CRIMINALIZING SEX WORK CLIENTS AND RUSHED NEGOTIATIONS AMONG SEX WORKERS WHO USE DRUGS IN A CANADIAN SETTING

Adina Landsberg[1,2], Kate Shannon[1,3], Andrea Krüsi[1,3], Kora DeBeck[1,4], M-J Milloy[1,3], Ekaterina Nosova[1], Thomas Kerr[1,3], Kanna Hayashi[1,5]

1. British Columbia Centre for Excellence in HIV/AIDS, St. Paul's Hospital, 608-1081 Burrard Street, Vancouver, BC, CANADA, V6Z 1Y6
2. Faculty of Health Sciences, McMaster University, 1280 Main Street West, Hamilton, ON, CANADA, L8S 4L8
3. Faculty of Medicine, University of British Columbia, St. Paul's Hospital, 608-1081 Burrard Street, Vancouver, BC, CANADA, V6Z 1Y6
4. School of Public Policy, Simon Fraser University, 515 West Hastings Street – Suite 3271, Vancouver, BC, CANADA, V6B 5K3
5. Faculty of Health Sciences, Simon Fraser University, 8888 University Drive, Burnaby, BC, CANADA, V5A 1S6

Send correspondence to: Dr. Kanna Hayashi, PhD
Research Scientist, Urban Health Research Initiative
B.C. Centre for Excellence in HIV/AIDS
St. Paul's Hospital Chair in Addiction Research
Simon Fraser University
608-1081 Burrard Street, Vancouver, B.C., V6Z 1Y6
Canada
Tel: +1 (604) 558-6680
Fax: +1 (604) 559-9800
Email: uhri-kh@cfenet.ubc.ca

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ABSTRACT

Previous research indicates that criminalization of sex work is associated with harms among sex workers. In 2013, the Vancouver Police Department changed their sex work policy to no longer target sex workers while continuing to target clients and third parties in an effort to increase safety of sex workers (similar to "end-demand sex work" approaches being adopted in a number of countries globally). We sought to investigate the trends and correlates of rushing negotiations with clients due to police presence among 359 sex workers who use drugs in Vancouver before and after the guideline change. Data were derived from three prospective cohort studies of people who use drugs in Vancouver between 2008 and 2014. We used sex-stratified multivariable generalized estimating equation models. The **crude** percentages of sex workers who use drugs reporting rushing client negotiations changed from **8.9%** before the guideline change to **14.8%** after the guideline change among 259 women, and **from 8.6% to 7.1%** among 100 men. In multivariable analyses, **there was a significant increase in reports of rushing client negotiation after the guideline change among women (p=0.04). Other** variables that were independently associated with increased odds of rushing client negotiation included: experiencing client-perpetrated violence (among both men and women) **and** non-heterosexual orientation (among women) (all $p<0.05$). These findings indicate that despite the policing guideline change, rushed client negotiation due to police presence **appeared to have increased among our sample of female sex workers who use drugs. It** was **also** associated with client-perpetrated violence and other marker of vulnerability. These findings lend further evidence that criminalizing the purchase of sexual services does not protect the health and safety of sex workers.

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INTRODUCTION

In recent years, many international organizations and expert groups, including the World Health Organization and the Global Commission on HIV and the Law, among others, have endorsed the decriminalization of sex work among adults due to the well-documented harms associated with the criminalization of sex work [1-5]. It has been associated with greater risk of experiencing violence, abuse, discrimination, and increased risk of human immunodeficiency virus (HIV) and other sexually transmitted infections (STIs) among sex workers [1-3, 6, 7]. In areas where sex work is criminalized, street-based sex workers may be displaced to more isolated areas, where they are at an elevated risk of intimidation, violence, theft, and rape, as there are fewer witnesses to protect them [1, 7-11] and they experience a lack of legal protection [8]. When sex workers are more concerned about risk of violence, their ability to negotiate condom use is limited [1, 8, 10, 11], as they must prioritize their immediate safety over risk for infectious disease acquisition [11-13]. Furthermore, police presence adds additional pressure for sex workers to rush client negotiations, which has been found to increase the odds of client-perpetrated violence [14-16]. Cumulatively, these factors impose barriers to sex worker's access to health and social services and ability to report client-perpetrated violence to the police [1-3, 6, 7]. Despite a large body of evidence that supports the decriminalization of

sex work, many countries continue to criminalize sex work or various aspects of it, which effectively make sex work illegal [1-3, 8, 17-19].

