

Structural Determinants of Inconsistent Condom Use With Clients Among Migrant Sex Workers: Findings of Longitudinal Research in an Urban Canadian Setting

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Background: Migrant women in sex work experience unique risks and protective factors related to their sexual health. Given the dearth of knowledge in high-income countries, we explored factors associated with inconsistent condom use by clients among migrant female sex workers over time in Vancouver, BC.

Methods: Questionnaire and HIV/sexually transmitted infection testing data from a longitudinal cohort, An Evaluation of Sex Workers Health Access, were collected from 2010 to 2013. Logistic regression using generalized estimating equations was used to model correlates of inconsistent condom use by clients among international migrant sex workers over a 3-year study period.

Results: Of 685 participants, analyses were restricted to 182 (27%) international migrants who primarily originated from China. In multivariate generalized estimating equations analyses, difficulty accessing condoms (adjusted odds ratio [AOR], 3.76; 95% confidence interval [CI], 1.13–12.47) independently correlated with increased odds of inconsistent condom use by clients. Servicing clients in indoor sex work establishments

(e.g., massage parlors) (AOR, 0.34; 95% CI, 0.15–0.77), and high school attainment (AOR, 0.22; 95% CI, 0.09–0.50) had independent protective effects on the odds of inconsistent condom use by clients.

Conclusions: Findings of this longitudinal study highlight the persistent challenges faced by migrant sex workers in terms of accessing and using condoms. Migrant sex workers who experienced difficulty in accessing condoms were more than 3 times as likely to report inconsistent condom use by clients. Laws, policies, and programs promoting access to safer, decriminalized indoor work environments remain urgently needed to promote health, safety, and human rights for migrant workers in the sex industry.

Global evidence indicates that migrant female sex workers (SWs) experience disproportionate health and social inequities, including those related to HIV and sexually transmitted infections (STIs).^{1,2} However, research suggests diversity in the health impacts of migration, which can foster exposure to enhanced risks (e.g., drug use, violence, and loss of social support) and protective factors such as better wages and working conditions.^{1,3–5} For example, a recent systematic review comparing HIV and STI prevalence among migrant and nonmigrant female SWs found that although migrants in low- and high-income countries faced increased STI prevalence in all countries compared with nonmigrants, only those in lower-income countries were also at elevated risks for HIV.¹ Such heterogeneity in HIV/STI protection and risk may be due to varied structural determinants across migration and sex work contexts,⁶ including differences in cultural and social norms for sexual behavior and drug use, insecure immigration status, social isolation, differential exposure to workplace violence and policing, and barriers to health care and legal assistance.^{3,5,7–9}

In high-income countries such as Canada and the United States, research indicates that most long-term international migrants in the sex industry work in indoor establishments, such as massage parlors and “health enhancement centers,”^{10,11} where they tend to experience lower rates of HIV and violence relative to street-based SWs.^{11–14} However, qualitative research has identified a number of persistent barriers to the sexual health and safety of migrant workers in indoor establishments including stigma, competition between workers, limited English proficiency, and police and immigration crackdowns.^{14–16} Moreover, although previous epidemiologic research on HIV/STI risks among migrant SWs has emphasized the experiences of migrants in low- and middle-income settings,^{1,3,5,17–20} research in North America remains extremely limited.¹

We drew upon a “structural determinants of HIV in sex work” framework to conceptualize condom use among migrant SWs as shaped by intersecting factors operating at multiple levels—including structural and individual.^{5,8,21} Structural determinants of HIV/STIs among SWs include *macrostructural* laws and policies, *community organization* determinants, and *work environment features* (e.g., violence, policing practices, and condom access in the workplace). Condom use among SWs is also

