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Lack of full citizenship rights linked to heightened client condom refusal among im/migrant sex workers in Metro Vancouver (2010–2018)

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ABSTRACT

In Canada, im/migrant sex workers face stigma, health access barriers, and overlapping marginalisation, with end-demand law reforms in 2014 postulated to exacerbate these inequities. Yet, little quantitative evidence on how immigration status shapes HIV/STI risk exists. Drawing on community-based longitudinal cohort data (AESHA, 2010–2018), we used multivariable confounder models with logistic regression to model (1) the independent effect of precarious immigration status (any status revocable under criminal charges: permanent residency/temporary residency/undocumented) on client condom refusal, and (2) the moderating effect of precarious status on the relationship between condom refusal and exposure to end-demand law reform (2015–2018). Over this 8-year study involving 758 sex workers in Metro Vancouver, 16.0% were im/migrants, of whom 57% had precarious immigration status at baseline. 16.5% of participants experienced client condom refusal. Precarious immigration was associated with increased odds of facing condom refusal (adjusted odds ratio [AOR] 2.53, 95% confidence interval [CI] 1.37–4.68), and these odds were heightened post-end-demand law reforms (AOR 4.35, 95%CI 1.21–15.66). Our findings suggest that lack of citizenship rights may enhance barriers to safer sex negotiation and increase HIV/STI risk among sex workers, highlighting the need for sex work and immigration policy reforms.

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Background

Global migration estimates suggest there are 258 million international migrants worldwide (UNDESA, 2017), excluding undocumented migrants. Workers often migrate seeking improved working conditions, yet frequently face precarious labour and insecure employment in destination settings (Benach, Muntaner, Delclos, Menéndez, & Ronquillo, 2011; Hasstedt, 2013; Smith & Mustard, 2010): evidence from global Northern and Southern contexts has documented poor working conditions, informal labour involvement, barriers to health access, and poor health outcomes among immigrant and migrant (im/migrant[1]) workers (Holmes, 2013; Lucchini & London, 2014; Moyce & Schenker, 2018; Pérez et al., 2012).

Health and social inequities faced by im/migrants are exacerbated among those with precarious immigration status. Precarious immigration status has previously been defined by the absence of

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citizenship rights, and captures variable forms of 'less than full status'(Goldring & Landolt, 2011) (i.e. temporary workers, students, visa overstayers, undocumented entrants, vs. naturalised citizens and permanent residents). This definition has been applied in research exploring precarious employment and racialisation among im/migrant workers in Canada, and draws attention to the gradations of non-citizenship and illegality (Goldring, Berinstein, & Bernhard, 2009). However, recent research involving im/migrant sex workers in Canada, Europe and New Zealand has documented enhanced criminalisation (criminalised laws and their enforcement, e.g. surveillance, workplace raids, police harassment, and arrests) and fear of criminalisation and its potential consequences (i.e. loss of income, family finding out about sex work, and immigration status revocation/deportation) due to intersecting sex work laws and prohibitive immigration policies (Abel, 2019; Lam, 2018; Levy & Jakobsson, 2014; McBride, Shannon, et al., 2019; PION, 2017; Vuolajärvi, 2018). This suggests a need to operationalise 'precarious immigration status' in a broader manner among this group.

Sex worker mobility across national borders has been documented since 1860 (Kempadoo & Doezema, 1998). Current evidence illustrates that sex workers at diverse levels are highly mobile: many structurally marginalised sex workers frequently move between venues, cities and countries to seek new clients, work privately (e.g. away from family/home community) and avoid law enforcement (Gülcür & Ilkkaracan, 2012; NSWP, 2018) while high income sex workers routinely 'tour' or travel domestically or internationally for work (Nelson, Hausbeck Korgan, Izzo, & Bessen, 2019). Other labour migrants may have not previously been involved in sex work, but first engage in sex work in destination settings, thus becoming subject to the sex work legislation of their destination country (Gülcür & Ilkkaracan, 2012; Lam, 2018; NSWP, 2018). In addition to the precarity faced by im/migrants who do not have the right to live (e.g. undocumented migrants) or work (e.g. tourist visa holders) in a destination setting, precarious im/migrants involved in sex work can face exacerbated precarity due to laws prohibiting sex work.

