13.4)*	391 *(16.2)*	
Urban	4,694 *(85.4)*	2,671 *(86.6)*	2,023 *(83.8)*	
Living arrangement				p<0.001
Living alone	667 *(12.1)*	332 *(10.8)*	335 *(13.9)*	
Living with family or other relatives	3,389 *(61.6)*	1,858 *(60.2)*	1,531 *(63.4)*	
Living with others	1,442 *(26.2)*	894 *(29.0)*	548 *(22.7)*	
Type of sex worker				p=0.001
Brothel based	1,182 *(21.5)*	721 *(23.4)*	461 *(19.1)*	
Street based	3,221 *(58.6)*	1,766 *(60.3)*	1,455 *(57.3)*	
Home based	1,095 *(19.9)*	597 *(19.4)*	498 *(20.6)*	
Duration of sex work				p=0.005
New entrants *[0-2 years]*	1,104 *(20.1)*	661 *(21.4)*	443 *(18.4)*	
Others *[more than 2 years]*	4,394 *(79.9)*	2,423 *(78.6)*	1,971 *(81.6)*	
Mobility status among FSW				p<0.001
High mobile *[more than 4 places]*	2,499 *(45.5)*	1,490 *(48.3)*	1,009 *(41.8)*	
Low mobile *[4 or less places]*	2,999 *(54.5)*	1,594 *(51.7)*	1,405 *(58.2)*	
Membership of any organization/NGO/CBO/SHG				p<0.001
Member	3,917 *(71.2)*	2,093 *(67.9)*	1,824 *(75.6)*	
Non member	1,581 *(28.8)*	991 *(32.1)*	590 *(24.4)*	

[a]Exposure to media is defined into two categories, "low exposed", i.e. exposed to any two channels of mass media and "high exposed", i.e. exposed to more than two channels of mass media in the last month. [b]p value is estimated using Pearson chi-square test, [c]p value is based on the t test.

Among those who were less exposed to media channels 44% were in the age bracket of 26-30 years, 47% were non-literate, 59% were ever married, 87% were residing in urban areas, 60% were living with family or any other relative, 79% were in sex work more than two years, 48% were highly mobile, 32% were not member of any SHG/ CBO/ NGO or any other sex worker collectives and 60% were street-based SWs.

Sexual behavior and media exposure among mobile FSWs

The proportion FSWs, who were more exposed to media channels using condom consistently with occasional clients in the last week worked was higher compared to those who were less exposed to media channels [80.1% Vs 65.2%, AOR = 1.12, 95% CI: 1.05-1.18]. Likewise, the proportion was higher among those who were more exposed to media using condom consistently with regular clients and other non-paying clients [69.1% Vs 54.3%, AOR = 1.10, 95% CI: 1.04-1.16; 24.3% Vs 12.7%, AOR = 1.13, 95% CI: 1.07-1.20]. Table **3** shows the results of multivariate logistic regression models.

Table 3 *Media exposure and sexual behaviour among mobile female sex workers*

Sexual behavior factors [a]	Total [n=5498]	Low exposure [b] [n=3084]	High exposure [n=2414]	AOR [c] [95%CI]
Consistent condom use with occasional clients	71.8	65.2	80.1	1.12*** [1.05-1.18]
Consistent condom use with regular clients	60.8	54.3	69.1	1.10*** 1.04-1.16]
Consistent condom use with non-paying partner	17.8	12.7	24.3	1.13*** [1.07-1.20]
Consistent condom use with all partners	16.6	11.3	23.4	1.14*** [1.08-1.22]
High self perceived risk of HIV [d]	40.0	42.9	36.4	0.86*** [0.82-0.91]
STI risk	21.4	24.5	17.4	0.99 [0.93-1.04]

[a]Dependent variables: Consistent condom use (by type of partners) [0 = No, 1 = Yes]; self perceived risk of HIV infection [0 =low risk, 1= high risk]; [b]Reference category; [c]Controlled for age, education, marital status, type of SWs, living arrangements, place, membership of any organization, duration in sex work, income, flow of clients, accessibility of condoms; [d]85 SWs did not respond for self perceived risk of HIV infection. AOR: Adjusted odds ratio; 95% CI: 95% Confidence interval; *p<0.10; **p < 0.05; ***p < 0.001.

