Background

More than half of new transmissions originate from individuals with undiagnosed HIV infection [1]. In Canada, an estimated 1 in 4 HIV infections are undiagnosed [2]. Characterizing this hidden population could inform HIV testing strategies to better target the undiagnosed.

Observational cohorts offer a unique opportunity to identify and study the undiagnosed population. Self-reported health status, commonly requested from cohort study participants upon enrollment in a study. Those that report “Unknown” or “HIV negative” status but test positive on the confirmatory HIV test present previously undiagnosed group. In this study, we characterized individuals who were unaware of their HIV infection at the time of enrollment into observational cohorts of injection drug users (IDU) and street-based sex workers (SW) to identify possible factors that may lead to missed HIV diagnoses.

Methods


Groups were defined for comparison based on HIV status at the time of enrollment: Self-reported HIV “unknown” or “HIV negative” status but test positive on the confirmatory HIV test present HIV positive group (Table 2). Groups were compared across socio-demographic, risk-behavior, safety and violence variables. Chi-square and Fischer’s exact tests were applied in bivariate comparisons. Statistics Canada’s analytic results were used to develop a multivariate model for injection drug users only, because data for sex workers were insufficient for the multivariate analysis.

Results

18% of HIV positive street-based sex workers were undiagnosed on enrollment in the study. The group with diagnosed HIV at baseline were more likely - with marginal significance - to inject cocaine; they were also significantly more likely to have had a Hepatitis C test and report poor health, but less likely to be subjected to physical violence (Table 1).

17% of HIV positive injection drug users were undiagnosed on enrollment in the study, Table 2 shows that diagnosed IDU were significantly more likely than undiagnosed to be female, Caucasian or Aboriginal, to have Hepatitis C, have ever had a mental illness, ever used a needle exchange, engage in binge injection, use a drug treatment facility, visit a counselor, and access a doctor, emergency room or hospital. In multivariate analyses, HIV diagnosis remained associated with lower odds of being male and was positively associated with Hepatitis C infection, binge injection and using needle exchange.

Discussion

Street-based sex workers and injection drug users with undiagnosed HIV infection were less likely to have recognized risk factors. For example, binge injecting and having Hepatitis C were more common among those with diagnosed HIV infection. This suggests that specific risk factors are more likely to trigger HIV testing. Therefore, those engaging in high-risk activities less often – yet who are still at significant risk for HIV infection – could be falling through the cracks and may be missing opportunities for HIV testing.

Results point to specific vulnerabilities affecting the undiagnosed. Male injection drug users and street-based sex workers who experienced physical violence were less likely to be diagnosed in this study. To identify specific vulnerabilities relevant today, more recent data would be required.

Current risk-based HIV testing strategies may need to be revised to better target the undiagnosed. Risk-based testing criteria for traditional targeted testing strategies should be reviewed to help reach vulnerable individuals who remain hidden to the testing program. While outreach testing remains essential, expanding routine voluntary HIV testing could improve the overall effectiveness of comprehensive testing programs.