In 2014, Canada enacted end-demand sex work legislation (*Protection of Communities and Exploited Persons Act, PCEPA*), which leaves the sale of sex services legal while criminalising the purchase of sex services by clients, and upholding the criminalisation of third parties (e.g. venue owners, managers, receptionists) who advertise for sex workers or materially benefit from others' sex work (Parliament of Canada, 2014). However, selling sexual services remains explicitly prohibited for all open work permit holders and temporary residents under Canadian immigration policy (Government of Canada, 2018), due to the conflation of migration, sex work (consensual exchange of sex services), and sex trafficking (forced sexual labour) (Lam, 2018). Thus, while Canadian citizens can legally sell sexual services under the PCEPA, sex work remains a criminal offense for open work permit holders and temporary residents. Further, the criminalisation of third party material benefits (Parliament of Canada, 2014) under Canadian end-demand laws may disproportionately impact im/migrant sex workers, who often rely on third parties for security and other support services, and frequently work together (i.e. as third parties to one another) and in managed indoor venues to counter migration-related marginalisation (i.e. language barriers, barriers to finding clients) (Goldenberg, Krüsi, Zhang, Chettiar, & Shannon, 2017; Lam, 2018; McBride & Murphy, 2019). Under these laws and immigration policies, many im/migrants who arrive in Canada via legal channels can face detention, deportation, or status revocation if authorities become aware of their sex work involvement (Lam, 2018). Given this unique vulnerability, our study extends 'precarious immigration status' to include forms of status which are revocable if the individual is charged with a criminal offense – namely, permanent residency. This is the case for permanent residents in Canada, who could face status revocation if they act as a third party in sex work (Lam, 2018; Parliament of Canada, 2014), and for temporary residents and work permit holders who may legally work in other industries, but risk being charged, detained, or deported for doing sex work (Government of Canada, 2018; Lam, 2018).

In 2011, im/migrants represented 20.6% of Canada's total population, which is the highest proportion among G8 countries (Statistics Canada, 2013). While Canada welcomed 296,000 permanent residents in 2016, almost as many im/migrants came as temporary workers (286,000) (Government

of Canada, 2017), and 71% of all im/migrants to Canada in 2018 were temporary residents (Migrant Rights Network, 2018). Estimates from research and local advocacy groups suggest that there is a significant population of precarious im/migrants working without authorisation (Dawson, 2016; Migrant Rights Network, 2018). In Canada, im/migrant workers are disproportionately exposed to occupational health hazards (Smith & Mustard, 2010), and immigration status at time of arrival has a lasting effect on labour conditions across sectors: im/migrants who entered with precarious status had higher odds of facing job precarity and poor working conditions relative to those who entered as permanent residents (Goldring & Landolt, 2011).

Women labour migrants to North America, particularly from non-English-speaking countries, often experience 'double disadvantage' and inequities based on gender and immigration status (Beach & Worswick, 2006; Le & Miller, 2010). In Canada, im/migrant women face gendered labour vulnerabilities: they are more likely to be overqualified relative to their level of employment (Chen, Smith, & Mustard, 2010), receive lower wages relative to men (Beach & Worswick, 2006; Le & Miller, 2010), and are overrepresented in lower paying sectors (e.g. caregiving) and precarious labour, including sex work (Benach et al., 2011; Goldenberg, Krüsi, et al., 2017). Of concern, community-based research suggests that sex work provides key flexibility and income for im/migrant women facing marginalisation and exclusion from formal employment opportunities (Goldenberg, Krüsi, et al., 2017; Lam, 2016), yet im/migrant sex workers have no access to labour protections and remain highly criminalised (Lam, 2018). Despite robust evidence that im/migrant status and precarious status impact health and labour outcomes (Goldring et al., 2009), existing literature has largely focused on male im/migrant workers in conventional labour settings (i.e. agriculture, factory work), with a paucity of research on women, particularly those with precarious immigration status and working in informal or criminalised labour.

In Canada and globally, im/migrant workers face structural barriers to health access including low language proficiency and lack of information (Kalich, Heinemann, & Ghahari, 2016; Moyce & Schenker, 2018). Those with precarious immigration status face exacerbated barriers including economic vulnerability, high costs of services, and fear of status revocation (Berk & Schur, 2001; Weine & Kashuba, 2012; Woodward, Howard, & Wolffers, 2014), yet little research has examined health outcomes among precarious im/migrants in Canada. Im/migrants can also face barriers to accessing HIV/STI testing and care (Fakoya, Reynolds, Caswell, & Shiripinda, 2008; Weine & Kashuba, 2012; Shedlin et al., 2006), and a 2012 systematic review on labour migration and HIV identified economic marginalisation, poor working conditions, and limited condom use as determinants enhancing HIV risk among im/migrant workers globally (Weine & Kashuba, 2012). Due to differences in social norms, work and living environments, and gendered power dynamics between origin and destination settings, im/migration can also impact sexual risk behaviours and ability to negotiate condom use (McGrath, Hosegood, Newell, & Eaton, 2015; Weine & Kashuba, 2012; Shedlin et al., 2006). While extensive literature has documented HIV/STI risks and barriers to HIV/STI services among both im/migrants and sex workers, respectively, few studies have explored how precarious immigration status shapes HIV/STI risk among sex workers, particularly in the context of shifting sex work laws and immigration policies in many countries (Global Network of Sex Work Projects, 2018; Vuolajärvi, 2018).