It was also observed that the proportion of mobile FSWs using consistent condoms with all partners was high among those who were more exposed to media compared to those who were less exposed [23.4% Vs 11.3%, AOR = 1.14, 95% CI: 1.08-1.22]. In like manner, the proportion of mobile FSWs who were more exposed to media channels reporting high self perceived risk of HIV was lesser compared to those who were less exposed to media [36.4% Vs 42.9%, AOR = 0.86, 95% CI: 0.82-0.91]. The proportion of SWs having STI symptoms and continued to have sex was less among those who were more exposed to media [17.4% Vs 24.5%, AOR = 0.99]. However, the relationship is not statistically significant; the direction of the relationship is as expected.

Discussions

The findings in the paper show that SWs those who were more exposed to media channels, were more likely to have consistent condom use with different partners. It may be attributed to the pro-active condom promotion campaign, dissemination of information regarding safer sexual practices and about HIV through various modes of media. Studies have also reported that exposure to multiple sources of HIV information (where at least one source is mass media) was significantly related to HIV knowledge and less stigmatizing attitude toward those living with HIV. Enhancing the content of HIV/AIDS campaigns within the various channels of the media can be an important strategy in disseminating HIV knowledge and reducing HIV-related discrimination (Li et al. – 2009). Likewise, studies have also concluded that mid-media events and clinics were the most effective package of services to increase consistent condom use (CCU) among vulnerable groups like long distance truckers (Juneja, Rao Tirumalasetti, Mishra, Sethu, & Singh, 2013). A study based in Burkina Faso, Africa found that truckers, those who were exposed to PSAMAO "Roulez Protégé" mass media campaign had greatly understood the main message (Tambashe, Speizer, Amouzou, & Djangone, 2003). Likewise, a study based in Chittoor district of Andhra Pradesh, India among truck drivers, revealed that 'social vaccine' had greatly enhanced the understanding of truck drivers on HIV, changed their attitudes on sex, increased the use of condoms, and modified their sexual behavior (Ubaidullah, 2004). In other studies, mass media exposure had significantly induced men who have sex with men (MSM) to get tested for HIV (McOwan, Gilleece, Chislett, & Mandalia, 2002), reduced number of sexual partners and increased condom use among men and women (Vaughan, Regis, & Catherine, 2000).

A study among youth found that those who were exposed to the media, had initiated the condom use significantly, talked with others about safer sex, continued abstinence / said no to sex and reduced numbers of sex partners (Kim et al, 2001). A study based in Kenya found that those who reported high exposure to branded messages (i.e. Those who were exposed to Trust condom advertising through both radio and television) were twice as likely to believe that they could convince their spouse to use a condom (Agha, 2003).

The findings also revealed that SWs those who were more exposed to media channels were less likely to have high self perceived risk of HIV. This may be contributed to the behavior change communication (BCC) disseminated through various mass media sources

regarding safer sexual practices and risk of HIV. The findings are in line with the earlier studies in other countries. A Uganda based study found that BCC exposure was strongly associated with higher condom knowledge. The same study revealed that women and men who reported being exposed to messages in the mass media were at least twice as likely as those with no exposure to know about condoms as a mean to avoid HIV/AIDS (Bessinger, Katende, & Gupta, 2004). A women study in Indian context had reported that that mass media channels, such as television and radio, were important sources of HIV/AIDS information, but subgroups of ‘‘media-poor’’ women did not have access to these channels and thus were unable to benefit from these resources (Pallikadavath, Sreedharan, & Stones, 2006). Similarly, a Nigeria based study on the exposure to the VISION mass media campaign found that those with high program exposure were almost one and a half (Odds Ratio [O.R.] = 1.47, 95% Confidence Interval [C.I.] 1.01–2.16) times more likely than those with no exposure to have discussed HIV/AIDS with a partner and over twice (O.R. = 2.20, C.I. 1.49–3.25) as likely as those with low exposure to know that condom use can reduce risk of HIV infection (Keating, Meekers, & Adewuyi, 2006). Similarly, a study based in Bangladesh reported that those men and women who regularly watch TV were 8.6 times more likely to be aware about HIV/ AIDS compared to those who never watch TV (Rahman, 2007). The findings of the paper and other studies also reported that CCU was associated with age, educational status, marital status and living arrangements among SWs (Kayembe et al., 2008).