In Canada, the Protection of Communities and Exploited Persons Act (PCEPA) came into effect in December 2014, through which, for the first time in Canadian history, purchasing of sex and third party advertising sexual services have been criminalized. Although sex work itself has never been illegal in Canada, laws governing sex work have resulted in a restrictive environment for sex workers since before the Act passed [10, 11]. For example, communication of sexual services in public spaces and sex work in indoor, supported environments were prohibited [10, 20]. In light of human rights concerns from these restrictions, the Supreme Court of Canada struck down these criminal laws in December 2012 in unanimous decision (Canada vs. Bedford). However, Canada, as other countries and jurisdictions globally, has increasingly turned to the "End Demand" approaches (or the "Nordic Model") that has been implemented in several European countries, which focus on criminalizing and targeting the client of sex workers and third parties (e.g. managers) [21]. Adopting this "end demand" approach, in January of 2013, the Vancouver Police Department (VPD) created a new enforcement guideline that was intended to prioritize the safety of and prevent violence against sex workers [22], but continued to target clients and third parties, while de-prioritizing the targeting of sex workers except in cases of last resort [22]. Previous research demonstrated that there was no statistically significant change in the rates of physical and sexual violence reported by

street-involved sex workers in this setting eight months before and after the policy change [23]. Further, an analysis of publicly-available police arrest date before/ after the legal changes found a 51% increase in police arrest on "prostitution" charges, demonstrating an increase in targeting of clients in 2013 [23]. Qualitative interview data from street-based sex workers indicated that client's fear of police detection and arrest resulted in maintaining sex workers' vulnerability to harms in the year post-guideline implementation [23]. For example, sex workers experienced pressure from potential clients to quickly negotiate terms of the sexual transactions. This served to impede sex worker's ability to screen clients for potential weapons or intoxication and check 'bad date' sheets for past violent clients, which are well documented techniques for sex workers to reduce harms such as risk of violence, abuse and HIV/STIs [7, 11, 13, 23-25].

Given legal and policy changes targeting clients but not sex workers have been suggested to particularly impact the most marginalized and visible sex workers, including those who use drugs, we sought to conduct a longitudinal analysis to examine the trends and correlates of rushing negotiation with a client due to police presence among sex workers who use drugs in the cohorts in Vancouver, Canada, during periods before and after the implementation of new policing guidelines by the VPD. This analysis takes advantage of data from three large ongoing prospective cohorts of people who use drugs in this setting. As the data collected up until November 2014 were available for the analyses, the present study referred to the period before the new PCEPA laws came into

effect and prior to further changes in VPD. Specifically, since December of 2014, the VPD has moved to no longer target clients [26]; however the implementation of the 2013 guidelines provides a critical window to evaluating the impact of end-demand enforcement approaches on some of the most marginalized and visible sex workers (e.g., those who use drugs).

METHODS

Study Procedures and Participants

Data for this study were obtained from the At-Risk Youth Study (ARYS), the AIDS Care Cohort to evaluate Exposure to Survival Services (ACCESS), and the Vancouver Injection Drug Users Study (VIDUS). Details of these ongoing open prospective cohort studies have been described elsewhere [27-29]. VIDUS and ACCESS began enrolling people who use drugs in the Greater Vancouver region in May 1996. VIDUS follows HIV-negative people who inject drugs and ACCESS follows HIV positive people who use illicit drugs other than or in addition to cannabis. The ARYS cohort was founded in 2005 and enrolls street-involved youth aged 14-26 years who use illicit drugs other than or in addition to cannabis.

