



Research Article

Sexual Health Promotion Intervention for Male Sex Workers in Vietnam Increases Knowledge of STI/HIV Transmission Risk

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Abstract

Background: HIV prevalence in urban populations of Men who have Sex with Men (MSM) in Vietnam has increased sharply in recent years. Owing to the confluence of both complex sexual partnering and high risk sexual practices, Male Sex Workers (MSW) are at especially high risk for both acquisition and transmission of HIV and other STIs.

Methods: We developed, implemented and evaluated a Sexual Health Promotion intervention to engage MSW in health services (including routine testing for STIs and HIV). We implemented the intervention among MSW in Hanoi and Ho Chi Minh City, Vietnam, including pre- and post-intervention assessments of STI/HIV knowledge (n=200).

Results: Overall, STI/HIV knowledge increased by 17.3% (p<0.001). All groups of participants showed improved STI/HIV knowledge following the intervention. However, those with the lowest knowledge scores at pre-intervention showed the greatest gains at post-test, so much so that between group disparities in STI/HIV knowledge at pre-test were eliminated following the intervention.

Conclusion: Sexual Health Promotion is a promising intervention for increasing STI/HIV knowledge in MSW, and reducing knowledge disparities in this vulnerable population.

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Introduction

Vietnam has a large and complex HIV epidemic. Initially driven by injection drug users and female sex workers, MSM were added to sentinel surveillance in 2006. Since that time, the prevalence rate among MSM has increased rapidly, from an initial estimate of 3.7% to a current estimate of 16% [1]. Epidemiological studies also show high rates of HIV risk among MSM in Vietnam, including among Male Sex Workers (MSWs) [2-7].

MSM and MSW are especially vulnerable for multiple reasons. Due to high levels of perceived and enacted stigma surrounding HIV, sex work and homosexual sex, MSM in Vietnam are poorly represented in health services [8-10]. Poor engagement is compounded by high rates of non-disclosure of MSM status to healthcare providers, contributing to suboptimal STI/HIV screening, late detection and preventable secondary transmission.

In Ho Chi Minh City, less than 1% of those receiving free public HIV testing self-identify as MSM [10]. Although HIV knowledge among MSM in Vietnam has improved in recent years, following concentrated efforts to target MSM in prevention programming, serious gaps remain in knowledge about HIV transmission, including the role of routine testing and early detection in improved clinical outcomes [11-14].

These gaps are especially pronounced among MSW, many of whom are rural migrants with very limited formal education; a fact that presents challenges for their understanding of STI/HIV transmission processes [5]. MSW have high numbers of concurrent male and female sex partners, including partners from populations with high background HIV prevalence and relatively high rates of untreated and late-treated STIs, including ulcerative STIs that have the potential to amplify STI/HIV transmission risk [5,8,15-18].

Studies in similar low- and middle-income countries and populations have shown that interventions to improve STI/HIV transmission knowledge contribute to increased condom use and increased use of health services, outcomes that have independently confer a protective influence [19,20]. With this as background, in early 2014 we initiated a Sexual Health Promotion (SH) Intervention for MSW in Hanoi and Ho Chi Minh City, Vietnam [21]. The intervention, which was based on Harm Reduction principles, helped participants to identify and address their individualized STI/HIV risks [22,23]. Motivational Interviewing was used to encourage active participation in the educational process [24]. Specific content focused on improving knowledge of STI/HIV transmission risk, practical harm reduction strategies and discussion of health services (particularly routine testing and early detection) to protect sexual health. This paper describes the effect of the intervention on STI/HIV knowledge in this especially vulnerable group of MSW.

Methods

The study design has been described elsewhere [21]. Briefly, we used targeted sampling, for which we mapped and then systematically visited (at various days and times) public and semi-public venues to

recruit MSW for participation in a behavioral survey that included assessments of both STI/HIV transmission knowledge and behavioral risk. To avoid biasing the sample toward men who “appeared” to be sex workers, all young men in the venue were approached and asked to complete a brief screening interview. Eligibility was restricted to young men, ages 16-29 who reported transactional sex with another man at least once in the past 90 days and men who met these criteria were invited to complete a more detailed behavioral survey. Because clinic capacity was limited, randomly selected survey participants were invited to participate in the SHP intervention at a nearby health clinic.