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Acknowledgments: The authors thank all those who contributed their time and expertise to this project, including participants, partner agencies, and the AESHA Community Advisory Board. They wish to acknowledge the research and administrative support from Peter Vann, Sarah Allan, Kathleen Deering, Putu Duff, Sabina Dobrer, Ofer Amram, Jill Chettiar, Chrissy Taylor, Jennifer Morris, Rachel Nicoletti, Brittney Udall, Julia Homer, Emily Leake, Tina Ok, Sylvia Machat, Rhiannon Hughes, Meenakshi Manoe, Saba Tadesse-Lee, Rachel Croy, Emily Groundwater, Jasmine McEachern, Christina Rzepa, and Jingfei Zhang. This research was supported by operating grants from the US National Institutes of Health (R01DA028648), Canadian Institutes of Health Research (HHP-98835), and the Canadian Institutes of Health Research and Public Health Agency of Canada (HEB-330155). K.S. is supported by a Canada Research Chair in Global Sexual Health and HIV/AIDS and Michael Smith Foundation for Health Research. S.S. is supported through an NIDA MERIT award (R37 DA019829). S.G. is supported by the Canadian Institutes of Health Research and the Michael Smith Foundation for Health Research.

Conflict of interest: None declared.

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Received for publication December 3, 2014, and accepted March 10, 2015. DOI: 10.1097/OLQ.0000000000000276

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influenced by *individual and partner-level factors*, including age of sex work initiation, substance use, and numbers/types of sex acts with different partners.^{6,22}

Although structural determinants are now recognized as critical in shaping SWs' health,⁶ few studies have evaluated structural determinants of health among migrant workers in the sex industry. Our team's previous work has shown that among SWs, migration is linked to some health-protective factors (e.g., higher condom use and lower drug use), but also enhanced structural risks (e.g., language barriers, barriers to health care access, high levels of police raids and crackdowns, and stigma).^{3,5,16} Given significant heterogeneity in evidence pertaining to the health and well-being of migrant SWs, and limited research examining structural determinants in particular, the objective of this study was to examine structural determinants of STI/HIV risk measured as inconsistent condom use by clients, among international migrant SWs in Metropolitan Vancouver, British Columbia.

MATERIALS AND METHODS

Study Design

Data were drawn from an open prospective cohort, An Evaluation of Sex Workers Health Access (AESHA), that initiated recruitment in late January 2010. The AESHA study was developed based on longstanding community collaborations with sex work agencies since 2005²³ and is monitored by a Community Advisory Board of representatives from more than 15 community agencies. As previously described, female (including transgender women) individuals who exchanged sex for money within the last 30 days, were 14+ years of age, and could provide written informed consent were recruited through time-location sampling²⁴ across Metropolitan Vancouver. Sex workers were recruited through day and late night outreach to outdoor/public (e.g., streets and alleys) and indoor sex work venues (e.g., massage parlors, micro-brothels, and in-call locations), as well as online recruitment. Indoor sex work venues and outdoor solicitation spaces ("strolls") were identified through community mapping conducted together with current/former SWs²³ and continued to be updated by the outreach team. After informed consent, participants completed interviewer-administered questionnaires at baseline and semiannual follow-up visits by a trained female interviewer (both experiential and nonexperiential) in English, Mandarin, or Cantonese. A shorter interviewer-administered pretest counseling questionnaire and voluntary HIV/STI serology testing (i.e., syphilis, gonorrhea, and chlamydia) was administered by a project nurse to facilitate education, support, and referral. All participants received \$40 CAD at each biannual visit for their time, expertise, and travel expenses. The study is approved by the Providence Health Care/University of British Columbia Research Ethics Board.

Inconsistent Condom Use Outcome

The outcome for the analysis was a time-updated measure of inconsistent condom use by clients for vaginal or anal sex at each semiannual study visit. Inconsistent condom use was based on reporting less than 100% condom use for sex work transactions in each 6-month period (responses of "usually," "sometimes," "occasionally," or "never"), for either or both of one-time and regular (repeat) clients. Participants were asked to report condom use by one-time and repeat clients separately for vaginal, anal, and oral sex. Given the low reported rates of anal sex and the relatively lower HIV/STI acquisition/transmission risk through oral sex, inconsistent condom use was only considered for vaginal and/or anal sex at each time interval. Sensitivity analyses were also run

separately for regular and one-time clients, with similar directions reported for both analyses.