The common enrollment criteria of the three studies were: age of at least 14 years, provision of informed consent, and residence in the Greater Vancouver region. All studies utilized harmonized follow-up and data collection procedures and tools, enabling

us to combine data from studies with different inclusion criteria. Specifically, eligible participants were invited to complete an interviewer-administered questionnaire to obtain information regarding their sociodemographic characteristics, HIV risk behaviour, drug use, and healthcare access. A separate assessment is then completed by a nurse to screen for various health conditions and obtain blood sample for HIV serology. Participants were followed up every six months and were remunerated with $30 CAD for each visit. All cohort studies have been approved by the University of British Columbia/Providence Health Care Research Ethics Board.

For the present analyses, participants were eligible if they completed at least one study visit between December 1, 2008 and November 30, 2014, were 18 years of age or older, and reported residing in the Lower Mainland (i.e., within the VPD jurisdiction) and engaging in sex work (i.e., having exchanged sex for gifts, food, clothing, shelter, money or drugs) during the previous six months at each interview.

Study Variables

The primary outcome measure was 'rushed client negotiation' defined as rushing negotiations with a sex work client in a public space due to police presence in the previous six months (yes *vs.* no). We considered explanatory variables that we hypothesized might be associated with rushed client negotiation. These included: interview date **(on and after July 1, 2013-November 30, 2014 *vs.* before January 1, 2013)**; age; ethnicity/ancestry (White *vs.* visible minority); sexual orientation (non-heterosexual

vs. heterosexual); experiencing client-perpetrated violence (including physical, sexual and verbal violence; yes *vs.* no); unprotected vaginal/anal sex with a client (yes *vs.* no); homelessness (yes *vs.* no); Downtown Eastside (DTES) residence (yes *vs.* no); heroin use (≥ daily *vs.* < daily); illicit prescription opioid use (≥ daily *vs.* < daily); stimulant (i.e., powder or crack cocaine, and crystal methamphetamine) use (≥ daily *vs.* < daily); heavy alcohol use (yes *vs.* no); drug or alcohol treatment (yes *vs.* no); incarceration ever (yes *vs.* no); non-fatal overdose (yes *vs.* no); HIV positive (yes *vs.* no); and cohort enrollment (ACCESS *vs.* VIDUS and ARYS *vs.* VIDUS). **As the primary outcome (rushed client negotiation) referred to anytime in the six months prior to interviews, we removed observations made between January 1, 2013 and June 30, 2013 to compare time periods before and after the VPD policy change (January 1, 2013)**. DTES residence was included because Vancouver's DTES is home to one of the largest open drug scenes in North America [30]. Heavy alcohol use was defined according to the National Institute on Alcohol Abuse and Alcoholism as an "average of >3 alcoholic drinks per occasion or >7 drinks per week in the past six months for women, and an average of >4 alcoholic drinks per occasion or >14 drinks in total per week in the past six months for men" [31]. Behavioural variables referred to the previous six months unless otherwise indicated. All variables except for ethnicity/ancestry and sexual orientation were treated as time-varying variables.

Statistical Analysis

All analyses were stratified by sex (female *vs.* male). Then, as a first step, we examined the baseline sample characteristics stratified by reports of rushing client negotiation due to police presence, using the Pearson's Chi-squared test (for categorical variables) and Mann-Whitney test (for continuous variables).

Since analyses of factors potentially associated with rushing client negotiations included serial measures for each participant, we used generalized estimating equation (GEE) with logit link, which provided standard errors adjusted by multiple observations per person using an exchangeable correlation structure. Therefore, data from every participant follow-up visit were considered in this analysis. As a first step, we used univariable GEE analyses to determine factors associated with rushing client negotiations. Next, because our study aimed to identify the set of variables that best explain a higher odds of rushing client negotiation, we used an a *priori*-defined backward model selection procedure based on examination of quasilikelihood under the independence model criterion statistic (QIC) to fit a multivariable model. In brief, we first included all explanatory variables that were associated rushing client negotiations at the level of $p < 0.10$ in univariable analyses in a full model. After examining the QIC of the model, we removed the variable with the largest p-value and built a reduced model. We continued this iterative process and selected the multivariable model with the lowest QIC value [32].

All *p*-values are two sided. All statistical analyses were performed using RStudio, version 0.99.892 (R Foundation for Statistical Computing, Vienna, Austria) [33].