Im/migrant sex workers, community groups and researchers have drawn attention to the unique marginalisation faced by im/migrant sex workers globally (Abel, 2019; Lam, 2018, 2019; TAMPEP, 2019; Vuolajärvi, 2018). These groups advocate for the recognition of im/migrant sex workers as legitimate workers, and for involving im/migrant sex workers in policy development and implementation towards upholding their labour, health and human rights (Abel, 2019; Lam, 2018; McBride, Goldenberg, et al., 2019; SWAN Vancouver Society, 2015; Vuolajärvi, 2018). Despite im/migrant sex workers facing exacerbated criminalisation and precarity under Canada's current sex work legislation and immigration policies, little quantitative evidence exists on how precarious immigration status shapes labour conditions and HIV/STI risk. Given this gap, our prospective study aimed to model (1) the effect of precarious immigration status on client condom refusal; and (2) the

moderating effect of precarious immigration status on the relationship between client condom refusal and exposure to end-demand sex work legislation, among sex workers in Metro Vancouver over 8 years.

Methods

Longitudinal data (January 2010-February 2018) were drawn from a community-based open prospective cohort, An Evaluation of Sex Workers Health Access (AESHA) which initiated recruitment in 2010, is based on community collaborations since 2005, and is overseen by a community advisory board of over 15 community organisations. Eligibility criteria include identifying as a woman (cisgender or transgender), having exchanged sex for money in the last month, and providing written informed consent. Time-location sampling was used to recruit Canadian-born and im/migrant women aged 14+ through day and late-night outreach to outdoor locations (i.e. streets, alleys), in-call venues (i.e. massage parlours, micro-brothels), out-call venues (i.e. hotels, bars) and online solicitation spaces across Metro Vancouver, identified in collaboration with sex work community partners. Since inception, women with lived experience (current/former sex workers) are hired throughout the project, from interviewers/outreach workers and sexual health research nurses to coordinators. Further detail on the AESHA study's community origins is available elsewhere (Shannon et al., 2007).

After informed consent, participants completed interviewer-administered questionnaires in English, French, Spanish, Cantonese or Mandarin, at baseline and semiannual follow-up visits. The primary questionnaire elicited responses on socio-demographics, work environments and structural factors, and the clinical component elicits responses on health access and outcomes. All participants received $40 CAD at each biannual visit. The study holds ethical approval through Providence Health Care/University of British Columbia and Simon Fraser University Research Ethics Boards.

Measures

Primary outcome

The primary outcome was a time-updated measure examining any experience of client male condom refusal in the last 6 months at each semiannual visit. Consistent with other research (Argento et al., 2016; Decker et al., 2010), client condom refusal was defined as being forced to have sex without a condom, or a client breaking or removing the condom on purpose. As noted by social epidemiological theory and moving beyond traditional epidemiology, cisgender male condom use is often inaccurately evaluated as the same measure across all genders, failing to consider the gendered negotiation of male condom use (Zierler & Krieger, 1997).

Explanatory variables

Our primary explanatory variable was a time-updated measure for precarious immigration status, informed by research on precarious immigration status and labour outcomes among im/migrant workers (Goldring et al., 2009) and adapted to reflect precarity faced by im/migrant sex workers in Canada. Precarious immigration status was defined to include all forms of status which do not confer the rights guaranteed to Canadian citizens, and which are revocable under criminal charges. Under this measure, women with permanent residency, temporary residency (including student visa and tourist visa holders), no documents or expired documents were considered to have precarious immigration status. To time-update im/migration status, participants were asked if they had received Canadian citizenship in the last 6 months at each semiannual study visit. Women who were born in Canada or naturalised citizens were considered to have secure status.

Our second explanatory variable was exposure to the post-law reform time period, defined as completing a study interview in 2015–2017, vs. 2010–2013. As end-demand legislation was passed in December 2014, the year 2014 and the first 3 months of 2015 were dropped from analyses due to variation in how the laws may have been enforced and to account for time-updated exposure measures referring to the preceding six months. This measure was used to investigate the moderating effect of precarious immigration status on the relationship between condom refusal and exposure to end-demand sex work legislation.

Other variables of interest and potential confounders

Other individual, interpersonal, workplace and structural variables and those which were hypothesised to confound the relationship between precarious immigration status and client condom refusal were explored. Individual-level time-fixed variables included identifying as a gender and/or sexual minority (Lesbian, gay, bisexual, transgender, queer, Two Spirit (LGTBQ2S) vs cisgender and heterosexual), and ethnicity (white, Indigenous, Chinese, or other ethnic minority). Time-fixed structural factors included high school completion (vs. less than high school). All other variables were time-updated at each semiannual follow-up (examining events during the past six months). Individual factors included age, non-injection substance use (e.g. cocaine, crystal meth; excluding cannabis and alcohol use), injection drug use, having good self-rated health (defined as reporting one's health as excellent, very good or good vs. fair or poor), and years in sex work. Work environment factors included primary place serving clients (informal indoor space [e.g. bar, out-call, client's place] or in-call venue [e.g. massage/beauty parlour, micro-brothel] vs. outdoor/public space [e.g. street, car]), difficulty accessing condoms while working (yes vs. no), number of condoms carried per shift, and whether police presence affected where the participant worked (yes vs. no). Structural factors included time since im/migration to Canada (Canadian-born vs. recent im/migrant [migrated within the past 5 years] vs. long term im/migrant [migrated over 5 years ago]), average monthly income from all sources (excluding government allowances), financially supporting other dependents (yes vs. no), homelessness (e.g. sleeping on the street overnight), unstable housing (e.g. any stays in single-room occupancy hotels/supportive housing, staying with family/friends), experiencing workplace physical/sexual violence from clients or perpetrators posing as clients (sexual assault, rape, being strangled, beaten, locked/trapped in a car/room, thrown out of a moving car, assaulted with a weapon, drugged, or kidnapped), and experiencing police harassment (excluding arrest) while working (defined as experiencing any of: police raid, police parked nearby/drove by repeatedly, being told to move on, being threatened with arrest/detainment/fines, being searched/followed/picked up and driven elsewhere to work, being verbally harassed, being detained, physical assault, drugs/drug use equipment confiscated, searched for condoms/condoms taken, other property taken, or propositioned to exchange sex or coerced into providing sexual favours).