However, the results of the paper should be read with certain caveats. First, the paper comments on the general mass media exposure only among SWs. It does not attempt to assess the impact of any specific mass media campaign in response to HIV/AIDS and safer sexual behavior. Second, the paper does not make any comment on the frequency of the exposure to different mass media channels, as the question was not asked in the interview schedule. Third, behavior change communication may be attributed to other micro level strategies [e.g. Peer led interventions] as well.

Nevertheless, Mass media influences people’s attitudes and habits considerably. Media can act as an agent of social change. It educates and provides information to the masses (LaCroix et al., 2014). This highlights that pro-active media campaigns have the capability to influence sexual behavior among masses especially among high risk groups.

Conclusions

Mass media plays a vital role in influencing attitudes and perceptions of the masses on a variety of issues. The mass media also play a larger role in shaping and inculcating cultural values, by selecting and portraying a particular set of beliefs, values, and traditions. The easy access to different channels of media may influence the sexual behavior, especially among those who belong to high-risk groups such as truck drivers and SWs, and provides an opportunity to educate the whole country on HIV/AIDS issues and reduce HIV incidences in the country. A pro-active media campaign may transform the lives of masses considerably and may open a window of opportunity to infuse the information and awareness rigorously to those marginalized groups. The findings of the paper also recommend launching comprehensive mass media campaigns targeted to SWs and other groups at risk of HIV infection. The paper made a generous attempt to introduce the same dialogue into the debate by providing the evidences of impact of general media exposure on sexual behavior among SWs. Though, a comprehensive research is needed on the dynamics of exposure to multiple communication channels and the contributions of complementary interventions (Lipovsek et al., 2010).

Acknowledgments

This paper was written as a part of the Knowledge Network Project of the Population Council, as a grantee from the Bill & Melinda Gates Foundation (BMGF) through Avahan, its India AIDS Initiative. The views expressed in this paper are of the author(s) alone and do not necessarily reflect the official policy or position of the BMGF and Avahan.

References

Agarwal., S., & Araujo., P. d. (2014). Access to Media and HIV Knowledge in India. *Economies, 2*, 124-146. doi: 10.3390/economies2020124

Agha, S. (2003). The impact of a mass media campaign on personal risk perception, perceived self-efficacy and on other behavioural predictors. *AIDS Care, 15*(6), 749-762. doi: 10.1080/09540120310001618603

Arora, P., Nagelkerke, N. J., Moineddin, R., Bhattacharya, M., & Jha, P. (2013). Female sex work interventions and changes in HIV and syphilis infection risks from 2003 to 2008 in India: a repeated cross-sectional study. *British Medical Journal Open, 3*(6). doi: 10.1136/bmjopen-2013-002724

Baral, S., Beyrer, C., Muessig, K., Poteat, T., Wirtz, A. L., Decker, M. R., Kerrigan, D. (2012). Burden of HIV among female sex workers in low-income and middle-income countries: a systematic review and meta-analysis. *Lancet Infectious Diseases, 12*(7), 538-549. doi: 10.1016/s1473-3099(12)70066-x

Bertrand, J. T., & Anhang, R. (2006). The effectiveness of mass media in changing HIV/AIDS-related behaviour among young people in developing countries. *World Health Organisation Techical Report Series, 938*, 205-241; discussion 317-241.

Bertrand, J. T., O'Reilly, K., Denison, J., Anhang, R., & Sweat, M. (2006). Systematic review of the effectiveness of mass communication programs to change HIV/AIDS-related behaviors in developing countries. *Health Education Research, 21*(4), 567-597. doi: 10.1093/her/cyl036

Bessinger, R., Katende, C., & Gupta, N. (2004). Multi-media campaign exposure effects on knowledge and use of condoms for STI and HIV/AIDS prevention in Uganda. *Evaluation Program and Planning, 27*(4), 397-407.

Campos, P. E., Buffardi, A. L., Carcamo, C. P., Garcia, P. J., Buendia, C., Chiappe, M., Holmes, K. K. (2013). Reaching the unreachable: providing STI control services to female sex workers via mobile team outreach. *PLoS One, 8*(11), e81041. doi: 10.1371/journal.pone.0081041

Chattopadhyay, A., & McKaig, R. G. (2004). Social development of commercial sex workers in India: an essential step in HIV/AIDS prevention. *AIDS Patient Care and STDs, 18*(3), 159-168. doi: 10.1089/108729104322994847

Cohen, D. A., Wu, S. Y., & Farley, T. A. (2005). Cost-effective allocation of government funds to prevent HIV infection. *Health Affairs, 24*(4), 915-926.