RESULTS

In total, **359** participants were eligible for the present analyses, including **259** (**72.1**%) women. Of these, median age at baseline was **36** years (interquartile range [IQR]: **28-45**) among females and 26 years (IQR: 22-37) among males. Overall, these **359** individuals contributed **981** observations (**772** among females and **209** among males) to the analysis. Table 1 shows the baseline sample characteristics. As shown, **49** (**13.6**%) of **359** participants (**14.7**% among females and **11.0**% among males) reported rushing client negotiation due to police presence during the previous six months at baseline. In total, **80** (**22.3**%) unique individuals (**24.7**% among females and **16.0**% among males) made a total of **98** reports of rushed client negotiation at some point during the study period. Figure 1 depicts the percentages of reporting rushed client negotiation in public places due to police presence before **January 1, 2013** and after **July 1, 2013** (interview date). The percentages changed from **8.9**% to **14.8**% and from **8.6**% to **7.1**% for women and men, respectively.

The results of the univariable and multivariable GEE analyses of factors associated with rushing client negotiation due to police presence during the previous six months are presented in Table 2. As shown, in the final multivariable model, factors that remained

independently and positively associated with rushing client negotiation among females included: experiencing client-perpetrated violence (adjusted odds ratio [AOR]: **2.55**, 95% confidence interval [CI]: **1.41-4.63**), interview date **on or after July 1, 2013 (AOR: 1.73; 95% CI: 1.03-2.90)** and non-heterosexual orientation (AOR: **1.85**; 95% CI: **1.03-3.33**). Factors that remained independently and positively associated with rushing client negotiation among males included: experiencing client-perpetrated violence (AOR: **8.51**; 95% CI: **2.25-32.18**).

DISCUSSION

We found that approximately one-quarter of sex workers who use drugs in our sample reported rushed negotiation with clients due to police presence at least once between 2008 and 2014. **The multivariable analyses showed that since the new enforcement guideline adopted by the VPD in 2013, reports of rushing client negotiation due to police presence have significantly increased among female sex workers.** After extensive confounder adjustment, experiencing client-perpetrated violence remained associated with rushing negotiation with clients among both male and female sex workers. In addition, self-identifying as non-heterosexual (among women only) **was** independently correlated with rushing client negotiation.

Our findings of **increased** rates of reports of **female** sex workers rushing client negotiation in public places due to police presence after **the VPD policy change** is

consistent with the results of Krüsi et al. They found when the police targeted clients, violence rates were unchanged and since it remained in the shared interest of the sex worker and client to be undetected by the police, the negotiation of the terms of the transaction was rushed [23]. Although sex workers were no longer being targeted directly by the police, the enforcement environment that continued to target clients during our study period appeared to put pressure on sex workers to rush the screening. Initial screening of prospective clients, such as checking bad date sheets, and negotiating the terms of the transaction, such as where it will take place, the fee, and condom use, is essential to protect the safety of sex workers [7, 11, 13, 23-25], and among the key evidence cited by the Supreme Court of Canada in striking down the old criminal laws. When negotiations are rushed or forgone, sex workers are known to face significantly increased risk of violence, abuse, and condom refusal, which can result in HIV/STIs [7, 11, 13, 23-25, 34].

Also consistent with the findings of Krüsi et al [23] as well as longitudinal analyses prior to the legal changes [7], we found that among our set of explanatory variables, experiencing client-perpetrated violence had the strongest association with rushing negotiation with clients among both male and female sex workers. Violence or the threat of violence by clients has been shown to reduce sex worker harm reduction practices such as safely negotiating male condom use, thereby increasing risk for HIV infection [11, 35-39]. Additionally, client-perpetrated violence has been highly associated with inability to

access substance use treatment [7]. Given that client-perpetrated violence is a serious negative health outcome in itself as well as associated with a range of other harms, our findings suggest that mitigating rushing client negotiation may be an important step towards harm reduction among sex workers.