Independent Variables of Interest

Based on known and hypothesized factors associated with condom use from the literature and earlier published AESHA data, time-fixed variables derived from the main baseline questionnaire included potential confounders such as age, age of sex work entry, education, country of origin, languages spoken, and migration history and duration (<5 years vs. 5+ years in Canada). All other variables were considered as time-updated covariates of occurrences within the past 6 months. These included sexual risks and work patterns (e.g., number of clients), drug use patterns (e.g., injection and noninjection drug use), alcohol use, and average monthly income.

Structural determinants examined included primary places of solicitation and servicing clients, access to condoms, safety support from other workers, exposure to violence, and police harassment. Condom access was assessed by asking whether participants experienced difficulty accessing condoms while working. Primary place of service (sex work transaction) was categorized as working at formal indoor sex work establishments ("in-call" venues such as massage parlors, health enhancement centers, and other managed indoor spaces) versus informal indoor venues (e.g., bars, saunas, and hotels) and street/public places.⁶ Safety support from other SWs was derived from a broader set of questions regarding social cohesion in the work place²⁵ (measured as "strongly agree," "agree," or "somewhat agree" to the statement: "You can count on other workers if you need help with violence or difficult client"). Client violence included client-perpetrated physical and/or sexual violence in the last 6 months, including being abducted/kidnapped, being forced to have unprotected sex, and being raped, strangled, or physically assaulted and assaulted with a weapon. Police harassment included experiencing police raids, searches, detainment, physical assault, having property confiscated, and being coerced into providing sexual favors.

Statistical Analyses

Of 685 SWs enrolled in the study between January 2010 and February 2013, the prospective analysis was restricted to 182 (27%) migrant SWs, defined as those who had moved to Canada from another country. Descriptive statistics were calculated at baseline and stratified by whether participants reported any inconsistent condom use in the past 6 months. Differences between migrants who reported inconsistent condom use and those who did not at baseline were assessed using the Mann-Whitney test for continuous variables and Pearson χ^2 test (Fisher exact test for small cell counts) for categorical variables. After this, generalized estimating equations (GEEs) and an exchangeable correlation structure²⁶ were used to longitudinally examine correlates of inconsistent condom use events over the 3-year study period.

Bivariate and multivariate GEE analyses²⁷ with a logit link function were used for our binary outcome to account for repeated measures among the same individuals. Sociodemographic characteristics were treated as fixed covariates, whereas all other variables (e.g., drug use, work environment, condom access, and violence) were treated as time-updated covariates. Known potential confounders as described in previous literature, factors hypothesized *a priori* to be related to inconsistent condom use, and variables with a significance level less than 5% in bivariate analyses were considered for inclusion in the multivariate model. Model selection was constructed using a backward process to obtain the model with the best overall fit, as indicated by the lowest quasi-likelihood under the independence model criterion value.²⁸

TABLE 1. Individual, Partner, and Structural Factors Stratified by Inconsistent Condom Use With Any Client Among Migrant SWs in Metropolitan Vancouver, BC (n = 182) at Baseline, 2010–2013