The SHP intervention included seven modules delivered in a single session, lasting approximately one hour, by a trained Health Educator. The seven modules include 1) Understanding Sexual Health (distinguishing it as something different than just the absence of disease), 2) Sexual Diversity (affirming variability in sources of sexual attraction, experience and creating a safe environment in which to discuss sexual practices), 3) Education about sources of STI/HIV transmission (including modes of transmission, symptomatology and screening), 4) Sexual risk reduction (including the full range of options for reducing sexual risk in oral, vaginal and anal sex practices, including condom use, strategic positioning, serosorting and related partner-selection strategies), 5) Substance use (detailed education about risks associated with substance abuse - alcohol, tobacco and the full range of illicit drugs - including injection risk, safe injection techniques, options for safer drug sharing strategies, guidance about needle cleaning, wound care and overdose), 6) Stigma management skills and proactive planning on dealing with bias and discrimination in accessing services and 7) Health-seeking (with an emphasis on the benefits of health services engagement in protecting health, HIV treatment education and the clinical advantages of early HIV care). The modules were followed by a clinical exam and STI/HIV testing conducted by a study physician. An appointment to receive test results was scheduled approximately one week later. Treatment was provided onsite for all STIs and those who tested HIV-positive were referred to local HIV treatment centers where free antiretroviral therapy is available.

In addition to the venue-based behavioral survey, participants completed an intake survey prior to receiving the SHP intervention, a clinical exam (including STI/HIV screening and free onsite STI treatment) and a post-intervention survey upon completion of the intervention. All survey data were collected by trained research interviewers. Participants were paid the equivalent of US\$5 for completion of the venue-based survey and US\$10 for participation in a post-intervention assessment survey. Other than free services, no compensation was offered for participation in the intervention itself, or for returning to the clinic for STI/HIV test results and treatment. All study procedures were reviewed and approved by Internal Review Boards in both the U.S. and Vietnam.

The study was implemented in both Hanoi and Ho Chi Minh City, from 2014 through mid-2016. STI/HIV knowledge was assessed using an 18-item survey based on measures that we had used in prior studies with similar populations. This survey includes items assessing knowledge of transmission, symptoms and treatment, PrEP and perceived risk. During the latter part of the study, we added the STI/HIV knowledge survey to the post-intervention assessment to assess changes in STI/HIV knowledge among SHP intervention participants. This change in the protocol resulted in 200 participants with matching pre- and post-intervention STI/HIV knowledge scores.

Paired-sample t-tests were used to assess changes in pre- and post-intervention STI/HIV knowledge scores. Independent sample t-tests and one-way analyses of variance were used to compare STI/HIV knowledge scores between subgroups of participants based on demographic characteristics, sexual practices and health services outcomes. For continuous independent variables (e.g., age, counts of sexual partners or events), bivariate Pearson and Spearman correlations were used. All data were analyzed using SPSS version 22.

Results

200 participants completed the pre- and post-intervention assessments of STI/HIV knowledge, 120 in Hanoi and 80 in Ho Chi Minh City. The average interval between the pre- and post-intervention assessments was 11 days, and 92.5% of participants completed the second assessment within one month of recruitment. Participants had a mean age of 21.6 years (range 16-29) and most (75.0%) were born somewhere other than the city in which they were recruited. Overall, participants had a mean of 11.78 years of formal education (range 3-16 years) and nearly one third (30.0%) were currently in school at the time of the study. On average, participants earned just under 10.5 million Vietnamese Dong in the past month, equivalent to approximately US\$500. In response to a question about their gender self-concept, most (59.8%) described themselves as “men”. However, fewer than half (45.0%) described themselves as exclusively attracted to men and nearly a third (30.5%) said they were exclusively attracted to women.