We also found that the post policy change was not associated with rushing client negotiation among male sex workers even in univariable analyses. A recent study in Vancouver highlights a shift from the streets to online sex work among men and trans sex workers, which provides an environment with a greater ability to screen prospective clients and negotiate the terms of the transaction [40]. Additionally, online sex work has been found to provide a less violent and stigmatizing environment for sex workers [41, 42]. This may explain the gender-based differences identified in our analyses, although the sample size of male sex workers was small, and therefore we might have been underpowered to detect temporal trends in the rates of rushing client negotiations.

Our findings suggest that despite the intended efforts of the VPD to prioritize the safety of and prevent violence against sex workers through de-prioritizing the targeting of sex workers, so long as clients continue to be targets of enforcements, sex workers continued to rush client negotiation due to police presence. Additionally, rushing client negotiation was found to be associated with increased client-perpetrated violence. Taken together with the previous literature indicating that the criminalization of sex buyers could lead to furthering the marginalization of sex workers and restricting their ability to

negotiate sexual transactions for risk reduction [43-45], our results therefore lend further support to the need to consider decriminalization of sex work in order to mitigate the harms to sex workers associated with rushing client negotiation, particularly violence. In New Zealand, where sex work has been decriminalized since 2003, sex workers experience opportunities to develop stable and safe work environments and enhanced capability to manage negotiations for safe sex practices with clients [46]. However, among high-income countries, such as Canada, there has been a trend towards end-demand criminalization of clients and third parties, in the absence of any scientific data to support this approach to protect sex workers. This situation further highlights the significance of our findings, as now clients are not solely being targeted for purchasing sex work, the most marginalized and visible sex workers, including those who use drugs, are unable to protect themselves from violence or other poor health outcomes by the critical strategy of screening prospective clients.

This study has several limitations. First, as our cohort participants were not recruited at random, and our study sample was restricted to drug-using sex workers, the generalizability of our findings may be limited. Second, the self-reported data may be affected by response bias including socially desirable responding. However, previous research has shown that reported behaviours by people who use drugs were generally truthful and reliable [47, 48]. Third, although we restricted our sample to those residing the VPD jurisdiction, there is a possibility that some participants worked outside of the

VPD jurisdiction where traditional law enforcement activities that targeted sex workers were taking place. Unfortunately, we were unable to account for such potential difference between the location of residence and work. This may have led to the overestimation of the outcome. Lastly, the observational research study design may have excluded some important unmeasured confounding variables from consideration, although we did extensively adjust for potential confounding variables.

In sum, we found that there **appeared to be a significant increase** in reports of **female** sex workers rushing client negotiation due to police presence before and after the 2013 law enforcement guideline change, which deemphasized targeting sex workers and temporarily scaled up efforts to target clients. Consistent with a large body of literature, rushing client negotiations were associated with client-perpetrated violence and other markers of vulnerability. These findings support the growing body of literature suggesting that criminalizing sex work or aspects of it does not protect the safety and health of sex workers.

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REFERENCES

1. Gruskin S, Pierce GW, Ferguson L. Realigning government action with public health evidence: the legal and policy environment affecting sex work and HIV in Asia. Cult Health Sex. 2014;16(1):14-29.

2. UNAIDS (Joint United Nations Programme on HIV/AIDS). UNAIDS guidance note on HIV and sex work. Geneva: Joint United Nations Programme on HIV/AIDS, 2012.

3. Rekart ML. Sex-work harm reduction. Lancet. 2005;366(9503):2123-34.

4. WHO, UNFPA, UNAIDS, NSWP. Prevention and treatment of HIV and other sexually transmitted infections for sex workers in low- and middle-income countries: recommendations for a public health approach. Geneva: World Health Organization, 2012.

5. Godwin J. Sex work and the law in Asia and the Pacific: Laws, HIV and human rights in the context of sex work. Bangkok: UNAIDS, UNFPA, UNDP, 2012.

6. Shannon K, Montaner JS. The politics and policies of HIV prevention in sex work. Lancet Infect Dis. 2012;12(7):500-2.

7. Shannon K, Kerr T, Strathdee SA, Shoveller J, Montaner JS, Tyndall MW. Prevalence and structural correlates of gender based violence among a prospective cohort of female sex workers. BMJ. 2009;339:b2939.