Characteristic	Total (n = 182)	Inconsistent Condom Use by Clients		P
		Yes (n = 10)	No (n = 172)	
Age, median (IQR), y	37 (30–42)	38 (29–42)	37 (30–42)	1.000
Age at sex work entry, median (IQR), y	34 (26–39)	26.5 (15–36)	34 (27–39)	0.074
Completed high school, n (%)	149 (81.9)	3 (30.0)	146 (84.9)	<0.001
Injection drug use,* n (%)	11 (6.0)	4 (40.0)	7 (4.1)	0.001
Noninjection drug use,* n (%)	27 (14.8)	6 (60.0)	21 (12.2)	<0.001
Alcohol use,* n (%)	106 (58.2)	5 (50.0)	101 (58.7)	0.744
Average monthly no. of clients, median (IQR)*	40 (24–60)	40 (20–60)	40 (24–60)	0.622
Structural determinants				
China as country of origin, n (%)	140 (76.9)	4 (40.0)	136 (79.1)	0.011
Lives with others,* n (%)	115 (63.2)	5 (50.0)	110 (64.0)	0.502
Sex industry as main source of income,* n (%)	165 (90.7)	8 (80.0)	157 (91.3)	0.419
Average monthly income, in Canadian dollars, median (IQR)*	3200 (2000–6000)	3600 (2000–4400)	3200 (2000–6000)	0.995
Financially supports dependents,* n (%)	100 (54.9)	5 (50.0)	95 (55.2)	0.756
Primarily works in formal indoor establishment (vs. informal indoor/street),* n (%)	156 (85.7)	4 (40.0)	152 (88.4)	<0.001
Access to safety support from other SWs, n (%)	155 (85.2)	7 (70.0)	148 (86.1)	0.171
Difficult accessing condoms,* n (%)	12 (6.6)	2 (20.0)	10 (5.8)	0.134
Client physical/sexual violence,* n (%)	11 (6.0)	2 (20.0)	9 (5.2)	0.115
Police harassment without arrest,* n (%)	31 (17.0)	4 (40.0)	27 (15.7)	0.069

*All variables are baseline events/risks using last 6 months as a reference point.

Analyses were performed using the SAS software, version 9.3 (SAS, Cary, NC). All *P* values are 2 sided.

RESULTS

Of 401 observations among the 182 international migrant SWs included in the analysis, 28 (7%) events of inconsistent condom use by clients were reported over the 3-year study period. Of the migrant SWs, 102 participants had returned for at least 1 follow-up visit, with a median of 2 follow-up visits (interquartile range [IQR], 1–3) and a median of 16.6 months (IQR, 9.46–21.88) under follow-up.

Most migrants originated from China (76.9%); other countries included the United States (3.8%) and Philippines (2.2%). Among migrant SWs, 41.8% had moved to Canada within the past 5 years, whereas the rest were long-term migrants who had spent 5 or more years in Canada. Primary languages spoken included Mandarin (65.4%), English (16.5%), and Cantonese (12.6%). Among international migrants, at baseline 63.2% lived with at least 1 other person and 54.9% financially supported at least 1

dependent (i.e., cohabitating partner, boyfriend, children, parents, or other family) (Table 1).

In bivariate GEE analyses over the 3-year study period, younger age at sex work entry (median age, 26.5 vs. 34 years; odds ratio [OR], 0.92; 95% confidence interval [CI], 0.87–0.98), less than high school attainment (OR, 0.16; 95% CI, 0.07–0.40), injection drug use (OR, 5.24; 95% CI, 1.44–18.98), and use of non-injection drugs (OR, 2.98; 95% CI, 1.20–7.42) were independently correlated with increased odds of inconsistent condom use.

For structural determinants, servicing clients in formal indoor venues (OR, 0.17; 95% CI, 0.07–0.41), identifying sex work as one's primary source of income (OR, 0.26; 95% CI, 0.09–0.76), and experiencing difficulty accessing condoms in the workplace (OR, 4.75; 95% CI, 1.49–15.15) were all independently correlated with increased odds of inconsistent condom use with clients among migrant SWs.