Changes in STI/HIV knowledge

STI/HIV knowledge scores were calculated as the sum of correct responses and could therefore range from 0 to 18. Pre-intervention STI/HIV knowledge varied significantly at baseline. Those currently in school had significantly higher STI/HIV knowledge scores (12.15 vs. 10.26, $t=4.570$, $p<0.001$) and years of education was positively correlated with STI/HIV knowledge scores ($r=.326$, $p<0.001$). There were no significant differences on pre-intervention STI/HIV knowledge scores based on gender identity or sexual attraction.

STI/HIV knowledge scores increased in both cities following participation in the SHP intervention. Overall, scores increased 17.3%, from a mean of 10.83 correct answers (out of 18) to 12.70 correct answers ($t=9.283$, $p<0.001$). While no between-city differences in STI/HIV Knowledge were seen prior to the intervention, following the intervention participants in Hanoi had significantly higher scores than participants in HCMC (13.01 vs. 12.23, $t=2.174$, $p=0.031$).

Following the intervention, education was associated with changes in STI/HIV knowledge scores, with those participants who were currently in school continuing to score significantly higher (13.38 vs. 12.41, $t=2.518$, $p=0.013$) and years of education significantly correlated with scores ($r=0.295$, $p<0.001$). These findings are shown in table 1.

Sexual risk practices

Participants evidenced substantial complexity in both sexual partners and sexual practices. In addition to male client partners, one quarter (26.4%) also had sex with one or more female partners and nearly one third (31.3%) had sex with one or more elective male partners (with whom there was no monetary or material exchange) within the last 30 days. Participants engaged in a median of seven client-based sex work exchanges, with a median of five different client partners over the past 30 days. Their most recent sex work event had an inter quartile range of two days to eight days before the interview,

		STI/HIV Knowledge Score (Pre)	Statistic	P value	STI/HIV Knowledge Score (Post)	Statistic	P value
City	N						
Hanoi	120	10.85			13.01	t=9.235	<0.001
HCMC	80	10.78			12.23	t=4.026	<0.001
Between city comparison		Pre	t=0.205	n.s.	Post	t=2.174,	0.031
	Mean (s.d.)						
Average age	21.6 (2.95)		r=0.056	n.s.		r=0.058	n.s.
Birth place							
City where recruited	25.00%	10.92	t=0.275	n.s.	12.72	t=0.064	n.s.
Elsewhere	75.00%	10.79			12.7		
	Mean (s.d.)						
Years of education	11.78 (2.91)		r=.326	<0.001		r=0.295	<0.001
In School Now							
Yes	30.00%	12.15	t=4.570	<0.001	13.38	t=2.518	0.013
No	70.00%	10.26			12.41		
	Mean (s.d.)						
Average income last month (VND)	10,497,470 (13,789,581)		r=0.029	n.s.		r=0.090	n.s.
Gender Identity							
I think of myself as a man	59.80%	10.6	t=1.421	n.s.	12.66	t=0.392	n.s.
I think of myself as a woman/transgender person/other/not sure woman	40.20%	11.18			12.8		
Sexual Attraction							
Exclusively attracted to men	45.00%	11.31	F=2.890	n.s.	12.8	F=1.121	n.s.
Mixed	24.50%	10.69			13		
Exclusively attracted to women	30.50%	10.21			12.31		

Table 1: Demographics and STI/HIV knowledge.