8. Shannon K, Csete J. Violence, condom negotiation, and HIV/STI risk among sex workers. JAMA. 2010;304(5):573-4.

9. Tenni B, Carpenter J, Thomson N. Arresting HIV: fostering partnerships between sex workers and police to reduce HIV risk and promote professionalization within policing institutions: a realist review. PloS One. 2015;10(10):e0134900.

10. Shannon K, Kerr T, Allinott S, Chettiar J, Shoveller J, Tyndall MW. Social and structural violence and power relations in mitigating HIV risk of drug-using women in survival sex work. Soc Sci Med. 2008;66(4):911-21.

11. Shannon K, Strathdee SA, Shoveller J, Rusch M, Kerr T, Tyndall MW. Structural and environmental barriers to condom use negotiation with clients among female sex workers: implications for HIV-prevention strategies and policy. Am J Public Health. 2009;99(4):659-65.

12. Rhodes T, Simic M, Baros S, Platt L, Zikic B. Police violence and sexual risk among female and transvestite sex workers in Serbia: qualitative study. BMJ. 2008;337:a811.

13. Decker MR, McCauley HL, Phuengsamran D, Janyam S, Seage GR, 3rd, Silverman JG. Violence victimisation, sexual risk and sexually transmitted infection symptoms among female sex workers in Thailand. Sex Transm Infect. 2010;86(3):236-40.

14. Muldoon KA. A systematic review of the clinical and social epidemiological research among sex workers in Uganda. BMC Public Health. 2015;15:1226.

15. Erickson M, Goldenberg SM, Ajok M, Muldoon KA, Muzaaya G, Shannon K. Structural determinants of dual contraceptive use among female sex workers in Gulu, northern Uganda. Int J Gynaecol Obstet. 2015;131(1):91-5.

16. Muldoon KA, Akello M, Muzaaya G, Simo A, Shoveller J, Shannon K. Policing the epidemic: High burden of workplace violence among female sex workers in conflict-affected northern Uganda. Glob Public Health. 2015:1-14.

17. Harcourt C, Egger S, Donovan B. Sex work and the law. Sex Health. 2005;2(3):121-8.

18. Donovan B, Harcourt C, Egger S, Fairley CK. Improving the health of sex workers in NSW: maintaining success. N S W Public Health Bull. 2010;21(3-4):74-7.

19. Platt L, Jolley E, Rhodes T, Hope V, Latypov A, Reynolds L, et al. Factors mediating HIV risk among female sex workers in Europe: a systematic review and ecological analysis. BMJ Open. 2013;3(7).

20. Lazarus L, Deering KN, Nabess R, Gibson K, Tyndall MW, Shannon K. Occupational stigma as a primary barrier to health care for street-based sex workers in Canada. Cult Health Sex. 2012;14(2):139-50.

21. Canadain Public Health Association. Sex work in Canada. Ottawa: Canadian Public Health Association, 2014.

22. Vancouver Police Department. Sex work enforcement guidelines. Vancouver: Vancouver Police Department, 2013.

23. Krusi A, Pacey K, Bird L, Taylor C, Chettiar J, Allan S, et al. Criminalisation of clients: reproducing vulnerabilities for violence and poor health among street-based sex workers in Canada-a qualitative study. BMJ Ppen. 2014;4(6):e005191.

24. Krusi A, Chettiar J, Ridgway A, Abbott J, Strathdee SA, Shannon K. Negotiating safety and sexual risk reduction with clients in unsanctioned safer indoor sex work environments: a qualitative study. Am J Public Health. 2012;102(6):1154-9.

25. Decker MR, Wirtz AL, Baral SD, Peryshkina A, Mogilnyi V, Weber RA, et al. Injection drug use, sexual risk, violence and STI/HIV among Moscow female sex workers. Sex Transm Infect. 2012;88(4):278-83.

26. Li W. Vancouver police to prioritize safety over anti-prostitution laws. The Globe and Mail. 2014.

27. Tyndall MW, Currie S, Spittal P, Li K, Wood E, O'Shaughnessy MV, et al. Intensive injection cocaine use as the primary risk factor in the Vancouver HIV-1 epidemic. AIDS. 2003;17(6):887-93.