Dandona, R., Dandona, L., Kumar, G. A., Gutierrez, J., McPherson, S., Samuels, F., Team, t. A. F. S. (2006). Demography and sex work characteristics of female sex workers in India. *Bio Medical Central International Health and Human Rights, 6*(1), 5.

Elkins, D., Maticka-Tyndale, E., Kuyyakanond, T., Kiewying, M., Anusornteerakul, S., Chantapreeda, N., Haswell-Elkins, M. (1996). Evaluation of HIV/AIDS education initiatives among women in northeastern Thai villages. *Southeast Asian Journal of Tropical Medicine and Public Health, 27*(3), 430-442.

Gruskin, S., & Tarantola, D. (2008). Universal Access to HIV prevention, treatment and care: assessing the inclusion of human rights in international and national strategic plans. *AIDS, 22 Suppl 2*, S123-132. doi: 10.1097/01.aids.0000327444.51408.21

Juneja, S., Rao Tirumalasetti, V., Mishra, R. M., Sethu, S., & Singh, I. R. (2013). Impact of an HIV prevention intervention on condom use among long distance truckers in India. *AIDS and Behavior, 17*(3), 1040-1051. doi: 10.1007/s10461-012-0314-y

Jung, M., Arya, M., & Viswanath, K. (2013). Effect of Media Use on HIV/AIDS-Related Knowledge and Condom Use in Sub-Saharan Africa: A Cross-Sectional Study. *PLoS One, 8*(7), e68359. doi: 10.1371/journal.pone.0068359

Kayembe, P. K., Mapatano, M. A., Busangu, A. F., Nyandwe, J. K., Musema, G. M., Kibungu, J. P., Mayala, G. M. (2008). Determinants of consistent condom use among female commercial sex workers in the Democratic Republic of Congo: implications for interventions. *Sexually Transmitted Infections, 84*(3), 202.

Keating, J., Meekers, D., & Adewuyi, A. (2006). Assessing effects of a media campaign on HIV/AIDS awareness and prevention in Nigeria: results from the VISION Project. *Bio Medical Central Public Health, 6*(1), 123.

Kim, Y. M., Kols, A., Nyakauru, R., Marangwanda, C., & Chibatamoto, P. (2001). Promoting Sexual Responsibility among Young People in Zimbabwe. *International Prespectives on Sexual and Reproductive Health, 27*(1), 11-19. doi: 10.2307/2673800

LaCroix, J. M., Snyder, L. B., Huedo-Medina, T. B., & Johnson, B. T. (2014). Effectiveness of Mass Media Interventions for HIV Prevention, 1986–2013: A Meta-analysis. *JAIDS Journal of Acquired Immune Deficiency Syndromes, 66*, S329-S340 310.1097/QAI.0000000000000230.

Li, L., Rotheram-Borus, M. J., Lu, Y., Wu, Z., Lin, C., & Guan, J. (2009). Mass media and HIV/AIDS in China. *Journal of Health Communication, 14*(5), 424-438. doi: 10.1080/10810730903032994

Lipovsek, V., Mukherjee, A., Navin, D., Marjara, P., Sharma, A., & Roy, K. P. (2010). Increases in self-reported consistent condom use among male clients of female sex workers following exposure to an integrated behaviour change programme in four states in southern India. *Sexually Transmitted Infectionss, 86 Suppl 1*, i25-32. doi: 10.1136/sti.2009.038497

McOwan, A., Gilleece, Y., Chislett, L., & Mandalia, S. (2002). Can targeted HIV testing campaigns alter health-seeking behaviour? *AIDS Care, 14*(3), 385-390.

NACO. (2008). Annual Report 2008-09. New Delhi: Ministry of Health and Family Welfare. Retrieved on March 21 2015, from: http://www.naco.gov.in/upload/REPORTS/Annual_Report_NACO_2008-09.pdf.

NACO. (2012). Annual Report 2012-13. New Delhi, India: NACO, Ministry of Health & Family Welfare. Retrieved on March 21 2015, from: http://www.naco.gov.in/upload/Publication/Annual%20Report/Annual%20report%202012-13_English.pdf.