		STI/HIV Knowledge Score (pre)	Statistic	P value	STI/HIV Knowledge Score (post)	Statistic	P value
Last 30 days							
Sex with a Regular Female Partner							
Yes	26.40%	10.63	t=0.680	n.s.	12.62	t=0.469	n.s.
No	73.60%	10.94			12.81		
Sex with a Male Elective Partner							
Yes	31.30%	11.34	t=1.500	n.s.	13.21	t=1.612	n.s.
No	68.70%	10.67			12.57		
	Median (IQR)						
Number of sex work events	7 (4 - 16)		r=-0.070	0.044		r=0.079	n.s.
	Median (IQR)						
Number of different sex work clients	5 (2 - 15)		r=-0.102	0.027		r=0.079	n.s.
	Median (IQR)						
Last time exchanged sex (days ago)	4 (2 - 8)		r=0.145	0.044		r=0.039	n.s.
Sexual Practices Last Time Exchanged Sex							
Received oral sex							
Yes	91.30%	10.85	t=0.120	n.s.	12.7	t=1.393	n.s.
No	8.70%	10.94			13.59		
Gave Oral Sex							
Yes	69.90%	10.89	t=0.213	n.s.	12.64	t=1.178	n.s.
No	30.10%	10.8			13.1		

Insertive Anal Sex							
Yes	38.30%	10.91	t=0.173	n.s.	12.72	t=0.266	n.s.
No	61.70%	10.83			12.82		
Receptive Anal Sex							
Yes	44.40%	10.63	t=1.018	n.s.	12.63	t=0.740	n.s.
No	55.60%	11.05			12.9		
Condom Use at Last Anal Sex Work Event							
Insertive Anal Sex							
Yes	53.30%	11.13	t=0.673	n.s.	12.9	t=0.664	n.s.
No	46.70%	10.66			12.51		
Receptive Anal Sex							
Yes	64.40%	10.45	t=0.752	n.s.	12.91	t=1.233	n.s.
No	35.60%	10.97			12.13		

Table 2: Sexual practices and STI/HIV knowledge.

with a median of four days. Nearly all participants (91.3%) reported receiving oral sex at their last paid sex encounter and 69.9% reported giving oral sex in that encounter. Roughly a third had insertive (38.3%) anal sex and almost half had receptive (44.4%) anal sex at their last paid sexual encounter. More than half used condoms the last time they had insertive (53.3%) and/or receptive (64.4%) anal sex with a client.

There was a significant correlation between pre-intervention STI/HIV knowledge and measures of the frequency and intensity of sex work. STI/HIV knowledge was positively correlated with the number of days since participants' most recent sex work event ($r=0.145$, $p=0.044$) and negatively correlated with number of sex work events ($r=-0.70$, $p=0.044$) and number of sex work clients ($r=-0.102$, $p=0.027$). Following the SHP intervention, there was no relationship between STI/HIV knowledge and any of these variables. This change reflects a convergence of scores, where those participants who reported the highest intensity of sex work showed greater improvement in STI/HIV knowledge following the intervention, resulting in non-significant correlations between these measures at the post-intervention assessment. These data are shown in table 2.

Prior exposure to health services and HIV testing history

At baseline, participants reported very limited engagement in healthcare and poor disclosure of STI and HIV risks to healthcare providers. For example, prior to the intervention, fewer than half (45.5%) had ever visited a doctor or health service, just over a third (37.0%) had done so within the past six months and only 23.1% had ever told a healthcare provider that they had sex with men. Rates of prior STI/HIV testing were also low, with only 44.5% reporting having ever been tested for HIV and only 24.6% ever having been tested for any STI.

Prior to the intervention, previous exposure to health services was significantly associated with higher STI/HIV knowledge scores. For example, scores for those who had visited a healthcare provider in the last six months were higher than for those who had not (11.49 vs. 10.44, $t=2.583$, $p=0.011$) and those who had disclosed having sex with men to a healthcare provider also had higher scores (11.82 vs. 10.50, $t=2.846$, $p=0.005$). Previous experience with testing was also associated with higher STI/HIV knowledge scores pre-intervention, for both HIV (11.69 vs. 10.14, $t=4.015$, $p<0.001$) and STI testing (12.04 vs. 10.47, $t=3.445$, $p=0.001$). Following the intervention, scores for each of these subgroups increased and scores for the groups with lower

pre-intervention STI/HIV knowledge showed greater increases, such that there were no statistically significant between-group disparities in STI/HIV knowledge at the post-intervention assessment. These data are shown in table 3.