Statistical analyses

Confounder model for the independent effect of precarious immigration status on client condom refusal

We examined descriptive statistics for independent variables of interest and potential confounders, stratified by the primary variable of interest, precarious immigration status. Differences were assessed using the Wilcoxon rank-sum test for continuous variables and Pearson's chi-square test (or Fisher's exact test for small cell counts) for categorical variables. We then conducted bivariate and multivariable logistic regression on the outcome, client condom refusal, using generalised estimating equations (GEE) and an exchangeable correlation matrix to account for repeated measures on the same participants. Hypothesised confounders that were significant at $p < 0.05$ in bivariate

analysis were included in a multivariable confounder model to examine the independent effect of precarious status on client condom refusal. In this approach, using the process described by Maldonado and Greenland (Maldonado & Greenland, 1993), potential confounders were removed in a stepwise manner, and variables that altered the association of interest by <5% were systematically removed from the model.

Confounder model for the moderating effect of precarious immigration status on the relationship between condom refusal and exposure to end-demand legislation

To assess the moderating effect of precarious immigration status on the relationship between client condom refusal and exposure to end-demand sex work laws, an interaction term between im/migration status and exposure to the post-law reform time period was examined. The same set of potential confounders identified in the first multivariable model were included in the full multivariable confounder model for this analysis. As described above, variables that altered the association of interest (i.e. exposure to end-demand legislation and client condom refusal) by <5% were systematically removed from the model. All statistical analyses were performed in SAS version 9.4 (SAS, Cary, NC) and all *p*-values are two-sided.

Results

Over the 8-year study, of the 907 sex workers enrolled in the entire AESHA cohort, 758 answered questions in the migration supplement added in 2015 regarding their immigration status. These 758 participants were included in the present analysis. The median number of study visits was 4 (interquartile range [IQR]: 2–8). Among the 758 participants, 121 (16.0%) were im/migrants to Canada, of whom over half (69, 57.0%) had precarious immigration status at baseline: 60 (87.0%) were permanent residents, 6 (8.7%) were temporary residents and 3 (4.4%) had unknown status or no documents. The majority of im/migrants were of Chinese or Taiwanese origin, which mirrors broader immigration demographics in the Vancouver area (Statistics Canada, 2013). We found client condom refusal to be significantly associated with precarious immigration status in bivariate analysis, and as we know it is a measure of HIV/STI risk, we opted to make this the focus of our multivariable models.

Throughout the 8-year study, 16.5% of all participants experienced client condom refusal at least once, with 196 events of condom refusal reported. Among participants with precarious status, 17 (24.6%) reported client condom refusal at least once, with 24 events of condom refusal reported. 15/60 (25%) permanent residents and 2/9 (22.2%) temporary/undocumented/unknown status participants reported condom refusal at least once over the study period. Due to our small sample size of undocumented participants ($n = 3$), we grouped temporary and undocumented participants together when reporting the condom refusal rate.

At baseline, participants' median age was 35 (IQR 28–43), 20.3% had experienced recent physical/sexual workplace violence, and 10.3% reported difficulty accessing condoms while working. Just over half worked indoors (20.7% in in-call venues [i.e. massage parlours] and 32.6% in informal indoor spaces [i.e. apartments]), and 44.5% in outdoor/public spaces (Table 1). Baseline descriptive statistics are presented in Table 1.

In multivariable GEE analysis (Table 2), precarious immigration status was independently associated with increased odds of facing condom refusal (adjusted odds ratio[AOR] 2.53, 95% confidence interval[CI] 1.37–4.68) after adjustment for key confounders.

In a second multivariable GEE confounder model (Table 3), precarious immigration status moderated the relationship between condom refusal and the post-law reform period: women with precarious status faced 4-fold increased odds of condom refusal post-PCEPA (4.35, 95%CI 1.21–15.66), whereas among women with secure status, odds of condom refusal were not significantly different post-law reform (AOR 1.17, 95%CI 0.77–1.78).

