



Research paper

Piloting a ‘spatial isolation’ index: The built environment and sexual and drug use risks to sex workers



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ABSTRACT

Background: Employing innovative mapping and spatial analyses of individual and neighbourhood environment data, we examined the social, physical and structural features of overlapping street-based sex work and drug scenes and explored the utility of a ‘spatial isolation index’ in explaining exchanging sex for drugs and exchanging sex while high.

Methods: Analyses drew on baseline interview and geographic data (January 2010–October 2011) from a large prospective cohort of street and off-street sex workers (SWs) in Metropolitan Vancouver and external publically-available, neighbourhood environment data. An index measuring ‘spatial isolation’ was developed from seven indicators measuring features of the built environment within 50 m buffers (e.g., industrial or commercial zoning, lighting) surrounding sex work environments. Bivariate and multivariable logistic regression was used to examine associations between the two outcomes (exchanged sex for drugs; exchanged sex while high) and the index, as well as each individual indicator.

Results: Of 510 SWs, 328 worked in street-based/outdoor environments (e.g., streets, parks, alleys) and were included in the analyses. In multivariable analysis, increased spatial isolation surrounding street-based/outdoor SWs’ main places of servicing clients as measured with the index was significantly associated with exchanging sex for drugs. Exchanging sex for drugs was also significantly positively associated with an indicator of the built environment suggesting greater spatial isolation (increased percent of parks) and negatively associated with those suggesting decreased spatial isolation (increased percent commercial areas, increased count of lighting, increased building footprint). Exchanging sex while high was negatively associated with increased percent of commercial zones but this association was removed when adjusting for police harassment.

Conclusions: The results from our exploratory study highlight how built environment shapes risks within overlapping street-based sex work and drug scenes through the development of a novel index comprised of multiple indicators of the built environment available through publicly available data. This study informs the important role that spatially-oriented responses, such as safer-environment interventions, and structural responses, such as decriminalization of sex work can play in improving the health, safety and well-being of SWs.

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Introduction

Increasing theoretical, qualitative and social epidemiological work has elucidated the important role of place, including the

dynamic interplay between social context and physical and structural environments, on influencing health risks experienced by vulnerable and marginalized populations, including sex workers (SWs) and people who use drugs (Tempalski & McQuie, 2009). Rhodes’ ‘risk environment framework’ has been particularly useful in re-conceptualizing drug use harms, including drug-related harms, as being produced by social situations and places rather than solely by individual ‘risk behaviours’, with the ‘risk environment’ defined as the “space...in which a variety of factors interact to increase the chances of drug-related harm” (Rhodes, 2002). Related

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research has advocated for conceptual and analytic methods that can account for the effects of social and physical factors operating on multiple and interrelated levels, including on the level of populations (macro), community (meso) and individual (micro) on HIV risk (Aral, Padian, & Holmes, 2005; Diez Roux & Aiello, 2005; Rhodes, 2009). Further work by Blanchard and Aral conceptualizes sex work as a complex system, whereby the overlap of social context and physical and structural environments of sex work interact to produce HIV risk; for example, in settings where sex work is highly criminalized and stigmatized, sex work environments remain largely hidden and isolated, highly mobile and controlled by pimps or brokers who connect SWs with clients (Blanchard & Aral, 2010).

In settings where sex work and drug use markets overlap, place- and gender-based dual drug use and sexual risks for women may be exacerbated. The male-dominated nature of street culture within such settings and the gendered dynamics of public spaces, wherein power relations favour male drug use and sexual partners, shape the negotiation of sexual practices (Bourgois, Prince, & Moss, 2004; Rhodes et al., 2012; Shannon, Kerr, Allinott, et al., 2008). In such settings, sexual HIV transmission is thought to have been driven by the advent and increase in crack use since the early 1990s, the demands of which required women in particular to trade sex for drugs and negatively affected the amount of money for sex acts and power in negotiations with clients (Maher, 1997; Maher & Curtis, 1992; Maher, Dunlap, Johnson, & Hamid, 1996; Shannon, Kerr, Allinott, et al., 2008). Limited research suggests that sex-for-drug exchanges are riskier than exchanging sex for money and have been associated with crack use and unprotected sex and sex with a drug user (Kwiatkowski & Booth, 2000). SWs who exchange sex for drugs or exchange sex while high are also less likely to be able to negotiate terms with clients (e.g., safer sex), more likely to engage in riskier sexual practices (e.g., sex without condoms, anal sex) in exchange for immediate drugs and less able to control the drug preparation process (e.g., assess drug quality/safety, share drug use equipment as second user) (Maher & Curtis, 1992; Maher et al., 1996; Shannon, Kerr, Bright, Gibson, & Tyndall, 2008).