NACO. (2013). HIV Sentinel Surveillance 2012-13 A Technical Brief. New Delhi: Ministry of Health and Family Welfare. Retrieved on March 21 2015, from: http://www.naco.gov.in/upload/NACP%20-%20IV/HSS%20TECHNICAL%20BRIEF/HIV%20Sentinel%20Surveillance%20Technical%20Brief.pdf

Pallikadavath, S., Sreedharan, C., & Stones, R. W. (2006). Sources of AIDS awareness among women in India. *AIDS Care, 18*(1), 44-48.

Prüss-Ustün, A., Wolf, J., Driscoll, T., Degenhardt, L., Neir, M., & Calleja, J. M. G. (2013). HIV Due to Female Sex Work: Regional and Global Estimates. *PLoS One, 8*(5). doi: 10.1371/journal.pone.0063476

PSI. (2003). Balbir Pasha: HIV/AIDS Campaign is the Talk of Mumbai. In Population Service International (Ed.). Washington DC: PSI. Retrieved on March 21 2015, from: http://www.saathii.org/saathiiorc/index.php?option=com_docman&task=doc_download&gid=156&Itemid=5

Rahman, M. (2007). Media and education play a tremendous role in mounting AIDS awareness among married couples in Bangladesh. *AIDS Research and Therapy, 4*(1), 10.

Reed, E., Gupta, J., Biradavolu, M., & Blankenship, K. M. (2012). Migration/mobility and risk factors for HIV among female sex workers in Andhra Pradesh, India: implications for HIV prevention. *International Journal of STDs and AIDS, 23*(4), e7-e13. doi: 10.1258/ijsa.2009.009421

Romer, D., Sznitman, S., DiClemente, R., Salazar, L. F., Vanable, P. A., Carey, M. P., Juzang, I. (2009). Mass media as an HIV-prevention strategy: using culturally sensitive messages to reduce HIV-associated sexual behavior of at-risk African American youth. *American Journal of Public Health, 99*(12), 2150-2159.

Saggurti, N., Jain, A. K., Sebastian, M. P., Singh, R., Modugu, H. R., Halli, S. S., & Verma, R. K. (2012). Indicators of mobility, socio-economic vulnerabilities and HIV risk behaviours among mobile female sex workers in India. *AIDS and Behavior, 16*(4), 952-959. doi: 10.1007/s10461-011-9937-7

Saggurti, N., Verma, R. K., Halli, S. S., Swain, S. N., Singh, R., Modugu, H. R., Jain, A. K. (2011). Motivations for entry into sex work and HIV risk among mobile female sex workers in India. *Journal of Biosocial Science,43*(5), 535-554. doi: 10.1017/S0021932011000277

Shapiro, D., Meekers, D., & Tambashe, B. (2003). Exposure to the 'SIDA dans la Cite' AIDS prevention television series in Cote' d'Ivoire, sexual risk behaviour and condom use. *AIDS Care, 15*(3), 303-314.

Shisana., O., & Simbayi., L. (2002). Nelson Mandela HSRC Study of HIV/AIDS: Full Report South African national HIV prevalence, behavioural risks and mass media. Household survey 2002 (pp. 136). Cape Town.

Tambashe, B. O., Speizer, I. S., Amouzou, A., & Djangone, A. M. (2003). Evaluation of the PSAMAO "Roulez Protege" mass media campaign in Burkina Faso. Prevention du SIDA sur les Axes Migratoires de l'Afrique de l'Ouest. *AIDS Education and Prevention, 15*(1), 33-48.

Ubaidullah, M. (2004). Social vaccine for HIV prevention: a study on truck drivers in South India. *Social Work in Health Care, 39*(3-4), 399-414.

Vaughan, P. W., Regis, A., & Catherine, E. S. (2000). Effects of an Entertainment-Education Radio Soap Opera on Family Planning and HIV Prevention in St. Lucia. *International Prespectives on Sexual and Reproductive Health, 26*(4), 148-157. doi: 10.2307/2648250

Vernon, R., Ojeda, G., & Murad, R. (1990). Incorporating AIDS prevention activities into a family planning organization in Colombia. *Studies in Family Planning, 21*(6), 335-343.