Table 1. Baseline individual and structural factors stratified by precarious immigration status among sex workers in Metro Vancouver, Canada who completed the migration supplement ($n = 758$), AESHA 2010–2018.

Characteristic	Total ($N = 758$) *n* (%)	Precarious status		*P*
		Yes ($N = 69$) *n* (%)	No ($N = 689$) *n* (%)	
Individual factors				
Age, median (IQR)	35.0 (28.0–43.0)	38 (30.0–43.0)	34.0 (27.0–42.5)	0.049
Ethnicity				
White	270 (35.6)	1 (1.5)	269 (39.0)	–
Indigenous	341 (45.0)	1 (1.5)	340 (49.4)	–
Chinese/Taiwanese	97 (12.8)	60 (86.9)	37 (5.4)	–
Other ethnic minority	50 (6.6)	7 (10.1)	43 (6.2)	<.001
Gender and/or sexual minority**	283 (37.3)	11 (15.9)	272 (39.5)	<.001
Non-injection drug use†	580 (76.5)	5 (7.3)	575 (83.5)	<.001
Injection drug use†	353 (46.6)	1 (1.5)	352 (51.1)	<.001
Good self-rated health	502 (66.2)	58 (84.1)	444 (64.4)	0.001
Years working in sex work, median (IQR)	12 (5–21)	1 (0–1)	13 (6–22)	<.001
Structural determinants				
Completed high school	373 (49.2)	59 (85.5)	314 (45.6)	<.001
Time since migration to Canada				
Canadian-born	636 (83.9)	0 (0.0)	636 (92.3)	–
Recent im/migrant (within last 5 years)	43 (5.7)	43 (62.3)	0 (0.0)	–
Long-term im/migrant (>5 years)	68 (9.0)	18 (26.1)	50 (7.3)	<.001
Homelessness†	270 (35.6)	0 (0.0)	270 (39.2)	<.001
Unstable housing†	634 (83.6)	35 (50.7)	599 (86.9)	<.001
Average monthly income ($ CAD)†, median (IQR)	2500 (1330–5300)	2900 (1800–4000)	2400 (1210–5430)	0.429
Financially supports dependents	197 (26.0)	39 (56.5)	158 (22.9)	<.001
Primary place servicing clients†				
Outdoor/public space	337 (44.5)	1 (1.5)	336 (48.8)	
Informal indoor venue (e.g. bars, hotels)	247 (32.6)	3 (4.4)	244 (35.4)	
In-call sex work venue (e.g. massage parlour, micro-brothel)	157 (20.7)	65 (94.2)	92 (13.4)	<.001
Sexual risk				
Client condom refusal†	54 (7.1)	7 (10.1)	47 (6.8)	0.322
Number of condoms carried per shift†, median (IQR)	6.0 (4.0–10.0)	4.0 (2.0–10.0)	6.0 (4.0–10.0)	<.001
Difficulty accessing condoms while working†	78 (10.3)	3 (4.4)	75 (10.9)	0.0873
Physical/sexual violence from clients†	154 (20.3)	3 (4.4)	151 (21.9)	<.001
Police presence affected where participant worked†	364 (48.0)	2 (2.9)	362 (52.5)	<.001
Police harassment excluding arrest†	267 (35.2)	6 (8.7)	261 (37.9)	<.001

Notes: All data refer to *n* (%) of participants unless otherwise specified.
†In the last 6 months.
**LGBTQ2S vs cisgender and heterosexual.

Discussion

In our study, 16.0% of participants were im/migrant workers, of whom 57.0% had precarious immigration status. Alarmingly, sex workers with precarious status faced 2.5-fold increased odds of experiencing condom refusal relative to those with secure status, and this was exacerbated after implementation of end-demand legislation: women with precarious status faced an over 4-fold increased odds of condom refusal post-end-demand law reform. Previous literature suggests that

Table 2. Confounder model of the independent effect of precarious immigration status on client condom refusal among sex workers in Metro Vancouver, Canada ($n = 758$), AESHA 2010–2018.

Exposure	Outcome: experienced client condom refusal†	
	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Precarious status†	1.98 (1.16–3.38)‡‡	2.53 (1.37–4.68)‡‡

Notes: Confounders identified through bivariate analysis and included in the final model were years in sex work, recent physical/sexual client violence†, and difficulty accessing condoms while working†.
†Time-updated measures (serial measures at each study visit using last 6 months as reference point).
‡‡Significantly associated at $p \leq 0.05$.

Table 3. Confounder model of the independent the effect of exposure to end-demand law reform on client condom refusal among sex workers with and without precarious immigration status in Metro Vancouver, Canada ($n = 758$), AESHA 2010–2018.