Key features of physical locations of sex work environments can play an important role in gender-based dual drug use and sexual risks to SWs, particularly in settings where sex work is criminalized. The geographic concentration of sex work in more hidden and isolated spaces is often a “socially acceptable” strategy with the goal of removing the visible presence of sex work from the public eye (e.g., from streets, windows). Removing sex work from public spaces can happen explicitly through regulation (e.g., municipal zoning restrictions on working in specific areas of a city) or through the creation of formal tolerance zones (e.g., ‘red light districts’) (Hubbard & Whowell, 2008; Lowman, 1992) or ‘defacto tolerance zones’ due to local policing and fear of police harassment and arrest (Hubbard, 1998). Spatial isolation of SWs, including through policing practices related to enforcement of sex work laws, has been associated with increased health harms to SWs, including gender-based violence, risky sexual or drug-related behaviours (e.g., unsafe sex; sharing drug use equipment) and lack of access to health services (Lazarus, Chettiar, Deering, Nabess, & Shannon, 2011; Rhodes, Simic, Baros, Platt, & Zikic, 2008; Shannon, Kerr, Allinott, et al., 2008; Shannon et al., 2009).

This qualitative and social epidemiological research has been integral in identifying the importance of features of place, including spatial isolation, on negative health risks among SWs; however this research has largely relied on individual self-reported experiences and descriptions of the individual’s environment. Critical work within the drug use and sexual health literature has examined the effects of social context and physical and structural environments on health via aggregated or cumulative effects through indicators that measure features of the built environment. The

term ‘built environment’, has broad uses and applications, and in our paper refers to features of human-made spaces, places or surroundings in which human activity takes place. For example, the relationship between spatial access to sterile syringes, policing of drug use (arrests) and the use of safe drug use equipment has been assessed (Cooper, Des Jarlais, Ross, et al., 2012; Cooper, Des Jarlais, Tempalski, et al., 2012). An index measuring the cumulative effects of physical disorder within neighbourhoods (e.g., structural damage to homes; streets with trash, abandoned cars, graffiti; physical problems and building code violations in high schools), the ‘Broken Window Index’, was examined for its influence on neighbourhood gonorrhoea rates in New Orleans (Cohen et al., 2000). Despite important contributions of this work to understanding the effects of features of place, including within the built environment among marginalized and street-involved populations, to date, there has been little to no cross-dialogue between built environment research and spatial research of health inequities at the population level and qualitative and social epidemiological research of social and health harms at the individual level (e.g., cohort data, qualitative in-depth interviews), particularly within sex work research.

Through employing innovative mapping with a large cohort of SWs and spatial analyses of both individual data and neighbourhood environment data, our exploratory study aimed to address these gaps in research by examining the social, physical and structural features in overlapping street-based sex work and drug scenes. Guided by existing theoretical, qualitative and social epidemiological research, we explored the utility of a spatial isolation index of SWs’ built environment, and the relationship between this index and two dual drug use and sexual risk outcomes: exchanging sex while high and exchanging sex for drugs. We also examined the individual effects of built environment indicators that were used to develop the index on the outcomes. In addition, given substantial evidence of the influence of policing practices on influencing sex work activities as well as the spaces where sex work is practiced within settings where sex work is criminalized, we aimed to explore the potential confounding effect of police harassment on the relationship between built environment indicators and our two outcomes. This research is situated in Vancouver, Canada, a setting with criminalized policies towards both sex work (i.e., communicating/soliciting for the purposes of prostitution; owning and operating a brothel/bawdy house; and living off the avails of prostitution) and drug use.

Methods

Survey design and sample

Beginning in January 2010, youth and adult women (14 years+) were enrolled in a longitudinal cohort known as ‘An Evaluation of Sex Worker’s Health Access’ (‘AESHA’). This study is based on substantial community collaborations (e.g., sex work agencies and service providers) existing since 2005, and is monitored by a Community Advisory Board with representatives from 15+ agencies. Using time-location sampling (Stueve, O’Donnell, Duran, San Doval, & Blome, 2001) women who exchanged sex for money within the last 30 days (SWs) were recruited through outreach to outdoor sex work locations (i.e. streets, alleys), indoor sex work venues (i.e. massage parlours, micro-brothels, and in-call locations) and independent/self-advertising SWs (e.g., online, newspapers) in Metropolitan Vancouver. Our eligibility is inclusive of transgender individuals (male-to-female, MTF) who identify as women, based on our previous work (Shannon et al., 2007) and community guidance, as MTF transgender individuals work in similar spaces as the female SW population, and access the same services as the female SWs (directed towards self-identifying women,

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