In multivariate GEE analysis (Table 2), difficulty accessing condoms in the workplace (adjusted OR [AOR], 3.76; 95% CI, 1.13–12.47), servicing clients in formal indoor establishments (in-call venues such as massage parlors, health enhancement centers, and other managed indoor spaces; AOR, 0.34; 95% CI,

TABLE 2. Bivariate and Multivariate GEE Analyses of Factors Associated With Inconsistent Condom Use With Clients Among Migrant SWs (n = 182) in Metropolitan Vancouver, BC, 2010–2013

Characteristic	Unadjusted OR (95% CI)	AOR (95% CI)
Age at sex work entry, per year older*	0.92 (0.87–0.98)	
Completed high school*	0.16 (0.07–0.40)	0.22 (0.09–0.50)
Injection drug use [†]	5.24 (1.44–18.98)	
Noninjection drug use [†]	2.98 (1.20–7.42)	
Structural determinants		
China country of origin*	0.20 (0.08–0.50)	
Sex industry as main source of income [†]	0.26 (0.09–0.76)	
Primarily works in formal indoor establishment (vs. informal indoor/street) [†]	0.17 (0.07–0.41)	0.34 (0.15–0.77)
Access to safety support from other SWs [†]	0.42 (0.20–0.90)	
Difficulty accessing condoms [†]	4.75 (1.49–15.15)	3.76 (1.13–12.47)

*Time-fixed.

[†]Time-updated measures (serial measures at each study visit using last 6 months as reference point).

0.15–0.77), and high school attainment (AOR, 0.22; 95% CI, 0.09–0.50) remained independently correlated with inconsistent condom use with clients over the 3-year study period.

DISCUSSION

Despite overall high levels of condom use among primarily Chinese-born migrants in Canada's sex industry, this 3-year study found that barriers to accessing condoms in the workplace can undermine successful sexual risk negotiation between migrant SWs and their clients. We also found that working in formal indoor establishments such as massage parlors, health enhancement centers, and other managed indoor spaces related to more consistent condom use, suggesting that indoor workspaces remain essential to facilitating HIV/STI prevention for migrant SWs.

An important strength of this study was its explicit focus on structural determinants of condom use between migrant SWs and their clients. International research from low- and middle-income countries and some European settings has highlighted the complexities of migration and health among marginalized women and has identified structural determinants of migrant SWs' health as a key research gap. For example, in India, inconsistent condom use among mobile and internal migrant SWs is associated with client-perpetrated violence and substance use during sex work,^{18–20} whereas international migrants in South Africa's sex industry face pronounced barriers to health services access and protective factors (e.g., higher earnings) related to operating out of indoor venues.¹⁷ In a study conducted in London, migrant workers from Eastern Europe and the Former Soviet Union were younger, saw more clients, and faced lower risks of sexual violence, yet faced elevated barriers to contraceptive use.⁴ In light of these complexities, researchers have speculated that heterogeneity in HIV/STI risks and their determinants among migrant SWs may be linked to different structural features of working environments across diverse contexts and geographic settings,^{1,3,5} a research gap meriting further attention. Our findings from Canada contribute new knowledge by highlighting the salience of occupational conditions such as condom access in the workplace and access to formal indoor workspaces, in shaping HIV/STI prevention among migrant SWs.

In high-income contexts such as Canada, previous research indicates that SWs who operate in formal indoor environments may experience health-enabling environments compared with those in outdoor or informal settings, who often face higher rates of violence and barriers to safer sex practices such as rushed negotiation and insufficient time to screen clients.^{6,29,30} In Western Canada, indoor sex work largely operates as licensed businesses such as massage parlors and escort agencies.¹⁰ Features of formal indoor work environments that may support condom use include supportive management policies, security measures that reduce the threat of violence or client condom refusal, and the availability of HIV/STI prevention resources and information.^{5,6,29}