Discussion

This study demonstrates that it is possible to engage MSW in targeted interventions, that such interventions positively impact knowledge and understanding of HIV risk and that these interventions can help eliminate background disparities in STI/HIV knowledge, disparities that are themselves associated with both increased behavioral risk and limited exposure to the protective influence of health services.

The SHP intervention increased STI/HIV knowledge among a group of sexually active MSW with extremely limited access to and engagement in, health services. Furthermore, STI/HIV knowledge increases were greater among subgroups of participants who had lower knowledge at the pre-intervention assessment and at the post-intervention assessment the only significant subgroup differences seen were in city, years of education and current enrollment in school. This suggests that participation in the SHP intervention resulted in the elimination of between group disparities in pre-intervention STI/HIV knowledge.

The pattern of pre-intervention differences suggests that, even within this extremely vulnerable group, those with the lowest levels of STI/HIV knowledge also evidenced the lowest levels of prior exposure to two critically important protective influences: formal education and experience with sexual healthcare. In addition, those who had higher STI/HIV knowledge scores prior to the intervention also reported lower levels of sexual risk, including less frequent sex work and fewer client partners.

A number of limitations should be considered when interpreting these findings. First, absolute gains in knowledge were modest, with mean scores on the 18-item measure increasing by 17.3%, from 10.82 to 12.68 correct answers, suggesting that there is additional room for improvement. Second, post-intervention data were collected on average one week after the intervention was delivered, when participants returned for their test results. The study focused on implementation of the SHP intervention and did not follow participants beyond completion of testing and treatment. Thus, while we are able to document short-term improvements in STI/HIV knowledge, future studies should focus on longer-term impacts. Third, we cannot determine the

		STI/HIV Knowledge Score (pre)	Statistic	P value	STI/HIV Knowledge Score (post)	Statistic	P value
Visited Health Service							
Ever							
Yes	45.50%	11.13	t=1.412	n.s.	12.77	t=0.351	n.s.
No	54.50%	10.57			12.64		
Last Six Months							
Yes	37.00%	11.49	t=2.583	0.011	12.89	t=0.816	n.s.
No	63.00%	10.44			12.59		
Ever told Doctor or Nurse you were MSM							
Yes	23.10%	11.82	t=2.846	0.005	12.89	t=0.599	n.s.
No	76.90%	10.5			12.63		
Ever had an HIV Test							
Yes	44.50%	11.69	t=4.015	<0.001	12.9	t=0.989	n.s.
No	55.50%	10.14			12.54		
Ever Tested for an STI							
Yes	24.60%	12.04	t=3.445	0.001	13.04	t=0.890	n.s.
No	75.40%	10.47			12.67		

Table 3: Healthcare and STI/HIV knowledge.

representativeness of the study sample. Although recruitment took place in community venues and was preceded by substantial community mapping, it is likely that some commercial sex work venues were not included. While random selection of SHP intervention participants from the community-based survey suggests that these findings are generalizable to the community-based sample, it is not clear how findings would generalize to MSW in other cities or countries. The relatively small sample size may also limit generalizability. Finally, differences were seen between cities, with greater gains made in Hanoi than in HCMC. The reasons for this are unclear, although these cities differ politically, economically, socially and environmentally. Future research will be needed to determine how interventions can best be tailored for each unique environment.

Conclusion/Recommendation

MSW in Vietnam are at high risk for HIV and other STIs. Low levels of STI/HIV knowledge, limited access to healthcare and frequent sex with both commercial and regular sex partners increase the likelihood of both acquisition and transmission of STIs and HIV. We developed, implemented and evaluated an individual-level intervention targeted to the needs of male sex workers in Vietnam and the intervention had a substantive impact on improving MSW's overall knowledge of STI/HIV transmission risk. Moreover, the data showed the intervention also served to significantly reduce within-group disparities in STI/HIV knowledge that existed prior to participation in the intervention, with those with the lowest baseline knowledge scores showing the greatest improvement. Thus, we conclude that this and similar types of interventions can positively contribute to STI/HIV prevention, even in one of the most "hidden" and "hard to reach" populations.

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