28. Strathdee SA, Palepu A, Cornelisse PG, Yip B, O'Shaughnessy MV, Montaner JS, et al. Barriers to use of free antiretroviral therapy in injection drug users. JAMA. 1998;280(6):547-9.

29. Wood E, Stoltz JA, Montaner JS, Kerr T. Evaluating methamphetamine use and risks of injection initiation among street youth: the ARYS study. Harm Reduct J. 2006;3:18.

30. Wood E, Kerr T, Small W, Li K, Marsh DC, Montaner JS, et al. Changes in public order after the opening of a medically supervised safer injecting facility for illicit injection drug users. CMAJ. 2004;171(7):731-4.

31. Kennedy MC, Marshall BD, Hayashi K, Nguyen P, Wood E, Kerr T. Heavy alcohol use and suicidal behavior among people who use illicit drugs: a cohort study. Drug Alcohol Depend. 2015;151:272-7.

32. Pan W. Akaike's information criterion in generalized estimating equations. Biometrics. 2001;57(1):120-5.

33. Team RC. R: a language and enviornment for statistical computing. Vienna, Austria: R Foundation for Statistical Computing; 2016.

34. Deering KN, Lyons T, Feng CX, Nosyk B, Strathdee SA, Montaner JS, et al. Client demands for unsafe sex: the socioeconomic risk environment for HIV among street and off-street sex workers. J Acquir Immune Defic Syndr. 2013;63(4):522-31.

35. Shannon K, Strathdee SA, Goldenberg SM, Duff P, Mwangi P, Rusakova M, et al. Global epidemiology of HIV among female sex workers: influence of structural determinants. Lancet. 2015;385(9962):55-71.

36. Beattie TS, Bhattacharjee P, Ramesh BM, Gurnani V, Anthony J, Isac S, et al. Violence against female sex workers in Karnataka state, south India: impact on health, and reductions in violence following an intervention program. BMC Public Health. 2010;10:476.

37. Ramesh S, Ganju D, Mahapatra B, Mishra RM, Saggurti N. Relationship between mobility, violence and HIV/STI among female sex workers in Andhra Pradesh, India. BMC Public Health. 2012;12:764.

38. Bharat S, Mahapatra B, Roy S, Saggurti N. Are female sex workers able to negotiate condom use with male clients? The case of mobile FSWs in four high HIV prevalence states of India. PloS One. 2013;8(6):e68043.

39. Deering KN, Bhattacharjee P, Mohan HL, Bradley J, Shannon K, Boily MC, et al. Violence and HIV risk among female sex workers in Southern India. Sex Transm Dis. 2013;40(2):168-74.

40. Argento E, Taylor M, Jollimore J, Taylor C, Jennex J, Krusi A, et al. The loss of boystown and transition to online sex work: strategies and barriers to increase safety among men sex workers and clients of men. Am J Mens Health. 2016.

41. MacPhail C, Scott J, Minichiello V. Technology, normalisation and male sex work. Cult Health Sex. 2015;17(4):483-95.

42. Minichiello V, Scott J, Callander D. New pleasures and old dangers: reinventing male sex work. J Sex Res. 2013;50(3-4):263-75.

43. Krusi A, Kerr T, Taylor C, Rhodes T, Shannon K. 'They won't change it back in their heads that we're trash': the intersection of sex work-related stigma and evolving policing strategies. Sociol Health Illn. 2016.

44. Open Society Foundation. Laws and policies affecting sex work - a reference brief. New York: Open Society Foundation, 2012.

45. Scoular J. Criminalising 'Punters': evaluating the Swedish position on prostitution. J Soc Welf Fam Law. 2004;26:195-210.

46. Healy C. HIV and the decriminalization of sex work in New Zealand. HIV AIDS Policy Law Review. 2006;11(2-3):73-4.

47. Darke S. Self-report among injecting drug users: a review. Drug Alcohol Depend. 1998;51(3):253-63; discussion 67-8.

48. Weatherby NL, Needle R, Cesari H, Booth R, Mccoy CB, Watters JK, et al. Validity of self-reported drug-use among injection-drug users and crack cocaine users recruited through street outreach. Eval Program Plann. 1994;17(4):347-55.