	Outcome: experienced client condom refusal[†]			
	Unadjusted Odds Ratio (95% CI)		Adjusted Odds Ratio (95% CI)	
Exposure	Secure status	Precarious status	Secure status	Precarious status
Post end-demand law reform period	0.53 (0.36–0.78)[‡‡]	3.24 (1.02–10.32)[‡‡]	1.17 (0.77–1.78)	4.35 (1.21–15.66)[‡‡]

Notes: Confounders identified through bivariate analysis and included in the final model were age, years in sex work, average monthly income[†], recent physical/sexual client violence[†], whether police presence affected where the participant worked[†], and difficulty accessing condoms while working[†].
[†]Time-updated measures (serial measures at each study visit using last 6 months as reference point).
[‡‡]Significantly associated at $p \leq 0.05$.

criminalisation and policing may perpetuate gendered power imbalances that reduce control over working conditions and sex work transactions (e.g. condom negotiations) (Global Network of Sex Work Projects, 2018; Goldenberg, Krusi, Zhang, Chettiar, & Shannon, 2017; Lam, 2018; Le Bail & Giametta, 2018): our findings build on this by suggesting that the denial of full labour and citizenship rights among im/migrant sex workers may structure their vulnerability and enhance exposure to unprotected sex and HIV/STI risk.

Our finding that sex workers with precarious immigration status faced over twice the odds of experiencing client condom refusal (i.e. clients forcing sex without a condom, or removing/breaking the condom during sex) suggests precarious status may undermine im/migrant sex workers' control and agency in client interactions, with serious implications for their labour conditions and potential exposure to HIV/STIs. According to international labour laws and standards, every worker has the right to work in an environment free from violence, in which their health and safety are protected (International Labour Organization, 2019). In the context of sex work, the ability to access condoms and negotiate condom use with clients are important determinants of occupational health and safety among sex workers (Bharat, Mahapatra, Roy, & Saggurti, 2013), and our results raise concerns that the current legislative and policy environment may restrict im/migrant sex workers' ability to negotiate condom use and protect themselves against HIV/STI exposure.

Research involving im/migrant sex workers in diverse settings has highlighted how structural marginalisation conferred by im/migrant status, gender, racialisation and other facets of precarity restricts sex workers' ability to negotiate safe and healthy working conditions, and this structural vulnerability presents several possible pathways through which precarious immigration status may increase women's risk of facing client condom refusal. A study in India found that fewer than 20% of 5000 sex workers were able to effectively negotiate condom use in new locations (Bharat et al., 2013), highlighting how newcomer status in a geographic setting may shift negotiating power in favour of the client. Similarly, research and community reports from Canada have highlighted how the enduring threat of status revocation faced by sex workers with precarious immigration status enhances power imbalances between sex workers, third parties and clients, limiting workers' ability to insist on supportive labour environments and negotiate male condom use with clients (Goldenberg, Krüsi, et al., 2017; Lam, 2018). Reflecting our study findings, research involving im/migrant sex workers in Guatemala, Russia and Canada has documented experiences of stealthy condom removal by clients during sex (Bungay et al., 2013; Goldenberg, Krüsi, et al., 2017; Goldenberg, Rocha Jiménez, Brouwer, Morales Miranda, & Silverman, 2018; Weine et al., 2013), and identified recent im/migration, language barriers and fear of interacting with authorities (due to potential immigration status consequences) as determinants shaping power dynamics between sex workers and clients, and hampering workers' ability to report client abuses. Im/migrants with precarious status are also more likely to face economic marginalisation (Benach et al., 2011; Nandi et al., 2008), which has been documented to enhance HIV/STI risk by undermining workers' ability to negotiate condom use and to decline clients' offers of increased pay for unprotected sex (Febres-Cordero et al., 2018; Goldenberg, Krüsi, et al., 2017; Weine et al., 2013). This evidence suggests that precarious immigration

status, combined with im/migration-related marginalisation including low familiarity with the legal and labour context, economic vulnerability, limited language proficiency, and fear of criminalisation and status revocation powerfully restrict women's economic and social capital, thereby structuring their vulnerability in interactions with clients and heightening their HIV/STI risk.

Our finding that sex workers with precarious immigration status face heightened odds of condom refusal is affirmed by recent studies in Somalia, Italy and Portugal, which highlighted the impacts of precarious status as a structural factor which promoted im/migrant sex workers' vulnerability to HIV and STI acquisition (Dias, Gama, Pingarilho, Simões, & Mendão, 2017; Kriitmaa et al., 2010; Zermiani et al., 2012). This vulnerability is particularly concerning given strong evidence that im/migrant sex workers face well-documented barriers to accessing HIV/STI testing, care, and primary health services (Berk & Schur, 2001; Dias et al., 2017; Fakoya et al., 2008; Mc Grath-Lone, Marsh, Hughes, & Ward, 2014; McBride, Shannon, et al., 2019; Rhodes et al., 2015). In research involving undocumented sex workers in Italy, 100% of 345 women confirmed that they had never previously been tested for HIV/STIs in Italy (Zermiani et al., 2012), while a study in Portugal found that gaps in HIV/STI testing were greatest among undocumented im/migrant sex workers (Dias et al., 2017). A forthcoming systematic review has identified fear of the potential implications of an HIV/STI+ result, while living with precarious immigration status, as a significant barrier to accessing HIV/STI testing among im/migrant sex workers (McBride, 2019). Taken together, this research illustrates how the denial of full citizenship rights contributes to excluding marginalised im/migrants from accessing essential sexual health services.