Although our findings highlight the importance of safer indoor sex work venues for facilitating condom use, difficulties accessing condoms pose significant challenges to the protection of sexual health and human rights of migrants in the sex industry.³¹ These findings are supported by previous research indicating the importance of adequate condom access in the workplace for condom use among SWs^{6,29} and are particularly important given the stigma associated with sex work and cultural barriers faced by migrant SWs in accessing condoms outside the workplace. In recent qualitative work in Vancouver¹⁶ and elsewhere in Canada,³² the increasingly criminalized nature of sex work (e.g., bill C-36 enacted in 2014 to criminalize third-party advertisement of services and purchasing by clients³³) has been shown to undermine and will

likely exacerbate access to condoms for migrant SWs. Because of the bill's provision against third parties and unannounced police raids where condoms can be used as evidence for sex work, managers may be more reluctant to offer condoms on premises, restrict number of condoms permitted, refuse free condoms delivered by health outreach workers, and enforce strict rules for storage and disposal.¹⁶ Because condom access and structural drivers such as criminalization have not been explored in-depth among migrant SWs, there remains a need for cohort studies to evaluate the impacts of evolving structural determinants on sexual health and safety among migrant SWs over time.

Strengths and Limitations

The longitudinal nature of this study, following up participants over a 3 year study period, is a major strength of this research. Although qualitative research suggests that migrant/new immigrant women may attach cultural and social norms to condom use and thus it may be possible that there is underreporting due to social desirability bias, our team has developed a strong rapport with participants (e.g., regular follow-up and outreach visits). Furthermore, any underestimation of inconsistent condom use would have ultimately biased our multivariate results toward the null, making it more difficult to detect the associations found with inconsistent condoms use. However, these results are consistent with research in Vancouver that has shown that protections afforded by access to indoor spaces (e.g., supportive venues and practices) and condom use with clients is relatively high as compared with informal indoor and outdoor sex work.⁶ Because the AESHA study was not designed specifically to investigate migration issues, we may not have had sufficient statistical power to systematically investigate migrant-specific risks or protective factors and were limited by a lack of detailed information pertaining to migration history and experiences (e.g., legal immigration status, access to medical and legal assistance upon arrival, and sociocultural differences between Canada and circumstances in home countries). Our study may have also underrepresented some ethnic migrant SWs in Vancouver (e.g., Latin American origin). However, our outreach team conducted extensive outreach to a diverse variety of venues where migrants engage in sex work (identified by ongoing community mapping) and were able to conduct informed consent and offer questionnaires in the primary languages spoken by potential participants (i.e., English, Cantonese, and Mandarin). Continued efforts to identify and reach out to diverse migrant populations remain needed, including longitudinal and mixed methods studies with more recent cohorts of migrant SWs to better understand shifting health behaviours and outcomes by the duration and context of migration.

Recommendations for Interventions

These findings suggest the need to shift away from punitive law enforcement practices such as confiscation or use of condoms as evidence of sex work. Improved police relations in criminalized contexts can also improve work conditions, such as through increased control over working conditions and removal/reporting of violent clients.³⁰ In addition, safer workplace models such as those that facilitate managers' capacity to provide HIV/STI prevention resources, connect migrant SWs to culturally appropriate outreach and services, and facilitate workplace safety, remain needed.

Policy and programmatic responses that engage and involve migrant SWs (e.g., in designing and leading occupational health interventions) and that are based on human and labor rights frameworks remain needed. Effective strategies that have been implemented internationally include increasing access to

nonstigmatizing, culturally appropriate, and SW-tailored health services, as well as venue and managerial practices and policies that support sexual health and safety, such as engagement of managers in sexual health and HIV/STI prevention training.⁶

CONCLUSIONS

Findings of this longitudinal study highlight the critical importance of structural determinants, including safer formal indoor workspaces and adequate condom access, for promoting HIV/STI prevention between migrant SWs and their clients. Although working in formal indoor work venues can promote condom use, difficulty accessing condoms for migrants within the indoor sex industry represents a serious concern resulting from the criminalization of sex work in Canada. Interventions that positively engage managers, owners, and peers to promote condom access, health, and safety within indoor venues are recommended to enhance migrant SWs' occupational health and human rights.

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