Mapping Criminalization of Sex Work: Impacts on ART Interruptions among Women Living with HIV in Vancouver, Canada

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Background

- Despite the high HIV burden faced by women in sex work, data on sex workers' (SWs) access and retention in antiretroviral therapy (ART) are limited, with most studies focused on clinical/behavioural determinants
- Using an innovative spatial approach, we mapped the criminalization of sex work and explored its independent effects (e.g., client violence, policing, legal restrictions) on HIV treatment interruptions (i.e., ≥2 day ART interruptions) among women sex workers (SWs) living with HIV in Metropolitan Vancouver, BC, over a 3.5 year period.

Methods

- Data were drawn from a prospective community-based cohort (An Evaluation of Sex Workers' Health Access, 2010-13), including baseline and semi-annual interview questionnaires and mapping data.
  - Interviewer, outreach, and nursing staff include experiential staff (sex workers) and individuals with sex work community support experience
  - AESHA is guided by a Community Advisory Board of >15 organizations
- Through informed consent, we also drew on linked data on ART dispensation from the BC Centre for Excellence Drug Treatment Program.
- Using GIS mapping and multivariable logistic regression with generalized estimating equations (GEE), we examined the confounding effects of spatial density of criminalization within a buffer of women's place of residence on treatment interruptions (time-updated variable of no ART dispensed for ≥2 consecutive days at each semi-annual visit) among women living with HIV who had previously used ART.
- Using the kernel density function, spatial criminalization variables were created from the locations of reported police harassment, physical dislocation due to policing, and "red zone"/legal restrictions on working locations. Data for place of residence was laid over this surface and a 250m buffer was created around each location. For each participant, spatial criminalization variables were measured as the density of reported events within a 250-meter buffer of each participants' residential location.

Results

- 66 women who were HIV-seropositive, used ART, and who identified a valid location for their place of residence were included in the analysis.
- Among 66 participants, there were 208 observations and 83 events of ≥2-day ART interruptions over the 3.5-year study period. At baseline, 32 participants (48.5%) had experienced at least one treatment interruptions in the prior six months, and over the entire study period, 44 participants (66.7%) experienced at least one ART interruption.

Table 1: Baseline Characteristics of SWs Living With HIV (N=66) in Metropolitan Vancouver, 2010-2013

Variable	≥2 Day ART Interruption: Yes n (%) n = 32	No n (%) n = 39	Total n (%) N=66	*p-value*
Age, in years *(med, IQR)*	37.0 (28.0-43.0)	35.0 (31.5-42.5)	35.5 (31.0-43.0)	*0.689*
≥ High school education	9 (26.5%)	14 (43.8%)	23 (34.9%)	*0.144*
Duration of known HIV positivity, in years *(med, IQR)*	9.1 (2.1-14.2)	7.7 (3.2-12.4)	8.3 (2.8-12.5)	*0.456*
CD4 cell count, per 100 cells/mm^3 *(med, IQR)**	3.3 (1.3-4.5)	4.5 (2.1-5.8)	3.7 (2.4-5.0)	*0.022*
HIV RNA plasma viral load, per $\log_{10}$ copies/mL) *(med, IQR)**	3.2 (1.9-4.5)	1.6 (1.5-3.3)	2.2 (1.5-4.3)	*0.013*
Average monthly income* *(med)*	$1500	$1680	$1640	*0.978*
Monthly client volume* *(med)*	24.0	24.0	24.0	*0.761*
Inconsistent condom use, clients*	6 (17.7%)	3 (9.4%)	9 (13.6%)	*0.267*
Non-injection drug use*	30 (88.2%)	30 (93.8%)	60 (90.9%)	*0.443*
Injection drug use*	20 (58.8%)	22 (68.8%)	42 (63.6%)	*0.403*
Homelessness*	15 (44.1%)	6 (18.8%)	21 (31.8%)	*0.031*
Place of service				*0.214*
Outdoor/public	13 (38.2%)	14 (43.8%)	27 (40.9%)	
Informal indoor establishment	16 (47.1%)	11 (34.4%)	27 (40.9%)	
Brothel/quasi-brothel	1 (2.9%)	5 (15.6%)	6 (9.1%)	

- In a multivariate GEE model adjusted for key confounders (age, homelessness, injection drug use, duration of known HIV positivity), increased density of displacement due to policing within a 250-meter buffer of one's residential location independently correlated with HIV treatment interruptions (Table 2)

Table 2. Confounder GEE Model of Relationship Between Police Displacement and ≥2 Day ART Interruption Among SWs Living With HIV (N=66) In Metropolitan Vancouver, 2010-2013

Variable	≥2 Day ART Interruption: Adjusted Odds Ratio (95% CI)	*p-value*
Density of displacement due to policing, within 250m of residence*	1.02 (1.00-1.04)	*0.014*

- In two separate multivariate GEE confounder models, "red zone" restrictions (Table 3) and a combined spatial measure of criminalization (Table 4) were also marginally correlated with ≥2-day ART interruptions.

Table 3. Confounder GEE Model of Relationship Between 'Red Zone'/Legal Restrictions and ≥2 Day ART Interruption Among SWs Living With HIV (N=66) In Metropolitan Vancouver, 2010-2013

Variable	≥2 Day ART Interruption: Adjusted Odds Ratio (95% CI)	*p-value*
Density of 'red zone'/legal restrictions on work areas, within 250m of residence*	1.03 (0.97-1.79)	*0.083*

Table 4. Confounder GEE Model of Relationship Between Combined Spatial Criminalization and ≥2 Day ART Interruption Among SWs Living With HIV (N=66) In Metropolitan Vancouver, 2010-2013

Variable	≥2 Day ART Interruption: Adjusted Odds Ratio (95% CI)	p-value
Density of combined spatial criminalization, within 250m of residence*	1.00 (1.00-1.01)	*0.069*

*All confounder models were adjusted for age, homelessness, injection drug use (last 6 mos), and duration of known HIV-positive status.

Conclusions

- Spatial criminalization (e.g., policing, legal restrictions) within SWs' neighborhood environments may undermine sustained use and retention in HIV treatment.
- These findings contribute to a body of global evidence highlighting the ways in which laws and policies that criminalize aspects of sex work and their enforcement undermine sex workers' access to health and human rights, including retention in HIV treatment.
- Programmes facilitating access to safer living and working spaces for women living with HIV/AIDS should be explored as potential intervention strategies, alongside critically-needed policy reforms.

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