Our findings are aligned with evidence demonstrating that across diverse global settings and industries, precarious im/migrant workers hold low structural power, which undermines their access to safe labour conditions and health (Holmes, 2013; Lucchini & London, 2014; Pérez et al., 2012). Research involving im/migrant farmworkers in the U.S. highlights how exclusionary labour laws shape labour hierarchies organised around ethnicity and citizenship, which promote unsafe working conditions; poor health outcomes; and restricted access to recourse among undocumented, Indigenous Mexican workers (Holmes, 2013). Precarious im/migrant workers globally often fill 'dangerous, dirty and degrading'(Benach et al., 2011) roles in manufacturing and low-wage service jobs in destination settings, and are rendered vulnerable to exploitation in the workplace due to exclusion from labour protections and risk of incarceration and deportation (Benach et al., 2011).

Similarly to other im/migrant workers, im/migrant sex workers in our study faced exposure to workplace abuses from clients and little access to recourse, and this vulnerability was exacerbated for those with precarious immigration status. While women with precarious status reported less client violence and police harassment, these rates are high in comparison with the general population, and im/migrant sex workers faced significantly higher odds of client condom refusal. The comparatively higher prevalence of violence and police harassment among women with secure status may relate to evidence that Canadian-born sex workers in Metro Vancouver are more likely to work in street-based and informal indoor venues, which are characterised by poorer occupational conditions, enhanced drug use, and severe inequities related to gender-based violence as previously documented by our team (Goldenberg, Deering, et al., 2017; Shannon et al., 2009). Harassment from law enforcement is also likely to differ between im/migrant groups, and advocacy groups have documented identity checks, arrests, detentions and deportations particularly among temporary and undocumented workers (Lam, 2018): due to data limitations, our study does not report on experiences of police harassment by im/migration status.

While strong associations between client violence, police harassment, and HIV/STI risk have been robustly documented in existing research involving sex workers, the experiences of im/migrant sex workers – particularly those with precarious immigration status – remain underrepresented (Goldenberg et al., 2016). Our study provides some of the first robust quantitative evidence from North America on precarious immigration status and implications for HIV/STI risk among sex workers. We argue that the association between precarious status and experiencing condom refusal identified represents a form of structural (e.g. gendered, racialized) violence which carries important HIV/STI

exposure implications for this marginalised group. Given concerns that im/migrant sex workers face exacerbated criminalisation under end-demand laws which have been implemented in dozens of countries over the past two decades (Global Network of Sex Work Projects, 2018; Vuolajärvi, 2018), further mixed-methods research on im/migrant sex workers' experiences of client violence and police harassment, particularly among those with criminalised status (e.g. undocumented) is recommended to investigate how shifting sex work and immigration laws shape labour rights and sexual risk outcomes among more hidden populations of im/migrants.

Our study found that sex workers with precarious immigration status faced 4-fold increased odds of condom refusal after exposure to end-demand criminalisation, highlighting a need for sex work and immigration policy reforms. Concerningly, recent Canadian research found that im/migrant sex workers who feared negative consequences of interacting with authorities due to criminalisation faced heightened barriers to health services (McBride, Shannon, et al., 2019). Qualitative research with im/migrant indoor sex workers in Vancouver found that criminalisation and language barriers jointly undermined workers' agency: limited English proficiency and perceived illegality were perceived to severely restrict negotiating power in sex work (e.g. pressure to acquiesce to clients' requests, including condomless services, due to fears that an unsatisfied patron may draw police attention) (Goldenberg, Krüsi, et al., 2017). Sex work criminalisation and police enforcement have been documented to enhance workplace violence (Deering et al., 2014), restrict access to condoms and HIV/STI testing in the workplace (Goldenberg, Krüsi, et al., 2017) and restrict ability to carry condoms (Weine et al., 2013) among sex workers, highlighting how criminalisation undermines im/migrant sex workers' ability to protect their sexual health.

Evidence has shown that most im/migrant sex workers come to Canada through legal channels and without prior sex work experience, but engage in sex work as a way of meeting their financial and other goals in the context of economic marginalisation, discrimination and racism, non-recognition of foreign credentials and training, and exclusion from formal employment (Goldenberg, Krüsi, et al., 2017; Lam, 2016, 2018, 2019). In this context, the denial of citizenship and labour rights among im/migrant sex workers under end-demand laws represents a form of structural violence that enhances their vulnerability to occupational violence, sexual risk, and labour rights abuses.

