OPERATIONALIZING THE RISK ENVIRONMENT: SPATIAL DISTRIBUTION OF PEOPLE WHO INJECT DRUGS AND HOTSPOTS OF SOCIAL INJECTING ACTIVITY IN MONTREAL, CANADA

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Background:
People who inject drugs (PWID) are considered a priority population in global HCV elimination efforts. It is acknowledged that drug harms are concentrated within specific social and geographic spaces ("risk environments"). Identifying these spaces may improve targeting of public health interventions.
Aims:
i) Describe geographic dwelling and injecting spaces occupied by PWID in Montreal between 2004-2017;
ii) Identify areas demonstrating heightened clustering of social injecting locations ("hotspots");
iii) Examine potential period effects reflecting evolving drug epidemics.

Methods:
Data were drawn from HEPCO, a longitudinal cohort study established to examine individual and contextual determinants of HCV infection (eligibility criteria: age ≥18, self-reported injection in the previous 6 months). At regular (6/3-monthly) visits, trained interviewers collect sociodemographic and behavioural data, and nurses perform HCV testing. Participants report the postcode of the place they slept most often in the past month ("dwelling location") and where they most recently injected with (an)other person(s) present ("injecting location"). *Analyses:* Spatial analyses were performed in R, ArcGIS and GeoDa. Period effects were assessed by analyzing 2004-2010 and 2011-2017 eras separately. The Getis-Ord-Gi* statistic was used to identify hotspots (areas demonstrating significant clustering of injecting locations; null hypothesis: random distribution across Montreal island).

Results: 1540 participants reported 9489 dwelling (2296 unique) and 3892 (1416 unique) injecting postcodes. Across both time periods, injecting locations were concentrated in the downtown area, whereas dwelling locations were more dispersed. The mean centres of dwelling and injecting locations have remained stable over time, however, deviation from these centres was greater in 2011-2017, suggesting geographical expansion over time. Results of hotspot analyses suggest a core area in the downtown/old town that has expanded over time, with an emerging hotspot further south.

Conclusion: Geographic expansion and emergence of social injecting hotspots call for ongoing assessment of risk environments and adaptation of harm reduction strategies.

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