Community efforts in Canada and globally by im/migrant sex workers and supportive organisations have advanced labour rights among im/migrant sex workers through advocating for safer working conditions, including access to HIV/STI prevention and care, and dismantling prominent stereotypes conflating sex work with sex trafficking among im/migrant women (Abel, 2019; Lam, 2019; McBride, Shannon, et al., 2019; TAMPEP, 2019; Vuolajärvi, 2018). While community empowerment interventions have been effective in enhancing solidarity and uptake of HIV/STI prevention and testing among sex workers (Febres-Cordero et al., 2018; WHO; UNFPA; UNAIDS; NSWP; World Bank; UNDP, 2013), further work is needed to extend community empowerment programming to im/migrant women working in informal and criminalised labour, including sex work. A forthcoming systematic review found that im/migrant sex workers across diverse contexts expressed appreciation for community-based outreach services offering condoms, voluntary HIV/STI testing, and nonjudgmental sexual health nursing (McBride, 2019). Such interventions were found to address the barriers presented by criminalisation, precarious immigration status, limited language proficiency, and privacy concerns, towards increasing access to safe, appropriate HIV/STI prevention and supports for im/migrant sex workers (McBride, 2019). However, community-led efforts remain limited given that even advocacy organisations operate within criminalised contexts, and the provision of sexual health supplies and other supports can be considered aiding, abetting and/or procuring under some end-demand laws (Lam, 2018; NSWP, 2018). Despite prohibitive laws, access to condoms in the workplace and to supportive third parties (i.e. venue owners, managers, advocacy) have been documented to promote effective condom use negotiation among im/migrant sex workers (Febres-Cordero et al., 2018; Goldenberg et al., 2018; Trout et al., 2015), and use of third party services was recently linked to heightened access to mobile condom distribution among sex workers in Canada (McBride, Goldenberg, et al., 2019). This evidence and our findings suggest

that existing end-demand laws should be reformed to enable the operation of formal indoor sex work venues by third parties, to support the distribution of condoms in venues (McBride, Goldenberg, et al., 2019), and to enable community empowerment and advocacy initiatives. Globally, im/migrant sex worker groups, allies and researchers are challenging existing power structures through briefing and position papers, conference presentations, community organising, and multimedia art exhibits (Lam, 2018; NSWP, 2018; Pacific AIDS Network, n.d.; Red Edition, 2019; SWAN Vancouver Society, 2015; TAMPEP, 2019). These calls for policy reforms to mitigate harms and promote rights among a marginalised, precarious group of workers represent a powerful demonstration of resistance and resilience in the face of ongoing criminalisation and social exclusion, and must be supported towards the realisation of im/migrant sex workers' labour and human rights.

Strengths and limitations

A limitation of our study is our small sample of sex workers with precarious status (69 women), of whom most were permanent residents. These challenges stem from the difficulty in recruiting vulnerable, hidden and criminalised populations such as sex workers, and the unique and potentially exacerbated challenges which have been documented in research involving im/migrant sex workers, who also face heightened marginalisation related to racialisation and im/migration status (Goldenberg et al., 2016; Goldenberg, Krüsi, et al., 2017). Future research involving larger samples of im/migrant sex workers is recommended in North America and elsewhere. As with all observational research, causality and directionality cannot be inferred from our data; further, self-reported data may be subject to recall, social desirability, and misclassification biases. However, the community-based nature of this research (i.e. experiential and multilingual staff, long-term rapport with participants) is likely to mitigate social desirability bias. Despite robust evidence on the health inequities (including HIV/STI risks and barriers to HIV/STI care) faced by im/migrant workers, our study is among the first longitudinal epidemiological studies we are aware of to examine how precarious immigration status impacts HIV/STI exposure among im/migrant sex workers.

Conclusion

Our study found that sex workers with precarious immigration status faced 2.5-fold increased odds of experiencing condom refusal relative to those with secure status, and women with precarious status faced an over 4-fold increased odds of condom refusal after end-demand law reform. Our findings suggest that precarious immigration status may present barriers to safer sex and increasing HIV/STI risk among this group of informal workers, and this was exacerbated by end-demand criminalisation. Our findings reflect existing research highlighting precarious immigration status as a macrostructural determinant which heightens vulnerability to client abuses and restricts access to safe workspaces, health services, and police protections among im/migrant sex workers. There is a critical need to reform end-demand sex work laws and immigration policies which heighten precarity among im/migrant sex workers, and to centre the voices of im/migrant sex workers in the development and implementation of supportive labour policies and HIV/STI interventions, towards enhancing their control and agency in negotiations with clients and all aspects of their labour conditions, and upholding their health and human rights.

Note

1. The term 'migrant worker' often refers to individuals who do not hold citizenship or permanent residency (i.e. temporary or undocumented workers) in a country; particularly with 'migrant sex worker'. Community-based organizations (SWAN Vancouver Society, 2015) have proposed 'im/migrant sex worker' as a broader term inclusive of the diverse persons (regardless of immigration status) who were born in another country and now work in sex work in Canada. Our study uses 'im/migrant' to include all possible forms of immigration status.

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Availability of data

Due to our ethical and legal requirements related to protecting participant privacy and current ethical institutional approvals, all relevant data are available upon request pending ethical approval. Please submit all request to initiate the data access process to the corresponding author.

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